Signal conditioning & Communication

Product catalog
Our purpose

is to create market-leading site standard solutions with high signal integrity and simplicity for our customers, concentrating on innovation in six core business areas: Temperature, I.S. Interfaces, Communication Interfaces, Multifunctional, Isolation and Display.

Our products are individually outstanding, but when our point-to-point temperature measurement devices, I.S. interfaces, backplanes, multifunctional signal devices and future-proof communication interfaces are combined, our solutions are truly unrivalled.

We will be

our customer’s trusted partner for the best and most innovative signal conditioning solutions in the process and factory automation industries.

We provide

a wide range of benefits to our customers through innovative solutions and close collaboration:

• The highest signal integrity from your measurement point to control system
• Maximum uptime based on our Install and Forget® philosophy
• Easy and cost-effective deployment and monitoring with intuitive communication interfaces
• Site standard devices that are easily programmable to suit your specific application
• Day-to-day delivery

Since 1974 we have been dedicated to perfecting our core competence of innovating high precision technology with low power consumption. With a dedicated R&D center that is integrated with our lean production facility at our headquarters in Denmark, we are today one of the leading companies within signal conditioning.
6 Product Pillars

to meet your every need
+ devices for special applications

TEMPERATURE
Transmitters and sensors - analog, bus or digital

I.S. INTERFACES
Intrinsically safe isolation barriers and backplanes

COMMUNICATION INTERFACES
Detachable local or remote operator interfaces

MULTIFUNCTIONAL
Wide range of input/output - multiple applications

ISOLATION
Compact and fast isolators with exceptional performance

DISPLAYS
Complete range of panel meters

SPECIAL DEVICES
Devices for special applications
Transmitters and sensors converting industrial process temperature signals to analog, bus or digital communication

Our range of temperature transmitters and sensors provides the highest level of signal integrity from the measurement point to your control system. You can convert industrial process temperature signals to analog, bus or digital communication using a highly reliable point-to-point solution with a fast response time, automatic self-calibration, sensor error detection, low drift, and top EMC performance in any environment.
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<td>2-wire programmable transmitter</td>
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<td>5335D</td>
<td>2-wire transmitter with HART® 5 protocol</td>
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<tr>
<td>5337A</td>
<td>2-wire transmitter with HART® 7 protocol</td>
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<tr>
<td>5337D</td>
<td>2-wire transmitter with HART® 7 protocol</td>
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<td>5350A</td>
<td>PROFIBUS® PA / FOUNDATION™ Fieldbus transmitter</td>
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<tr>
<td>5350B</td>
<td>PROFIBUS® PA / FOUNDATION™ Fieldbus transmitter</td>
</tr>
<tr>
<td>6331A</td>
<td>2-wire programmable transmitter</td>
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<td>6331B</td>
<td>2-wire programmable transmitter</td>
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<tr>
<td>6333A</td>
<td>2-wire programmable transmitter</td>
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<td>6334A</td>
<td>2-wire programmable transmitter</td>
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<tr>
<td>6334B</td>
<td>2-wire programmable transmitter</td>
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<tr>
<td>6335A</td>
<td>2-wire HART® 5 transmitter</td>
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<tr>
<td>6335D</td>
<td>2-wire HART® 5 transmitter</td>
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<tr>
<td>6337A</td>
<td>2-wire HART® 7 transmitter</td>
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<td>6337D</td>
<td>2-wire HART® 7 transmitter</td>
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<tr>
<td>6350A</td>
<td>PROFIBUS® PA / FOUNDATION™ Fieldbus transmitter</td>
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<tr>
<td>6350B</td>
<td>PROFIBUS® PA / FOUNDATION™ Fieldbus transmitter</td>
</tr>
<tr>
<td>7400</td>
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<td>2202</td>
<td>R/I transmitter</td>
</tr>
<tr>
<td>2914</td>
<td>2-wire room temperature transmitter</td>
</tr>
</tbody>
</table>
TC converter 3101

- High accuracy, better than 0.1% of span
- Slimline housing of 6 mm
- Excellent EMC performance and 50/60 Hz noise suppression
- Selectable < 30 ms / 300 ms response time
- Pre-calibrated temperature ranges selectable via DIP-switches

Application
- The 3101 temperature converter measures standard TC J and K temperature sensors, and provides an analog voltage or current output.
- The 3101 can be mounted in the safe area or in Zone 2 / Division 2 areas.
- Approved for marine applications.

Technical characteristics
- Flexibly powered by 24 VDC (±30%) via connectors.
- < 30 ms fast response time with simultaneous sensor error detection when selected.
- Selectable 300 ms response time when signal dampening is needed.
- High conversion accuracy in all available ranges, better than 0.1% of span.
- Meeting the NAMUR NE21 recommendations, the 3101 provides top measurement performance in harsh EMC environments.
- The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
- A visible green LED indicates operational status of the unit and the input sensor.
- All terminals are protected against overvoltage and polarity error.
- Excellent signal/noise ratio of > 60 dB.

Mounting / installation / programming
- Selectable DIP-settings for easy configuration of more than 1000 factory calibrated measurement ranges.
- The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide ambient temperature range of -25...+70°C.

Connections
### Environmental Conditions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications range</td>
<td>-25°C to +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Calibration temperature</td>
<td>20...28°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>&lt; 95% RH (non-cond.)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP20</td>
</tr>
<tr>
<td>Installation in</td>
<td>Pollution degree 2 &amp; measurement</td>
</tr>
</tbody>
</table>

### Mechanical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (HxWxD)</td>
<td>113 x 6.1 x 115 mm</td>
</tr>
<tr>
<td>Weight approx.</td>
<td>70 g</td>
</tr>
<tr>
<td>DIN rail type</td>
<td>DIN EN 60715/35 mm</td>
</tr>
<tr>
<td>Wire size</td>
<td>0.13 x 2.5 mm² / AWG 26...12 stranded wire</td>
</tr>
<tr>
<td>Screw terminal torque</td>
<td>0.5 Nm</td>
</tr>
<tr>
<td>Vibration IEC 60068-2-6 : 2007</td>
<td>±1.6 mm</td>
</tr>
<tr>
<td>Vibration 25...100 Hz</td>
<td>±4 g</td>
</tr>
</tbody>
</table>

### Common Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>16.8...31.2 VDC</td>
</tr>
<tr>
<td>Max. power consumption</td>
<td>0.7 W</td>
</tr>
<tr>
<td>Signal / noise ratio</td>
<td>&gt; 60 dB</td>
</tr>
<tr>
<td>Signal dynamics, input</td>
<td>23 bit</td>
</tr>
<tr>
<td>Signal dynamics, output</td>
<td>18 bit</td>
</tr>
<tr>
<td>Response time (0...90%, 100...10%)</td>
<td>&lt; 30 ms / 300 ms (selectable)</td>
</tr>
<tr>
<td>EMC immunity influence</td>
<td>≤ ±0.5% of span</td>
</tr>
<tr>
<td>Extended EMC immunity: NAMUR NE21, A criterion, burst</td>
<td>≤ ±1% of span</td>
</tr>
<tr>
<td>Incorrect DIP-switch setting identification</td>
<td>0 V / 0 mA output; LED 0.5 s / 1 Hz</td>
</tr>
</tbody>
</table>

### Input specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range, TC J.</td>
<td>-100...+1200°C</td>
</tr>
<tr>
<td>Temperature range, TC K.</td>
<td>-180...+1372°C</td>
</tr>
<tr>
<td>Accuracy, TC: the greater of</td>
<td>Better than 0.1% of span or 1°C</td>
</tr>
<tr>
<td>Temperature coefficient, TC: the greater of</td>
<td>0.1°C/°C or ±0.01%/°C</td>
</tr>
<tr>
<td>Sensor cable resistance, TC</td>
<td>≤ 5 kΩ per wire</td>
</tr>
<tr>
<td>Cold junction compensation (CJC)</td>
<td>Better than ±2.5°C</td>
</tr>
<tr>
<td>Open Thermocouple detection</td>
<td>Yes - selectable via DIP-switch</td>
</tr>
<tr>
<td>Internal CJC error detection</td>
<td>Yes</td>
</tr>
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</table>

### Output specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programmable current ranges</td>
<td>0 / 4...20 mA</td>
</tr>
<tr>
<td>Range limits (0...20 mA)</td>
<td>0...20.5 mA</td>
</tr>
<tr>
<td>Sensor error indication (0...20 mA)</td>
<td>0 mA or 23 mA / OFF</td>
</tr>
<tr>
<td>Range limits (4...20 mA)</td>
<td>3.8...20.5 mA acc. to NAMUR NE43</td>
</tr>
<tr>
<td>Sensor error indication (4...20 mA)</td>
<td>3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF</td>
</tr>
<tr>
<td>Load (@ current output)</td>
<td>≤ 600 Ω (12.6 V / 21 mA)</td>
</tr>
<tr>
<td>Open output</td>
<td>&lt; 18 V</td>
</tr>
<tr>
<td>Updating time</td>
<td>10 ms</td>
</tr>
<tr>
<td>Load stability, current output</td>
<td>≤ 0.01% of span / 100 Ω</td>
</tr>
<tr>
<td>Programmable voltage ranges</td>
<td>0/1...5 and 0/2...10 V</td>
</tr>
<tr>
<td>Low range</td>
<td>0/1...5 V</td>
</tr>
<tr>
<td>Limits, low range</td>
<td>0/0.875...5.125 V</td>
</tr>
<tr>
<td>High range</td>
<td>0/2...10 V</td>
</tr>
<tr>
<td>Limits, high range</td>
<td>0/1.75...10.25 V</td>
</tr>
<tr>
<td>Sensor error indication, voltage output</td>
<td>0 V / 10% above the max. / none</td>
</tr>
<tr>
<td>Load (@ voltage output)</td>
<td>≥ 10 kΩ</td>
</tr>
<tr>
<td>Current limitation @ low output load</td>
<td>≤ 60 mA peak / &lt; 4 mA average</td>
</tr>
</tbody>
</table>

### Approvals

<table>
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<th>Approval</th>
<th>Value</th>
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<td>EMC</td>
<td>EN 61326-1</td>
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<tr>
<td>LVD</td>
<td>EN 61010-1</td>
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<tr>
<td>ATEX</td>
<td>KEMA 10ATEX0147 X</td>
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<tr>
<td>IECEx</td>
<td>KEM 10.0058X</td>
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<tr>
<td>FM</td>
<td>3041043-C</td>
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<tr>
<td>DNV Marine</td>
<td>Stand. f. Certific. No. 2.4</td>
</tr>
<tr>
<td>GL</td>
<td>V1-7-2</td>
</tr>
<tr>
<td>COST R</td>
<td>Yes</td>
</tr>
<tr>
<td>UL</td>
<td>UL 61010-1</td>
</tr>
</tbody>
</table>
Pt100 converter

3102

- High accuracy, better than 0.1% of span
- Slimline housing of 6 mm
- Excellent EMC performance and 50/60 Hz noise suppression
- Selectable < 30 ms / 300 ms response time
- Pre-calibrated temperature ranges are selectable via DIP-switches

Application

- The 3102 temperature converter measures a standard 2-, 3- or 4-wire Pt100 temperature sensor, and provides an analog voltage or current output.
- The 3102 can be mounted in the safe area or in Zone 2 / Division 2 areas.
- Approved for marine applications.

Technical characteristics

- Flexibly powered by 24 VDC (±30%) via connectors.
- < 30 ms fast response time with simultaneous sensor error detection when selected.
- Selectable 300 ms response time when signal dampening is needed.
- High conversion accuracy in all available ranges, better than 0.1% of span.
- Meeting the NAMUR NE21 recommendations, the 3102 provides top measurement performance in harsh EMC environments.
- The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
- A visible green LED indicates operational status of the unit and the input sensor.
- All terminals are protected against overvoltage and polarity error.
- Excellent signal/noise ratio of > 60 dB.

Mounting / installation / programming

- Selectable DIP-settings for easy configuration of more than 1000 factory calibrated measurement ranges.
- The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide ambient temperature range of -25…+70°C.
Environmental Conditions
Specifications range.......................... -25°C to +70°C
Storage temperature.......................... -40°C to +85°C
Calibration temperature....................... 20...28°C
Relative humidity............................. < 95% RH (non-cond.)
Protection degree............................. IP20
Installation in.................................... Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)......................... 113 x 6.1 x 115 mm
Weight approx................................. 70 g
DIN rail type..................................... DIN EN 60715/35 mm
Wire size........................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque........................ 0.5 Nm
Vibration........................................ IEC 60068-2-6 : 2007
Vibration: 2...25 Hz......................... ±1.6 mm
Vibration: 25...100 Hz...................... ±4 g

Common specifications
Supply voltage................................ 16.8...31.2 VDC
Max. power consumption..................... 0.7 W
Signal / noise ratio.......................... > 60 dB
Signal dynamics, input...................... 23 bit
Signal dynamics, output..................... 18 bit
Response time (0...90%, 100...10%)....... < 30 ms / 300 ms (selectable)
EMC immunity influence..................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst................. < ±1% of span
Incorrect DIP-switch setting identification: 0 V / 0 mA output; LED 0.5 s / 1 Hz

Input specifications
Temperature range, Pt100................. -200...+850°C
Accuracy, RTD: the greater of:............ Better than 0.1% of span or 0.2°C
Temperature coefficient, RTD:............. 0.02%/°C or ≤ ±0.01%/°C
Sensor current, RTD.......................... < 150 µA
Sensor cable resistance, RTD............... < 50 Ω per wire
Effect of sensor cable resistance (3-4-wire), RTD...< 0.002 Ω / Ω
Sensor error detection, RTD................. Yes - selectable via DIP-switch
Broken sensor detection.................. > 800 Ω
Shorted sensor detection................. < 18 Ω

Output specifications
Programmable current ranges............ 0 / 4...20 mA
Sensor error indication (0...20 mA)...... 0 mA or 23 mA / OFF
Range limits (4...20 mA).................. 3.8...20.5 mA acc. to NAMUR NE43
Sensor error indication (4...20 mA)... 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
Load (@ current output).................... ≤ 600 Ω (12.6 V / 21 mA)
Open output................................... < 18 V
Updating time.................................. 10 ms
Load stability, current output........... < ±0.01% of span / 100 Ω
Programmable voltage ranges........... 0/1...5 and 0/2...10 V
Low range...................................... 0/1...5 V
Limits, low range.......................... 0/0.875...5.125 V
High range.................................... 0/2...10 V
Limits, high range......................... 0/1.75...10.25 V
Sensor error indication, voltage output........................................ 0 V / 10% above the max. / none
Load (@ voltage output)................... ≥ 10 kΩ
Current limitation @ low output load........................................ < 60 mA peak / < 4 mA average

Approvals
EMC............................................. EN 61326-1
LVD............................................. EN 61010-1
ATEX......................................... KEMA 10ATEX0147 X
IECEx.......................................... KEM 10.0068X
FM............................................. 3041043-C
DNV Marine................................. Stand. f. Certific. No. 2.4
GL............................................. V1-7-2
GOST R........................................ Yes
UL............................................. UL 61010-1
TC converter - isolated

3111

- Excellent accuracy, better than 0.05% of span
- Slimline housing of 6 mm
- Excellent EMC performance and 50/60 Hz noise suppression
- Selectable < 30 ms / 300 ms response time
- Pre-calibrated temperature ranges are selectable via DIP-switches

Application
- The 3111 temperature converter measures standard TC J and K temperature sensors, and provides an isolated analog voltage or current output.
- High 3 port isolation provides surge suppression and protects the control system from transients and noise.
- The 3111 can be mounted in the safe area or in Zone 2 / Division 2 areas.
- Approved for marine applications.

Technical characteristics
- Flexibly powered by 24 VDC (±30%) via power rail or connectors.
- < 30 ms fast response time with simultaneous sensor error detection when selected.
- Selectable 300 ms response time when signal dampening is needed.
- Selectable internal/external CJC.
- Excellent conversion accuracy in all available ranges, better than 0.05% of span.
- Meeting the NAMUR NE21 recommendations, the 3111 provides top measurement performance in harsh EMC environments.
- The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
- A visible green LED indicates operational status of the unit and the input sensor.
- All terminals are protected against overvoltage and polarity error.
- High galvanic isolation of 2.5 kVAC.
- Excellent signal/noise ratio of > 60 dB.

Mounting / installation / programming
- Selectable DIP-settings for easy configuration of more than 1000 factory calibrated measurement ranges.
- The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide ambient temperature range of -25...+70°C.
Environmental Conditions
Specifications range........................................ -25°C to +70°C
Storage temperature........................................ -40°C to +85°C
Calibration temperature........................................ 20...28°C
Relative humidity............................................. < 95% RH (non-cond.)
Protection degree............................................. IP20
Installation in................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)........................................ 113 x 6.1 x 115 mm
Weight approx.................................................... 70 g
DIN rail type..................................................... DIN EN 60715/35 mm
Wire size......................................................... 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque........................................... 0.5 Nm
Vibration......................................................... IEC 60068-2-6 : 2007
Vibration: 2...25 Hz............................................. ±1.6 mm
Vibration: 25...100 Hz......................................... ±4 g

Common specifications
Supply voltage.................................................... 16.8...31.2 VDC
Max. power consumption..................................... 0.7 W
Isolation voltage, test.......................................... 2.5 kVAC
Isolation voltage, working.................................... 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio.............................................. > 60 dB
Signal dynamics, input....................................... 23 bit
Signal dynamics, output..................................... 18 bit
Response time (0...90%, 100...10%)........................ < 30 ms / 300 ms (selectable)
EMC immunity influence..................................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst........................................... < ±1% of span
Incorrect DIP-switch setting identification.................. 0 V / 0 mA output; LED 0.5 s / 1 Hz

Input specifications
Temperature range, TC J................................... -100...+1200°C
Temperature range, TC K................................... -180...+1372°C
Accuracy, TC: the greater of................................ Better than 0.05% of span or 0.5°C
Temperature coefficient, TC: the greater of.............. 0.1°C°C or ≤ ±0.01%/°C
Sensor cable resistance, TC.................................. < 5 kΩ per wire
Cold junction compensation (CJC): Accuracy @ external Pt100 input.............................................. Better than ±0.15°C
Cold junction compensation (CJC): Accuracy @ internal CJ............................................................... Better than ±2.5°C
Open Thermocouple detection............................ Yes - selectable via DIP-switch
Internal CJC error detection............................... Yes
External CJC error detection.............................. Yes - selectable via DIP-switch

Output specifications
Programmable current ranges................................ 0 / 4...20 mA
Range limits (0...20 mA)....................................... 0...20.5 mA
Sensor error indication (0...20 mA)......................... 0 mA or 23 mA / OFF
Range limits (4...20 mA)....................................... 3.8...20.5 mA acc. to NAMUR NE43
Sensor error indication (4...20 mA)......................... 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
Load (@ current output)........................................ ≤ 600 Ω (12.6 V / 21 mA)
Open output.................................................... < 18 V
Updating time................................................... 10 ms
Load stability, current output............................... ≤ 0.01% of span / 100 Ω
Programmable voltage ranges.............................. 0/1...5 and 0/2...10 V
Low range......................................................... 0/1...5 V
Limits, low range............................................. 0/0.875...5.125 V
High range....................................................... 0/2...10 V
Limits, high range........................................... 0/1.75...10.25 V
Sensor error indication, voltage output..................... 0 V / 0% above the max. / none
Load (@ voltage output)........................................ ≥ 10 kΩ
Current limitation @ low output load........................ ≤ 60 mA peak / < 4 mA average

Approvals
EMC.............................................................. EN 61326-1
LVD.............................................................. EN 61010-1
ATEX............................................................. KEMA 10ATEX0147 X
IECEx............................................................ KEM 10.0068X
FM.............................................................. 3041043-C
DNV Marine................................................... Stand 1. Certific. No. 2.4
GL............................................................... V1-7-2
GOST R.......................................................... Yes
UL............................................................... UL 61010-1
Pt100 converter - isolated

3112

- Excellent accuracy, better than 0.05% of span
- Slimline housing of 6 mm
- Excellent EMC performance and 50/60 Hz noise suppression
- Selectable < 30 ms / 300 ms response time
- Pre-calibrated temperature ranges selectable via DIP-switches

Application

- The 3112 temperature converter measures a standard 2-, 3- or 4-wire Pt100 temperature sensor, and provides an isolated analog voltage or current output.
- High 3 port isolation provides surge suppression and protects the control system from transients and noise.
- The 3112 can be mounted in the safe area or in Zone 2 / Division 2 areas.
- Approved for marine applications.

Technical characteristics

- Flexibly powered by 24 VDC (±30%) via power rail or connectors.
- < 30 ms fast response time with simultaneous sensor error detection when selected.
- Selectable 300 ms response time when signal dampening is needed.
- Excellent conversion accuracy in all available ranges, better than 0.05% of span.
- Meeting the NAMUR NE21 recommendations, the 3112 provides top measurement performance in harsh EMC environments.
- The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
- A visible green LED indicates operational status of the unit and the input sensor.
- All terminals are protected against overvoltage and polarity error.
- High galvanic isolation of 2.5 kVAC.
- Excellent signal/noise ratio of > 60 dB.

Mounting / installation / programming

- Selectable DIP-settings for easy configuration of more than 1000 factory calibrated measurement ranges.
- The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide ambient temperature range of -25...+70°C.
Environmental Conditions
Specifications range........................................... -25°C to +70°C
Storage temperature......................................... -40°C to +85°C
Calibration temperature.................................... 20..28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in............................................... Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)......................................... 113 x 6.1 x 115 mm
Weight approx............................................... 70 g
DIN rail type.................................................. DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26..12 stranded wire
Screw terminal torque...................................... 0.5 Nm
Vibration........................................................ ±1.6 mm
Vibration: 2...25 Hz........................................... ±4 g

Common specifications
Supply voltage............................................... 16.8...31.2 VDC
Max. power consumption................................. 0.7 W
Isolation voltage, test...................................... 2.5 kVAC
Isolation voltage, working............................... 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio........................................... > 60 dB
Signal dynamics, input.................................... 23 bit
Signal dynamics, output................................. 18 bit
Response time (0...90%, 100...10%)................. < 30 ms / 300 ms (selectable)
EMC immunity influence................................. ≤ ±5% of span
Extended EMC immunity: NAMUR NE43..............< ±1% of span
Incorrect DIP-switch setting identification..........0 V / 0 mA output; LED 0.5 s / 1 Hz

Input specifications
Temperature range, Pt100............................... -200...+850°C
Accuracy, RTD: the greater of......................... Better than 0.05% of span or 0.1°C
Temperature coefficient, RTD: the greater of........0.02°C/C or ≤ ±0.01%/°C
Sensor current, RTD......................................... < 150 μA
Sensor cable resistance, RTD......................... < 50 Ω per wire
Effect of sensor cable resistance (3-wire), RTD.....< 0.002 Ω / Ω
Sensor error detection, RTD.............................. Yes - selectable via DIP-switch
Broken sensor detection................................. > 800 Ω
Shorted sensor detection............................... < 18 Ω

Output specifications
Programmable current ranges.......................... 0 / 4..20 mA
Range limits (0..20 mA)...................................... 0...20.5 mA
Sensor error indication (0..20 mA)........................0 mA or 23 mA / OFF
Range limits (4..20 mA)...................................... 3.8...20.5 mA acc. to NAMUR NE43
Sensor error indication (4..20 mA)....................... 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
Load (@ current output)................................... ≤ 600 Ω (12.6 V / 21 mA)
Open output.................................................. < 18 V
Updating time.............................................. 10 ms
Load stability, current output........................... ≤ 0.01% of span / 100 Ω
Programmable voltage ranges........................ 0/1..5 and 0/2..10 V
Low range................................................... 0/1..5 V
Limits, low range......................................... 0/0.875..5.125 V
High range.................................................. 0/2..10 V
Limits, high range........................................ 0/1..75..10.25 V
Sensor error indication, voltage output.............0 V / 10% above the max. / none
Load (@ voltage output)................................... ≥ 10 kΩ
Current limitation @ low output load.................. ≤ 60 mA peak / < 4 mA average

Approvals
EMC........................................................... EN 61326-1
LVD............................................................ EN 61010-1
ATEX.......................................................... KEMA 10ATEX0147 X
IECEx........................................................ EN 61326-1
ATEX.......................................................... KEMA 10ATEX0147 X
LVD............................................................ EN 61010-1
NAMUR....................................................... NE21, A criterion, burst: 0 mA or 23 mA / OFF
Gl. .............................................................. V1-2
DNV Marine.................................................. Stand. f. Certific. No. 2.4
GOST R......................................................... Yes
UL.............................................................. UL 61010-1

HART 7 temperature converter

3113

- High accuracy, better than 0.05% of span
- Slimline housing of 6 mm
- Excellent EMC performance
- Selectable 60 ms / 60 s response time
- Pre-calibrated temperature ranges selectable via DIP-switches

Application

- The 3113 temperature converter measures a standard Pt100, TC J and K temperature sensor, and provides an isolated active analog current and HART® signal output.
- High 3 port isolation provides surge suppression and protects the control system from transients and noise.
- The 3113 can be mounted in the safe area or in Zone 2 / Division 2 areas.
- Approved for marine applications.

Technical characteristics

- Flexibly powered by 24 VDC (±30%) via power rail or connectors.
- A 60 ms fast response time with simultaneous sensor error detection when selected.
- Selectable internal/external CJC.
- Excellent conversion accuracy in all available ranges, better than 0.05% of span.
- Meeting the NAMUR NE21 recommendations, the 3113 provides top measurement performance in harsh EMC environments.
- The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
- A visible green LED indicates operational status of the unit and the input sensor.
- All terminals are protected against overvoltage and polarity error.
- High galvanic isolation of 2.5 kVAC.
- Excellent signal/noise ratio of > 60 dB.

Mounting / installation / programming

- Selectable HART® mode with HART® 7 revision protocol enables extended device programming.
- Selectable DIP-mode for easy configuration of more than 1000 factory calibrated measurement ranges with HART® read only feature.
- The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide ambient temperature range of -25...+70°C.
**Environmental Conditions**

- **Specifications range:** -25°C to +70°C
- **Storage temperature:** -40°C to +85°C
- **Calibration temperature:** 20...28°C
- **Relative humidity:** < 95% RH (non-cond.)
- **Protection degree:** IP20
- **Installation in:** Pollution degree 2 & measurement / overvoltage cat. II

**Mechanical specifications**

- **Dimensions (HxWxD):** 113 x 6.1 x 115 mm
- **Weight approx.:** 70 g
- **DIN rail type:** DIN EN 60715/35 mm
- **Wire size:** 0.13 x 2.5 mm² / AWG 26...12 stranded wire
- **Screw terminal torque:** 0.5 Nm
- **Vibration:** IEC 60068-2-6 : 2007
  - **Vibration: 2...25 Hz:** ±1.6 mm
  - **Vibration: 25...100 Hz:** ±4 g

**Common specifications**

- **Supply voltage:** 16.8...31.2 VDC
- **Max. power consumption:** 0.7 W
- **Isolation voltage, test:** 2.5 kVAC (Zone 2, Div. 2)
- **Signal / noise ratio:** > 60 dB
- **Signal dynamics, input:** 23 bit
- **Signal dynamics, output:** 18 bit
- **Response time, HART® mode, (0...90%, 100...10%)** 60 ms...60 s, programmable
- **Response time, DIP mode, (0...90%, 100...10%)** < 60 ms
- **EMC immunity influence:** < ±0.5% of span
- **Extended EMC immunity: NAMUR NE 21, A criterion, burst:** < ±1% of span
- **Incorrect DIP-switch setting identification:** 3.5 mA output; LED 0.5 s / 1 Hz

**Input specifications**

- **Temperature range, Pt100:** -200...+850°C
- **Accuracy, RTD: the greater of:** Better than 0.05% or span or 0.1°C
- **Temperature coefficient, RTD: the greater of:** 0.02°C/C or ≤ ±0.01%/°C
- **Sensor current, RTD:** < 150 µA
- **Sensor cable resistance, RTD:** < 50 Ω per wire
- **Effect of sensor cable resistance (3/4-wire), RTD:** < 0.002 Ω / Ω
- **Sensor error detection, RTD:** Yes - selectable via DIP-switch
- **Broken sensor detection:** > 800 Ω
- **Shorted sensor detection:** < 18 Ω
- **Temperature range, TC J:** -100...+1200°C
- **Temperature range, TC K:** -180...+1372°C
- **Accuracy, TC: the greater of:** Better than 0.05% of span or 0.1°C
- **Temperature coefficient, TC: the greater of:** 0.1°C/C or ≤ ±0.01%/°C
- **Sensor cable resistance, TC:** < 5 kΩ per wire
- **Cold junction compensation (CJC): Accuracy @ external Pt100 input:** Better than ±0.15°C

**Output specifications**

- **Programmable current ranges:** 4...20 and 20...4 mA
- **Range limits:** 3.8...20.5 mA NAMUR NE43
- **Sensor error indication:** 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
- **Load (@ current output):** ≤ 600 Ω (23 mA)
- **Open output:** < 20 V
- **Updating time:** 10 ms
- **Load stability, current output:** ≤ 50.01% of span / 100 Ω
- **HART® protocol revisions:** HART® 7

**Approvals**

- **EMC:** EN 61326-1
- **LVD:** EN 61010-1
- **ATEX:** KEMA 10ATEX0147 X
- **IECEx:** KEM 10.0068X
- **FM:** 3041043-C
- **DNV Marine:** Stand. f. Certific. No. 2.4
- **GL:** V1-7-2
- **COST R:** Yes
- **UL:** Yes

**Specifications**

- **Load stability, current output:** ≤ 600 Ω (23 mA)
- **Load (@ current output):** ≤ 600 Ω (23 mA)
- **Sensor error detection, RTD:** Yes - selectable via DIP-switch
- **Broken sensor detection:** > 800 Ω
- **Shorted sensor detection:** < 18 Ω
- **Temperature range, TC J:** -100...+1200°C
- **Temperature range, TC K:** -180...+1372°C
- **Accuracy, TC: the greater of:** Better than 0.05% of span or 0.1°C
- **Temperature coefficient, TC: the greater of:** 0.1°C/C or ≤ ±0.01%/°C
- **Sensor cable resistance, TC:** < 5 kΩ per wire
- **Cold junction compensation (CJC): Accuracy @ external Pt100 input:** Better than ±0.15°C
Temperature converter, loop-powered - isolated

3331

- Excellent accuracy, better than 0.05% of span
- Slimline housing of 6 mm
- Excellent EMC performance and 50/60 Hz noise suppression
- Selectable < 30 ms / 300 ms response time
- Pre-calibrated temperature ranges selectable via DIP-switches

**Application**
- The 3331 temperature converter measures a standard Pt100, TC J and K temperature sensor, and provides an isolated passive analog current output signal.
- High 2 port isolation provides surge suppression and protects the control system from transients and noise.
- The 3331 can be mounted in the safe area or in Zone 2 / Division 2 areas.
- Approved for marine applications.

**Technical characteristics**
- Flexibly loop powered by 5.5...35 VDC via connectors.
- < 30 ms fast response time with simultaneous sensor error detection when selected.
- Selectable 300 ms response time when signal dampening is needed.
- Selectable internal/external CJC.
- Excellent conversion accuracy in all available ranges, better than 0.05% of span.
- Meeting the NAMUR NE21 recommendations, the 3331 provides top measurement performance in harsh EMC environments.
- The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
- All terminals are protected against overvoltage and polarity error.
- High galvanic isolation of 2.5 kVAC.
- Excellent signal/noise ratio of > 60 dB.

**Mounting / installation / programming**
- Selectable DIP-settings for easy configuration of more than 1000 factory calibrated measurement ranges.
- The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide ambient temperature range of -25...+70°C.
Environmental Conditions
Specifications range....................................... -25°C to +70°C
Storage temperature...................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in.................................................. Pollution degree 2 &
measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx................................................ 70 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque.................................... 0.5 Nm
Vibration......................................................... IEC 60068-2-6 : 2007
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 5.5...35 VDC
Voltage drop................................................... 5.5 VDC
Isolation voltage, test...................................... 2.5 kVAC
Isolation voltage, working............................... 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio........................................ > 60 dB
Signal dynamics, input.................................. 23 bit
Signal dynamics, output................................. 18 bit
Response time (0...90%, 100...10%)............... < 30 ms / 300 ms (selectable)
EMC immunity influence............................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst................. < ±1% of span
Incorrect DIP-switch setting identification........... 3.5 mA

Input specifications
Temperature range, Pt100............................. -200...+850°C
Accuracy, RTD: the greater of.......................... Better than 0.05% of span or 0.1°C
Temperature coefficient, RTD: the greater of...... 0.02°C/C or ≤ ±0.01%/°C
Sensor current, RTD....................................... < 150 µA
Sensor cable resistance, RTD......................... < 50 Ω per wire
Effect of sensor cable resistance (3-/4-wire), RTD...... < 0.002 Ω / Ω
Sensor error detection, RTD.............................. Yes - selectable via DIP-switch
Broken sensor detection.................................. > 800 Ω
Shorted sensor detection................................ < 18 Ω
Temperature range, TC J................................. -100...+1200°C
Temperature range, TC K............................... -180...+1372°C
Accuracy, TC: the greater of......................... Better than 0.05% of span or 0.5°C
Temperature coefficient, TC: the greater of...... 0.1°C/C or ≤ ±0.01%/°C
Sensor cable resistance, TC........................... < 5 kΩ per wire
Cold junction compensation (CJC): Accuracy @ external Pt100 input.............................. Better than ±0.15°C
Cold junction compensation (CJC): Accuracy @ internal CJC........................................... Better than ±2.5°C

Output specifications
Programmable current ranges....................... 4...20 and 20...4 mA
Load limits................................................... 3.8...20.5 mA NAMUR NE43
Sensor error indication................................. 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
Load resistance, current output..................... ≤ (Vsupply - 5.5) / 0.023 [Ω]
Load stability, current output....................... ±0.01% of span / 100 Ω

Approvals
EMC............................................................... EN 61326-1
LVD................................................................ EN 61010-1
ATEX.............................................................. KEMA 10ATEX0147 X
IECEx............................................................ KEM 10.0068X
FM.................................................................. 3041043-C
DNV Marine................................................... Stand. f. Certific. No. 2.4
GL.................................................................. V1-7-2
GOST R......................................................... Yes
UL................................................................... UL 61010-1

Open Thermocouple detection............... Yes - selectable via DIP-switch
Internal CJC error detection......................... Yes
External CJC error detection........................ Yes - selectable via DIP-switch
Pt100 converter, loop-powered

3333

- High accuracy, better than 0.1% of span
- Slimline housing of 6 mm
- Excellent EMC performance and 50/60 Hz noise suppression
- Selectable < 30 ms / 300 ms response time
- Pre-calibrated temperature ranges selectable via DIP-switches

Application

• The 3333 temperature converter measures a standard 2-, 3- or 4-wire Pt100 temperature sensor, and provides a passive analog current output signal.
• The 3333 can be mounted in the safe area or in Zone 2 / Division 2 areas.
• Approved for marine applications.

Technical characteristics

• Flexibly loop powered by 3.3...35 VDC via connectors.
• 30 ms fast response time with simultaneous sensor error detection when selected.
• Selectable 300 ms response time when signal dampening is needed.
• High conversion accuracy in all available ranges, better than 0.1% of span.
• Meeting the NAMUR NE21 recommendations, the 3333 provides top measurement performance in harsh EMC environments.
• The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
• All terminals are protected against overvoltage and polarity error.
• Excellent signal/noise ratio of > 60 dB.

Mounting / installation / programming

• Selectable DIP-settings for easy configuration of more than 1000 factory calibrated measurement ranges.
• The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
• Wide ambient temperature range of -25...+70°C.

Connections
Environmental Conditions
Specifications range: -25°C to +70°C
Storage temperature: -40°C to +85°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20
Installation in: Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD): 113 x 6.1 x 115 mm
Weight approx: 70 g
DIN rail type: DIN EN 60715/35 mm
Wire size: 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque: 0.5 Nm
Vibration: ±1.6 mm
Vibration: ±4 g

Common specifications
Supply voltage: 3.3...35 VDC
Voltage drop: 3.3 VDC
Signal / noise ratio: > 60 dB
Signal dynamics, input: 23 bit
Signal dynamics, output: 18 bit
Response time (0...90%, 100...10%): < 30 ms / 300 ms (selectable)
EMC immunity influence: < ±0.5% of span
Incorrect DIP-switch setting: 3.5 mA

Input specifications
Temperature range, Pt100: -200...+850°C
Accuracy, RTD: the greater of: Better than 0.1% of span or 0.2°C
Temperature coefficient, RTD: the greater of: 0.02°C/C or ±0.01%/°C
Sensor current, RTD: < 150 µA
Sensor cable resistance, RTD: < 50 Ω per wire
Effect of sensor cable resistance (3-/4-wire), RTD: < 0.002 Ω / Ω
Sensor error detection, RTD: Yes - selectable via DIP-switch
Broken sensor detection: > 800 Ω
Shorted sensor detection: < 18 Ω

Output specifications
Programmable current ranges: 4...20 and 20...4 mA
Range limits: 3.8...20.5 mA NAMUR NE43
Sensor error indication: 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
Load resistance, current output: ± (Vs supply - 3.3) / 0.023 [Ω]
Updating time: 10 ms
Load stability, current output: ±0.01% of span / 100 Ω

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
ATEX: KEMA 10ATEX0147 X
IECEx: KEM 10.0068X
FM: 3041043-C
DNV Marine: Stand. f. Certific. No. 2.4
GL: V1-7-2
GOST R: Yes
UL: UL 61010-1

Order:
Type: 3333
HART 7 temperature converter, loop-powered

3337

- High accuracy, better than 0.05% of span
- Slimline housing of 6 mm
- Excellent EMC performance
- Selectable 60 ms / 60 s response time
- Pre-calibrated temperature ranges selectable via DIP-switches

Application
- The 3337 temperature converter measures a standard Pt100, TC J and K temperature sensor, and provides an isolated passive analog current and HART® signal output.
- High 2 port isolation provides surge suppression and protects the control system from transients and noise.
- The 3337 can be mounted in the safe area or in Zone 2 / Division 2 areas.
- Approved for marine applications.

Technical characteristics
- Flexibly loop powered by 6.2...35 VDC via connectors.
- A 60 ms fast response time with simultaneous sensor error detection when selected.
- Selectable internal/external CJC.
- Excellent conversion accuracy in all available ranges, better than 0.05% of span.
- Meeting the NAMUR NE21 recommendations, the 3337 provides top measurement performance in harsh EMC environments.
- The device meets the NAMUR NE43 standard defining out of range and sensor error output values.
- All terminals are protected against overvoltage and polarity error.
- High galvanic isolation of 2.5 kVAC.
- Excellent signal/noise ratio of > 60 dB.

Mounting / installation / programming
- Selectable HART® mode with HART® 7 revision protocol enables extended device programming.
- Selectable DIP-mode for easy configuration of more than 1000 factory calibrated measurement ranges with HART® read only feature.
- The narrow 6 mm housing allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide ambient temperature range of -25...+70°C.
Environmental Conditions
Specifications range: -25°C to +70°C
Storage temperature: -40°C to +85°C
Calibration temperature: 20...22°C
Relative humidity: <95% RH (non-cond.)
Protection degree: IP20
Installation in: Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD): 113 x 6.1 x 115 mm
Weight approx: 70 g
DIN rail type: DIN EN 60715/35 mm
Wire size: 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque: 0.5 Nm
Vibration: 2...25 Hz: ±1.6 mm
Vibration: 25...100 Hz: ±4 g

Common specifications
Supply voltage: 6.2...35 VDC
Voltage drop: 6.2 VDC
Isolation voltage, input: 2.5 kVAC
Isolation voltage, working: 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio: > 60 dB
Signal dynamics, input: 23 bit
Signal dynamics, output: 16 bit
Response time, HART® mode, (0...90%, 100...10%): 60 ms...60 s, programmable
Response time, DIP mode, (0...90%, 100...10%): < 60 ms
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span
Incorrect DIP-switch setting identification: 3.5 mA

Input specifications
Temperature range, Pt100: -200...+850°C
Accuracy, RTD: the greater of: Better than ±0.05% of span or 0.1°C
Temperature coefficient, RTD: the greater of: 0.02°C/C or ≤ ±0.01%/°C
Sensor current, RTD: < 150 µA
Sensor cable resistance, RTD: < 50 Ω per wire
Effect of sensor cable resistance (3-/4-wire), RTD: < 0.002 Ω / Ω
Sensor error detection, RTD: Yes - selectable via DIP-switch
Broken sensor detection: > 800 Ω
Shorted sensor detection: < 18 Ω
Temperature range, TC K: -180...+1372°C
Accuracy, TC: the greater of: Better than 0.05% of span or 0.5°C
Temperature coefficient, TC: the greater of: 0.1°C/°C or ≤ ±0.01%/°C
Sensor cable resistance, TC: < 5 kΩ per wire
Cold junction compensation (CJC): Accuracy @ external Pt100 input: Better than ±0.15°C

Output specifications
Programmable current ranges: 4...20 and 20...4 mA
Range limits: ±3.8...20.5 mA NAMUR NE43
Sensor error indication: 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
Load resistance, current output: ≤ (Vsupply - 6.2) / 0.023 [Ω]
Updating time: ≤ 10 ms
Load stability, current output: 50.01% of span / 100 Ω
HART® protocol revisions: HART® 7

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
ATEX: KEMA 10ATEX0147 X
IECEx: KEM 10.0068X
FM: 3041043-C
DNV Marine: Stand. f. Certific. No. 2.4
GL: V1-7-2
GOST R: Yes
UL: UL 61010-1
LVD: EN 61010-1
EMC: EN 61326-1

Cold junction compensation
(CJC): Accuracy @ internal
CJC: Better than ±2.5°C
Open Thermocouple detection: Yes - selectable via DIP-switch
Internal CJC error detection: Yes
External CJC error detection: Yes - selectable via DIP-switch

External CJC error detection: Yes - selectable via DIP-switch
Internal CJC error detection: Yes
Open Thermocouple detection: Yes - selectable via DIP-switch
Cold junction compensation (CJC): Accuracy @ external
Pt100 input: Better than ±0.15°C
RTD transmitter

5102

- Cost effective RTD transmitter
- Input for Pt100, Ni100 or Ohm
- Linearized analog output
- 1- or 2-channel version
- DIN rail mounting

Advanced features

- The 5102 transmitter can be configured with the software program PReset 5000 using a DOS-based PC and the Loop Link communications unit.

Application

- Linearized temperature measurement with Pt100 (to IEC 715) or Ni100 (to DIN 43760) sensors.
- Conversion of linear resistance change to standard analog current/voltage signal from for example valves or linear movements with attached potentiometer.
- Signal simulator via externally mounted 10-turn potentiometer, to aid with installation and commissioning the plant.
- 3-wire connection cable compensation or 2-wire connection without cable compensation.
- Sensor error detection with Upscale, Downscale or custom set values.
- Reversible inputs with 0% set to maximum value of the desired input range and 100% set to the minimum value of the desired input range.

Technical characteristics

- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
- Programming can be performed with or without a power supply.
Environmental Conditions
Specifications range....................................... -40°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 130 mm
Weight approx............................................. 170 g
DIN rail type............................................... DIN 46277
Screw terminal torque................................. 0.5 Nm

Common specifications
Supply voltage............................................... 19.2...28.8 VDC
Internal consumption.................................... 1.7 W (2 channels)
Warm-up time.............................................. < 5 min.
Communications interface......................... Loop Link
Signal / noise ratio..................................... Min. 60 dB
Signal dynamics, input................................. 17 bit
Signal dynamics, output............................... 16 bit
Response time (0...90%, 100...10%)......... < 165 ms
Temperature coefficient.............................. < ±0.01% /°Camb.
EMC immunity influence.............................. < ±0.5% of span

Input specifications
Max. offset............................................... 50% of selected max. value
RTD input................................................ Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD................. 10...50 Ω (programmable)
Sensor current, RTD.................................... > 0.2 mA, < 0.4 mA
Sensor error detection, RTD........................ Upscale

Output specifications
Max. offset............................................... 50% of selected max. value
Current output: Signal range....................... 0...20 mA
Min. signal range......................................... 5 mA
Voltage output: signal range...................... 0...10 VDC
Voltage output, min. signal range..................... 250 mV
Load (max.)............................................... 20 mA/600 Ω/12 VDC
Load stability, current output................... ≤0.01% of span / 100 Ω
Current limit............................................. ≤ 28 mA
*of span.................................................. = of the presently selected range

Approvals
EMC......................................................... EN 61326-1
GOST R.................................................. Yes
2-wire programmable transmitter

5131A

- Input for RTD, TC, mV, linear resistance, mA, and V sample
- 3.75 kVAC galvanic isolation
- 4...20 mA loop output
- 1- or 2-channel version
- DIN rail mounting

Advanced features

- The 5131A transmitter can be configured with the software program PReset using a standard PC and the Loop Link communications unit.

Application

- Independent channel jumper selectable inputs for current/voltage or temperature.
- Current input programmable in range 0...100 mA and voltage inputs in range 0...250 VDC.
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, for example from solenoids and butterfly valves or linear movements with attached potentiometer.
- 4- or 3-wire connection automatic cable compensation or 2-wire connection with programmable cable compensation.
- Configurable sensor error detection including NAMUR NE43.

Technical characteristics

- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC.
- Programming can be performed with or without a power supply.
- The 2-channel version has full galvanic isolation between the channels.
- Separation of circuits in PELV/SELV installations.
### Environmental Conditions

<table>
<thead>
<tr>
<th>Specifications range</th>
<th>-20°C to +60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration temperature</td>
<td>20...28°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>&lt; 95% RH (non-cond.)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP20</td>
</tr>
</tbody>
</table>

### Mechanical specifications

<table>
<thead>
<tr>
<th>Dimensions (HxWxD)</th>
<th>109 x 23.5 x 130 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight approx.</td>
<td>155 g</td>
</tr>
<tr>
<td>DIN rail type</td>
<td>DIN 46277</td>
</tr>
<tr>
<td>Wire size</td>
<td>1 x 2.5 mm² stranded wire</td>
</tr>
<tr>
<td>Screw terminal torque</td>
<td>0.5 Nm</td>
</tr>
</tbody>
</table>

### Common specifications

| Supply voltage | 7.5...35 VDC |
| Fuse | 50 mA SB / 250 VAC |
| Isolation voltage, test / working | 3.75 kVAC / 250 VAC |
| Communications interface | Loop Link |
| Signal / noise ratio | Min. 60 dB (0...100 kHz) |
| Signal dynamics, input | 22 bit |
| Signal dynamics, output | 16 bit |
| Updating time, temperature input | 115 ms |
| Updating time, mA / V / mV input | 75 ms (mA / V / mV input) |
| Response time (0...90%, 100...10%): | Temperature input 400 ms...60 s |
| mAh / V input (programmable) | 250 ms...60 s |
| EMC immunity influence | < ±0.5% of span |
| Extended EMC immunity: NAMUR NE 21, A criterion, burst | < ±1% of span |
| Effect of supply voltage change | < 0.005% of span / VDC |

### Input specifications

| Max. offset | 50% of selected max. value |
| RTD input | Pt100, Ni100, lin. R |
| Cable resistance per wire (max.), RTD | 10 Ω |
| Sensor current, RTD | Nom. 0.2 mA |
| Effect of sensor cable resistance (3-4wire), RTD | < 0.002 Ω / V |
| Sensor error detection, RTD | Yes |
| Cold junction compensation (CJC) | < ±1.0°C |
| Sensor error current, TC | Nom. 30 μA |
| Sensor error detection, TC | Yes |
| Current input: Measurement range | 0...100 mA |
| Min. measurement range (span), current input | 4 mA |
| Input resistance: Supplied unit | Nom. 10 Ω + PTC 10 Ω |
| Input resistance: Non-supplied unit | RSHUNT = ± 5 mV |
| Voltage input: Measurement range | -150...+150 mV |
| Voltage input: Measurement range | 0...250 VDC |
| Min. measurement range (span), voltage input | 5 mV |
| Input resistance, voltage input | Nom. 10 MO (≤ 2.5 VDC) |
| Input resistance, voltage input | Nom. 5 MO (> 2.5 VDC) |

### Output specifications

| Max. offset | 50% of selected max. value |
| Current output: Signal range | 4...20 mA |
| Min. signal range | 10 mA |
| Load resistance, current output | ≤ (Vsupply - 7.5)/0.023 [Ω] |
| Load stability, current output | ±0.01% of span / 100 Ω |
| Current limit | ≤ 28 mA |
| Sensor error indication, current output | Programmable 3.5...23 mA |
| NAMUR NE 43 Upscale/Downscale | 23 mA / 3.5 mA |
| *of span... = of the presently selected range |

### Approvals

| EMC | EN 61326-1 |
| LVD | EN 61010-1 |
| PELV/SELV | IEC 60644-441 and EN 60742 |
| ATEX | DEMKO 99ATEX124572 |
# 2-wire programmable transmitter

## 5331A

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- 1.5 kVAC galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting

---

### Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

### Technical characteristics

- Within a few seconds the user can program PR5331A to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- Continuous check of vital stored data for safety reasons.

### Mounting / installation

- For DIN form B sensor head or DIN rail mounting with the PR fitting type 8421.

---

### Connections

<table>
<thead>
<tr>
<th>Connections</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTD to 4...20 mA</td>
<td><img src="image1" alt="Diagram" /></td>
</tr>
<tr>
<td>TC to 4...20 mA</td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td>Resistance to 4...20 mA</td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
<tr>
<td>mV to 4...20 mA</td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity....................................... < 95% RH (non-cond.)
Protection degree (encl./terminal).................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 7.2...35 VDC
Internal consumption...................................... 25 mW...0.8 W
Voltage drop.................................................. 7.2 VDC
Isolation voltage, test / working............................. 1.5 kVAC / 50 VAC
Warm-up time................................................. 5 min.
Communications interface............................. Loop Link
Signal / noise ratio......................................... Min. 60 dB
Response time (programmable)...................... 1...60 s
EEprom error check....................................... < 3.5 s
Accuracy......................................................... Better than 0.05% of selected range
Signal dynamics, input................................... 20 bit
Signal dynamics, output................................ 16 bit
Effect of supply voltage change...................... < 0.005% of span / VDC
EMC immunity influence............................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.............. < ±1% of span

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range........................................... 16 mA
Updating time.............................................. 440 ms
Load resistance, current output....................... s (Vsupply - 7.2) / 0.023 [Ω]
Load stability, current output........................... 50.01% of span / 100 Ω
Sensor error indication, current output.............. Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.................... 23 mA / 3.5 mA
of span......................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
ATEX.............................................................. KEMA 10ATEX0002 X
IECEx............................................................. DEK 13.0035X
INMETRO....................................................... DEKRA 13.0001 X
GOST R.......................................................... Yes
DNV Marine................................................... Stand. f. Certific. No. 2.4

<table>
<thead>
<tr>
<th>Type</th>
<th>Ambient temperature</th>
<th>Galvanic isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5311A</td>
<td>-40°C...+85°C</td>
<td>3 1500 VAC</td>
</tr>
</tbody>
</table>
2-wire programmable transmitter

5331D

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- 1.5 kVAC galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting

Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

Technical characteristics

- Within a few seconds the user can program PR5331D to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- Continuous check of vital stored data for safety reasons.

Mounting / installation

- For DIN form B sensor head mounting.
- NB: As Ex barrier we recommend 5104B, 5114B, or 5116B.

Connections

- RTD to 4...20 mA
- TC to 4...20 mA
- Resistance to 4...20 mA
- mV to 4...20 mA
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree (encl./terminal).................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 7.2...30 VDC
Internal consumption...................................... 25 mW...0.8 W
Voltage drop................................................... 7.2 VDC
Isolation voltage, test / working.................................... 1.5 kVAC / 50 VAC
Warm-up time................................................. 5 min.
Signal / noise ratio......................................... Min. 60 dB
Response time (programmable).................... 1...60 s
EEprom error check....................................... < 3.5 s
Accuracy........................................................ Better than 0.05% of selected range
Signal dynamics, input.................................... 20 bit
Signal dynamics, output................................ 16 bit
Effect of supply voltage change......................... < 0.005% of span / VDC
EMC immunity influence.................................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.< ±1% of span

Input specifications
Max. offset................................................... 50% of selected max. value
RTD input....................................................... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD.......................... 5 Ω
Sensor current, RTD....................................... Nom. 0.2 mA
Effect of sensor cable resistance (3/4-wire), RTD.......................... < 0.002 Ω / Ω
Sensor error detection, RTD................................ Yes
Cold junction compensation (CJC)........................... < ±1.0°C
Sensor error detection, TC................................. Yes
Sensor error current: When detecting / else.......................... Nom. 33 μA / 0 μA
Voltage input: Measurement range........................... -12...800 mV
Min. measurement range (span), voltage input........................................... 5 mV
Input resistance, voltage input................................ 10 MΩ

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range........................................... 16 mA
Updating time................................................. 440 ms
Load resistance, current output.................... s (Vs-7.2) / 0.023 [Ω]
Load stability, current output.......................... 50.01% of span / 100 Ω
Sensor error indication, current output.................. Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.................... 23 mA / 3.5 mA
*of span....................................................... of the presently selected range

Approvals
EMC................................................................... EN 61326-1
ATEX.............................................................. KEMA 06ATEX0062
IECEx............................................................. DEK 13.0035X
FM.................................................................. 205A7
CSA.................................................................. 1125003
INMETRO.......................................................... DEKRA 13.0001 X
GOST R........................................................... Yes
GOST Ex........................................................ Yes
DNV Marine........................................................... Stand. f. Certific. No. 2.4
2-wire programmable transmitter

**5333A**
- RTD or Ohm input
- High measurement accuracy
- 3-wire connection
- Programmable sensor error value
- For DIN form B sensor head mounting

**Application**
- Linearized temperature measurement with Pt100...Pt1000 or Ni100...Ni1000 sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.

**Technical characteristics**
- Within a few seconds the user can program PR5333A to measure temperatures within all RTD ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 3-wire connection.

**Mounting / installation**
- For DIN form B sensor head or DIN rail mounting with the PR fitting type 8421.

**Connections**
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature.................................. 20...28°C
Relative humidity......................................... < 95% RH (non-cond.)
Protection degree (encl./terminal).................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration......................................................... IEC 60068-2-6 : 2007
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 8.0...35 VDC
Internal consumption...................................... 25 mW...0.8 W
Voltage drop................................................... 8.0 VDC
Warm-up time............................................... 5 min.
Communications interface......................... Loop Link
Signal / noise ratio......................................... Min. 60 dB
Response time (programmable).................... 0.33...60 s
Accuracy........................................................ Better than 0.1% of selected range
Signal dynamics, input.................................... 19 bit
Signal dynamics, output............................ 16 bit
Effect of supply voltage change.................... < 0.005% of span / VDC
EMC immunity influence.............................. < ±0.5% of span

Input specifications
Max. offset........................................................ 50% of selected max. value
RTD input......................................................... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD........... 10 Ω
Sensor current, RTD................................. > 0.2 mA, < 0.4 mA
Effect of sensor cable resistance (3-wire), RTD.. < 0.002 Ω / Ω
Sensor error indication, RTD......................... Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale............. 23 mA / 3.5 mA
*of span.......................... = of the presently selected range

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range......................................... 16 mA
Updating time................................................ 135 ms
Load resistance, current output................. ≤ (Vsupply - 8) / 0.023 [Ω]
Load stability, current output...................... 50.01% of span / 100 Ω
Sensor error indication, current output........ Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale............. 23 mA / 3.5 mA
*of span.......................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
ATEX.............................................................. KEMA 10ATEX0003 X
IECEx.......................................................... DEK 13.0036X
INMETRO...................................................... DEKRA 13.0002 X
GOST R........................................................... Yes
DNV Marine............................................. Stand. f. Certific. No. 2.4
2-wire programmable transmitter

5333D
- RTD or Ohm input
- High measurement accuracy
- 3-wire connection
- Programmable sensor error value
- For DIN form B sensor head mounting

Application
- Linearized temperature measurement with Pt100...Pt1000 or Ni100...Ni1000 sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.

Technical characteristics
- Within a few seconds the user can program PR5333D to measure temperatures within all RTD ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 3-wire connection.

Mounting / installation
- For DIN form B sensor head mounting.
- NB: As Ex barrier we recommend 5104B, 5114B, or 5116B.

Connections
Environmental Conditions
Specifications range: -40°C to +85°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree (encl./terminal): IP68 / IP00

Mechanical specifications
Dimensions: Ø 44 x 20.2 mm
Weight approx: 50 g
Wire size: 1 x 1.5 mm² stranded wire
Screw terminal torque: 0.4 Nm
Vibration: 2...25 Hz: ±1.6 mm
Vibration: 25...100 Hz: ±4 g

Common specifications
Supply voltage: 8.0...30 VDC
Internal consumption: 25 mW...0.8 W
Voltage drop: 8.0 VDC
Warm-up time: 5 min.
Communications interface: Loop Link
Signal / noise ratio: Min. 60 dB
Response time (programmable): 0.33...60 s
Accuracy: Better than 0.1% of selected range
Signal dynamics, input: 19 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC
EMC immunity influence: < ±0.5% of span

Input specifications
Max. offset: 50% of selected max. value
RTD input: Pt100, Ni100, lin. R
Cable resistance per wire (max.): 10 Ω
Sensor current, RTD: > 0.2 mA, < 0.4 mA
Effect of sensor cable resistance (3-wire): < 0.002 Ω / Ω
Sensor error detection, RTD: Yes

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 135 ms
Load resistance, current output: less (Vsupply - 8) / 0.023 [Ω]
Load stability, current output: 50.01% of span / 100 Ω
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
* of span: = of the presently selected range

Approvals
EMC: EN 61326-1
ATEX: KEMA 03ATEX1535 X
IECEX: DEK 13.0036X
FM: 2D5A7
CSA: 1125003
INMETRO: DEKRA 13.0002 X
GOST R: Yes
GOST Ex: Yes
DNV Marine: Stand. f. Certific. No. 2.4
2-wire programmable transmitter

5334A

- TC input
- High measurement accuracy
- Galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting

Application
- Linearized temperature measurement with TC sensor.
- Amplification of bipolar mV signals to a 4...20 mA signal, optionally linearized according to a defined linearization function.

Technical characteristics
- Within a few seconds the user can program PR5334A to measure temperatures within all TC ranges defined by the norms.
- Cold junction compensation (CJC) with a built-in temperature sensor.
- Continuous check of vital stored data for safety reasons.

Mounting / installation
- For DIN form B sensor head or DIN rail mounting with the PR fitting type 8421.

Connections

TC to 4...20 mA
mV to 4...20 mA
2-wire installation in control room
2-wire installation in control room
Environmental Conditions
Specifications range: -40°C to +85°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree (encl./terminal): IP68 / IP00

Mechanical specifications
Dimensions: Ø 44 x 20.2 mm
Weight approx: 50 g
Wire size: 1 x 1.5 mm² stranded wire
Screw terminal torque: 0.4 Nm
Vibration: 2...25 Hz: ±1.6 mm
Vibration: 25...100 Hz: ±4 g

Common specifications
Supply voltage: 7.2...35 VDC
Internal consumption: 25 mW...0.8 W
Voltage drop: 7.2 VDC
Isolation voltage, test / working: 1.5 kVAC / 50 VAC
Warm-up time: 5 min.
Communications interface: Loop Link
Signal / noise ratio: Min. 60 dB
Response time (programmable): 1...60 s
EEprom error check: < 3.5 s
Accuracy: Better than 0.05% of selected range
Signal dynamics, input: 18 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 440 ms
Load resistance, current output: s (Vsupply - 7.2) / 0.023 [Ω]
Load stability, current output: 50.01% of span / 100 Ω
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
*of span: = of the presently selected range

Approvals
EMC: EN 61326-1
ATEX: KEMA 10ATEX0002 X
IECEx: DEK 13.0035X
INMETRO: DEKRA 13.0001 X
GOST R: Yes

Input specifications
Max. offset: 50% of selected max. value
Cold junction compensation (CJC): < ±1.0°C
Sensor error detection, TC: Yes
Sensor error current: When detecting / else: Nom. 33 µA / 0 µA
Voltage input: Measurement range: -12...150 mV
Min. measurement range (span), voltage input: 5 mV
Input resistance, voltage input: 10 MΩ

<table>
<thead>
<tr>
<th>Type</th>
<th>Ambient temperature</th>
<th>Galvanic isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5334A</td>
<td>-40°C...+85°C</td>
<td>1500 VAC</td>
</tr>
</tbody>
</table>
2-wire programmable transmitter

5334B
- TC input
- High measurement accuracy
- Galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting

Application
- Linearized temperature measurement with TC sensor.
- Amplification of bipolar mV signals to a 4...20 mA signal, optionally linearized according to a defined linearization function.

Technical characteristics
- Within a few seconds the user can program PR5334B to measure temperatures within all TC ranges defined by the norms.
- Cold junction compensation (CJC) with a built-in temperature sensor.
- Continuous check of vital stored data for safety reasons.

Mounting / installation
- For DIN form B sensor head mounting.
- NB: As Ex barrier we recommend 5104B, 5114B, or 5116B.

Connections
Order:

<table>
<thead>
<tr>
<th>Type</th>
<th>Ambient temperature</th>
<th>Galvanic isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5334B</td>
<td>-40°C to +85°C</td>
<td>1500 VAC B</td>
</tr>
</tbody>
</table>

Environmental Conditions
Specifications range: -40°C to +85°C
Calibration temperature: 20°C...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree (encl./terminal): IP68 / IP00

Mechanical specifications
Dimensions: Ø 44 x 20.2 mm
Weight approx: 50 g
Wire size: 1 x 1.5 mm² stranded wire
Screw terminal torque: 0.4 Nm
   Vibration: 2...25 Hz: ±1.6 mm
   Vibration: 25...100 Hz: ±4 g

Common specifications
Supply voltage: 7.2...30 VDC
Internal consumption: 25 mW...0.8 W
Voltage drop: 7.2 VDC
Isolation voltage, test / working: 1.5 kVAC / 50 VAC
Warm-up time: 5 min.
Communication interface: Loop Link
Signal / noise ratio: Min. 60 dB
Response time (programmable): 1...60 s
 EEPROM error check: < 3.5 s
Accuracy: Better than 0.05% of selected range
Signal dynamics, input: 18 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications
Max. offset: 50% of selected max. value
Cold junction compensation (CJC): < ±1.0°C
Sensor error detection, TC: Yes
Sensor error current: When detecting / else: Nom. 33 μA / 0 μA
Voltage input: Measurement range: -12...150 mV
Min. measurement range (span), voltage input: 5 mV
Input resistance, voltage input: 10 MΩ

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 440 ms
Load resistance, current output: ≤ (Vsupply - 7.2) / 0.023 [Ω]
Load stability, current output: < 50.01% of span / 100 Ω
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
* of span: = of the presently selected range

Approvals
EMC: EN 61326-1
ATEX: KEMA 06ATEX0062
IECEx: DEK 13.0035X
INMETRO: DEKRA 13.0001 X
GOST R: Yes
GOST Ex: Yes
DNV Marine: Standard f. Certific. No. 2.4
2-wire transmitter with HART® protocol

5335A

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- HART® 5 protocol
- Programmable sensor error value
- For DIN form B sensor head mounting

Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Difference or average temperature measurement of 2 resistance or TC sensors.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.
- Connection of up to 15 transmitters to a digital 2-wire signal with HART® communication.

Technical characteristics

- Within a few seconds the user can program PR5335A to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- The 5335A has been designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.
- Continuous check of vital stored data for safety reasons.
- Sensor error detection according to the guidelines in NAMUR NE89.

Mounting / installation

- For DIN form B sensor head or DIN rail mounting with the PR fitting type 8421.
Environmental Conditions
Specifications range ....................................... -40°C to +85°C
Calibration temperature .................................. 20...28°C
Relative humidity........................................... < 95% RH (non-cond.)
Protection degree (encl./terminal) .................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 8.0...35 VDC
Isolation voltage, test / working........................... 1.5 kVAC / 50 VAC
Warm-up time............................................... 30 s
Communications interface......................... Loop Link & HART®
Signal / noise ratio......................................... Min. 60 dB
Accuracy...................................................... Better than 0.05% of selected range
Response time (programmable).................... 1...60 s
Signal dynamics, input................................ 22 bit
Signal dynamics, output................................. 16 bit
Effect of supply voltage change..................... < 0.005% of span / VDC
EMC immunity influence.............................. < ±0.1% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst................................. < ±1% of span

Input specifications
Max. offset.................................................. 50% of selected max. value
RTD input.................................................. Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD.............. 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current, RTD.................................. Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD.............. < 0.002 Ω / Ω
Sensor error detection, RTD.......................... Yes
Cold junction compensation (CJC).................. < ±1.0°C
Sensor error detection, TC............................ Yes
Sensor error current: When detecting / else......... Nom. 33 μA / 0 μA
Voltage input: Measurement range............... -800...+800 mV
Min. measurement range (span), voltage input........ 2.5 mV
Input resistance, voltage input.................. 10 MΩ

Output specifications
Current output: Signal range ....................... 4...20 mA
Min. signal range........................................... 16 mA
Load resistance, current output.................. ≤ (Vs supply - 8) / 0.023 [Ω]
Load stability, current output.................... ≤0.01% of span / 100 Ω
Sensor error indication, current output........... Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale................ 23 mA / 3.5 mA
* of span..................................................... = of the presently selected range

Approvals
EMC.......................................................... EN 61326-1
ATEX.......................................................... KEMA 03ATEX1508 X
IECEx.......................................................... KEM 10.0083X
INMETRO.................................................... NCC 12.0844 X
GOST R.......................................................... Yes
DNV Marine............................................... Stand. f. Certific. No. 2.4
SIL............................................................... Hardware assessed for use in SIL applications
2-wire transmitter with HART® protocol

5335D

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- HART® 5 protocol
- Galvanic isolation
- For DIN form B sensor head mounting

Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Difference or average temperature measurement of 2 resistance or TC sensors.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.
- Connection of up to 15 transmitters to a digital 2-wire signal with HART® communication.

Technical characteristics

- Within a few seconds the user can program PR5335D to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- The 5335A has been designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.
- Continuous check of vital stored data for safety reasons.
- Sensor error detection according to the guidelines in NAMUR NE89.

Mounting / installation

- For DIN form B sensor head mounting.
- NB: As Ex barrier we recommend 5106B.
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature................................... 20...28°C
Relative humidity......................................... < 95% RH (non-cond.)
Protection degree (encl./terminal).................... IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx............................................... 50 g
Wire size....................................................... 1 x 1.5 mm² stranded wire
Screw terminal torque..................................... 0.4 Nm
Vibration....................................................... IEC 60068-2-6 : 2007
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz..................................... ±4 g

Common specifications
Supply voltage............................................... 8.0...30 VDC
Isolation voltage, test / working........................ 1.5 kVAC / 50 VAC
Warm-up time............................................... 30 s
Communications interface............................. Loop Link & HART®
Signal / noise ratio........................................ Min. 60 dB
Response time (programmable)....................... 1...60 s
Accuracy...................................................... Better than 0.05% of selected range
Signal dynamics, input..................................... 22 bit
Signal dynamics, output................................... 16 bit
Effect of supply voltage change..................... < 0.005% of span / VDC
EMC immunity influence................................. < ±0.1% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst............................................ < ±1% of span

Input specifications
Max. offset.................................................. 50% of selected max. value
RTD input.................................................... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD............... 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current, RTD........................................ Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD............. < 0.002 Ω / Ω
Sensor error detection, RTD.............................. Yes
Cold junction compensation (CJC)...................... < ±1.0°C
Sensor error detection, TC.............................. Yes
Sensor error current: When detecting / else........... Nom. 33 μA / 0 μA
Voltage input: Measurement range.................. -800...+800 mV
Min. measurement range (span), voltage input...... 2.5 mV
Input resistance, voltage input....................... 10 MΩ

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range......................................... 16 mA
Load resistance, current output................. ≤ (Vsupply - 8) / 0.023 [Ω]
Load stability, current output...................... ≤0.01% of span / 100 Ω
Sensor error indication, current output.............. Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.................... 23 mA / 3.5 mA
*of span...................................................... = of the presently selected range

Approvals
EMC............................................................. EN 61326-1
ATEX............................................................ KEMA 03ATEX1537
IECEx........................................................... KEM 10.0083X
FM.............................................................. 2D5A7
CSA............................................................ 1125003
INMETRO...................................................... NCC 12.0844 X
GOST R.......................................................... Yes
GOST Ex.......................................................... Yes
DNV Marine.................................................. Stand. f. Certific. No. 2.4
SIL.............................................................. Hardware assessed for use in SIL applications
2-wire transmitter with HART® protocol

5337A

- RTD, TC, Ohm, and bipolar mV input
- 2 analogue inputs and 5 device variables with status available
- HART® protocol revision selectable from HART® 5 or HART® 7
- Hardware assessed for use in SIL applications
- Mounting in Safe area or Zone 2/22

Application

- Linearized temperature measurement with TC and RTD sensors e.g. Pt100 and Ni100.
- HART® communication and 4...20 mA analog PV output for individual, difference or average temperature measurement of up to two RTD or TC input sensors.
- Conversion of linear resistance to a standard analog current signal, e.g. from valves or Ohmic level sensors.
- Amplification of bipolar mV signals to standard 4...20 mA current signals.
- Up to 63 transmitters (HART® 7) can be connected in a multidrop communication setup.

Technical characteristics

- HART® protocol revision can be changed by user configuration to either HART® 5 or HART® 7 protocol.
- The HART® 7 protocol offers: ∙ Long Tag numbers of up to 32 characters. ∙ Enhanced Burst Mode and Event notification with time stamping. ∙ Device variable and status mapping to any dynamic variable PV, SV, TV or QV. ∙ Process signal trend measurement with logs and summary data. ∙ Automatic event notification with time stamps. ∙ Command aggregation for higher communication efficiency.
- 5337A is designed according to strict safety requirements and is therefore suitable for applications in SIL installations.
- Continuous check of vital stored data.
- Meeting the NAMUR NE21 recommendations, the 5337 HART® transmitter ensures top measurement performance in harsh EMC environments. Additionally, the 5337 meets NAMUR NE43 and NE89 recommendations.

Mounting / installation

- For DIN form B sensor head or DIN rail mounting via the PR fitting type 8421.
- Configuration via standard HART® communication interfaces or by PR 5909 Loop Link.
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree (encl./terminal).................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 8.0...35 VDC
Response time (programmable).................... 1...60 s
Accuracy........................................................ Better than 0.05% of selected range

Input specifications
Max. offset...................................................... 50% of selected max. value
RTD input........................................................ Pt50, Pt100, Pt200, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000
Cable resistance per wire (max.), RTD.............. 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current, RTD........................................ Nom. 0.2 mA
Cold junction compensation (CJC).................... Constant, internal or external via a Pt100 or Ni100 sensor
Voltage input: Measurement range.................-800...+800 mV
Min. measurement range (span), voltage input........................................ 2.5 mV
Input resistance, voltage input........................ 10 MΩ

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range........................................... 16 mA
Updating time.............................................. 440 ms
Load resistance, current output.................... ≤ (Vsupply - 8) / 0.023 [Ω]
NAMUR NE 43 Upscale/Downscale.................. 23 mA / 3.5 mA
HART® protocol revisions............................ HART® 5 and HART® 7

Approvals
EMC............................................................... EN 61326-1
ATEX.............................................................. KEMA 03ATEX1508 X
IECEx............................................................ KEM 10 0083 X
INMETRO......................................................... NCC 12 0844 X
DNV Marine.................................................. Stand. f. Certific. No. 2.4
SIL................................................................. Hardware assessed for use in SIL applications
2-wire transmitter with HART® protocol

5337D

- RTD, TC, Ohm, and bipolar mV input
- 2 analogue inputs and 5 device variables with status available
- HART® protocol revision selectable from HART® 5 or HART® 7
- Hardware assessed for use in SIL applications
- Mounting in hazardous gas and dust area

Application
- Linearized temperature measurement with TC and RTD sensors e.g. Pt100 and Ni100.
- HART® communication and 4...20 mA analog PV output for individual, difference or average temperature measurement of up to two RTD or TC input sensors.
- Conversion of linear resistance to a standard analog current signal, e.g from valves or Ohmic level sensors.
- Amplification of bipolar mV signals to standard 4...20 mA current signals.
- Up to 63 transmitters (HART® 7) can be connected in a multidrop communication setup.

Technical characteristics
- HART® protocol revision can be changed by user configuration to either HART® 5 or HART® 7 protocol.
- The HART® 7 protocol offers: ∙ Long Tag numbers of up to 32 characters. ∙ Enhanced Burst Mode and Event notification with time stamping. ∙ Device variable and status mapping to any dynamic variable PV, SV, TV or QV. ∙ Process signal trend measurement with logs and summary data. ∙ Automatic event notification with time stamps. ∙ Command aggregation for higher communication efficiency.
- 5337D is designed according to strict safety requirements and is therefore suitable for applications in SIL installations.
- Continuous check of vital stored data.
- Meeting the NAMUR NE 21 recommendations, the 5337 HART® transmitter ensures top measurement performance in harsh EMC environments. Additionally, the 5337D meets NAMUR NE43 and NE89 recommendations.

Mounting / installation
- For DIN form B sensor head mounting.
- Configuration via standard HART® communication interfaces or by PR 5909 Loop Link.
- PR 5106B or 9106B is recommended as a barrier for 5337D.
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree (encl./terminal).................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration ......................................................... IEC 60068-2-6 : 2007
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 8.0...30 VDC
Voltage drop................................................... 8.0 VDC
Isolation voltage, test / working......................... 1.5 kVAC / 50 VAC
Communications interface ......................... Loop Link & HART®
Signal / noise ratio......................................... > 60 dB
Response time (programmable).................... 1...60 s
Accuracy........................................................ Better than 0.05% of selected range
EMC immunity influence.............................. < ±0.1% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.................... < ±1% of span

Input specifications
Max. offset...................................................... 50% of selected max. value
RTD input......................................................... Pt50, Pt100, Pt200, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000
Cable resistance per wire (max.), RTD................. 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current, RTD............................................ Nom. 0.2 mA
Cold junction compensation (CJC)........................ Constant, internal or external via a Pt100 or Ni100 sensor
Voltage input: Measurement range................. -800...+800 mV
Min. measurement range (span), voltage input................................. 2.5 mV
Input resistance, voltage input.............................. 10 MΩ

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range........................................ 16 mA
Updating time........................................ 440 ms
Load resistance, current output.................... s (Vsupply - 8) / 0.023 [Ω]
Sensor error indication, current output................ Programmed 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.... 23 mA / 3.5 mA
HART® protocol revisions...................... HART® 5 and HART® 7

Approvals
EMC............................................................. EN 61326-1
ATEX............................................................ KEMA 03ATEX1537
IEC Ex.......................................................... KEM 10.0083X
FM............................................................. 2D5A7
CSA............................................................ 1126003
INMETRO..................................................... NCC 12.0844 X
GOST R.......................................................... Yes
GOST Ex...................................................... Yes
DNV Marine................................................ Stand. f. Certific. No. 2.4
SIL............................................................. Hardware assessed for use in SIL applications
Profibus PA / Foundation Fieldbus transmitter

5350A

- PROFIBUS® PA ver. 3.0
- FOUNDATION™ Fieldbus ver. ITK 4.6
- Automatic switch between protocols
- Basic or LAS capability with F.F.
- For DIN form B sensor head mounting

Application
- Linearized temperature measurement with RTD or TC sensor.
- Difference, average or redundancy temperature measurement with RTD or TC sensor.
- Linear resistance, potentiometer and bipolar mV measurement.

Technical characteristics
- Bus transmitter with both PROFIBUS® PA and FOUNDATION™ Fieldbus communication. A unique switch function ensures automatic shift between the two protocols.
- Set-up for PROFIBUS® PA can be done via Siemens Simatic® PDM®, ABB Melody / Harmony and Metso DNA software and for FOUNDATION™ Fieldbus via Emerson DeltaV, Yokogawa CS 1000 / CS 3000, ABB Melody / Harmony and Honeywell Experion software.
- The simulation mode function can be activated by way of a magnet.
- Polarity-independent bus connection.
- 24 bit A/D converter ensures high resolution.
- PROFIBUS® PA function blocks: 2 analog.
- FOUNDATION™ Fieldbus function blocks: 2 analog and 1 PID.
- FOUNDATION™ Fieldbus capability: Basic or LAS.

Mounting / installation
- For DIN form B sensor head or DIN rail mounting with the PR fitting type 8421.

Connections

- RTD to bus communication
- TC to bus communication
- Resistance to bus communication
- mV to bus communication
- Difference, redundancy or average; RTD, TC or mV
Environmental Conditions

Specifications range ..................................... -40°C to +85°C
Calibration temperature............................... 20...28°C
Relative humidity ...................................... < 95% RH (non-cond.)
Protection degree (encl./terminal)................. IP68 / IP00

Mechanical specifications

Dimensions ............................................... Ø 44 x 20.2 mm
Weight approx......................................... 56 g
Screw terminal torque................................ 0.4 Nm
Vibration .................................................. DIN class B, IEC 60068-2-6
Vibration: 2...25 Hz .................................... ±1.6 mm
Vibration: 25...100 Hz................................ ±4 g

Common specifications

Supply voltage......................................... 9.0...32 VDC
Internal consumption................................ < 11 mA
Max. current increase in the event of an error ....... < 7 mA
Isolation voltage, test................................... 1.5 kVAC for 60 s
Isolation voltage, working............................ 50 VRMS / 75 VDC
Warm-up time......................................... 30 s
Signal / noise ratio.................................... Min. 60 dB
Response time (programmable)..................... 1...60 s
Updating time......................................... < 400 ms
Execution time, analog input........................ < 50 ms
Accuracy............................................... Better than 0.05% of selected range
Signal dynamics, input............................... 24 bit
EMC immunity influence.............................. < ±0.1% of reading
Extended EMC immunity: NAMUR NE 21, A criterion, burst......................... < ±1% of reading

Input specifications

RTD input........................................... Pt25...1000, Ni25...1000, Cu10...1000, lin. R, potentiometer
Cable resistance per wire (max.), RTD.............. 50 Ω
Sensor current, RTD.................................. Nom. 0.2 mA
Effect of sensor cable resistance (3-wire), RTD.... < 0.002 Ω / Ω
Sensor error detection, RTD.......................... Yes
Short circuit detection, RTD........................ < 15 Ω
Cold junction compensation (CJC)...................... < ±0.5°C
Sensor error current: When detecting / else........ Nom. 4 μA / 0 μA
Short circuit detection, TC........................... < 3 mV
Voltage input: Measurement range.................. -800...+800 mV
Input resistance, voltage input..................... 10 MΩ

Output specifications

PROFIBUS PA protocol.......................... Profile A&B, ver. 3.0
PROFIBUS PA protocol standard.................. EN 50170 vol. 2
PROFIBUS PA address (at delivery).............. 126
PROFIBUS PA function blocks..................... 2 analog
FOUNDATION™ Fieldbus protocol................ FF protocol
FOUNDATION™ Fieldbus protocol standard........ FF design specifications
FOUNDATION™ Fieldbus version.................. ITK 4.6
FOUNDATION™ Fieldbus capability............... Basic or LAS
FOUNDATION™ Fieldbus function blocks.......... 2 analog and 1 PID

Approvals

EMC....................................................... EN 61326-1
ATEX...................................................... KEMA 03ATEX1011 X
CSA....................................................... 1418937
FM....................................................... 3015609
NEPSI................................................... GYJ14.1100U
GOST R.................................................. Yes
Profibus PA / Foundation Fieldbus transmitter

5350B

- PROFIBUS® PA ver. 3.0
- FOUNDATION™ Fieldbus ver. ITK 4.6
- Automatic switch between protocols
- FISCO-certified
- Basic or LAS capability with F.F.

Application
- Linearized temperature measurement with RTD or TC sensor.
- Difference, average or redundancy temperature measurement with RTD or TC sensor.
- Linear resistance, potentiometer and bipolar mV measurement.

Technical characteristics
- Bus transmitter with both PROFIBUS® PA and FOUNDATION™ Fieldbus communication. A unique switch function ensures automatic shift between the two protocols.
- Set-up for PROFIBUS® PA can be done via Siemens Simatic® PDM®, ABB Melody / Harmony and Metso DNA software and for FOUNDATION™ Fieldbus via Emerson DeltaV, Yokogawa CS 1000 / CS 3000, ABB Melody / Harmony and Honeywell Experion software.
- The simulation mode function can be activated by way of a magnet.
- Polarity-independent bus connection.
- 24 bit A/D converter ensures high resolution.
- PROFIBUS® PA function blocks: 2 analog.
- FOUNDATION™ Fieldbus function blocks: 2 analog and 1 PID.
- FOUNDATION™ Fieldbus capability: Basic or LAS.

Mounting / installation
- For DIN form B sensor head mounting.
Environmental Conditions
Specifications range......................... -40°C to +85°C
Calibration temperature......................... 20...28°C
Relative humidity............................... < 95% RH (non-cond.)
Protection degree (encl./terminal).............. IP68 / IP00

Mechanical specifications
Dimensions........................................ Ø 44 x 20.2 mm
Weight approx..................................... 56 g
Screw terminal torque............................ 0.4 Nm
Vibration ........................................... DIN class B, IEC 60068-2-6 and IEC 60068-2-64
Vibration: 2...25 Hz................................ ±1.6 mm
Vibration: 25...100 Hz.............................. ±4 g

Common specifications
Supply voltage......................... 9.0...30 VDC
Supply voltage in FISCO installations........... 9.0...17.5 VDC
Internal consumption.......................... < 11 mA
Max. current increase in the event of an error.................... < 7 mA
Isolation voltage, test........................... 1.5 kVAC for 60 s
Isolation voltage, working....................... 50 VRMS / 75 VDC
Warm-up time..................................... 30 s
Signal / noise ratio............................... Min. 60 dB
Response time (programmable)................... 1...60 s
Response time, analog input...................... < 400 ms
Execution time, analog input..................... < 50 ms
Accuracy............................................. Better than 0.05% of selected range
Signal dynamics, input.......................... 24 bit
EMC immunity influence....................... < ±0.1% of reading
Extended EMC immunity: NAMUR NE 21, A criterion, burst...................... < ±1% of reading

Input specifications
RTD input........................................ Pt25…1000, Ni25…1000, Cu10…1000, lin. R, potentiometer
Cable resistance per wire
(max.), RTD.......................................... 50 Ω
Sensor current, RTD................................ Nom. 0.2 mA
Effect of sensor cable resistance
(3-4-wire), RTD................................... < 0.002 Ω / Ω
Sensor error detection, RTD...................... Yes
Short circuit detection, RTD..................... < 15 Ω
Cold junction compensation
(CJC).................................................. < ±0.5°C
Sensor error detection, TC...................... Yes
Sensor error current: When detecting / else.................. Nom. 4 μA / 0 μA
Short circuit detection, TC....................... < 3 mV
Voltage input: Measurement range.................. -800...+800 mV
Input resistance, voltage input................... 10 MΩ

Output specifications
PROFIBUS PA protocol......................... Profile A&B, ver. 3.0
PROFIBUS PA protocol standard................. EN 50170 vol. 2
PROFIBUS PA address (at delivery)............ 126
PROFIBUS PA function blocks.................... 2 analog
FOUNDATION™ Fieldbus protocol............ FF protocol
FOUNDATION™ Fieldbus protocol standard........... FF design specifications
FOUNDATION™ Fieldbus version................ ITK 4.6
FOUNDATION™ Fieldbus capability............. Basic or LAS
FOUNDATION™ Fieldbus function blocks........ 2 analog and 1 PID

Approvals
EMC..................................................... EN 61326-1
ATEX..................................................... KEMA 02ATEX1318
IECEx.................................................. BVS 12.0035X
FM....................................................... 3015609
CSA.................................................... 1418937
INMETRO............................................. NCC 12.1009 X
NEPSI.................................................. GV214.1101X
GOST R................................................ Yes
GOST Ex............................................. Yes
2-wire programmable transmitter

6331A

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- Galvanic isolation
- Programmable sensor error value
- 1- or 2-channel version

Application
- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

Technical characteristics
- Within a few seconds the user can program PR6331A to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- A limit can be programmed on the output signal.
- Continuous check of vital stored data for safety reasons.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version, up to 84 channels can be mounted per meter.

Connections

- RTD to 4...20 mA
- TC to 4...20 mA
- Resistance to 4...20 mA
- mV to 4...20 mA
Environmental Conditions
Specifications range: -40°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight (1 / 2 channels): 145 / 185 g
Wire size: 1 x 1.5 mm² stranded wire

Common specifications
Supply voltage: 7.2...35 VDC
Internal consumption, per channel: 0.17...0.8 W
Voltage drop: 7.2 VDC
Isolation voltage, test / working: 1.5 kVAC / 50 VAC
Warm-up time: 5 min.
Communications interface: Loop Link
Signal / noise ratio: Min. 60 dB
Accuracy: Better than 0.05% of selected range
Response time (programmable): 1...60 s
EEProm error check: < 3.5 s
Signal dynamics, input: 20 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 440 ms
Load resistance, current output: ≤ (Vsupply - 7.2) / 0.023 [Ω]
Load stability, current output: ≤ 0.01% of span / 100 Ω
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
*of span: of the presently selected range

Approvals
EMC: EN 61326-1
ATEX: KEMA 10ATEX0005 X
GOST R: Yes
GOST Ex: Yes

*NB! Please remember to order CJC connector type 5910 (channel 1) and 5913 (channel 2) for TC inputs with an internal CJC.
2-wire programmable transmitter

6331B

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- Galvanic isolation
- Can be installed in Ex zone 0
- 1- or 2-channel version

Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

Technical characteristics

- Within a few seconds the user can program PR6331B to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- A limit can be programmed on the output signal.
- Continuous check of vital stored data for safety reasons.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version, up to 84 channels can be mounted per meter.
- NB: As Ex barrier we recommend 5104B, 5114B, or 5116B.
Environmental Conditions
Specifications range: -40°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight (1 / 2 channels): 145 / 185 g
Wire size: 1 x 1.5 mm² stranded wire

Common specifications
Supply voltage: 7.2...30 VDC
Internal consumption, per channel: 0.17...0.8 W
Voltage drop: 7.2 VDC
Isolation voltage, test / working: 1.5 kVAC / 50 VAC
Accuracy: Better than 0.05% of selected range
Response time (programmable): 1...60 s
EEProm error check: < 3.5 s
Signal dynamics, input: 20 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications
Max. offset: 50% of selected max. value
RTD input: Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD: 5 Ω
Sensor current, RTD: Nom. 0.2 mA
Effect of sensor cable resistance (3/4-wire), RTD: < 0.002 Ω / Ω
Sensor error detection, RTD: Yes
Cold junction compensation (CJC): < ±1.0°C
Sensor error detection, TC: Yes
Sensor error current: When detecting / else: Nom. 33 μA / 0 μA
Voltage input: Measurement range: -12...800 mV
Min. measurement range (span), voltage input: 5 mV
Input resistance, voltage input: 10 MΩ

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 440 ms
Load resistance, current output: ≤ (Vsupply - 7.2) / 0.023 [Ω]
Load stability, current output: 50.01% of span / 100 Ω
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
*of span: of the presently selected range

Approvals
EMC: EN 61326-1
ATEX: KEMA 06ATEX0115
GOST R: Yes
GOST Ex: Yes

*NB! Please remember to order CJC connector type 5916Ex (channel 1) and 5913Ex (channel 2) for TC inputs with an internal CJC.
2-wire programmable transmitter

6333A

- RTD or Ohm input
- High measurement accuracy
- 3-wire connection
- Programmable sensor error value
- 1- or 2-channel version

Application
- Linearized temperature measurement with Pt100...Pt1000 or Ni100...Ni1000 sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.

Technical characteristics
- Within a few seconds the user can program PR6333A to measure temperatures within all RTD ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 3-wire connection.
- A limit can be programmed on the output signal.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels per meter can be mounted.

Connections
### Environmental Conditions
Specifications range: -40°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

### Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight (1 / 2 channels): 145 / 185 g
Wire size: 1 x 2.5 mm² stranded wire

### Common specifications
Supply voltage: 8.0...35 VDC
Internal consumption: 0.19...0.8 W
Voltage drop: 8.0 VDC
Isolation voltage, ch. 1 / ch. 2: 3.75 kVAC
Warm-up time: 5 min.
Communications interface: Loop Link
Signal / noise ratio: Min. 60 dB
Accuracy: Better than 0.1% of selected range
Response time (programmable): 0.33...60 s
Signal dynamics, input: 19 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC
EMC immunity influence: < ±0.5% of span

### Input specifications
Max. offset: 50% of selected max. value
RTD input: Pt100, Ni100, lin. R
Cable resistance per wire (max.): 10 Ω
Sensor current, RTD: > 0.2 mA, < 0.4 mA
Effect of sensor cable resistance (3-wire): < 0.002 Ω / Ω
Sensor error detection, RTD: Yes

### Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 135 ms
Load resistance, current output: s (Vsupply - 8) / 0.023 [Ω]
Load stability, current output: 50.01% of span / 100 Ω
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
*of span: = of the presently selected range

### Approvals
EMC: EN 61326-1
ATEX: KEMA 10ATEX0007 X
GOST R: Yes
2-wire programmable transmitter

6333B
- RTD or Ohm input
- High measurement accuracy
- 3-wire connection
- Can be installed in Ex zone 0
- 1- or 2-channel version

Application
- Linearized temperature measurement with Pt100...Pt1000 or Ni100...Ni1000 sensor.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.

Technical characteristics
- Within a few seconds the user can program PR6333B to measure temperatures within all RTD ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 3-wire connection.
- A limit can be programmed on the output signal.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version, up to 84 channels can be mounted per meter.
- NB: As Ex barrier we recommend 5104B, 5114B, or 5116B.
Environmental Conditions
Specifications range....................................... -40°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Weight (1 / 2 channels).................................. 145 / 185 g
Wire size........................................................ 1 x 1.5 mm² stranded wire

Common specifications
Supply voltage............................................... 8.0...30 VDC
Isolation voltage, ch. 1 / ch. 2........................... 1500 VAC
Warm-up time.................................................. 5 min.
Communications interface................................ Loop Link
Signal / noise ratio...................................... Min. 60 dB
Accuracy........................................................ Better than 0.1% of selected range
Response time (programmable).......................... 0.33...60 s
Signal dynamics, input................................... 19 bit
Signal dynamics, output................................. 16 bit
Effect of supply voltage change..................... < 0.005% of span / VDC

Input specifications
Max. offset.................................................. 50% of selected max. value
RTD input.................................................... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD.............. 10 Ω
Sensor current, RTD................................... > 0.2 mA, < 0.4 mA
Effect of sensor cable resistance (3-wire), RTD.... < 0.002 Ω / Ω
Sensor error detection, RTD......................... Yes

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range........................................ 16 mA
Updating time............................................. 135 ms
Load resistance, current output.................. 5 (Vsupply - 8) / 0.023 [Ω]
Load stability, current output.................... 50.01% of span / 100 Ω
Sensor error indication, current output................ Programmed 3.5...23 mA
NAMUR NE 43 Upscale/Downscale........... 23 mA / 3.5 mA
Effect of span.............................................. = of the presently selected range

Approvals
EMC.......................................................... EN 61326-1
ATEX........................................................ KEMA 09ATEX0147
GOST Ex.................................................. Yes

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2-wire programmable transmitter

6334A

- TC input
- High measurement accuracy
- Galvanic isolation
- Programmable sensor error value
- 1- or 2-channel version

Application
- Linearized temperature measurement with TC sensor.
- Amplification of bipolar mV signals to a 4...20 mA signal, optionally linearized according to a defined linearization function.

Technical characteristics
- Within a few seconds the user can program PR6334A to measure temperatures within all TC ranges defined by the norms.
- Cold junction compensation (CJC) with a built-in temperature sensor.
- A limit can be programmed on the output signal.
- Continuous check of vital stored data for safety reasons.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels can be mounted per meter.

Connections

Within a few seconds the user can program PR6334A to measure temperatures within all TC ranges defined by the norms.

Cold junction compensation (CJC) with a built-in temperature sensor.

A limit can be programmed on the output signal.

Continuous check of vital stored data for safety reasons.

Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels can be mounted per meter.
Environmental Conditions
Specifications range....................................... -40°C to +60°C
Calibration temperature................................. 20..28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Weight (1 / 2 channels).................................. 145 / 185 g
Wire size........................................................ 1 x 1.5 mm² stranded wire

Common specifications
Supply voltage............................................... 7.2...35 VDC
Internal consumption...................................... 0.17...0.8 W
Voltage drop................................................... 7.2 VDC
Isolation voltage, test / working.......................... 1.5 kVAC / 50 VAC
Warm-up time................................................. 5 min.
Communications interface................................ Loop Link
Signal / noise ratio......................................... Min. 60 dB
Response time (programmable)......................... 1...60 s
EEPROM error check....................................... < 3.5 s
Signal dynamics, input..................................... 18 bit
Signal dynamics, output................................... 16 bit
Effect of supply voltage change......................... < 0.005% of span / VDC
EMC immunity influence................................... < ±0.5% of span

Input specifications
Max. offset...................................................... 50% of selected max. value
Cold junction compensation (CJC)....................... < ±1°C
Voltage input: Measurement range..................... -12...150 mV
Min. measurement range (span), voltage input.......... 5 mV
Input resistance, voltage input........................ Nom. 10 MΩ

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range.......................................... 16 mA
Updating time.................................................. 440 ms
Load resistance, current output........................ ≤ (Vsupply - 7.2) / 0.023 [Ω]
Sensor error indication, current output................ Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.................... 23 mA / 3.5 mA
*of span...................................................... = of the presently selected range

Approvals
EMC......................................................... EN 61326-1
ATEX......................................................... KEMA 10ATEX0005 X
GOST R....................................................... Yes

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2-wire programmable transmitter

6334B

- TC input
- High measurement accuracy
- Galvanic isolation
- Can be installed in Ex zone 0
- 1- or 2-channel version

Application
- Linearized temperature measurement with TC sensor.
- Amplification of bipolar mV signals to a 4...20 mA signal, optionally linearized according to a defined linearization function.

Technical characteristics
- Within a few seconds the user can program PR6334B to measure temperatures within all TC ranges defined by the norms.
- Cold junction compensation (CJC) with a built-in temperature sensor.
- A limit can be programmed on the output signal.
- Continuous check of vital stored data for safety reasons.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels can be mounted per meter.
- NB: As Ex barrier we recommend 5104B, 5114B, or 5116B.

Connections

TC to 4...20 mA

mV to 4...20 mA

2-wire installation in control room
Environmental Conditions
Specifications range....................................... -40°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Weight (1 / 2 channels).................................. 145 / 185 g
Wire size........................................................ 1 x 1.5 mm² stranded wire

Common specifications
Supply voltage............................................... 7.2...30 VDC
Internal consumption...................................... 0.17...0.8 W
Voltage drop................................................... 7.2 VDC
Isolation voltage, test / working......................... 1.5 kVAC / 50 VAC
Warm-up time................................................. 5 min.
Communications interface............................. Loop Link
Signal / noise ratio......................................... Min. 60 dB
Accuracy........................................................ Better than 0.05% of selected range
Response time (programmable).................... 1...60 s
EEPROM error check........................................ < 3.5 s
Signal dynamics, input.................................... 18 bit
Signal dynamics, output................................. 16 bit
Effect of supply voltage change..................... < 0.005% of span / VDC
EMC immunity influence............................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst < ±1% of span

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range.......................................... 16 mA
Updating time................................................. 440 ms
Load resistance, current output.................... ≤ (Vsupply - 7.2) / 0.023 [Ω]
NAMUR NE 43 Upscale/Downscale...................... 23 mA / 3.5 mA
*of span........................................................ = of the presently selected range

Approvals
EMC.................................................................. EN 61326-1
ATEX.................................................................. KEMA 06ATEX0115
GOST Ex........................................................ Yes

Input specifications
Max. offset...................................................... 50% of selected max. value
Cold junction compensation (CJC).................... < ±1.0°C
Voltage input: Measurement range.................. -12...150 mV
Min. measurement range (span), voltage input 5 mV
Input resistance, voltage input......................... 10 MΩ
2-wire HART® transmitter

6335A

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- HART® 5 protocol
- Galvanic isolation
- 1- or 2-channel version

Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Difference or average temperature measurement of 2 resistance or TC sensors.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.
- Connection of up to 15 channels to a digital 2-wire signal with HART® communication.

Technical characteristics

- Within a few seconds the user can program PR6335A to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- The 6335A has been designed according to strict safety requirements and is thus suitable for application in SIL 2 installations.
- Continuous check of vital stored data for safety reasons.
- Sensor error detection according to the guidelines in NAMUR NE89.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighbouring units, up to 84 channels can be mounted per metre.
Environmental Conditions
Specifications range................................. -40°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Weight (1 / 2 channels).................................. 145 / 185 g
Wire size........................................................ 1 x 1.5 mm² stranded wire

Common specifications
Supply voltage............................................... 8.0...35 VDC
Voltage drop................................................... 8.0 VDC
Isolation voltage, test / working..................... 1.5 kVAC / 50 VAC
Isolation voltage, ch. 1 / ch. 2............................. 3.75 kVAC
Warm-up time................................................. 30 s
Communications interface............................. Loop Link & HART®
Signal / noise ratio......................................... Min. 60 dB
Accuracy........................................................ Better than 0.05% of selected range
Response time (programmable).................... 1...60 s
Signal dynamics, input................................. 22 bit
Signal dynamics, output............................... 16 bit
Effect of supply voltage change................. < 0.005% of span / VDC
EMC immunity influence......................... < ±0.1% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst................................. < ±1% of span

Input specifications
Max. offset.................................................. 50% of selected max. value
RTD input................................................... Pt100,...1000, Ni100,...1000, lin. R
Cable resistance per wire (max.), RTD........... 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current, RTD........................................ Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD........................................ < 0.002 Ω / Ω
Sensor error detection, RTD........................... Yes
Cold junction compensation (CJC).................... < ±1.0°C
Sensor error detection, TC............................. Yes
Sensor error current: When detecting / else........ Nom. 33 μA / 0 μA
Voltage input: Measurement range............. -800...+800 mV
Min. measurement range (span), voltage input........................................ 2.5 mV
Input resistance, voltage input...................... 10 MΩ

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range........................................ 16 mA
Updating time............................................. 440 ms
Load resistance, current output.................. (Vsupply - 8) / 0.023 [Ω]
Load stability, current output....................... ±0.01% of span / 100 Ω
Sensor error indication, current output......... Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale................ 23 mA / 3.5 mA
*of span...................................................... = of the presently selected range

Approvals
EMC.............................................................. EN 61326-1
ATEX............................................................ KEMA 10ATEX0006 X
IECEx.......................................................... KEM 10.0084X
GOST R......................................................... Yes
SIL............................................................... Hardware assessed for use in SIL applications

*NB! Please remember to order CJC connectors type 5910 (channel 1) and 5613 (channel 2) for TC inputs with an internal CJC.
2-wire HART® transmitter

6335D

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- HART® 5 protocol
- Can be installed in Ex zone 0
- 1- or 2-channel version

Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Difference or average temperature measurement of 2 resistance or TC sensors.
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.
- Connection of up to 15 channels to a digital 2-wire signal with HART® communication.

Technical characteristics

- Within a few seconds the user can program PR6335D to measure temperatures within all ranges defined by the norms.
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection.
- The 6335D has been designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.
- Continuous check of vital stored data for safety reasons.
- Sensor error detection according to the guidelines in NAMUR NE89.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 84 channels can be mounted per meter.
- NB: As Ex barrier we recommend 5106B.
**Environmental Conditions**

Specifications range: -40°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

**Mechanical specifications**

Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight (1 / 2 channels): 145 / 185 g
Wire size: 1 x 1.5 mm² stranded wire

**Common specifications**

Supply voltage: 8.0...30 VDC
Voltage drop: 8.0 VDC
Isolation voltage, test / working: 1.5 kVAC / 50 VAC
Isolation voltage, ch. 1 / ch. 2: 1500 VAC
Warm-up time: 30 s
Communications interface: Loop Link & HART®
Signal / noise ratio: Min. 60 dB
Accuracy: Better than 0.05% of selected range
Response time (programmable): 1...60 s
Signal dynamics, input: 22 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC

**Output specifications**

Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 440 ms
Load resistance, current output: ≤ (Vsupply - 8) / 0.023 [Ω]
Load stability, current output: ≤0.01% of span / 100 Ω
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
*of span: = of the presently selected range

**Approvals**

EMC: EN 61326-1
ATEX: KEMA 09ATEX0148
IECEx: DEK 11.0084X
FM: 2D5A7
CSA: 1125003
GOST R: Yes
GOST Ex: Yes
SIL: Hardware assessed for use in SIL applications

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*NBI: Please remember to order CJC connectors type 5910Ex (channel 1) and 5613Ex (channel 2) for TC inputs with an internal CJC.
2-wire HART® transmitter

6337A

- 1- or 2-channel converter for RTD, TC, Ohm, and bipolar mV signals
- 2 analogue inputs and 5 device variables with status available
- HART® protocol revision selectable from HART® 5 or HART® 7
- Hardware assessed for use in SIL applications
- Mounting on a DIN rail in Safe Area or Zone 2/22

Application

- Linearized temperature measurement with TC and RTD sensors e.g. Pt100 and Ni100.
- HART® communication and 4...20 mA analog PV output for individual, difference or average temperature measurement of up to two RTD or TC input sensors.
- Conversion of linear resistance to a standard analog current signal, e.g from valves or Ohmic level sensors.
- Amplification of bipolar mV signals to standard 4...20 mA current signals.
- Up to 63 transmitters (HART® 7) can be connected in a multidrop communication setup.

Technical characteristics

- HART® protocol revision can be changed by user configuration to either HART® 5 or HART® 7 protocol.
- The HART® 7 protocol offers:
  - Long Tag numbers of up to 32 characters.
  - Enhanced Burst Mode and Event notification with time stamping.
  - Device variable and status mapping to any dynamic variable PV, SV, TV or QV.
  - Process signal trend measurement with logs and summary data.
  - Automatic event notification with time stamps.
  - Command aggregation for higher communication efficiency.
- 6337A is designed according to strict safety requirements and is therefore suitable for applications in SIL installations.
- Continuous check of vital stored data.
- Meeting the NAMUR NE21 recommendations, the 6337A HART® transmitter ensures top measurement performance in harsh EMC environments. Additionally, the 6337A meets NAMUR NE43 and NE89 recommendations.

Mounting / installation

- DIN rail mounting with up to 84 channels per meter.
- Configuration via standard HART® communication interfaces or by PR 5909 Loop Link.

Connections

- RTD to 4...20 mA
- TC to 4...20 mA
- Resistance to 4...20 mA
- mV to 4...20 mA
- Difference or average RTD, TC or mV
Environmental Conditions
Specifications range: -40°C to +60°C
Storage temperature: -40°C to +85°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight (1 / 2 channels): 150 / 200 g
DIN rail type: DIN EN 60715/35 mm
Wire size: 0.13...2.08 mm² AWG 26...14 stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage: 8.0...35 VDC
Voltage drop: 8.0 VDC
Isolation voltage, test / working: 1.5 kVAC / 50 VAC
Isolation voltage, ch. 1 / ch. 2: 3.75 kVAC
Signal / noise ratio: > 60 dB
Response time (programmable): 1...60 s
EMC immunity influence: < ±0.1% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications
Max. offset: 50% of selected max. value
RTD input: Ph50, Ph100, Ph200, Ph500, Pt1000, Ni50, Ni100, Ni120, Ni1000
RTD input: Linear resistance
Cable resistance per wire (max.), RTD: 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current, RTD: Nom. 0.2 mA
Cold junction compensation (CJC): Constant, internal or external via a Pt100 or Ni100 sensor
Voltage input: Measurement range: -800...+800 mV
Min. measurement range (span), voltage input: 2.5 mV
Input resistance, voltage input: 10 MΩ

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: < 440 ms
Load resistance, current output: ≤ (Vsupply - 8) / 0.023 [Ω]
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Up/Downscale: 23 mA / 3.5 mA
HART® protocol revisions: HART® 5 and HART® 7

Approvals
EMC: EN 61326-1
ATEX: KEMA 10ATEX0006 X
IECEx: KEM 10.0084X
GOST R: Yes
SIL: Hardware assessed for use in SIL applications

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*NB! Please remember to order CJC connectors type 5910 (channel 1) and 5613 (channel 2) for TC inputs with an internal CJC.
2-wire HART® transmitter

6337D

- 1- or 2-channel converter for RTD, TC, Ohm, and bipolar mV signals
- 2 analog inputs and 5 device variables with status available
- HART® protocol revision selectable from HART® 5 or HART® 7
- Hardware assessed for use in SIL applications
- Mounting on a DIN rail in hazardous gas and dust area

Application
- Linearized temperature measurement with TC and RTD sensors e.g. Pt100 and Ni100.
- HART® communication and 4...20 mA analog PV output for individual, difference or average temperature measurement of up to two RTD or TC input sensors.
- Conversion of linear resistance to a standard analog current signal, e.g. from valves or Ohmic level sensors.
- Amplification of bipolar mV signals to standard 4...20 mA current signals.
- Up to 63 transmitters (HART® 7) can be connected in a multidrop communication setup.

Technical characteristics
- HART® protocol revision can be changed by user configuration to either HART® 5 or HART® 7 protocol.
- The HART® 7 protocol offers: ∙ Long Tag numbers of up to 32 characters. ∙ Enhanced Burst Mode and Event notification with time stamping. ∙ Device variable and status mapping to any dynamic variable PV, SV, TV or QV. ∙ Process signal trend measurement with logs and summary data. ∙ Automatic event notification with time stamps. ∙ Command aggregation for higher communication efficiency.
- 6337D is designed according to strict safety requirements and is therefore suitable for applications in SIL installations.
- Continuous check of vital stored data.
- Meeting the NAMUR NE 21 recommendations, the 6337D HART® transmitter ensures top measurement performance in harsh EMC environments. Additionally, the 6337D meets NAMUR NE43 and NE89 recommendations.

Mounting / installation
- DIN rail mounting with up to 84 channels per meter.
- Configuration via standard HART® communication interfaces or by PR 5909 Loop Link.
- PR 5106B or 9106B is recommended as a barrier for 6337D.
Environmental Conditions
Specifications range: -40°C to +60°C
Storage temperature: -40°C to +85°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight (1 / 2 channels): 150 / 200 g
DIN rail type: DIN EN 60715/35 mm
Wire size: 0.13...2.08 mm² AWG 26...14 stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage: 8.0...30 VDC
Voltage drop: 8.0 VDC
Isolation voltage, test / working: 1.5 kVAC / 50 VAC
Isolation voltage, ch. 1 / ch. 2: 1500 VAC
Communications interface: Loop Link & HART®
Signal / noise ratio: > 60 dB
Response time (programmable): 1...60 s
EMC immunity influence: < ±0.1% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications
Max. offset: 50% of selected max. value
RTD input: Pt50, Pt100, Pt200, Pt500, Pt1000, N50, N100, N120, N1000
RTD input: Linear resistance
Cable resistance per wire (max.), RTD: 5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current, RTD: Nom. 0.2 mA
Cold junction compensation (CJC): Constant, internal or external via a Pt100 or Ni100 sensor
Voltage input: Measurement range: -800...+800 mV
Min. measurement range (span), voltage input: 2.5 mV
Input resistance, voltage input: 10 MΩ

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 440 ms
Load resistance, current output: ≤ (Vsupply - 8) / 0.023 [Ω]
Sensor error indication, current output: Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
HART® protocol revisions: HART® 5 and HART® 7

Approvals
EMC: EN 61326-1
ATEX: KEMA 09ATEX0148
IECEx: DEK 11.0084X
FM: 2D5A7
CSA: 125003
GOST R: Yes
GOST Ex: Yes
SIL: Hardware assessed for use in SIL applications
Profibus PA / Foundation Fieldbus transmitter

6350A

- PROFIBUS® PA ver. 3.0
- FOUNDATION™ Fieldbus ver. ITK 4.6
- Automatic switch between protocols
- Basic or LAS capability with F.F.
- 1- or 2-channel version

Application

- Linearized temperature measurement with RTD or TC sensor.
- Difference, average or redundancy temperature measurement with RTD or TC sensor.
- Converts analog mA signals into digital values on the bus communication.
- Linear resistance, potentiometer and bipolar mV measurement.

Technical characteristics

- Bus transmitter with both PROFIBUS® PA and FOUNDATION™ Fieldbus communication. A unique switch function ensures automatic shift between the two protocols.
- Set-up for PROFIBUS® PA can be done via Siemens Simatic® PDM®, ABB Melody / Harmony and Metso DNA software and for FOUNDATION™ Fieldbus via Emerson DeltaV, Yokogawa CS 1000 / CS 3000, ABB Melody / Harmony and Honeywell Experion software.
- Built-in simulation mode function.
- Polarity-independent bus connection.
- 24 bit A/D converter ensures high resolution.
- PROFIBUS® PA function blocks: 2 analog.
- FOUNDATION™ Fieldbus function blocks: 2 analog and 1 PID.
- FOUNDATION™ Fieldbus capability: Basic or LAS.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels per meter can be mounted.
Environmental Conditions
Specifications range: -40°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight (1 / 2 channels): 145 / 185 g
DIN rail type: DIN 46277
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage: 9.0...32 VDC
Internal consumption, per channel: < 11 mA
Isolation voltage, test: 1.5 kVAC for 60 s
Isolation voltage, working: 50 VRMS / 75 VDC
Warm-up time: 30 s
Signal / noise ratio: Min. 60 dB
Accuracy: Better than 0.05% of selected range
Response time (programmable): 1...60 s
Updating time: < 400 ms
Execution time, PID controller: < 200 ms
Execution time, analog input: < 50 ms
Signal dynamics, input: 24 bit
EMC immunity influence: < ±0.1% of reading
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of reading

Input specifications
RTD input: Pt25...1000, Ni25...1000, Cu10...1000, lin. R, potentiometer
Cable resistance per wire (max.): 50 Ω
Sensor current, RTD: Nom. 0.2 mA
Effect of sensor cable resistance (3-4-wire): < 0.002 Ω / Ω
Sensor error detection, RTD: Yes
Short circuit detection, RTD: < 15 Ω
Cold junction compensation (CJC): < ±0.5°C
Sensor error detection, TC: Yes
Sensor error current: When detecting / else: Nom. 2 μA / 0 μA
Short circuit detection, TC: < 3 mV
Bipolar current input: Measurement range: -100...+100 mA
Input resistance, current input: 10 Ω + PTC < 20 Ω
Bipolar voltage input: Measurement range: -800...+800 mV
Min. measurement range (span), voltage input: 2.5 mV
Input resistance, voltage input: 10 MΩ
Short circuit detection, voltage input: < 3 mV

Output specifications
PROFIBUS PA protocol: Profile A&B, ver. 3.0
PROFIBUS PA protocol standard: EN 50170 vol. 2
PROFIBUS PA address (at delivery): 126
PROFIBUS PA function blocks: 2 analog
FOUNDATION™ Fieldbus protocol: FF protocol
FOUNDATION™ Fieldbus protocol standard: FF design specifications
FOUNDATION™ Fieldbus version: ITK 4.6
FOUNDATION™ Fieldbus capability: Basic or LAS
FOUNDATION™ Fieldbus function blocks: 2 analog and 1 PID

Approvals
EMC: EN 61326-1
ATEX: KEMA 03ATEX1013 X
FM: 3015609
CSA: 1418937
GOST R: Yes
**Profibus PA / Foundation Fieldbus transmitter**

**6350B**

- PROFIBUS® PA ver. 3.0
- FOUNDATION™ Fieldbus ver. ITK 4.6
- Automatic switch between protocols
- FISCO-certified
- Basic or LAS capability with F.F.

### Application
- Linearized temperature measurement with RTD or TC sensor.
- Converts analog mA signals into digital values on the bus communication.
- Difference, average or redundancy temperature measurement with RTD or TC sensor.
- Linear resistance, potentiometer and bipolar mV measurement.

### Technical characteristics
- Bus transmitter with both PROFIBUS® PA and FOUNDATION™ Fieldbus communication. A unique switch function ensures automatic shift between the two protocols.
- Set-up for PROFIBUS® PA can be done via Siemens Simatic® PDM®, ABB Melody / Harmony and Metso DNA software and for FOUNDATION™ Fieldbus via Emerson DeltaV, Yokogawa CS 1000 / CS 3000, ABB Melody / Harmony and Honeywell Experion software.
- Built-in simulation mode function.
- Polarity-independent bus connection.
- 24 bit A/D converter ensures high resolution.
- PROFIBUS® PA function blocks: 2 analog.
- FOUNDATION™ Fieldbus function blocks: 2 analog and 1 PID.
- FOUNDATION™ Fieldbus capability: Basic or LAS.

### Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version up to 84 channels per meter can be mounted.

### Connections

- RTD and resistance to bus communication
- Conversion of mA to bus communication
- mV to bus communication
- Difference, redundancy or average: RTD, TC or mV
Environmental Conditions
Specifications range....................................... -40°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Weight (1 / 2 channels).................................. 145 / 185 g
DIN rail type................................................... DIN 46277
Wire size........................................................ 1 x 2.5 mm² stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage............................................... 9.0...30 VDC
Internal consumption, per channel...................... < 11 mA
Isolation voltage, test..................................... 1.5 kVAC for 60 s
Isolation voltage, working............................... 50 VRMS / 75 VDC
Warm-up time................................................. 30 s
Signal / noise ratio......................................... Min. 60 dB
Accuracy........................................................ Better than 0.05% of selected range
Response time (programmable)....................... 1...60 s
Updating time............................................... < 400 ms
Execution time, PID controller ....................... < 200 ms
Execution time, analog input......................... < 50 ms
Signal dynamics, input.................................... 24 bit
EMC immunity influence......................... < ±0.1% of reading
Extended EMC immunity: NAMUR NE 21, A criterion, burst......... < ±1% of reading

Input specifications
RTD input....................................................... Pt25…1000, Ni25…1000, Cu10…1000, lin. R, potentiometer
Cable resistance per wire (max.), RTD.................. 50 Ω
Sensor current, RTD......................................... Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD<norm> 0.002 Ω / Ω
Sensor error detection, RTD............................ Yes
Short circuit detection, RTD............................ < 15 Ω
Cold junction compensation (CJC)..................... < ±0.5°C
Sensor error detection, TC............................. Yes
Sensor error current: When detecting / else............ Nom. 2 μA / 0 μA
Short circuit detection, TC............................. < 3 mV
Bipolar current input: Measurement range........... -100...+100 mA
Input resistance, current input........................ 10 Ω + PTC < 20 Ω
Bipolar voltage input: Measurement range......... -800...+800 mV
Min. measurement range (span), voltage input....... 2.5 mV
Input resistance, voltage input............................ 10 MD
Short circuit detection, voltage input.................. < 3 mV

Output specifications
PROFIBUS PA protocol........................................ Profile A&B, ver. 3.0
PROFIBUS PA protocol standard....................... EN 50170 vol. 2
PROFIBUS PA address (at delivery).................... 126
PROFIBUS PA function blocks........................... 2 analog
FOUNDATION™ Fieldbus protocol...................... FF protocol
FOUNDATION™ Fieldbus protocol standard........... FF design specifications
FOUNDATION™ Fieldbus version....................... ITK 4.6
FOUNDATION™ Fieldbus capability.................... Basic or LAS
FOUNDATION™ Fieldbus function blocks............. 2 analog and 1 PID

Approvals
ATEX.......................................................... KEMA 03ATEX1013 X
FM............................................................. 3015609
CSA............................................................ 1418937
GOST R.......................................................... Yes
GOST Ex...................................................... Yes
Pt100 temperature sensor

7400

- Accuracy, IEC 60751 class A
- Terminal head DIN 43.729 form B
- Stainless steel
- Protection tube Ø 9 x 1
- Temperature range -50°C to +400°C

Application
- Temperature measurement in industrial systems, e.g. in the food, chemical and pharmaceutical industries, district heating, power plants and ships.
- Temperature measurement in gas and floating media.

Technical characteristics
- The sensor element is a thin film platinum resistor - Pt100 - trimmed at a laboratory to comply with the resistance values of the standard IEC 60751, class A. The advantage of a thin film element is an ultra short reaction time. The Pt100 element is electrically isolated from the protecting tube and terminal head.
- The protecting tube is Ø 9 x 1 mm stainless, acid-proof steel W no. 1.4571 / AISI 316TI, filled with aluminum oxide powder. A 1/2" RG thread nipple is welded on the protecting tube with a packing sheet of Ø 30 and span 30.
- The terminal head is a standard DIN 43.729 form B housing produced in light-alloy metal, protected against corrosion through strong industrial lacquering. The sensor is available with or without cooling extension to keep the terminal head clear of isolated surfaces.

Electrical connection
- Each sensor is delivered with a three-wire connection which allows cable compensation to the sensor element.

Option
- Pt100 sensor type 7400 is available with a built-in 2-wire programmable transmitter for both standard and I.S. installations.

Connections
Environmental Conditions

Protection degree: ........................................ IP54

Mechanical specifications

Max. tightening torque: ................................... 50 Nm
Packing surface: ........................................... Ø 30 x Ø 21.5
Max. pressure for insertion length ≤ 250 mm: ....................... 36.5 bar
Max. pressure for insertion length > 250 mm:....................... 22.5 bar
Cable connection (screwed): .................. M20 x 1.5

Common specifications

Recommended sensor current: .................. ≤ 2 mA
Max. temperature diffusion at 0°C: IEC 60751 class A: ... ≤ ±0.15°C
Long-term stability (≥1000 hours at max. temperature):... ≤ ±0.05°C

<table>
<thead>
<tr>
<th>Type</th>
<th>Pt100 Sensors</th>
<th>Accuracy</th>
<th>Cooling extension</th>
<th>Insertion length</th>
</tr>
</thead>
<tbody>
<tr>
<td>7400</td>
<td>1 x Pt100 : A</td>
<td>Class A : 1</td>
<td>None : A</td>
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<td>100 mm : B</td>
<td>100 mm : 2</td>
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<td>350 mm : 5</td>
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<td>450 mm : 6</td>
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</tbody>
</table>
R/I transmitter

2202

- Input for Pt100, Ni100 or Ohm
- Sensor cable compensation
- Linearized analog output
- 24 VDC or universally supplied
- Individual 0 and 100% adjustment

Advanced features

- 0 and 100% adjustments on the front face can be adjusted individually without interacting.

Application

- Linearized temperature measurement with Pt100 (to IEC 751) or Ni100 (to DIN 43760) sensors.
- Conversion of linear resistance change to standard analog current/voltage signal from for example valves or linear movements with attached potentiometer.
- Signal simulator via externally mounted 10-turn potentiometer, to aid with installation and commissioning plant.
- 3-wire connection cable compensation or 2-wire connection without cable compensation.
- Sensor error detection with Upscale, Downscale or custom set values.
- Reversible inputs with 0% set to maximum value of the desired input range and 100% set to the minimum value of the desired input range.

Technical characteristics

- Analog current and voltage output options include 0/4...20 mA, 0/2...10 VDC and special ranges.
- Galvanic isolation between supply and input / output ground.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP50

Mechanical specifications
Dimensions (HxWxD)..................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight DC / universally supplied................... 100 g / 150 g

Common specifications
Supply voltage............................................... 19.2...28.8 VDC
Supply voltage, universal............................... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Internal consumption...................................... ≤ 0.9 W (2202 _ _ D)
Internal consumption...................................... ≤ 1.4 W (2202 _ _ P)
Isolation voltage, test / working....................... 3.75 kVAC / 250 VAC
Signal / noise ratio........................................... Min. 60 dB
Signal dynamics, input................................ 17 bit
Response time (0...90%, 100...10%)............. < 165 ms
Signal dynamics, output................................ 16 bit
Temperature coefficient................................ ≤0.01°C/Camb. (span < 100°C)
Temperature coefficient................................ ≤0.01% of span/Camb. (span > 100°C)
Linearity error................................................. < 0.1% of span
EMC immunity influence................................. < ±0.5%

Input specifications
Max. offset...................................................... 50% of max. value
Adjustment acc. to order.............................. ±2.5...±25% of span
RTD input....................................................... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD............... 10 Ω
Sensor current, RTD........................................... > 0.2 mA, < 0.4 mA

Output specifications
Max. offset...................................................... 50% of max. value
Current output: Signal range......................... 0...20 mA
Min. signal range........................................ 5 mA
Load (max.).................................................. 20 mA/600 Ω/12 VDC
Load stability, current output....................... ±0.01% of span / 100 Ω
Sensor error indication, current output............. Upscale / Downscale
Current limit................................................ ≤ 28 mA
Voltage output: signal range......................... 0...10 VDC
Voltage output, min. signal range................... 250 mV
*of span....................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
GOST R......................................................... Yes
2-wire room temperature transmitter

2914

- Room temperature measurement
- Complete with sensor and transmitter
- 4...20 mA output in 2-wire connection
- Easy mounting
- Measurement range 0...70°C
- Supply 8...35 VDC

**Application**
- Electronic temperature measurement in for instance control rooms, offices, heating plants, factories, living rooms, and similar dry rooms.
- Suitable as a transmitter for controllers, trip amplifiers, displays, or superior SCADA systems.

**Technical characteristics**
- A precision Pt100 sensor with a small mass is mounted on the transmitter input thereby achieving a fast response time.
- The 2-wire output signal of 4...20 mA is proportional and linear to the temperature value that influences the built-in sensor.
- A reversed output signal of 20...4 mA may be ordered.
- A number of different sensor error detection options may be ordered.
- Protected against polarity reversal.
- The bottom of the cabinet can be attached to a wall by two screws.
- Visible or hidden cable access.

**Connections**

Log-Powered Passive
2-wire output

mA
Environmental Conditions
Specifications range: 0°C to +70°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP30

Mechanical specifications
Dimensions (HxWxD): 70 x 121 x 25 mm
Weight approx: 95 g
Wire size: 1 x 1.5 mm²

Common specifications
Supply voltage: 8.0...35 VDC
Internal consumption: 25 mW...0.8 W
Voltage drop: 8.0 VDC
Warm-up time: 5 min.
Signal / noise ratio: Min. 60 dB
Response time: 10 s (@ 0.5 m/s)
Signal dynamics, input: 17 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < 0.005% of span / VDC
Temperature coefficient: < ±0.01% of span / °C
Linearity error: < ±0.1% of span
EMC immunity influence: < ±0.5%

Input specifications
Max. offset: 50% of max.°C
Measurement range: 0...70°C
Sensor current, RTD: > 0.2 mA, < 0.4 mA

Output specifications
Max. offset: 20% of max. mA
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Updating time: 135 ms
Load resistance, current output: (Vsupply - 8) / 0.023 [Ω]
Load stability, current output: 50.01% of span / 100 Ω
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
*of span: = of the presently selected range

Approvals
EMC: EN 61326-1
GOST R: Yes
Intrinsically safe isolation barriers and backplanes with full SIL assessment

We deliver the safest signals by validating our products against the toughest safety standards. Through our commitment to innovation, we have made pioneering achievements in developing I.S. interfaces with full SIL assessment that are both efficient and cost-effective.

Our comprehensive range of analog and digital intrinsically safe isolation barriers offers multifunctional inputs and outputs, making PR an easy-to-implement site standard. Our backplanes further simplify large installations and provide seamless integration to standard DCS systems.
# I.S. interfaces

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>9106B</td>
<td>HART® transparent repeater</td>
<td>B.2</td>
</tr>
<tr>
<td>9107B</td>
<td>HART® transparent driver</td>
<td>B.4</td>
</tr>
<tr>
<td>9113B</td>
<td>Temperature / mA converter</td>
<td>B.6</td>
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<tr>
<td>9116B</td>
<td>Universal converter</td>
<td>B.8</td>
</tr>
<tr>
<td>9202B</td>
<td>Pulse isolator</td>
<td>B.10</td>
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<tr>
<td>9203B</td>
<td>Solenoid / alarm driver</td>
<td>B.12</td>
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<td>7908</td>
<td>System 9000 backplane, 8 devices</td>
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<td>System 9000 backplane, 16 devices</td>
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<td>7932</td>
<td>System 9000 backplane, 32 devices</td>
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<td>5104B</td>
<td>Ex repeater / power supply</td>
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<tr>
<td>5105B</td>
<td>Ex-isolated driver</td>
<td>B.22</td>
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<tr>
<td>5106B</td>
<td>HART® transparent repeater</td>
<td>B.24</td>
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<tr>
<td>5107B</td>
<td>HART® transparent driver</td>
<td>B.26</td>
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<td>5114B</td>
<td>Programmable transmitter</td>
<td>B.28</td>
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<td>5115B</td>
<td>Ex signal calculator</td>
<td>B.30</td>
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<td>5116B</td>
<td>Programmable transmitter</td>
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<td>5131B</td>
<td>2-wire programmable transmitter</td>
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<td>5202B</td>
<td>Pulse isolator</td>
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<td>5203B</td>
<td>Ex solenoid / alarm driver</td>
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<td>5223B</td>
<td>Programmable f/l-f/f converter</td>
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<tr>
<td>5420B</td>
<td>Ex power supply</td>
<td>B.42</td>
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</tbody>
</table>
**Application**

- 9106B is a 1- or 2-channel isolated 1:1 repeater barrier for intrinsic safety applications.
- The device supplies 2-wire SMART transmitters and can also be used for 2-wire SMART current sources. HART® & BRAIN protocols are supported and are transferred bi-directionally.
- 9106B can be mounted in the safe area or in zone 2 / Cl. 1, div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including mining / Class I/II/III, Div. 1, Gr. A-G.
- The PR 4501 displays the process value for each channel and can be used to define high and low limits for detection of loop current level. If these limits are exceeded, the status relay will activate.
- In the 1-channel version the status relay can be used as a simple limit switch.
- I.S. splitter application - 1 input and 2 outputs.
- In the dual channel version the 9106B can be implemented in a SIL3 loop.

**Advanced features**

- The PR 4501 detachable display and the green and red front LEDs indicate operation status for each channel.
- A tag number can be defined for each channel.
- Monitoring of error events and cable breakage on input via the individual status relay and/or a collective electronic signal via the power rail.

**Technical characteristics**

- High galvanic isolation of 2.6 kVAC.
- Fast response time <5 ms
- High accuracy better than 0.1%.
- 2-wire transmitter supply >16 V.

**Mounting**

- The devices can be mounted vertically or horizontally without distance between neighbouring units.

---

**Connections**

**Input signals:**

- Channel 1
- Current
- 2-wire transmitter

**Output signals:**

- Analog: 4…20 mA
- Current

**Power connection:**

- Supply
- 19.2…31.2 VDC
- Device status
- N.C.

**Zone 0, 1, 2, 20, 21, 22, M1 & Cl. I/II/III, Div. 1 gr. A-G**

**Zone 2 & Cl. 1, Div. 2, gr. A-B or Safe Area**
### Environmental Conditions
- **Specifications range**
  - -20°C to +60°C
- **Storage temperature**
  - -20°C to +85°C
- **Relative humidity**
  - <95% RH (non-cond.)
- **Protection degree**
  - IP20
- **Installation in**
  - Pollution degree 2 & overvoltage cat. II

### Mechanical specifications
- **Dimensions (HxWxD)**
  - 109 x 23.5 x 104 mm (without 4501)
  - 109 x 23.5 x 116 / 131 mm (with 4501)
- **Weight approx.**
  - 250 g
- **Weight incl. 4501 / 4511 (approx.)**
  - 265 g / 350 g
- **DIN rail type**
  - DIN EN 60715/35 mm
- **Screw terminal torque**
  - 0.5 Nm
- **Wire size**
  - 0.13...2.08 mm² AWG 26...14 stranded wire

### Common specifications
- **Supply voltage**
  - 19.2...31.2 VDC
- **Fuse**
  - 1.25 A SB / 250 VAC
- **Max. power consumption**
  - ≤ 3 W (2 channels)
- **Max. internal power dissipation**
  - ≤ 2 W (2 channels)
- **Isolation voltage, test (working):**
  - Input to any...
    - 2.6 kVAC / 300 VAC reinforced isolation
  - Analog output to supply...
    - 2.6 kVAC / 300 VAC reinforced isolation
  - Status relay to supply...
    - 1.5 kVAC / 150 VAC reinforced isolation
- **SMART bi-directional communication**
  - Frequency range...
    - 0.5...7.5 kHz
  - Signal / noise ratio...
    - > 60 dB
  - Response time (0...90%, 100...10%)...
    - < 5 ms
  - Accuracy...
    - Better than 0.1% of selected range
- **mA, absolute accuracy**
  - ≤ ±16 μA
- **mA, temperature coefficient**
  - ≤ ±1.6 μA / °C
- **Effect of supply voltage change on output (nom. 24 VDC)**
  - < ±10 μA
- **EMC immunity influence**
  - < ±0.5% of span
- **Extended EMC immunity: NAMUR**
  - NE 21, A criterion, burst...
    - < ±1% of span

### Input specifications
- **Current input: Measurement range**
  - 3.5...23 mA
- **2-wire transmitter supply**
  - 9106B1x (Uo = 28 VDC)...
    - > 16 V / 20 mA
  - **2-wire transmitter supply**
    - 9106B2x (Uo = 25.6 VDC)...
      - > 15 V / 20 mA
  - **Sensor error detection: Loop break**
  - < 1 mA
  - **Input voltage drop, supplied unit**
  - < 4 V @ 23 mA
  - **Input voltage drop, non-supplied unit**
  - < 6 V @ 23 mA

### Output specifications
- **Current output: Signal range**
  - 3.5...23 mA
- **Load (max.)**
  - 20 mA / 600 Ω / 12 VDC
- **Load stability, current output**
  - ≤ ±0.01% of span / 100 Ω
- **Current limit**
  - ≤ 28 mA
- **Effect of external 2-wire supply voltage variation**
  - < 0.005% of span / V
- **Max. load resistance [Ω]**
  - (Visupply - 3.5) / 0.023 A
- **Max. external 2-wire supply**
  - 26 VDC
- **Status relay output terminal**
  - Programmable low setpoint...
    - 0...29.9 mA
  - Programmable high setpoint...
    - 0...29.9 mA
  - Hysteresis for setpoints...
    - 0.1 mA
  - **Max. voltage, status relay**
    - 110 VDC / 125 VAC
  - **Max. current, status relay**
    - 0.3 ADC / 0.5 AAC
  - **Max. voltage - hazardous installation**
    - 32 VDC / 32 VAC
  - **Max. current - hazardous installation**
    - 1 ADC / 0.5 AAC
  - **of span**
    - ≤ normal measurement range
  - **Max. current**
    - ≤ 20 mA

### Approvals
- **EMC**
  - acc. to IEC 61508
- **VDE**
  - EN 61010-1
- **ATEX**
  - DEKRA 11ATEX0244 X
- **IECEx**
  - DEK 11.0084X
- **FM**
  - 003044327-C
- **INMETRO**
  - NCC 12.1302 X
- **UL**
  - UL 61010-1
- **GOST R**
  - Yes
- **GOST Ex**
  - Yes
- **DNV Marine**
  - Stand. f. Certific. No. 2.4
- **SIL**
  - SIL 2 certified & fully assessed
HART® transparent driver

9107B

- 24 VDC supply via power rail or connectors
- Fast response time
- High active output load 725 Ohm / 20 mA
- Output line fault detection via status relay
- SIL2 certified via Full Assessment according to IEC 61508

Application
- 9107B is a 1- or 2-channel isolated 1:1 driver barrier for intrinsic safety applications.
- Operation and drive control of I/P converters, valves and indicators mounted in the hazardous area.
- Operation of HART® devices is possible as the unit transmits HART® communication signals bi-directionally.
- 9107B can be mounted in the safe area or in zone 2 / Cl. 1, div. 2 and transmit signals to zone 0, 1, 2 and zone 20, 21, 22 including mining / Class I/II/III, Div. 1, Gr. A-G.
- The PR 4501 displays the process value for each channel and can be used to define high and low limits for detection of loop current level. If these limits are exceeded, the status relay will activate.
- Dual channel versions can be used for signal splitter applications - 1 in and 2 out.

Advanced features
- The PR 4501 detachable display and the green and red front LEDs indicate operation status for each channel.
- A tag number can be defined for each channel.
- Output line fault detection.
- In the 1-channel version the status relay can be used as a simple limit switch.

Technical characteristics
- High galvanic isolation of 2.6 kVAC.
- High accuracy better than 0.1%.
- Continuous check of vital stored data for safety reasons.

Mounting
- The devices can be mounted vertically or horizontally without distance between neighbouring units.
### Environmental Conditions

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</table>

### Mechanical specifications

| Dimensions (HxWxD)     | 109 x 23.5 x 104 mm   |
| Dimensions (HxWxD) w/ 4501 / 4511 | 109 x 23.5 x 116 / 131 mm |
| Weight approx          | 250 g                 |
| Weight incl. 4501 / 4511 (approx.) | 265 g / 350 g |
| DIN rail type          | DIN EN 60715/35 mm    |
| Wire size              | 0.13...2.08 mm² AWG 26...14 stranded wire |
| Screw terminal torque  | 0.5 Nm                |

### Common specifications

| Supply voltage         | 19.2...31.2 VDC        |
| Fuse                  | 1.25 A SB / 250 VAC    |
| Max. power consumption | ≤ 2 W (2 channels)    |
| Max. internal power dissipation | ≤ 2 W (2 channels) |
| Isolation voltage, test /working: | 2.6 kVAC / 300 VAC     |
| Analog output to supply | 2.6 kVAC / 300 VAC    |
| Status relay to supply | 1.5 kVAC / 150 VAC    |
| HART bi-directional communication frequency range | 0.5...7.5 kHz |
| Response time (0...90%, 100...10%) | < 5 ms |
| Accuracy              | Better than 0.1% of selected range |
| mA, absolute accuracy | ≤ ±16 μA |
| mA, temperature coefficient | ≤ ±1.6 μA / °C |
| Effect of supply voltage change on output (nom. 24 VDC) | ≤ ±10 μA |
| EMC immunity influence | ≤ ±0.5% of span |
| Extended EMC immunity: NAMUR NE 21, A criterion, burst | ≤ ±1% of span |

### Input specifications

| Current input: Measurement range | 3.5...23 mA |
| Sensor error detection: Loop break 4...20 mA | < 1 mA |
| Input voltage drop, supplied unit | < 2 V @ 23 mA |
| Input voltage drop, non-supplied unit | < 4 V @ 23 mA |

### Output specifications

| Current output: Signal range | 3.5...23 mA |
| Load (max.)                 | 20 mA / 725 Ω / 14.5 VDC |
| Load stability, current output | ≤ 0.01% of span / 100 Ω |
| Current limit               | ≤ 28 mA |
| Status relay output terminal 33-34: Relay function | N.C. |
| Programmable low setpoint    | 0...29.9 mA |
| Programmable high setpoint   | 0...29.9 mA |
| Hysteresis for setpoints     | 0.1 mA |
| Max. voltage, status relay   | 110 VDC / 125 VAC |
| Max. current, status relay   | 0.3 ADC / 0.5 AAC |
| Max. voltage - hazardous installation | 32 VDC / 32 VAC |
| Max. current - hazardous installation | 1 ADC / 0.5 AAC |
| Of span                     | Normal measurement range |
| Screw terminal torque       | 0.5 Nm |

### Approvals

<table>
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<tr>
<td>GOST R</td>
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<tr>
<td>SIL</td>
<td>SIL 2 certified &amp; fully assessed acc. to IEC 61508</td>
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</table>
Temperature / mA converter

9113B

- Input for RTD, TC and mA
- Active / passive mA output
- 1 or 2 channels
- Can be supplied separately or installed on power rail, PR type 9400
- SIL 2-certified via Full Assessment

**Advanced features**

- Configuration and monitoring by way of detachable display front (PR 4501); process calibration and signal simulation.
- Copying of the configuration from one device to others of the same type via the display front.
- TC inputs can use either the internal CJC or a terminal with a built-in Pt100 sensor (PR 5910Ex, channel 1 / PR 5913Ex, channel 2) for higher accuracy.
- The device automatically detects whether it must supply an active or a passive current signal.
- Advanced monitoring of internal communication and stored data.
- SIL 2 functionality is optional and must be activated in a menu point.

**Application**

- The device can be mounted in the safe area and in zone 2 / cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class III/III, Div. 1, Gr. A-G.
- Conversion and scaling of temperature (Pt, Ni and TC) and active current signals.
- The 9113 has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

**Technical characteristics**

- 1 green and 2 red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

**Mounting**

- The devices can be mounted vertically or horizontally without distance between neighbouring units.

**Connections**
Environmental Conditions
Specifications range.......................... -20°C to +60°C
Storage temperature.......................... -20°C to +85°C
Calibration temperature......................... 20...28°C
Relative humidity................................ < 95% RH (non-cond.)
Protection degree............................... IP20
Installation instructions......................... Pollution degree 2 & measurement / overvoltage
...cat. II

Mechanical specifications
Dimensions (HxWxD)............................. 109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511............. 109 x 23.5 x 116 / 131 mm
Weight approx..................................... 250 g
Weight incl. 4501 / 4511 (approx.)................. 265 g / 350 g
DIN rail type....................................... DIN EN 60715/35 mm
Wire size........................................... 0.13...2.08 mm² AWG 26...14 stranded wire
Screw terminal torque............................ 0.5 Nm

Common specifications
Supply voltage.................................... 19...31.2 VDC
Fuse.................................................. 400 mA SB / 250 VAC
Max. power consumption......................... ≤ 3.5 W (2 channels)
Isolation voltage, test (working):
Input to any........................................ 2.6 kVAC / 300 VAC
Analog output to supply.......................... 2.6 kVAC / 300 VAC
Status relay to supply.......................... 1.5 kVAC / 150 VAC
Communications interface......................... Communication enabler 4511
Signal / noise ratio................................ Min. 60 dB (0...100 kHz)
Average response time incl.
delay: Temperature input........................ ≤ 1 s
mA input............................................ ≤ 0.4 s
Accuracy........................................... Better than 0.1% of selected range
EMC immunity influence........................ < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst........ < ±1% of span

Input specifications
RTD input......................................... Pt10, P20, P50, Pt100, P200, P250, Pt300, Pt400, Pt500, Pt1000, N50, N100, N120, N1000
Cable resistance per wire
(max.), RTD........................................ 50 Ω
Sensor current, RTD............................. Nom. 0.2 mA
Effect of sensor cable resistance
(3-wire), RTD........................................ < 0.002 Ω / Ω
Sensor error detection, RTD......................... Programmable ON / OFF
Cold junction compensation (CJC) via ext. sensor in
connector 5910....................................... 20...28°C ± ±1°C -20...-20°C / 28...70°C ± 2°C
CJC via internally mounted
sensor.............................................. ±(2.0°C + 0.4°C * Δt)
Impact temperature-ambient
temperature........................................... ±(2.0°C + 0.4°C * Δt)
Sensor error detection, TC........................ Programmable ON or OFF
(on wire breakage)
Sensor error current: When
detecting / else................................... Nom. 2 μA / 0 μA
Current input: Measurement
range.............................................. 0...20 mA
Current input: Programmable
measurement ranges.......................... 0...20 and 4...20 mA
Input resistance, current
input.............................................. Nom. 20 Ω + PTC 50 Ω
Sensor error detection, current
input.............................................. Programmable ON / OFF

Output specifications
Current output: Signal range..................... 0...20 mA
Programmable current ranges.................... 0...20 / 4...20 / 20...0 and
20...4 mA
Load (max.)......................................... 20 mA/600 Ω/12 VDC
Load stability, current output.................... 50.01% of span / 100 Ω
Sensor error indication, current
output.............................................. 0 / 3.5 / 23 mA / none
NAMUR NE 43 Upscale/Downscale............. 23 mA / 3.5 mA
Output limitation, on 4...20
and 20...4 mA signals............................ 3.8...20.5 mA
Output limitation, on 0...20
and 20...0 mA signals............................ 0...20.5 mA
Current limit....................................... ≤ 28 mA
2-wire 4...20 mA output: External
2-wire supply range............................ 3.5...26 VDC
Signal range....................................... 4...20 mA
Max. load resistance [Ω].......................... (Vsupply - 3.5) / 0.023 A
Load stability, 4...20 mA output.................. ≤ 0.01% of span / 100 Ω
Effect of external 2-wire
supply voltage variation....................... < 0.005% of span / V
Max. voltage, status relay......................... 110 VDC / 125 VAC
Max. current, status relay........................ 0.3 ADC / 0.5 AAC
Max. AC power, status relay..................... 62.5 VA / 32 W
*of span........................................... = of the currently selected
measurement range

Approvals
EMC............................................... EN 61326-1
LVD.................................................. EN 61010-1
ATEX.............................................. KEMA 07ATEX0148 X
IECEx............................................. KEM 09.0052X
FM.................................................. 3038279-C
INMETRO......................................... NCC 12.1310 X
UL................................................... UL 61010-1
GOST R............................................ Yes
GOST Ex......................................... Yes
DNV Marine....................................... Stand. f. Certific. No. 2.4
SIL.................................................. SIL 2 certified & fully assessed
acc. to IEC 61508
Universal converter

9116B

- Input for RTD, TC, Ohm, potentiometer, mA and V
- Supply for 2-wire transmitters
- Active / passive mA output and relay output
- Can be supplied separately or installed on power rail, PR type 9400
- SIL 2-certified via Full Assessment

Advanced features

- Configuration and monitoring by way of detachable display front (PR 4501); process calibration, signal and relay simulation.
- Advanced relay configuration, e.g. setpoint, window, delay, sensor error indication and power monitoring.
- Copying of the configuration from one device to others of the same type via PR4501.
- Reduced Uo Ex data < 8.3 V for active input signals.
- TC inputs with internal CJC or external CJC for higher accuracy.
- The device automatically detects whether it must supply an active or a passive current signal.

Application

- 9116B can be mounted in the safe area and in zone 2 / cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class II/III, Div. 1, Gr. A-G.
- Conversion and scaling of temperature, voltage, potentiometer and linear resistance signals.
- Power supply and signal isolator for 2-wire transmitters.
- Monitoring of error events and cable breakage via the individual status relay and/or a collective electronic signal via the power rail.
- The 9116 has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

Technical characteristics

- 1 green and 1 red front LED indicate operation status and malfunction. 1 yellow LED indicates relay status.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting

- The devices can be mounted vertically or horizontally without distance between neighbouring units.
Supply voltage............................................... 19.2...31.2 VDC
Common specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Specifications range....................................... -20°C to +60°C
Environmental Conditions
Δt =.................................................................
Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 116 / 131 mm
Weight approx........................................... 185 g
Weight incl. 4501 / 4511 (approx.)................. 200 g / 285 g
DIN rail type.............................................. DIN EN 60715/35 mm
Wire size.................................................. 0.13...2.08 mm² AWG 26...14 stranded wire
Screw terminal torque.................................. 0.5 Nm
Common specifications
Supply voltage.............................................. 19.2...31.2 VDC
Fuse...................................................... 1.25 A SB / 250 VAC
Max. power consumption............................. ≤ 3.5 W
Isolation voltage, test working: Input to any................................................................. 2.6 kVAC / 300 VAC reinforced isolation
 Analog output to supply................................................................. 2.6 kVAC / 300 VAC reinforced isolation
 Status relay to supply................................................................. 1.5 kVAC / 150 VAC reinforced isolation
 Communications interface........................................ Communication enabler 4511
 Signal / noise ratio......................................... Min. 60 dB (0...100 kHz)
 Temperature input (programmable)................. 1...60 s
 mA / V input (programmable)......................... 0.4...60 s
 Accuracy.................................................. Better than 0.1% of selected range
 Auxiliary supplies for 9116B2:
 2-wire supply (terminal 54...52)...................... 28...165 VDC / 0...20 mA
 2-wire supply (terminal 54...52)...................... 22...165 VDC / 0...20 mA
 Input specifications
 RTD input.............................................. Pt10, Pt20, Pt50, Pt100, Pt200, Pt500, Pt1000, Pt50, Pt1000, Ni50, Ni100, Ni1/20, Ni100
 Cable resistance per wire
 (max.), RTD............................................. 50 Ω
 Sensor current, RTD.................................... Nom. 0.2 mA
 Effect of sensor cable resistance
 (3-wire, RTD), Ω...................................... < 0.002 Ω / Ω
 Sensor error detection, RTD........................ Programmable ON / OFF
 Short circuit detection, RTD.............................. Yes
 Cold junction compensation
 (CJC) via ext. sensor in connector 5910, °C / °C
 CJC via internally mounted sensor
 Δt =...................................................... ±(2.0°C + 0.4°C * Δt)
 Internal temperature-ambient temperature
 Sensor error detection, TC.......................... Programmable ON or OFF
 (only wire breakage)
 Current input: Measurement range.................. 0...20 mA
 Input resistance, current input........................ Nom. 20 Ω + PTC 50 Ω
 Sensor error detection, current input................ Loop break 4...20 mA
 Voltage input: Measurement range.................. 0...10 VDC
 Programmable measurement ranges,
 VDC...................................................... 0/0.2...1, 0/1...5, 0/2...10 VDC
 Input resistance, voltage input......................... Nom. >10 MQ
 Output specifications
 Current output: Signal range......................... 0...20 mA
 Programmable current ranges....................... 0...20 / 4...20 / 20...0 and
 Load (max.)............................................ 20...-4 mA
 Load stability, current output......................... ≤ ±0.01% of span / 100 Ω
 Sensor error indication, current output............. 0 / 3.5 / 23 mA / none
 NAMUR NE 43 Upscale/Downscale................... 23 mA / 3.5 mA
 Output limitation, on 4...20 and
 20...4 mA signals..................................... 3.8...20.5 mA
 Output limitation, on 0...20 and
 20...0 mA signals..................................... 0...20.5 mA
 Current limitation ........................................ ≤ 28 mA
 2-wire 4...20 mA output: External 2-wire
 supply range........................................... 3.5...26 VDC
 Signal range............................................ 4...20 mA
 Max. load resistance [Ω].............................. (Vsupply - 3.5) / 0.023 A
 Load stability, 4...20 mA output....................... ≤ 0.01% of span / 100 Ω
 Effect of external 2-wire
 supply voltage variation................................ < 0.005% of span / V
 Relay output: Relay functions......................... Setpoint, Window, Sensor
 error, Power and Off
 Hysteresis, in % of span/display
 range.................................................. 0.1...25 / 1...25
 ON and OFF delay.................................... 0...3600 s
 Sensor error reaction................................. Break / Make / Hold
 Max. voltage.......................................... 250 VAC / 30 VDC
 Max. current.......................................... 2 AAC / 2 ADC
 Max. AC power........................................ 500 VA / 60 W
 Max. voltage, status relay............................ 110 VDC / 125 VAC
 Max. current, status relay............................ 0.3 ADC / 0.5 AAC
 Max. AC power, status relay......................... 62.5 VA / 32 W
 *of span.............................................. = of the currently selected measurement range
 Approvals
 EMC.................................................. EN 61326-1
 LVD.................................................... EN 61010-1
 ATEX .................................................. KEMA 10ATEX0053 X
 IECEx .................................................. KEM 10.0022X
 FM ...................................................... 3038267-C
 INMETRO............................................ NCC 12.1309 X
 UL...................................................... UL 61010-1
 GOST R................................................ Yes
 GOST Ex............................................... Yes
 DNV Marine.......................................... Stand. f. Certific. No. 2.4
 SIL..................................................... SIL 2 certified & fully assessed
 acc. to IEC 61508

Pulse isolator

9202B

- Interface for NAMUR sensors and switches
- Extended self-diagnostics and detection of cable fault
- 1 or 2 channels
- Can be supplied separately or installed on power rail, PR type 9400
- SIL 2-certified via Full Assessment

Advanced features
- Configuration and monitoring by way of detachable display front (PR 4501).
- Selection of direct or inverted function for each channel via PR 4501.
- Advanced monitoring of internal communication and stored data.
- Optional redundant supply via power rail and/or separate supply.
- SIL 2 functionality is optional and must be activated in a menu point.

Application
- 9202B can be mounted in the safe area or in zone 2 / Cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including mining / Class I/II/III, Div. 1, Gr. A-G.
- Pulse isolator for transmission of signals to the safe area from NAMUR sensors and mechanical switches installed in the hazardous area.
- Monitoring of error events and cable breakage via the individual status relay and/or a collective electronic signal via the power rail.
- The 9202B has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

Technical characteristics
- 1 green and 2 yellow/red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting
- The devices can be mounted vertically or horizontally without distance between neighbouring units.
Environmental Conditions
Specifications range....................................... -20°C to +60°C  
Storage temperature...................................... -20°C to +85°C  
Calibration temperature................................. 20...28°C  
Relative humidity............................................ < 95% RH (non-cond.)  
Protection degree........................................... IP20  
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm  
Dimensions (HxWxD) w/ 4501 / 4511...........................109 x 23.5 x 116 / 131 mm  
Weight approx................................................ 170 g  
Weight incl. 4501 / 4511 (approx.)................. 185 g / 270 g  
DIN rail type................................................... DIN EN 60715/35 mm  
Wire size........................................................ 0.13...2.08 mm² AWG 26...14 stranded wire  
Screw terminal torque.................................... 0.5 Nm  
Vibration......................................................... IEC 60068-2-6 : 2007  
Vibration, continuous, IEC 60068-2-64..................Test Fh, 1 g, 3...100 Hz

Common specifications
Supply voltage............................................... 19.2...31.2 VDC  
Fuse............................................................... 400 mA SB / 250 VAC  
Max. power consumption...............................</p>
Solenoid / alarm driver

9203B

- Universal Ex driver for solenoids, acoustic alarms and LEDs
- Extended self-diagnostics
- 1 or 2 channels
- Can be supplied separately or installed on power rail, PR 9400
- SIL 2-certified via Full Assessment

Advanced features

- Universal I.S. driver for the control of solenoids etc. with various I.S. data by way of three built-in I.S. barriers.
- Two hardware versions make it possible to choose either Low (35 mA) or High (60 mA) current output.
- Configuration and monitoring by way of detachable display front (PR 4501).
- Selection of direct or inverted function for each channel via PR 4501 and the possibility of reducing the output current to the hazardous area to suit the application.
- Optional monitoring of the output current to the hazardous area by way of PR 4501.
- Optional redundant supply via power rail and/or separate supply.

Application

- 9203B can be mounted in the safe area or in zone 2 / div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including mining / Class I/III, Div. 1, Gr. A-G.
- I.S. driver for the control of ON / OFF solenoids, acoustic alarms and LEDs mounted in the hazardous area.
- The 9203B is controlled by an NPN/PNP signal or a switch signal.
- Monitoring of internal error events via the individual status relay and/or a collective electronic signal via the power rail.
- The 9203B has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

Technical characteristics

- 1 green and 2 yellow/red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting

- The devices can be mounted vertically or horizontally without distance between neighbouring units.

Connections
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Storage temperature...................................... -20°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511........................ 109 x 23.5 x 116 / 131 mm
Weight approx................................................ 170 g
Weight incl. 4501 / 4511 (approx.)................. 185 g / 270 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13...2.08 mm² AWG 26...14 stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage............................................... 19.2...31.2 VDC
Fuse............................................................... 1.25 A SB / 250 VAC
Max. power consumption................................ ≤ 3.5 W (2 channels)
Isolation voltage, test/working: Input to any........................................ 2.6 kVAC / 300 VAC reinforced isolation
Output 1 to output 2...................................... 1.5 kVAC / 150 VAC reinforced isolation
Status relay to supply................................... 1.5 kVAC / 150 VAC reinforced isolation
Communications interface............................. Communication enabler 4511 / Programming front 4501
EMC immunity influence................................ < ±0.5% of span
NE 21, A criterion, burst.............................. < ±1% of span

Input specifications
Trig level LOW, NPN+switch.......................... ≤ 2.0 VDC
Trig level HIGH, NPN+switch........................ ≥ 4.0 VDC
Max. external voltage, NPN+switch............... ≥ 4.0 VDC
Input impedance, NPN+switch...................... 28 VDC
Trig level LOW, PNP........................................ ≤ 8.0 VDC
Trig level HIGH, PNP...................................... ≥ 10.0 VDC
Max. external voltage, PNP........................ 28 VDC
Input impedance, PNP..................................... 3.5 kΩ

Output specifications
Output ripple................................................ < 40 mVRMS
Max. voltage, status relay........................... 110 VDC / 125 VAC
Max. current, status relay........................... 0.3 ADC / 0.5 AAC
Max. AC power, status relay......................... 62.5 VA / 32 W

Approvals
EMC............................................................... EN 61326-1
LVD................................................................ EN 61010-1
ATEX................................................................ KEMA 07ATEX0147 X
IECEx............................................................. KEM 09.0001X
FM.................................................................. 3035277-C
INMETRO......................................................... NCC 12.1306 X
UL................................................................. UL 61010-1
GOST R......................................................... Yes
GOST Ex......................................................... Yes
DNV Marine.................................................. Stand. f. Certific. No. 2.4
SIL.................................................................. SIL 2 certified & fully assessed acc. to IEC 61508
System 9000 backplane

7908

- Provides safe, easy wiring between the backplane and non I.S. automation systems using standard prefabricated I/O cables
- Direct, Redundant and Duplicate signalling - including HART I/O
- Robust, compact high-end design solution for 8 system 9000 units
- Digital output and LEDs indicate backplane system status

Application

- The 7908 backplane is a compact and robust solution that enables a safe and easy connection of PR system 9000 IS device signals into standard automation systems.
- Standard automation system cables and connectors are used to link the backplane to the I/O cards.
- The backplane can be used for Direct, Redundant, Duplicate signalling including HART I/O System connectivity (HART MUX).
- The system 9000 devices isolate and convert AI, AO, DI and DO signals coming from, or going to the I.S. classified area, and routes those signals to a system automation I/O card.
- The system 9000 units maintain a SIL2 level of functional safety, even when mounted in the backplane solution.

Technical characteristics

- Robust, compact high-end design that holds 8 system 9000 units.
- Digital output indicates status of the 9000 devices and primary/back-up power supplies.
- Flexible 24 VDC supply voltage and redundant power supply connection solution.

Mounting / installation / programming

- Flexible horizontal/vertical panel or wall mounting in the Safe or Zone 2 / Div 2 areas.
- System 9000 devices easily snap ON and OFF using piano keys, and devices can be hot-swapped.
- Tag number and ID labels are easily mounted and read by using the dedicated piano key spacer.
- Wide temperature operation range: -20...+60°C.
- Backplane selection guide can be found at www.prelectronics.com/backplane
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Storage temperature...................................... -40°C to +85°C
Relative humidity............................................ < 95% RH (non-cond.)
Installation in.................................................. Pollution degree 2 &
measurement / overvoltage
          cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 144 x 247 x 141 mm
Wire size........................................................ 2.5 mm² / AWG 12
Wire size........................................................ (Supply 1 / 2 and status relay
connectors)

Common specifications
Supply voltage............................................... 20...31.2 VDC (24 DC nom.)
Max. power consumption.............................. ≤ 30 W
Replaceable fuses........................................... Fuse F1 & F2: 1.6 A SB, 250
          V, type TR5
Isolation voltage, test /
working........................................................ 500 VAC / 50 VAC
Isolation voltage, test /
working........................................................ (Basic isolation between
          supply 1 & 2 and status relay)

Output specifications
Max. voltage, status relay.............................. 32 V (Zone 2 / Div. 2 area)
Max. voltage, status relay.............................. 42 V (Safe area)
Max. current, status relay............................. 100 mA (Zone 2 / Div. 2 area)
Max. current, status relay............................. 100 mA (Safe area)

Approvals
EMC............................................................... EN 61326-1
UL................................................................... UL 508
ATEX.............................................................. DEKRA 13ATEX0136X
IECEX............................................................ DEK 13.0044X
FM................................................................ 0003049918-C
System 9000 backplane

7916

- Provides safe, easy wiring between the backplane and non I.S. automation systems using standard prefabricated I/O cables
- Direct, Redundant and Duplicate signalling - including HART I/O
- Robust, compact high-end design solution for 16 system 9000 units
- Digital output and LEDs indicate backplane system status

Application

- The 7916 backplane is a compact and robust solution that enables a safe and easy connection of PR system 9000 IS device signals into standard automation systems.
- Standard automation system cables and connectors are used to link the backplane to the I/O cards.
- The backplane can be used for Direct, Redundant, Duplicate signalling including HART I/O System connectivity (HART MUX).
- The system 9000 devices isolate and convert AI, AO, DI and DO signals coming from, or going to the I.S. classified area, and routes those signals to a system automation I/O card.
- The system 9000 units maintain a SIL2 level of functional safety, even when mounted in the backplane solution.

Technical characteristics

- Robust, compact high-end design that holds 16 system 9000 units.
- Digital output indicates status of the 9000 devices and primary/back-up power supplies.
- Flexible 24 VDC supply voltage and redundant power supply connection solution.

Mounting / installation / programming

- Flexible horizontal/vertical panel or wall mounting in the Safe or Zone 2 / Div 2 areas.
- System 9000 devices easily snap ON and OFF using piano keys, and devices can be hot-swapped.
- Tag number and ID labels are easily mounted and read by using the dedicated piano key spacer.
- Wide temperature operation range: -20...+60°C.
- Backplane selection guide can be found at www.prelectronics.com/backplane
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Storage temperature...................................... -40°C to +85°C
Relative humidity............................................ < 95% RH (non-cond.)
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 144 x 443 x 141 mm
Wire size........................................................ 2.5 mm² / AWG 12
Wire size........................................................ (Supply 1 / 2 and status relay connectors)

Common specifications
Supply voltage............................................... 20...31.2 VDC (24 DC nom.)
Max. power consumption............................... ≤ 60 W
Replaceable fuses........................................... Fuse F1 & F2: 3.15 A SB, 250 V, type TR5
Isolation voltage, test / working.......................... 500 VAC / 50 VAC
Isolation voltage, test / working.......................... (Basic isolation between supply 1 & 2 and status relay)

Output specifications
Max. voltage, status relay.............................. 32 V (Zone 2 / Div. 2 area)
Max. voltage, status relay.............................. 42 V (Safe area)
Max. current, status relay............................... 100 mA (Zone 2 / Div. 2 area)
Max. current, status relay............................... 100 mA (Safe area)

Approvals
EMC............................................................ EN 61326-1
UL................................................................. UL 508
ATEX............................................................ DEKRA 13ATEX0136X
IECEx.......................................................... DEK 13.0044X
FM.............................................................. 0003049918-C
System 9000 backplane

7932

- Provides safe, easy wiring between the backplane and non I.S. automation systems using standard prefabricated I/O cables
- Direct, Redundant and Duplicate signalling - including HART I/O
- Robust, compact high-end design solution for 32 system 9000 units
- Digital output and LEDs indicate backplane system status

Application

- The 7932 backplane is a compact and robust solution that enables a safe and easy connection of PR system 9000 IS device signals into standard automation systems.
- Standard automation system cables and connectors are used to link the backplane to the I/O cards.
- The backplane can be used for Direct, Redundant, Duplicate signalling including HART I/O System connectivity (HART MUX).
- The system 9000 devices isolate and convert AI, AO, DI and DO signals coming from, or going to the I.S. classified area, and routes those signals to a system automation I/O card.
- The system 9000 units maintain a SIL2 level of functional safety, even when mounted in the backplane solution.

Technical characteristics

- Robust, compact high-end design that holds 32 system 9000 units.
- Digital output indicates status of the 9000 devices and primary/back-up power supplies.
- Flexible 24 VDC supply voltage and redundant power supply connection solution.

Mounting / installation / programming

- Flexible horizontal/vertical panel or wall mounting in the Safe or Zone 2 / Div 2 areas.
- System 9000 devices easily snap ON and OFF using piano keys, and devices can be hot-swapped.
- Tag number and ID labels are easily mounted and read by using the dedicated piano key spacer.
- Wide temperature operation range: -20...+60°C.
- Backplane selection guide can be found at www.prelectronics.com/backplane

Connections

[Diagram of DCS System and 7932 BP with I/O cards and field signals]
Environmental Conditions
Specifications range ....................................... -20°C to +60°C
Storage temperature ...................................... -40°C to +85°C
Relative humidity ............................................ < 95% RH (non-cond.)
Installation in .................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD) ..................................... 144 x 835 x 141 mm
Wire size........................................................ 2.5 mm² / AWG 12
Wire size........................................................ (Supply 1 / 2 and status relay connectors)

Common specifications
Supply voltage............................................... 20...31.2 VDC (24 DC nom.)
Max. power consumption............................... ≤ 120 W
Replaceable fuses......................................... Fuse F1 & F2: 6.2 A SB, 250 V, type TR5
Isolation voltage, test / working........................ 500 VAC / 50 VAC
Isolation voltage, test / working........................ (Basic isolation between supply 1 & 2 and status relay)

Output specifications
Max. voltage, status relay ................................ 32 V (Zone 2 / Div. 2 area)
Max. voltage, status relay ................................ 42 V (Safe area)
Max. current, status relay............................... 100 mA (Zone 2 / Div. 2 area)
Max. current, status relay............................... 100 mA (Safe area)

Approvals
EMC............................................................... EN 61326-1
UL................................................................. UL 508
ATEX............................................................. DEKRA 13ATEX0136X
IECEX.......................................................... DEK 13.0044X
FM.................................................................. 0003049918-C
Ex repeater / power supply

5104B

- 1- or 2-channel version
- 3- / 5-port 3.75 kVAC galvanic isolation
- Loop supply > 17.1 V in hazardous area
- 20 programmable measurement ranges
- Universal supply by AC or DC

Application

- Supply voltage and safety barrier for 2-wire transmitters mounted in a hazardous area.
- Safety barrier for analog current / voltage signals from a hazardous area.
- 1 : 1 or signal conversion of analog current / voltage signals.

Technical characteristics

- The 20 factory-calibrated measurement ranges in the 5104B can be selected by the internal DIP-switches without the need for recalibration. Special measurement ranges can be delivered.
- PR5104B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.
- The output can be connected either as an active current / voltage transmitter or as a 2-wire transmitter.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. By way of the 2-channel version up to 84 channels per meter can be mounted.
- NB: 5104B is recommended as I.S. barrier for 5331D, 5333D, 5334B, 5343B, 6331B, 6333B, and 6334B.

Connections
Environmental Conditions
Specifications range........................................... -20°C to +60°C
Calibration temperature.................................... 20 ... 28°C
Relative humidity................................................ < 95% RH (non-cond.)
Protection degree.............................................. IP20

Mechanical specifications
Dimensions (HxWxD)............................................. 109 x 23.5 x 130 mm
DIN rail type..................................................... DIN 46277
Weight approx................................................... 225 g
Wire size.......................................................... 1 x 2.5 mm² stranded wire
Screw terminal torque........................................ 0.5 Nm

Common specifications
Supply voltage, universal................................. 21.6 ... 253 VAC, 50 ... 60 Hz or 19.2 ... 300 VDC
Fuse................................................................... 400 mA SB / 250 VAC
Max. power consumption.................................... ≤ 3 W (2 channels)
Isolation voltage, test / working.......................... 3.75 kVAC / 250 VAC
Auxiliary supply: 2-wire supply (pin 44...42 and 54...52)........................................ 28 ... 17.1 VDC / 0 ... 20 mA
Signal / noise ratio............................................... Min. 60 dB (0 ... 100 kHz)
Response time (0 ... 90%, 100 ... 10%).................. < 25 ms
Accuracy.......................................................... Better than 0.1% of selected range
EMC immunity influence...................................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst............................. < ±1% of span

Input specifications
Max. offset.................................................... 20% of max. value
Current input: Measurement range.................... 0 ... 20 mA
Min. measurement range (span), current input........ 16 mA
Input resistance, current input.......................... Nom. 10 Ω + PTC 10 Ω
Voltage input: Measurement range....................... 0 ... 10 VDC
Min. measurement range (span), voltage input........ 8 VDC
Input resistance, voltage input.......................... > 2 MΩ

Output specifications
Max. offset.................................................... 20% of max. value
Current output: Signal range............................ 0 ... 20 mA
Min. signal range............................................... 16 mA
Load (max.)..................................................... 20 mA/600 Ω/12 VDC
Load stability, current output............................ 0.01% of span / 100 Ω
Current limit.................................................... ≤ 28 mA
External loop supply........................................... 29 VDC
Effect of external 2-wire supply voltage variation... < 0.005% of span / V
Voltage output: signal range............................... 0 ... 1 VDC / 0 ... 10 VDC
Voltage output, min. signal range....................... 0.8 VDC / 8 VDC
Load (min.)..................................................... 500 kΩ
*of span................................................................ of the presently selected range

Approvals
EMC.............................................................. EN 61326-1
LVD.................................................................... EN 61010-1
PELV/SELV..................................................... IEC 384-4-41 and EN 60742
ATEX............................................................. DEMKO 99ATEX126013
UL..................................................................... UL 913, UL 508
GOST R.......................................................... Yes
GOST Ex......................................................... Yes
DNV Marine..................................................... Stand. f. Certific. No. 2.4
Ex-isolated driver

5105B

- 1- or 2-channel version
- 3- / 5-port 3.75 kVAC galvanic isolation
- Driver for Ex / I.S. area
- 20 programmable measurement ranges
- Universal supply by AC or DC

Application
- Safety barrier for current signals transmitted to I/P converters and displays mounted in hazardous area.
- Safety barrier for analog current / voltage signals transmitted to hazardous area.
- 1 : 1 or signal conversion of analog current / voltage signals.

Technical characteristics
- The 20 factory-calibrated measurement ranges in the 5105B can be selected by the internal DIP-switches without the need for a recalibration. Special measurement ranges can be delivered.
- PRS105B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. By way of the 2-channel version up to 84 channels per meter can be mounted.

Connections

I / P Converter

Display

Current, mA

Voltage

Input

Supply

Input

Supply

Input

Supply

Input

Supply

Input

Supply
Environmental Conditions
Specifications range -20°C to +60°C
Calibration temperature 20°C to 28°C
Relative humidity < 95% RH (non-cond.)
Protection degree IP20

Mechanical specifications
Dimensions (HxWxD) 109 x 23.5 x 130 mm
Weight approx. 225 g
DIN rail type DIN 46277
Wire size 1 x 2.5 mm² stranded wire
Screw terminal torque 0.5 Nm

Common specifications
Supply voltage, universal 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse 400 mA SB / 250 VAC
Max. power consumption ≤ 2 W (2 channels)
Isolation voltage, test / working 3.75 kVAC / 250 VAC
Signal / noise ratio Min. 60 dB (0...100 kHz)
Response time (0...90%, 10...10%) < 25 ms
Accuracy Better than 0.1% of selected range
EMC immunity influence < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst ±1% of span

Input specifications
Max. offset 20% of max. value
Current input: Measurement range 0...20 mA
Min. measurement range (span), current input 16 mA
Input resistance, current input Nom. 10 Ω + PTC 10 Ω
Voltage input: Measurement range 0...10 VDC
Min. measurement range (span), voltage input 8 VDC
Input resistance, voltage input > 2 MΩ

Output specifications
Max. offset 20% of max. value
Current output: Signal range 0...20 mA
Min. signal range 16 mA
Load (max.) 20 mA/770 Ω/15.4 VDC
Load stability, current output ≤ 5% of span / 100 Ω
Current limit ≤ 28 mA
Voltage output: signal range 0...1 VDC / 0...10 VDC
Voltage output, min. signal range 0.8 VDC / 8 VDC
Load (min.) 500 kΩ
* of span = of the presently selected range

Approvals
EMC EN 61326-1
LVD EN 61010-1
PELV/SELV IEC 364-4-41 and EN 60742
ATEX DEMKO 99ATEX126014
UL UL 913, UL 508
GOST R Yes
GOST Ex Yes
DNV Marine Stand. f. Certific. No. 2.4
HART® transparent repeater

5106B

- 3- / 5-port 3.75 kVAC galvanic isolation
- Low response time
- 2-wire supply > 17 V in Ex / I.S. area
- 1- or 2-channel version
- Universal supply by AC or DC

Application

- Power supply and Ex / I.S. safety barrier with 2-way HART® communication for 2-wire transmitters installed in the hazardous area.
- Ex / I.S. safety barrier with 2-way HART® communication for supplied current transmitters installed in the hazardous area.
- Signal isolator with low response time on analog current signals from the hazardous area.

Technical characteristics

- PR5106B primarily processes current signals of 4...20 mA.
- PR5106B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.
- The output can be connected either as an active current transmitter or as a 2-wire transmitter.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without distance between neighboring units, up to 84 channels can be mounted per meter.
- PR5106B is recommended as Ex / I.S. safety barrier for 5335D and 6335D.

Connections

2-wire transmitter

Output

Supply

Current, mA

Output

Supply
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 130 mm
Weight approx.: 245 g
DIN rail type: DIN 46277
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage, universal: 21.6...235 VAC, 50...60 Hz or 19.2...300 VDC
Fuse: 400 mA SB / 250 VAC
Max. power consumption: ≤ 3 W (2 channels)
Isolation voltage, test / working: 3.75 kVAC / 250 VAC
Response time (0...90%, 100...10%): < 25 ms
Accuracy: Better than 0.1% of selected range

Output specifications
Current output: Signal range: 4...20 mA
2-wire 4...20 mA output: Signal range: 4...20 mA
Min. signal range: 16 mA
Load (max.): 20 mA / 600 Ω / 12 VDC
Load stability, current output: ≤ 0.01% of span / 100 Ω
Current limit: ≤ 28 mA
Max. external 2-wire supply: 29 VDC
Effect of external 2-wire supply voltage variation: < 0.005% of span / V
Output ripple: < 3 mVRMS on HART communication

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
ATEX: DEMKO 00ATEX127483
UL: UL 913, UL 508
GOST R: Yes
GOST Ex: Yes

Input specifications
Current input: Measurement range: 4...20 mA
Min. measurement range (span), current input: 16 mA
Input resistance: Supplied unit: Nom. 10 Ω
Input resistance: Non-supplied unit: Rs= = , Vdrop < 4 V

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<tr>
<th>Type</th>
<th>Input</th>
<th>Output</th>
<th>Channels</th>
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<td>4...20 mA</td>
<td>4...20 mA</td>
<td>Single</td>
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<tr>
<td></td>
<td>20...4 mA</td>
<td></td>
<td>Double</td>
</tr>
</tbody>
</table>
HART® transparent driver

5107B

- 1- or 2-channel version
- 3- / 5-port 3.75 kVAC galvanic isolation
- < 1.3 V voltage drop on input
- 16 V driving voltage on Ex / I.S. output
- Universal supply by AC or DC

Application
- Safety barrier for current signals and 2-way HART® communication transmitted to I/P converters mounted in hazardous area.
- Safety barrier for 2-way HART® communication and analog current signals transmitted to hazardous area.
- Signal isolator with low response time on analog current signals transmitted to hazardous area.

Technical characteristics
- PR’s HART® transparent driver primarily processes current signals of 4...20 mA.
- PR5107B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without distance between neighboring units, up to 84 channels can be mounted per meter.
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 130 mm
Weight approx: 260 g
DIN rail type: DIN 46277
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage, universal: 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse: 400 mA SB / 250 VAC
Max. power consumption: ≤ 2 W (2 channels)
Internal consumption: ≤ 2 W (2 channels)
Isolation voltage, test / working: 3.75 kVAC / 250 VAC
Signal / noise ratio: Min. 60 dB (0...100 kHz)
Accuracy: Better than 0.1% of selected range
Response time (0...90%, 100...10%): < 25 ms
Long-term stability, better than: ±0.1% of span / Year
Effect of supply voltage change: < ±10 μA
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications
Current input: Measurement range: 4...20 mA
Min. measurement range (span), current input: 16 mA
Input resistance: Supplied unit: 10 Ω + PTC, Vdrop < 1.3 V
Input resistance: Non-supplied unit: Rshunt = , Vdrop < 3.5 V

Output specifications
Current output: Signal range: 4...20 mA
Min. signal range: 16 mA
Load (max.): 20 mA / 800 Ω / 16 VDC
Load stability, current output: ≤0.01% of span / 100 Ω
Current limit: ≤ 28 mA

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 384-4-41 and EN 60742
ATEX: DEMKO 01ATEX127484
UL: UL 913, UL 508
GOST R: Yes
GOST Ex: Yes

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<tr>
<th>Type</th>
<th>Input</th>
<th>Output</th>
<th>Channels</th>
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<td>0187B</td>
<td>4...20 mA</td>
<td>4...20 mA</td>
<td>Single</td>
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<tr>
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<td>50...4 mA</td>
<td>0</td>
<td>Double</td>
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</table>

Order:
Programmable transmitter

5114B

- Input for RTD, TC, mV, linear resistance, mA, and V
- 3-port 3.75 kVAC galvanic isolation
- Current and voltage output
- Universal voltage supply
- 1- and 2-channel versions
- Loop supply > 17.1 V in Ex / I.S. zone 0

Advanced features

- The 5114 transmitter can be configured, with or without a power supply, using the PReset software and the Loop Link communications unit.

Application

- Jumper selectable inputs for current/voltage or temperature.
- Programmable current (0...100 mA) and voltage (0...250 VDC) inputs.
- Linearized, electronic temperature measurement.
- Conversion of linear resistance variation e.g., from solenoids and butterfly valves or linear movements with attached potentiometer.
- 17.1 VDC loop and 2.5 VDC potentiometer supplies.
- Automatic 4-/3-wire or programmable 2-wire cable compensation.
- Configurable sensor error detection including NAMUR NE43.

Technical characteristics

- Active or Passive current output and selectable voltage output.
- Separation of circuits in PELV/SELV installations.
- I.S. barrier for temperature sensors, potentiometers, and current / voltage signals.
- I.S. barrier with I.S. power supply for 2-wire transmitters in zone 0, 1, 2, 20, 21 and 2.
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 130 mm
Weight approx.: 225 g
DIN rail type: DIN 46277
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage, universal: 21.6...253 VAC, 50...60 Hz or
Min. measurement range (span), range: 0...250 VDC
Voltage input: Measurement unit:
Input resistance: Non-supplied
Input resistance: Supplied
Current input: 4 mA
Min. measurement range: 0...100 mA
Input resistance: 10 MΩ (≤ 2.5 VDC)
Input resistance: 5 MΩ (> 2.5 VDC)
Input resistance: 10 MΩ (mV input)

Output specifications
Max. offset: 50% of selected max. value
Current output: Signal range: 0...20 mA
Min. signal range: 10 mA
Load (max.): 20 mA/600 Ω/12 VDC
Load stability, current output: ≤ 0.01% of span / 100 Ω
Current limit: ≤ 28 mA
2-wire 4...20 mA output: Signal range: 4...20 mA
Load stability, 4...20 mA output: ≤ 0.01% of span / 100 Ω
Max. load resistance: ≤ 0.01% of span / 100 Ω
Max. external 2-wire supply: 29 VDC
Eff. of external 2-wire supply variation: ≈ 0.005% of span / V
Voltage output: signal range: 0...10 VDC
Voltage output, min. signal range: 500 mV
Load (min.): 500 kΩ
Sensor error indication, current output: Programmed 0...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
*of span: = of the presently selected range

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
ATEX: DENIKO 99ATEX124571
GOST R: Yes
GOST Ex: Yes
DNV Marine: Stand. f. Certific. No. 2.4
### Ex signal calculator

**5115B**

- Redundancy measurement with 2 input signals
- Signal calculator with the four arithmetical operations
- Duplication of the input signal
- Input for RTD, Ohm, TC, mV, mA, and V
- Universal supply by AC or DC

---

#### Application

- Redundancy measurement of temperature by means of two sensors, where the secondary sensor takes over the measurement when a sensor error occurs on the primary sensor.
- Duplication of the input signal, e.g. from a temperature sensor or an analog process signal to two separate analog outputs.
- Signal calculator with four arithmetical operations: Addition, subtraction, multiplication and division.
- Example: Differential measurement: \((\text{Input 1} \times K1) - (\text{Input 2} \times K2) + K4\)
- Example: Average measurement: \((\text{Input 1} \times 0.5) + (\text{Input 2} \times 0.5) + K4\)
- Example: Different functions on the outputs: Output 1 = input 1 - input 2, and Output 2 = input 1 + input 2
- I.S. safety barrier and power supply for 2-wire transmitters.

#### Technical characteristics

- Within a few seconds the user can program PR5115B to a selected application using the configuration program PReset.
- A green front LED indicates normal operation, sensor error on each sensor, and functional error.
- 5-port 3.75 kVAC galvanic isolation.

#### Mounting / installation

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 42 devices can be mounted per meter.
**Environmental Conditions**
Specifications range.................. -20°C to +60°C
Calibration temperature................ 20...28°C
Relative humidity........................... < 95% RH (non-cond.)
Protection degree.......................... IP20

**Mechanical specifications**
Dimensions (HxWxD)............................... 109 x 23.5 x 130 mm
Weight approx........................................ 225 g
Wire size.............................................. 1 x 2.5 mm² stranded wire
Screw terminal torque......................... 0.5 Nm
Vibration.............................................. IEC 60068-2-6 : 2007
Vibration: 2...25 Hz............................... ±1.6 mm
Vibration: 25...100 Hz............................. ±24 g

**Common specifications**
Supply voltage, universal.................. 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse.................................................. 400 mA SB / 250 VAC
Max. power consumption..................... ≤ 3 W
Internal consumption.......................... ≤ 2.0 W
Isolation voltage, test / working........ 3.75 kVAC / 250 VAC
Communications interface.................... Loop Link
Signal / noise ratio......................... Min. 60 dB (0...100 kHz)
Accuracy.............................................. Better than 0.05% of selected range
Response time (0...90%, 100...10%): Temperature input (programmable).................. 400 ms...60 s
Updancing time..................................... 115 ms (temperature input)
Updancing time..................................... 75 ms (mA / V / mV input)
Redundancy switch-over time............... ≤ 400 ms
Signal dynamics, input........................ 22 bit
Signal dynamics, output...................... 16 bit
Auxiliary voltages: Reference voltage........ 2.5 VDC ±0.5% / 15 mA
EMC immunity influence...................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst........................... < ±1% of span

**Output specifications**
Nom. 10 Ω + PTC 10 Ω
mV input: Measurement range............. -150...+150 mV
Min. measurement range (span), voltage input............................................. 5 mV
Input resistance, voltage input............. Nom. 10 MO (≤ 2.5 VDC)
Input resistance, voltage input............. Nom. 5 MO (> 2.5 VDC)
Input resistance, voltage input............. Nom. 10 MO (mV input)
Current input: Programmed 0...23 mA
Load (max.)........................................ 20 mA/600 Ω/12 VDC
Load stability, current output............. ≤ 0.01% of span / 100 Ω
Current limit..................................... ≤ 28 mA
Voltage output: Signal range............. 0...10 VDC
Voltage output, min. signal range........ 500 mV
Load (min.)........................................ 500 kΩ
2-wire 4...20 mA output: Signal range...................... 4...20 mA
Load stability, 4...20 mA output........... ≤ 0.01% of span / 100 Ω
Effect of external 2-wire supply voltage variation..................... < 0.005% of span / V
Max. external 2-wire supply................ 29 VDC
Sensor error indication, current output... Programmable 0...23 mA
NAMUR NE 43 Upscale/Downscale........ 23 mA / 3.5 mA
*of span:.............................................. = of the presently selected range

**Approvals**
EMC.................................................. EN 61326-1
LVD.................................................. EN 61010-1
PELV/SELV........................................ IEC 364-4-41 and EN 60742
ATEX.................................................. DEMKO 00ATEX128567
GOST R................................................ Yes
GOST Ex........................................... Yes
DNV Marine........................................ Stand. f. Certific. No. 2.4

**Input specifications**
Max. offset......................................... 50% of selected max. value
RTD input.......................................... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD........ 10 Ω
Sensor current, RTD............................... Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD........ < 0.002 Ω / Ω
Sensor error detection, RTD................. Yes
TC input: Thermocouple type................ B, E, J, K, L, N, R, S, T, U,
W3, W5, LR
Cold junction compensation (GJC)............ < ±1.0°C
Sensor error current, TC..................... Nom. 30 µA
Current input: Measurement range.............. 0...100 mA
Min. measurement range (span), current input................................. 4 mA
Input resistance: Supplied unit........................ Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit................ RSHUNT = ∞, VDROP < 6 V
Voltage input: Measurement range.............. 0...250 VDC
Programmable transmitter

5116B

- Input for RTD, TC, mV, Ohm, potentiometer, mA and V
- 2-wire supply > 16.5 V to Ex zone 0
- Bipolar voltage input
- Output for current, voltage and 2 relays
- Universal supply by AC or DC

Application
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with 2 potential-free relay contacts which can be configured for advanced functions.
- Galvanic separation of analog signals and measurement of floating signals.

Technical characteristics
- Within a few seconds the user can program PR5116B to suit the specific application.
- By way of the front push-button the input can be calibrated to the exact span of the process. Zero drift on the process signal can be adjusted by a single press of the front button.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 3.75 kVAC galvanic isolation.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 42 devices can be mounted per meter.
Environmental Conditions
Specifications range ................................................ -20°C to +60°C
Relative humidity .............................................. < 95% RH (non-cond.)
Protection degree .............................................. IP20

Mechanical specifications
Dimensions (HxWxD) ........................................ 109 x 23.5 x 130 mm
Weight approx .................................................. 235 g
Wire size ....................................................... 1 x 2.5 mm² stranded wire
Screw terminal torque ...................................... 0.5 Nm

Common specifications
Supply voltage, universal .................................. 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse................................................................. 400 mA SB / 250 VAC
Max. power consumption .................................... ≤ 3 W
Isolation voltage, test ......................................... 3.75 kVAC / 250 VAC
Communications interface ............................... Loop Link
Signal / noise ratio (Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%) .......................................................... 400 ms...60 s
Temperature input (programmable) .............. 250 ms...60 s
mA / V input (programmable) ......................... 250 ms...60 s
Signal dynamics, input ........................................ 22 bit
Signal dynamics, output ..................................... 16 bit
Auxiliary voltages: Reference voltage ............... 2.5 VDC ±0.5% / 15 mA
Auxiliary supplies: 2-wire supply (pin 54...52) .......... 28...16.5 VDC / 0...20 mA

Input specifications
Max. offset ...................................................... 50% of selected max. value
RTD input ....................................................... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD ............... 10 Ω (max. 50 Ω)
Sensor current, RTD .............................................. Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD ....... < 0.002 Ω / Ω
Sensor error detection, RTD ................................. Yes
Cold junction compensation (CJC) ................. < ±1.0°C
Sensor error current, TC ....................................... Nom. 30 µA
Sensor error detection, TC ................................. Yes
Current input: Measurement range ....................... 0...100 mA
Min. measurement range (span), current input ...... 4 mA
Input resistance: Supplied unit ................................. Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit ....................... Milli-Ohm
Sensor error detection, current input ................. Loop break 4...20 mA
Voltage input: Measurement range ....................... 0...250 VDC
Min. measurement range (span), current input ...... 2500...+2500 mV
Input resistance, voltage input ............................... Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input ............................... Nom. 5 MΩ (≥ 2.5 VDC)
Input resistance, voltage input ............................... > 5 MΩ (mV input)
Potentiometer via 2.5 V ref ............................... 170 Ω

Output specifications
Current output: Signal range ......................... 0...20 mA
Min. signal range .............................................. 10 mA
Load (max.) .................................................... 20 mA/600 Ω / 12 VDC
Load stability, current output ...................... ≤ 0.01% of span / 100 Ω
Current limit .................................................. ≤ 28 mA
Voltage output: signal range ....................... 0...10 VDC
Voltage output, min. signal range .......... 500 mV
Load (min.) ................................................... 500 kΩ
2-wire 4...20 mA output: Signal range .......... 4...20 mA
Load stability, 4...20 mA output ..................... ≤ 0.01% of span / 100 Ω
Max. external 2-wire supply ................... 29 VDC
Effet of external 2-wire supply .............. < 0.005% of span / V
Sensor error indication, current output .............. Programmable 0...23 mA
NAMUR NE 43 Upscale/Downscale .............. 23 mA / 3.5 mA
Relay output: Relay functions ......................... Increasing / decreasing
Relay output: Relay functions ......................... Window
Max. voltage .................................................. 250 VRMS
Max. current ..................................................... 2 AAC
Max. AC power ............................................... 500 VA
Max. load at 24 VDC .............................. 1 A
Sensor error reaction ........................................ Break / Make / Hold / None
* of span .................................................. = of the currently selected measurement range

Approvals
EMC .......................................................... EN 61326-1
LVD .......................................................... EN 61010-1
PELV/SELV ................................................ IEC 364-4-41 and EN 60742
ATEX .......................................................... KEMA 04ATEX1316 X
FM .............................................................. KEMA 04ATEX1316 X
UL .............................................................. UL 508
GOST R .......................................................... Yes
GOST Ex .......................................................... Yes
DNV Marine .................................................... Stand. f. Certific. No. 2.4
2-wire programmable transmitter

**5131B**

- Input for RTD, TC, mV, linear resistance, mA, and V
- 3.75 kVAC galvanic isolation
- 4...20 mA loop output
- 1- and 2-channel versions
- ATEX Ex / I.S. version
- DIN rail mounting

**Advanced features**

- The 5131 transmitter can be configured with a standard PC and the Loop Link communications unit.

**Application**

- Independent channel jumper selectable inputs for current/voltage or temperature.
- Current input programmable in range the 0...100 mA and voltage inputs in the range 0...250 VDC.
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, for example from solenoids and butterfly valves or linear movements with attached potentiometer.
- 4- or 3-wire connection with automatic cable compensation or 2-wire connection with programmable cable compensation.
- Configurable sensor error detection including NAMUR NE43.

**Technical characteristics**

- Analog current output can be configured to any current within the range 0...20 mA.
- Voltage output range is selectable between 0...10 VDC.
- Programming can be performed with or without a power supply.
- The 2-channel version has full galvanic isolation between the channels.
- Separation of circuits in PELV/SELV installations.
- I.S. barrier for temperature sensors, potentiometers and current / voltage signals.
Environmental Conditions
Specifications range........................................... -20°C to +60°C
Relative humidity...............< 95% RH (non-cond.)
Protection degree.......................... IP20

Mechanical specifications
Dimensions (HxWxD).............................. 109 x 23.5 x 130 mm
Weight approx............................... 195 g
DIN rail type............................. DIN 46277
Wire size............................... 1 x 2.5 mm² stranded wire
Screw terminal torque...................... 0.5 Nm

Common specifications
Supply voltage............................... 7.5...35 VDC
Fuse........................................... 50 mA SB / 250 VAC
Isolation voltage, test / working........ 3.75 kVAC / 250 VAC
Communications interface.............. Loop Link
Signal / noise ratio......................... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): Temperature input (programmable)........ 400 ms...60 s
………………..250 ms...60 s
Updating time.............................. 115 ms (temperature input)
Updating time.............................. 75 ms (mA / V / mV input)
Signal dynamics, input.................... 22 bit
Signal dynamics, output............... 16 bit
Effect of supply voltage change..........< 0.005% of span / VDC
EMC immunity influence..................< ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..........< ±1% of span

Input specifications
Max. offset.............................. 50% of selected max. value
RTD input........................................ Pt100, Ni100, lin, R
Cable resistance per wire (max.), RTD........ 10 Ω
Sensor current, RTD...................... Nom. 0.2 mA
Effect of sensor cable resistance (3-wire), RTD........ < 0.002 Ω / Ω
Sensor error detection, RTD............ Yes
Cold junction compensation (CJC).....< ±1°C
Sensor error current, TC................... Nom. 30 μA
Sensor error detection, TC............ Yes
Current input: Measurement range...... 0...100 mA
Min. measurement range (span), current input.......................... 4 mA
Input resistance: Supplied unit.............. Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit.............. RSHUNT = ∞, VDROP < 6 V
Voltage input: Measurement range....... 0...250 VDC
Voltage input: Measurement range......-150...+150 mV
Min. measurement range (span), voltage input.......................... 5 mV
Input resistance, voltage input.............. Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input.............. Nom. 5 MΩ (> 2.5 VDC)
Pulse isolator

5202B

- 2 channels x 2 or 4 outputs
- Dual output
- 5-port 3.75 kVAC galvanic isolation
- Cable error detection
- Universal supply by AC or DC

Application

- Pulse isolator with safety barrier for the supply of NAMUR sensors installed in the hazardous area.
- Pulse isolator with safety barrier for the detection of mechanical contacts installed in the hazardous area.
- One input signal can be used on two separate outputs.
- A cable error alarm can be detected on a separate output.

Technical characteristics

- PR5202B1 and 5202B2 have relays with change-over contacts or open NPN collectors available in the safe area.
- PR5202B4 has 4 SPST relays, which are activated simultaneously two and two, available in the safe area. Each relay can be programmed to the function N.O. or N.C.
- Inputs, outputs and supply are floating and galvanically separated.
- 5202B is designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. Up to 84 channels per meter can be mounted.
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 130 mm
Weight approx................................................ 230 g
Wire size........................................................ 1 x 2.5 mm² stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage, universal............................... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse............................................................... 400 mA SB / 250 VAC
Max. power consumption......................... ≤ 1.5 W (2 channels), 5202B1 and 5202B2
Max. power consumption......................... ≤ 2.0 W (2 channels), 5202B4
Internal consumption..................................... ≤ 1.5 W (2 channels), 5202B1 and 5202B2
Internal consumption..................................... ≤ 2.0 W (2 channels), 5202B4
Isolation voltage, test / working...................... 3.75 kVAC / 250 VAC
Auxiliary supplies: NAMUR supply...................... 8 VDC / 8 mA
EMC immunity influence.............................. < ±0.5%
Extended EMC immunity: NAMUR NE 21, A criterion, burst.............................. < ±1%

Input specifications
Sensor types.................................................. NAMUR according to EN 60947-5-6 / mechanical contact
Frequency range........................................... 0...5 kHz
Pulse length.................................................. > 0.1 ms
Input resistance............................................. 1 kΩ
Trig level, signal........................................... < 1.2 mA, > 2.1 mA
Trig level, cable fault..................................... < 0.1 mA, > 6.5 mA

Output specifications
Relay output: Max. switching frequency......................... 20 Hz
Max. voltage................................................... 250 VRMS
Max. current.................................................. 2 AAC
Max. AC power............................................. 100 VA
Max. load at 24 VDC....................................... 1 A
Opto, NPN outputs: Max. switching frequency......................... 5 kHz
Min. pulse length, NPN output........................ > 0.1 ms
Max. load, current / voltage........................ 80 mA / 30 VDC
Voltage drop at 25 mA / 80 mA........................ < 0.75 VDC / < 2.5 VDC

Approvals
EMC............................................................... EN 61326-1
LVD............................................................... EN 61010-1
PELV/SELV.................................................... IEC 364-4-41 and EN 60742
ATEX.............................................................. DEMKO 99ATEX127186
UL................................................................. UL 913, UL 508
GOST R......................................................... Yes
GOST Ex....................................................... Yes

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Ex solenoid / alarm driver

5203B

- 1- or 2-channel version
- Solenoid driver for I.S. area
- 3- / 5-port 3.75 kVAC galvanic isolation
- Digitally controlled voltage supply for I.S. area
- Universal supply by AC or DC

Application
- Driver with safety barrier for the control of ON / OFF solenoids mounted in hazardous area.
- Driver with safety barrier for the supply of LEDs and acoustic alarms mounted in hazardous area.
- Voltage supply with ON / OFF control of other equipment.

Technical characteristics
- PR5203B has a digital input per channel for the control of the I.S. output voltage.
- Supply, inputs, and outputs are floating and galvanically separated.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. By way of the 2-channel version up to 84 channels per meter can be mounted.

Connections
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 130 mm
Weight approx.: 230 g
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage, universal: 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse: 400 mA SB / 250 VAC
Max. power consumption: ≤ 4 W (2 channels)
Internal consumption: ≤ 2 W (2 channels)
Isolation voltage, test / working: 3.75 kVAC / 250 VAC
Max. frequency: 20 Hz
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications
Trig level LOW, NPN+switch: ≤ 4.0 VDC
Trig level HIGH, NPN+switch: ≥ 7.0 VDC
Max. external voltage, NPN+switch: 28 VDC
Input impedance, NPN+switch: 3.48 kΩ
Trig level LOW, PNP: ≤ 4.0 VDC
Trig level HIGH, PNP: ≥ 7.0 VDC
Max. external voltage, PNP: 28 VDC
Input impedance, PNP: 3.48 kΩ

Output specifications
Output voltage: See Ex data in manual
Output current: See Ex data in manual
Output ripple: < 40 mVRMS

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
ATEX: DEMKO 99ATEX126257
UL: UL 913, UL 508
GOST R: Yes
GOST Ex: Yes
Programmable f/I-f/f converter

5223B

- Pulse calculator / frequency generator
- Galvanic isolation
- ATEX I.S. version
- Analog current and voltage output
- PNP / NPN output, optional relays
- Universal supply

Advanced features
- The 5223 transmitter can be configured with a standard PC and the Loop Link communications unit, or delivered fully configured.

Application
- The f/I function performs frequency to current and voltage conversion.
- The f/f function can be used for pulse division or multiplication and as a buffer collecting fast pulse trains.
- A scale factor may be entered in all functions. Using both digital inputs, pulse addition or subtraction are possible.
- The frequency generator function is used as e.g. a time base or clock generator.
- Input and supply polarity reversal protection.
- Current and voltage output signals galvanically separated from the supply and the inputs.
- Programmable digital outputs including NPN, PNP or relay options.
- ATEX units have input for mechanical contact and NAMUR inductive proximity sensor.

Technical characteristics
- 5 front LEDs, indicating f1 and f2 active inputs (not NPN), Dig.out.1 and 2 active outputs, and a programmable error signal.
- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
- Programming can be performed with or without a power supply.
Environmental Conditions
Specifications range ...................................... -20°C to +60°C
Calibration temperature .................................. 20 ±2°C
Relative humidity ........................................ < 95% RH (non-cond.)
Protection degree ........................................ IP20

Mechanical specifications
Dimensions (HxWxD) ...................................... 109 x 23.5 x 130 mm
Weight approx ............................................. 240 g
DIN rail type ................................................ DIN 46277
Wire size ..................................................... 1 x 2.5 mm² stranded wire
Screw terminal torque ................................... 0.5 Nm

Common specifications
Supply voltage, universal .............................. 21.6...253 VAC, 50...60 Hz or
19.2...300 VDC
Fuse .......................................................... 400 mA SB / 250 VAC
Max. power consumption ................................ 3.5 W
Internal consumption .................................... 3 W
Isolation voltage, test / working ...................... 3.75 kVAC / 250 VAC
Power-up delay ............................................ 0...999 s
Warm-up time ............................................. 1 min.
Communications interface ............................ Loop Link
Signal / noise ratio ....................................... Min. 60 dB
Response time, analog .................................. < 60 ms + period
Response time, digital output ......................... < 50 ms + period
Effect of supply voltage change ...................... < 0.005% of span / VDC
Temperature coefficient ............................... < ±0.01% of span / °C
Linearity error ............................................ < 0.1% of span
NAMUR supply I.S. / Ex .................................. 8.9 VDC ±0.5 VDC / 8 mA
SO supply .................................................. 17 VDC / 20 mA
NPN / PNP supply ....................................... 17 VDC / 20 mA
Special supply (programmable) ...................... 5...17 VDC / 20 mA
EMC immunity influence .............................. < ±0.5%

Input specifications
Max. offset ............................................... 90% of selected max. frequency
Measurement range .................................... 0...20 kHz
Min. measurement range ............................... 0.001 Hz
Min. pulse length ....................................... 25 μs
Input types ............................................... NAMUR acc. to DIN 19234
Input types ............................................... Tacho
Input types ............................................... NPN / PNP
Input types ............................................... 2-phase encoder
Input types ............................................... TTL
Input types ............................................... SO acc. to DIN 43864

Output specifications
Max. offset ............................................... 50% of selected max. value
Current output: Signal range .......................... 0...20 mA
Min. signal range ....................................... 5 mA
Updating time ........................................... 20 ms
Load (max.) ............................................... 20 mA@600 Ω/12 VDC
Load stability, current output ...................... 50.01% of span / 100 Ω
Current limit ........................................... < 23 mA
Voltage output through internal shunt ................ See manual for details
Other output types ..................................... Active outputs (NPN / PNP)
Other output types ..................................... IF converter output
Other output types ..................................... Frequency generator
Relay output: Max. switching frequency .......... 20 Hz
Max. voltage ........................................... 250 VRMS
Max. current ........................................... 2 AAC
Max. AC power ........................................ 100 VA (I.S. version 5223B)
Max. load at 24 VDC .................................. 1 A
*of span .................................................. = of the presently selected range

Approvals
EMC .......................................................... EN 61326-1
LVD .......................................................... EN 61010-1
PELV/SELV .............................................. IEC 364-4-41 and EN 60742
ATEX ....................................................... KEMA 04ATEX1001
GOST R ................................................... Yes
GOST Ex .................................................. Yes
Ex power supply

5420B

- 2 channels
- 5-port 3.75 kVAC galvanic isolation
- Output voltage > 18 V to I.S. area
- Active current loop detection
- Universal supply by AC or DC

Application

- Voltage supply with safety barrier for the supply of equipment mounted in hazardous area.
- Voltage supply with failsafe detection of active current loop from 2-wire transmitters mounted in hazardous area.

Technical characteristics

- PR5420B has a relay with change-over contacts available in the safe area. When the loop current is within the defined limit, the relay is ON.
- Supply and outputs are floating and galvanically separated.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. Up to 84 channels per meter can be mounted.

Connections

- Connections with 2-wire transmitters.
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 130 mm
Weight approx: 215 g
DIN rail type: DIN 46277
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage, universal: 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. power consumption: ≤ 4 W (2 channels)
Internal consumption: ≤ 2 W (2 channels)
Fuse: 0.4 A SB / 250 VAC
Isolation voltage, test / working: 3.75 kVAC / 250 VAC
EMC immunity influence: ≤ ±0.5%
Extended EMC immunity: NAMUR NE 21, A criterion, burst: ≤ ±1%

Output specifications
Output voltage: > 18 VDC at 20 mA
Output current: 28 mA per channel (max.)
Relay outputs: On within limit: > 3.8...< 20.5 mA
Max. voltage: 250 VRMS
Max. current: 2 ARMS
Max. AC power: 100 VA
Max. load at 24 VDC: 1 A

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
ATEX: DEMKO 99ATEX126256
GOST R: Yes
GOST Ex: Yes
Get attached to better asset management with detachable local or remote operator interfaces

We provide inexpensive, easy-to-use, future-ready communication interfaces that can access your installed and future base of PR products. The detachable 4501 Local Operator Interface (LOI) allows for local monitoring of process values, device configuration, error detection and signal simulation.

The next generation, our 4511 Remote Operator Interface (ROI), does all that and more, adding remote digital communication via Modbus/RTU, while the analog output signals are still available for redundancy. With the 4511 you can further expand connectivity with a gateway which connects to major communication protocols through a Wi-Fi router or directly with the devices using our PR Process Supervisor (PPS) application. The PPS app is available for iOS, Android and Windows.
## Communication interfaces

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Communication enabler

**4511**

- Programming display for system 4000 and 9000 devices
- Modbus RTU protocol interface over RS-485
- Monitor process value from the built-in display
- High 2.5 kV isolation to host unit
- Shielded RJ45 connector on top

**Application**

- The 4511 detachable display adds Modbus RTU RS-485 serial communications to all current and future 4000/9000 units.
- The unit converts a wide array of sensors and analog device signals measured by the system 4000 like uni- and bipolar mA and voltage signals, potentiometer, Lin. R, RTD and TC, to a Modbus communication line signal.
- When mounted on a system 9000 device any signal coming from or going to I.S. classified area, like AI, AO, DI and DO signals, can be converted to a Modbus network.
- All individual unit operating parameters can easily and quickly be configured by using the Modbus communication or by using the front display menu.
- The easily readable 4511 display can be used to read the process signal, simulate the output signal, indicate sensor errors and internal device errors.

**Technical characteristics**

- 4511 has full 4501 functionality for unit programming, process signal monitoring and diagnostics handling.
- Modbus RTU protocol is supported using a serial RS-485 communication wiring.
- Multidrop half-duplex connection via shielded RJ45 connector.
- High safe galvanic isolation of 2.5 kVAC between the serial wiring and the connected system 4000/9000 units.
- Modbus parameters such as address, baud rate, stop bit(s), and parity bit are configured from the 4511 display, which also stores parameters.

**Mounting / installation / programming**

- Mounting in Zone 2 / Div 2.
- The 4511 can be moved from one device to another. The individual system 4000/9000 unit configuration of the first device can be saved and downloaded to subsequent devices.
- Programmed parameters can be protected by a userdefined password.
Environmental Conditions
Specifications range: -20°C to +60°C
Storage temperature: -20°C to +85°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20
Installation in: Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD): 73.2 x 23.3 x 26.5 mm
Dimensions (HxWxD) w/ 4000/9000 unit: 109 x 23.5 x 131 mm
Weight approx: 100 g
Connection: RJ45 - shielded

Common specifications
Max. power consumption: ≤ 0.15 W
Isolation voltage, test / working: 2.5 kVAC / 250 VAC
reinforced isolation
Signal / noise ratio: > 60 dB
Response time: < 20 ms
Update rate: > 50 Hz
Extended EMC immunity: NAMUR NE 21, A criterion, burst: No loss of communication
Signal type: RS-485 half duplex
Serial protocol: Modbus RTU
Modbus mode: RTU - slave
Devices on an RS485 line: Up to 32 (w/o a repeater)
Data rates, baud: 2400, 4800, 9600, 19200, 38400, 57600, 115200
Automatic baudrate detection: Yes - can be configured ON or OFF
Parity: Even, Odd, None
Stop bit(s): 1 or 2
Digital addressing: 1...247
Response delay: 0...1000 ms

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
DNV Marine: Standards f. Certific. No. 2.4
ATEX: DEKRA 13ATEX0098 X
IECEx: DEK 13.0026 X
FM: 0003049132-C
UL: UL 61010-1
Display / programming front

4501

- Modification of operational parameters in system 4000 and 9000 devices
- Fixed display for visualization of process data and status
- Password protection
- Scrolling help text in 7 languages
- Clicks on to the front of the device mounted in the process

Application
- Communications interface for modification of operational parameters in system 4000 and 9000 devices.
- Can be moved from one device to another of the same type and download the configuration of the first device to subsequent devices.
- Fixed display for visualization of process data and status.

Technical characteristics
- LCD display with 4 lines featuring scrolling help text in 7 languages which guides the user effortlessly through all the configuration steps.
- Programming access can be blocked by assigning a password. The password is saved in the device in order to ensure a high degree of protection against unauthorized modifications to the configuration.

Mounting / installation
- Click 4501 onto the front of the device mounted in the process.

Order:

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ConfigMate

4590

- Docking station for the PR 4501 display
- Handheld adaptor for programming the PR 3114 universal transmitter via the 4501 display
- Configuration upload and download tool on selected PR System 4000 and 9000 units
- Interfaces with the PR Preset software

Application

- The ConfigMate 4590 is used along with the 4501 programming display.
- 4590 can operate as a docking station for the 4501 display - allowing the 4501 to be connected to a PC and the PR Preset software.
- 4590 works standalone in adaptor mode for programming a PR 3114 unit.
- Upload and download function is for backup and restore purposes on selected PR 4000 and 9000 devices.
- The unit must be used together with PR Preset software to upload and download configuration parameters from a 4501 display.

Technical characteristics

- In docking station mode the 4590 will be powered from the PC’s USB power source.
- The included USB-B to a 2.5 mm jack cable must be used for connecting to a PR 3114.
- In adapter mode the included USB-B to USB-A cable must be used for connecting to a PC.
- 3 x 1.5 V AAA batteries must be inserted for powering the 4590 in adapter mode.
- Indication of battery level is displayed via the 3 green front LEDs.
- The 4590 will automatically detect if it is not in use, and will consequently shut itself down to conserve battery power.
- Battery life in adaptor mode is approximately 1 year of daily use, depending upon battery type.

Order:

| Type | 4590 |

Connections

Connection of 4590 to a PR 3114 device in adaptor mode:

Connection of ConfigMate 4590 to a PR 4000/9000 device:

Connection of 4590 to a PC in docking mode:
Our multifunctional devices are easily deployable as your site standard

Our unique range of single devices accepts a wide range of inputs and provides a wide range of outputs. These multifunctional devices cover isolation, conversion, scaling, amplification, alarming, control and more.

Having one variant that applies to a broad range of applications can reduce your installation time and training and greatly simplify spare-parts management at your facilities. Our devices are designed for long-term signal accuracy, low power consumption, simple programming and immunity to electrical noise.
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<tr>
<td>5116A</td>
<td>Programmable transmitter</td>
<td>D.16</td>
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</table>
Universal uni-/bipolar signal transmitter

4104
- Measures and outputs uni-/bipolar voltage and current signals
- Works with both passive and active inputs and outputs
- Uses the 4501 display for programming and process monitoring
- Fast < 20 ms response time and excellent < 0.05% accuracy
- Universally powered by 21.6...253 VAC / 19.2...300 VDC

Application
- Fast < 20 ms response time for measuring signals produced by torque, position, current & acceleration sensors.
- User configurable bipolar or unipolar I/O means the 4104 is suitable for nearly any voltage or current conversion.
- The excitation source enables measurement of two or three wire transmitters.
- The active or passive I/O makes the 4104 perfect for power matching current loops.
- Converts narrow bipolar inputs to wide bipolar or unipolar outputs, e.g., ±1 volt input = ±10 volt or 4...20 mA output.
- Selectable direct or inverse I/O makes the 4104 suitable for proportional control applications.
- The “V-curve” function outputs 100% – 0 – 100% when a 0 – 100% input signal is present.

Technical characteristics
- The latest analog and digital techniques are used to obtain maximum accuracy and immunity to interference.
- The current output can drive up to 800 Ohms, with an adjustable response time of 0.0...60.0 seconds.
- Exceptional mA output load stability of < 0.001% of span/100 Ohm.
- Meets the NAMUR NE21 recommendations, ensuring high accuracy in harsh EMC environments.
- Meets the NAMUR NE43 recommendations, allowing the control system to easily detect a sensor error.
- Each unit is tested to a high 2.3 kVAC, 3-port galvanic isolation level.
- Excellent signal to noise ratio of > 60 dB.

Mounting / installation / programming
- Very low power consumption means units can be mounted side by side without an air gap – even at 60°C ambient temperature.
- Approved for marine applications.
- Programming, monitoring, and 2-point process calibration is accomplished with the 4501 detachable display.
- All programming can be password protected.
**Environmental Conditions**

Specifications range: -20°C to +60°C
Storage temperature: -20°C to +85°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20
Installation in: Pollution degree 2 & measurement / overvoltage cat. II

**Mechanical specifications**

Dimensions (HxWxD) / 4501 / 4511 (approx.): 109 x 23.5 x 104 mm / 109 x 23.5 x 116 / 131 mm
Weight approx.: 250 g
Weight incl. 4501 / 4511 (approx.): 265 g / 350 g
DIN rail type: DIN EN 60715/35 mm
Wire size: 0.13...2.08 mm² AWG 26...14 stranded wire
Screw terminal torque: 0.5 Nm

**Common specifications**

Supply voltage, universal: 21.6...253 VAC, 50...60 Hz or Common specifications
Max. power consumption: ≤ 2.5 W
Internal consumption: ≤ 2 W
Isolation voltage, test / working: 2.3 kVAC / 260 VAC
Communications interface: Communication enable 4511
Signal / noise ratio: > 60 dB
Response time (0...90%, 100...10%): < 20 ms
Accuracy: Better than 0.05% of selected range
Cut-off frequency (3 dB): > 40 Hz
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

**Input specifications**

Current input: Signal range: ±23 mA
Current input: Programmable measurement ranges: ±10 and ±20 mA
Current input: Programmable measurement ranges: ±10 and ±20 mA
Input voltage drop: 1.4 V @ 20 mA
Loop error detection, 4...20 mA: Low: 3.6 mA
Loop error detection, 4...20 mA: High: > 21 mA
2-wire loop supply, (terminal 43 & 44): > 16 V / 20 mA
3-wire loop supply, (terminal 42 & 44): > 18 V / 20 mA
Loop supply limitation, terminal 44, nom.: 30 mA
Voltage input: Signal range: ±12 V
Programmable measurement ranges, VDC: 0/0.2...1, 0/1...5, 0/2...10 VDC
Programmable measurement ranges, VDC: ±1, ±5 and ±10 V
Input resistance, voltage input: > 2 MΩ

**Output specifications**

Current output: Signal range: 0...23 mA (unipolar)
Current output: Signal range: -23...+23 mA (bipolar)
Load stability, current output: ≤ 0.001% of span / 100 Ω
Current limit: ±28 mA (unipolar)
Current limit: ±28 mA (bipolar)
Programmable damping, current signals: 0...60.0 s
Programmable damping, current signals: 0 and 115% of max. value
Output limitation, on bipolar signals: ±115% of min. & max. values
Output limitation, on other unipolar mA signals: 0 and 115% of max. value
Current output: Active unipolar and bipolar programmable ranges: ±10 and ±20 mA
Current output: Active unipolar and bipolar programmable ranges: Direct or Inverted Action
V-curve function, active signals, 100-0-100%: 20-0-20 mA
Load (max.): 800 Ω / ±16 V @ ±20 mA
Passive 2-wire mA output: Programmable ranges: 0...20 and 4...20 mA
Passive 2-wire mA output: Programmable ranges: Direct or Inverted action
V-curve function, passive signals, 100-0-100%: 20-0-20 mA
External loop supply: 3.5 - 26 V
Programmable voltage ranges: 0/0.2...1; 0/1...5; 0/2...10 V
Programmable voltage ranges: ±1, ±5 and ±10 V
Programmable voltage ranges: Direct or Inverted action
V-curve function, voltage output, 100-0-100%: 1-0-1, 5-0-5 and 10-0-10 V
Load (min.): > 500 kΩ
Programmable damping, voltage signals: 0...60.0 s
Output limitation - outside range: on unipolar V signals starting from 0: 0 and 115% of max. value
Output limitation - outside range: on unipolar V signals with offset: 5% of min. value and 115% of max. value
Output limitation - outside range: on bipolar V signals: ±115% of min. & max. values
Sensor error indication, at 4...20 mA input: selectable: Low, High, Zero, None

**Approvals**

EMC: EN 61326-1
LVD: EN 61010-1
UL: UL 508
FM: 3025177
GOST R: Yes
DNV Marine: Stand. f. Certif. No. 2.4
Universal transmitter

4114

- Input for RTD, TC, Ohm, potentiometer, mA and V
- 2-wire supply > 16 V
- FM-approved for installation in Div. 2
- Output for current and voltage
- Universal AC or DC supply

Advanced features

- Programmable by way of detachable display front (4501), process calibration, signal simulation, password protection, error diagnostics and help text available in several languages.

Application

- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with standard analog output.
- Galvanic separation of analog signals and measurement of floating signals.
- The 4114 is designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.

Technical characteristics

- When 4114 is used with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4114 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- A green / red front LED indicates normal operation and malfunction.
- Continuous check of vital stored data for safety reasons.
- 3-port 2.3 kVAC galvanic isolation.
Environmental Conditions

Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications

Dimensions (HxWxD): 109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511: 109 x 23.5 x 116 / 131 mm
Weight approx.: 145 g
Weight incl. 4501 / 4511 (approx.): 160 g / 245 g
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications

Supply voltage, universal: 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. power consumption: ≤ 2.0 W
Isolation voltage, test / working: 2.3 kVAC / 250 VAC
Communications interface: Communication enabler 4511 / Programming front 4501
Signal / noise ratio: Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): ≤ 400 ms
Auxiliary supplies: 2-wire supply (terminal 44...43): 25...16 VDC / 0...20 mA
Accuracy: Better than 0.1% of selected range
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications

RTD input: Pt10, Pt20, Pt50, Pt100, Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000 Ni50, Ni100, Ni120, Ni1000, Cu10, Cu20, Cu50, Cu100
RTD input: Linear resistance
RTD input: Potentiometer
Cable resistance per wire (max.), RTD: 50 Ω
Sensor current, RTD: Nom. 0.2 mA
Effect of sensor cable resistance (3/4-wire), RTD: < 0.002 Ω / Ω
Sensor error detection, RTD: Yes
Short circuit detection, RTD: < 15 Ω
Cold junction compensation (CJC) via ext. sensor in connector 5910: ±(2.0°C + 0.4°C * Δt)
CJC via internally mounted sensor: ±(2.0°C + 0.4°C * Δt)
Sensor error detection, TC: Yes
Sensor error current: When detecting / else: Nom. 2 μA / 0 μA
Current input: Measurement range: 0...20 mA

Output specifications

Current output: Signal range: 0...20 mA
Programmable current ranges: 0...20 / 4...20 / 20...0 and 20...4 mA
Load (max.): 20 mA/800 Ω/16 VDC
Load stability, current output: ≤ 0.01% of span / 100 Ω
Sensor error indication, current output: 0 / 3.5 / 23 mA / none
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
Current limit: ≤ 28 mA
Voltage output: signal range: 0...10 VDC
Programmable voltage ranges: 0/0.2...1; 0/1...5; 0/2...10; 1...0/20; 5...1/10; 10...2/0 V
Load (min.): ≤ 400 kΩ
*t of span: = of the currently selected measurement range

Approvals

EMC: EN 61326-1
LVD: EN 61010-1
FM: UL 3025177
GOST R: Yes
DNV R: Stand. 1. Certific. No. 2.4
SIL: Hardware assessed for use in SIL applications
Universal transmitter

**4116**

- Input for RTD, TC, Ohm, potentiometer, mA and V
- 2-wire supply > 16 V
- FM-approved for installation in Div. 2
- Output for current, voltage and 2 relays
- Universal AC or DC supply

**Advanced features**

- Programmable via detachable display front (4501), process calibration, signal and relay simulation, password protection, error diagnostics and selection of help text in several languages.

**Application**

- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with 2 pairs of potential-free relay contacts and analog output.
- Galvanic separation of analog signals and measurement of floating signals.
- The 4116 is designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.

**Technical characteristics**

- When 4116 is used in combination with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4116 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- A green / red front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 4-port 2.3 kVAC galvanic isolation.
Environmental Conditions
Specifications range........................................ -20°C to +60°C
Calibration temperature........................................ 20...25°C
Relative humidity............................................. < 95% RH (non-cond.)
Protection degree............................................. IP20

Mechanical specifications
Dimensions (HxWxD)........................................ 109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511..................... 109 x 23.5 x 116 / 131 mm
Weight approx................................................ 170 g
Weight incl. 4501 / 4511 (approx.)......................... 185 g / 270 g
Wire size....................................................... 1 x 2.5 mm² stranded wire
Screw terminal torque....................................... 0.5 Nm

Common specifications
Supply voltage, universal............................... 21.6...253 VAC, 50...60 Hz or
Common specifications
Supply voltage, universal............................... 19.2...300 VDC
Fuse............................................................. 400 mA SB / 250 VAC
Max. power consumption..................≤ 2.5 W
Isolation voltage, test / working..................2.3 kVAC / 250 VAC
Communications interface.........................Communication enable 4511 / Programming front 4501
Signal / noise ratio........................................ Min. 60 dB (0...100 khz)
Response time (0...90%, 100...10%):............≤ 1 s
Response time (0...90%, 100...10%):............≤ 400 ms
Accuracy...................................................... Better than 0.1% of selected range
Auxiliary supplies: 2-wire supply (terminal 44...43).................................... 25...16 VDC / 0...20 mA
EMC immunity influence.........................< ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst............................................ < ±1% of span

Input specifications
RTD input................................................. Pt10, Pt20, Pt50, Pt100,
Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000 Ni50, Ni100,
Ni120, Ni1000, Cu10, Cu20, Cu50, Cu100
RTD input................................................. Potentiometer
Cable resistance per wire.............................. 50 Ω
Sensor current, RTD........................................ Nom. 0.2 mA
Effect of sensor cable resistance................. < 0.002 Ω / Ω
Sensor error detection, RTD......................... Yes
Short circuit detection, RTD............................. < 15 Ω
TC input: Thermocouple type......................... B, E, J, K, L, N, R, S, T, U,
W3, W5, LR
Cold junction compensation
(CJC) via ext. sensor in connector 5910.................. 20...28°C ≤ ±1°C, -20...20°C / 28...70°C ≤ ±2°C
CJC via internally mounted sensor......................... ±(2.0°C + 0.4°C * ΔT)
Sensor error detection, TC............................. Yes
Sensor error current: When detecting / else........ Nom. 2 μA / 0 μA
Current input: Measurement range...................... 0...20 mA
Current input: Programmable measurement range...................... 0...20 and 4...20 mA
Input resistance, current......................... Nom. 20 Ω + PTC 50 Ω
Voltage input: Measurement range...................... 0...12 VDC
Programmable measurement range, VDC.............................. 0/0.2...1, 0/1...5, 0/2...10 VDC
Input resistance, voltage input...................... Nom. 10 MΩ

Output specifications
Current output: Signal range...................... 0...20 mA
Programmable current ranges...................... 0...20 / 4...20 / 20...0 and
Load (max.)................................................ 20 mA/800 Ω/16 VDC
Load stability, current output...................... 50.01% of span / 100 Ω
Sensor error indication, current output........... 0 / 3.5 / 23 mA / none
NAMUR NE 43 Upscale/Downscale.......................... 23 mA / 3.5 mA
Current limit.......................................... ≤ 28 mA
Voltage output: signal range...................... 0...10 VDC
Programmable voltage ranges...................... 0/0.2...1; 0/1...5; 0/2...10;
Load (min.).............................................. 500 kΩ
2...500 VA
Relay output: Relay functions........................ Setpoint, Window, Sensor
Load stability, current output...................... 500 VA
error, Latch, Power and Off
Relay error reaction........................................................... Break / Make / Hold
Hysteresis.......................................................... 0...100%
ON and OFF delay........................................ 20...200 ms
Max. voltage.............................................. 250 VRMS
Max. current............................................... 2 AAC or 1 ADC
Max. AC power............................................. 500 VA
Sensor error reaction........................................................... Break / Make / Hold
*of span....................................................... ± of the currently selected measurement range
Approvals
Approvals
EMC.......................................................... EN 61326-1
LVD........................................................... EN 61010-1
FM........................................................... 3026177
UL........................................................... UL 508
GOST R......................................................... Yes
DNV R........................................................... Stand. f. Certific. No. 2.4
SIL........................................................... Hardware assessed for use in SIL applications

Universal trip amplifier

4131

- Input for RTD, TC, Ohm, potentiometer, mA and V
- 2 adjustable alarm limits
- FM-approved for installation in Div. 2
- 2 relay outputs
- Universal AC or DC supply

Advanced features

- Programmable via detachable display front (4501), process calibration, relay simulation, password protection, error diagnostics and selection of help text in several languages.

Application

- Process control with 2 pairs of potential-free relay contacts which can be configured to suit any application.
- Trip amplifier with window function defined by a high and a low setpoint. The relay changes state outside the window.
- Relay latch function, where the relay is activated and can only be reset manually.
- Sophisticated sensor error surveillance, where one relay holds the state immediately prior to the sensor error, while allowing the process to continue. The other relay can be set for sensor error alarm so that the defect sensor can be replaced immediately.

Technical characteristics

- When 4131 is used with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4131 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 2.3 kVAC galvanic isolation.

Connections

Input signals:

Output signals:

Supply:
Environmental Conditions
Specifications range -20°C to +60°C
Calibration temperature 20...28°C
Relative humidity < 95% RH (non-cond.)
Protection degree IP20

Mechanical specifications
Dimensions (HxWxD) ........................................ 109 x 23.5 x 104 mm
Weight approx .................................................. 170 g
Wire size ......................................................... 1 x 2.5 mm² stranded wire
Screw terminal torque ........................................ 0.5 Nm

Common specifications
Supply voltage, universal ............................... 21.6...253 VAC, 50...60 Hz
Common specifications
Dimensions (HxWxD) w/ 4501 / 4511 ......................... 109 x 23.5 x 116 / 131 mm
Weight incl. 4501 / 4511 (approx.) ......................... 185 g / 270 g

Input specifications
RTD input ....................................................... Pt10, Pt20, Pt50, Pt100, Pt200, Pt300, Pt400, Pt500, Pt1000 Ni50, Ni100, Ni120, Ni1000, Cu10, Cu20, Cu50, Cu100
RTD input ....................................................... Linear resistance
RTD input ....................................................... Potentiometer
Cable resistance per wire (max.), RTD ....................... 50 Ω
Secondary current, RTD ....................................... Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD ................... < 0.002 Ω / Ω
Sensor error detection, RTD ................................. Yes
Short circuit detection, RTD ....................................... < 15 Ω
Cold junction compensation (CJC) via ext. sensor in connector 5910. 20...28°C ±1°C, -20...20°C / 28...70°C ± 2°C
CJC via internally mounted sensor ................................ ±(2.0°C + 0.4°C * ΔT)
ΔT = ................................................................. Internal temperature-ambient temperature
Sensor error detection, TC ........................................... Yes
Sensor error current: When detecting / else ................. Nom. 2 μA / 0 μA
Current input: Measurement range ....................... 0...20 mA

Current input: Programmable measurement ranges ................. 0...20 and 4...20 mA
Input resistance, current input ..................................... Nom. 20 Ω + PTC 50 Ω
Voltage input: Measurement range ................................. 0...12 VDC
Programmable measurement ranges, VDC ....................... 0/0.2...1, 0/1...5, 0/2...10 VDC
Input resistance, voltage input ..................................... Nom. 10 Ω

Output specifications
Relay output: Relay functions ............................. Setpoint, Window, Sensor error, Latch, Power and Off
Hysteresis ..................................................... 0...100%
ON and OFF delay ............................................. 0...3600 s
Max. voltage .................................................... 250 VRMS
Max. current .................................................... 2 AAC or 1 ADC
Max. AC power .................................................. 500 VA
Sensor error reaction ......................................... Break / Make / Hold
*of span: .......................................................... of the currently selected measurement range

Approvals
EMC ..................................................................... EN 61326-1
LVD ..................................................................... EN 61010-1
FM ..................................................................... UL 508
UL ..................................................................... UL 508
GOST R ................................................................ Yes
DNV Marine ......................................................... Stand. f. Certific. No. 2.4

Order:
Type
4131
Universal I/f converter

4222

- Input for RTD, TC, Ohm, potentiometer, mA and V
- Frequency output NPN, PNP and TTL
- Generates frequencies from 0.001...25000 Hz
- 2-wire supply > 16 V
- Universal AC or DC supply

Advanced features

• Programmable via detachable display front (4501), process calibration, signal simulation, password protection, error diagnostics and selection of help text in several languages.

Application

• Linearized, electronic temperature measurement with RTD or TC sensor.
• Conversion of linear resistance variation to a frequency signal, e.g. from solenoids and butterfly valves or linear movements with attached potentiometer.
• Power supply and signal isolator for 2-wire transmitters.
• Process control by way of a frequency signal transmitted to e.g. a PLC or a process computer.
• Galvanic separation and conversion of analog signals to frequency signals.

Technical characteristics

• When 4222 is used in combination with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4222 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP switches.
• A green front LED indicates normal operation.
• Continuous check of vital stored data for safety reasons.
• 3-port 2.3 kVAC galvanic isolation.

Connections

Input signals:

Output signals:

Supply:
Environmental Conditions
Specifications range.............................. -20°C to +60°C
Calibration temperature.......................... 20° to 28°C
Relative humidity....................................... < 95% RH (non-cond.)
Protection degree...................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511.................. 109 x 23.5 x 116 / 131 mm
Weight approx........................................... 155 g
Weight incl. 4501 / 4511................................. 170 g / 255 g
Wire size.................................................... 1 x 2.5 mm² stranded wire
Screw terminal torque................................. 0.5 Nm

Common specifications
Supply voltage, universal.............................. 21.6...253 VAC, 50...60 Hz or
19.2...300 VDC
Fuse......................................................... 400 mA SB / 250 VAC
Max. power consumption.............................. ≤ 2.5 W
Isolation voltage, test / working....................... 2.3 kVAC / 250 VAC
Communications interface............................ Communication enabler 4511 /
Programming front 4501
Signal / noise ratio..................................... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): Temperature input (programmable)........ 1...60 s
mA / V input (programmable)......................... 0.4...60 s
Accuracy................................................... Better than 0.1% of selected range
Auxiliary supplies: 2-wire supply (terminal 44...43)..... 25...16 VDC / 0...20 mA
EMC immunity influence.............................. < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.............. < ±1% of span

Input specifications
RTD input.................................................... Pt100, Ni100, lin. R
RTD input..................................................... Potentiometer
Cable resistance per wire (max.), RTD.................. 50 Ω
Sensor current, RTD....................................... Nom. 0.2 mA
Sensor error detection, RTD........................... Yes
Short circuit detection, RTD........................... < 15 Ω
CJC via internally mounted sensor ................. < ±0.0°C
Sensor error detection, TC............................ Yes
Sensor error current: When detecting / else............... Nom. 2 μA / 0 μA
Current input: Measurement range.................. 0...20 mA
Current input: Programmable measurement ranges........ 0...20 and 4...20 mA
Input resistance, current input........................ Nom. 20 Ω + PTC 50 Ω
Voltage input: Measurement range.................... 0...12 VDC
Programmable measurement ranges, VDC............. 0/0.2...1, 0/0.5...2.5, 0/1...5,
0/2...10 VDC
Input resistance, voltage input........................ Nom. 10 MΩ

Output specifications
Frequency output range.............................. 0...25000 Hz
Min. frequency (span).................................. 0.001 Hz
Other output types..................................... PNP, NPN and TTL
Sensor error indication, programmable.............. 0...26250 Hz
*of span.................................................. = of the currently selected measurement range

Approvals
EMC........................................................ EN 61326-1
LVD.......................................................... EN 61010-1
UL.............................................................. UL 508
Programmable transmitter

5114A
- Input for RTD, TC, mV, linear resistance, mA, and V
- 3-port 3.75 kVAC galvanic isolation
- Current and voltage output
- Universal voltage supply
- 1- and 2-channel versions
- Loop supply > 17.1 V

Advanced features
- The 5114 transmitter can be configured, with or without a power supply, using the PReset software and the Loop Link communications unit.

Application
- Jumper selectable inputs for current/voltage or temperature.
- Programmable current (0...100 mA) and voltage (0...250 VDC) inputs.
- Linearized, electronic temperature measurement.
- Conversion of linear resistance variation e.g. from solenoids and butterfly valves or linear movements with attached potentiometer.
- 17.1 VDC loop and 2.5 VDC potentiometer supplies.
- Automatic 4- / 3-wire or programmable 2-wire cable compensation.
- Configurable sensor error detection including NAMUR NE43.

Technical characteristics
- Active or Passive current output and selectable voltage output.
- Separation of circuits in PELV/SELV installations.
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Common specifications
Dimensions (HxWxD): 109 x 23.5 x 130 mm
Weight approx.: 225 g
DIN rail type: DIN 46277
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Output specifications
Max. offset: 50% of selected max. value
Current output: Signal range: 0...20 mA
Min. signal range: 10 mA
Load (max.): 20 mA (24/25 VDC)
Load stability, current output: ± 0.01% of span / 100 Ω
Current limit: ± 28 mA
Effect of external 2-wire supply voltage variation: < 0.005% of span / V
Voltage output: signal range: 0...10 VDC
Voltage output, min. signal range: 500 mV
Load (min.): 500 kΩ
Sensor error indication, current output: Programmable 0...23 mA
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
* of span = of the presently selected range

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
GOST R: Yes
DNV Marine: Stand. f. Certific. No. 2.4
**Signal calculator**

**5115A**

- Redundancy measurement with 2 input signals
- Signal calculator with the four arithmetical operations
- Duplication of the input signal
- Input for RTD, Ohm, TC, mV, mA, and V
- Universal supply by AC or DC

**Application**

- Redundancy measurement of temperature by means of two sensors, where the secondary sensor takes over the measurement when a sensor error occurs on the primary sensor.
- Duplication of the input signal, e.g. from a temperature sensor or an analog process signal to two separate analog outputs.
- Signal calculator with four arithmetical operations: Addition, subtraction, multiplication and division.
  - Example: Differential measurement: (Input 1 * K1) - (Input 2 * K2) + K4
  - Example: Average measurement: (Input 1 * 0.5) + (Input 2 * 0.5) + K4
  - Example: Different functions on the outputs: Output 1 = input 1 - input 2, and Output 2 = input 1 + input 2
- Power supply for 2-wire transmitters.

**Technical characteristics**

- Within a few seconds the user can program PR5115A to a selected application using the configuration program PReset.
- A green front LED indicates normal operation, sensor error on each sensor, and functional error.
- Continuous check of vital stored data for safety reasons.
- 5-port 3.75 kVAC galvanic isolation.

**Mounting / installation**

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 42 devices can be mounted per meter.
Environmental Conditions
Specifications range........................................ -20°C to +60°C
Relative humidity........................................< 95% RH (non-cond.)
Protection degree........................................IP20

Mechanical specifications
Dimensions (HxWxD)...................................... 109 x 23.5 x 130 mm
Weight approx.............................................225 g
Wire size....................................................1 x 2.5 mm² stranded wire
Screw terminal torque....................................0.5 Nm

Common specifications
Supply voltage, universal...............................21.6...253 VAC, 50...60 Hz or
Common specifications
Specifications range....................................... -20°C to +60°C
Relative humidity........................................< 95% RH (non-cond.)
Protection degree........................................IP20

Mechanical specifications
Dimensions (HxWxD)...................................... 109 x 23.5 x 130 mm
Weight approx.............................................225 g
Wire size....................................................1 x 2.5 mm² stranded wire
Screw terminal torque....................................0.5 Nm

Common specifications
Supply voltage, universal...............................21.6...253 VAC, 50...60 Hz or
Common specifications
Specifications range....................................... -20°C to +60°C
Relative humidity........................................< 95% RH (non-cond.)
Protection degree........................................IP20

Mechanical specifications
Dimensions (HxWxD)...................................... 109 x 23.5 x 130 mm
Weight approx.............................................225 g
Wire size....................................................1 x 2.5 mm² stranded wire
Screw terminal torque....................................0.5 Nm

Common specifications
Supply voltage, universal...............................21.6...253 VAC, 50...60 Hz or
Common specifications
Specifications range....................................... -20°C to +60°C
Relative humidity........................................< 95% RH (non-cond.)
Protection degree........................................IP20

Mechanical specifications
Dimensions (HxWxD)...................................... 109 x 23.5 x 130 mm
Weight approx.............................................225 g
Wire size....................................................1 x 2.5 mm² stranded wire
Screw terminal torque....................................0.5 Nm

Common specifications
Supply voltage, universal...............................21.6...253 VAC, 50...60 Hz or

Output specifications
Max. offset................................................50% of selected max. value
Current output: Signal range..............................0...23 mA
Min. signal range..........................................10 mA
Load (max.)................................................20 mA/600 Ω/12 VDC
Load stability, current output.............................≤ 0.005% of span / V
Current limit................................................50 mA
Voltage output: signal range.............................0...10 VDC
Voltage output, min. signal range.......................500 mV
Load (min.)..................................................500 kΩ
2-wire 4...20 mA output: Signal range................4...20 mA
Load stability, 4...20 mA output..........................≤ 0.01% of span / 100 Ω
Effect of external 2-wire supply voltage variation..............< 0.005% of span / V
Max. external 2-wire supply................................29 VDC
Sensor error indication, current output...............Programmable 0...23 mA
NAMUR NE 43 Upscale/Downscale..............23 mA / 3.5 mA
*of span..............................................= of the presently selected range

Approvals
EMC..........................................................EN 61326-1
LVD..........................................................EN 61010-1
PELV/SELV................................................IEC 364-4-41 and EN 60742
DNV Marine........................................Stand. 1 Certific. No. 2.4
GOST R......................................................Yes

Input specifications
Max. offset.............................................50% of selected max. value
RTD input...........................................Pt100, NI100, lin. R
Cable resistance per wire (max.), RTD..................10 Ω
Sensor current, RTD........................................Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD..............< 0.002 Ω / Ω
Sensor error detection, RTD................................Yes
Cold junction compensation (CJC)...........................< ±1.0°C
Sensor error current, TC................................Nom. 30 μA
Current input: Measurement range..................0...100 mA
Min. measurement range (span), current input............4 mA
Input resistance: Supplied unit........................Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit.......................RSHUNT = -, VDROP < 6 V
Voltage input: Measurement range.....................0...250 VDC
mV input: Measurement range..........................-150...+150 mV
Min. measurement range (span), voltage input...........5 mV
Input resistance, voltage input........................Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input........................Nom. 5 MΩ (> 2.5 VDC)

Order:

<table>
<thead>
<tr>
<th>Type</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>5115A</td>
<td>RTD/TC/mV/R/mA/V</td>
</tr>
</tbody>
</table>
Programmable transmitter

5116A

- Input for RTD, TC, mV, Ohm, potentiometer, mA and V
- 2-wire supply > 16.5 V
- Bipolar voltage input
- Output for current, voltage and 2 relays
- Universal supply by AC or DC

Application
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with 2 potential-free relay contacts which can be configured for advanced functions.
- Galvanic separation of analog signals and measurement of floating signals.

Technical characteristics
- Within a few seconds the user can program PR5116A to suit the specific application.
- By way of the front push-button the input can be calibrated to the exact span of the process. Zero drift on the process signal can be adjusted by a single press of the front button.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 3.75 kVAC galvanic isolation.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 42 devices can be mounted per meter.
Environmental Conditions
Specifications range.......................... -20°C to +60°C
Calibration temperature...................... 20...28°C
Relative humidity.............................. < 95% RH (non-cond.)
Protection degree.............................. IP20

Mechanical specifications
Dimensions (HxWxD)............................. 109 x 23.5 x 130 mm
Weight approx..................................... 225 g
DIN rail type....................................... DIN 46277
Wire size.......................................... 1 x 2.5 mm² stranded wire
Screw terminal torque.......................... 0.5 Nm

Common specifications
Supply voltage, universal...................... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. power consumption....................... ≤ 3 W
Internal consumption........................ ≤ 2.0 W
Isolation voltage, test / working............. 3.75 kVAC / 250 VAC
Communications interface..................... Loop Link
Signal / noise ratio............................ Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%):........ 400 ms...60 s
Temperature input (programmable).......... 250 ms...60 s
Updating time................................... 115 ms (temperature input)
Updating time................................... 75 ms (mA / V / mV input)
Signal dynamics, input......................... 22 bit
Signal dynamics, output....................... 16 bit
Auxiliary voltages: Reference voltage........ 2.5 VDC ±0.5% / 15 mA
Auxiliary supplies: 2-wire supply (pin 5A...5D) 28...165 VDC / 0...20 mA
EMC immunity influence...................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.................. < ±1% of span

Input specifications
Max. offset...................................... 50% of selected max. value
RTD input........................................ Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD........ 10 Ω (max. 50 Ω)
Sensor current, RTD............................ Nom. 0.2 mA
Effect of sensor cable resistance (3-4-wire), RTD............ < 0.002 Ω / Ω
Sensor error detection, RTD.................. Yes
Cold junction compensation (CJC).............. < ±1.0°C
Sensor error current, TC...................... Nom. 30 µA
Sensor error detection, TC................... Yes
Current input: Measurement range........... 0...100 mA
Min. measurement range (span), current input......................... 4 mA
Input resistance: Supplied unit................ Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit........... RSHUNT = ∞, VDROP < 6 V
Sensor error detection, current input.......... Loop break 4...20 mA
Voltage input: Measurement range........... 0...250 VDC

Output specifications
Voltage input: Measurement range........... -2500...+2500 mV
Min. measurement range (span), voltage input........................ 5 mV
Input resistance, voltage input................ Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input................ Nom. 5 MΩ (> 2.5 VDC)
Input resistance, voltage input................ > 5 MΩ (mV input)
Potentiometer via 2.5 V ref.......................... 170 Ω

Approvals
EMC................................................ EN 61326-1
LVD.................................................. EN 61010-1
PELV/SELV...................................... IEC 364-4-41 and EN 60742
UL.................................................... UL 508
GOST R............................................. Yes
DNV Marine...................................... Stand. f. Certific. No. 2.4
Eliminate measurement errors with better isolation. *Isolators with exceptional performance for dedicated applications*

Our compact, fast and high-quality 6 mm isolators provide you with exceptionally high, safe signal isolation, no matter the type of signal. They can be stacked both vertically and horizontally with no air gap separation required, accommodating up to 50 units or 100 channels in just 30 centimeters.

All our isolators offer high isolation levels and exceptional EMC performance, utilizing our patented technology to provide high basic accuracy, low power consumption, and maximum protection against error due to electromagnetic noise (EMC).
## Isolation

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<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>3103</td>
<td>Isolated repeater</td>
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<tr>
<td>3104</td>
<td>Isolated converter</td>
<td>€4.4</td>
</tr>
<tr>
<td>3105</td>
<td>Isolated converter</td>
<td>€6.6</td>
</tr>
<tr>
<td>3108</td>
<td>Isolated repeater / splitter</td>
<td>€8.8</td>
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<td>Isolated converter / splitter</td>
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<td>3114</td>
<td>Isolated universal converter</td>
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<td>Bipolar isolated converter</td>
<td>€14.1</td>
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<tr>
<td>3118</td>
<td>Bipolar isolated converter / splitter</td>
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<td>Loop-powered isolator</td>
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<td>3186</td>
<td>2-wire transmitter isolator</td>
<td>€20.2</td>
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<td>5104A</td>
<td>Repeater / power supply</td>
<td>€22.2</td>
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<tr>
<td>5106A</td>
<td>HART® transparent repeater</td>
<td>€24.2</td>
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<tr>
<td>6185</td>
<td>Loop-powered isolator</td>
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<tr>
<td>2204</td>
<td>Isolation amplifier</td>
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<td>2279</td>
<td>AC/DC transmitter</td>
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<td>2284</td>
<td>Isolation amplifier</td>
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</tbody>
</table>
Isolated repeater

3103
- Isolation and 1:1 conversion of standard current signals
- Slimline housing of 6 mm
- Response time < 7 ms
- Low cost
- Simple - no setup needed

Application
- Isolation and 1:1 conversion of standard current signals.
- Galvanic separation of analog current signals.
- Elimination of ground loops and measurement of floating signals.
- A competitive choice in terms of both price and technology for galvanic isolation of current signals to SCADA systems or PLC equipment.
- Installation in ATEX Ex zone 2 / IECEx Zone 2 / FM division 2.
- Suitable for environments with high vibration stress, e.g. ships.

Technical characteristics
- The input is protected against overvoltage and polarity error.
- Factory-calibrated measurement ranges.
- Inputs and outputs are floating and galvanically separated.

Connections

Safe Area or Zone 2 & Cl. 1, Div. 2, gr. A-D
Environmental Conditions
Specifications range ....................................... -25°C to +70°C
Storage temperature ...................................... -40°C to +85°C
Calibration temperature .................................. 20...28°C
Relative humidity ............................................ < 95% RH (non-cond.)
Protection degree ........................................... IP20
Installation .................................................. Pollution degree 2 &
measurement / overvoltage
cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx ............................................. 70 g
DIN rail type ................................................. DIN EN 60715/35 mm
Wire size ..................................................... 0.13 x 2.5 mm² / AWG 26...12
stranded wire
Screw terminal torque ................................. 0.5 Nm

Common specifications
Supply voltage............................................ 16.8...31.2 VDC
Max. power consumption ........................... 0.8 W
Internal consumption................................ 0.4 W (typ.) / 0.65 W (max.)
Isolation voltage, test .................................. 2.5 kVAC
Isolation voltage, working.............................. 300 VAC (reinforced) / 250
VAC (Zone 2, Div. 2)
Signal / noise ratio ....................................... > 60 dB
Response time (0...90%, 100...10%)......... < 7 ms
Accuracy ....................................................... < ±0.05% of span
Temperature coefficient ............................ < ±0.01% of span / °C
EMC immunity influence .............................. < ±0.5% of span
Extended EMC immunity: NAMUR
NE 21, A criterion, burst ............................. < ±1% of span

Input specifications
Current input: Measurement range .............. 0...20.5 mA
Functional range, current input .................... 0...23 mA
Input voltage drop ...................................... < 1.5 VDC

Output specifications
Current output: Signal range ...................... 0...20.5 mA (span)
Load (max.).................................................. 23 mA/600 Ω
Current stability, current output .................... ±0.01% of span / 100 Ω
Current limit ................................................ ≤ 28 mA
of span ...................................................... ≤ 0...20 mA

Approvals
EMC.......................................................... EN 61326-1
LVD................................................................ EN 61010-1
ATEX.......................................................... KEMA 10ATEX0147 X
IECEx......................................................... KEM 10.0068X
FM............................................................. 3041043-C
DNV Marine................................................. Stand. f. Certific. No. 2.4
GL.................................................................. V1-7-2
GOST R....................................................... Yes
UL.............................................................. UL 61010-1
Isolated converter

3104

- Isolation 2.5 mm² and conversion of standard DC signals
- Slimline housing of 6 mm
- Power supply and signal isolator for 2-wire transmitter
- Loop supply >17 V
- DIP-switch configured

Application

- Isolation and conversion of standard DC signals.
- Galvanic separation of analog current and voltage signals.
- Elimination of ground loops and measurement of floating signals.
- A competitive choice in terms of both price and technology for galvanic isolation of current and voltage signals to SCADA systems or PLC equipment.
- Installation in ATEX Ex zone 2 / IECEx zone 2 / FM division 2.
- Suitable for environments with high vibration stress, e.g. ships.

Technical characteristics

- Easy configuration via DIP-switches.
- The input is protected against overvoltage and polarity error.
- Factory-calibrated measurement ranges.
- Inputs and outputs are floating and galvanically separated.

Connections
Environmental Conditions
Specifications range....................................... -25°C to +70°C
Storage temperature...................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx................................................ 70 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage............................................... 16.8...31.2 VDC
Max. power consumption................................ 1.2 W
Internal consumption..................................... 0.4 W (typ.) / 0.65 W (max.)
Isolation voltage, test..................................... 2.5 kVAC
Isolation voltage, working............................... 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio........................................ > 60 dB
Response time (0...90%, 100...10%)............... < 7 ms
Accuracy........................................................ < ±0.05% of span
Temperature coefficient................................ < ±0.01% of span / °C
EMC immunity influence.............................. < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst............... < ±1% of span

Input specifications
Current input: Measurement range.................. 0...20.5 mA
Functional range, current input...................... 0...23 mA
Current input: Programmable measurement ranges........... 0...20 and 4...20 mA
Input voltage drop........................................... < 1.5 VDC
2-wire transmitter supply.............................. > 17 V / 20 mA
Voltage input: Measurement range................. 0...10.25 V
Functional range, voltage input..................... 0...11.5 V / 0...5.75 V
Programmable measurement ranges, VDC............ 0/1...5 and 0/2...10 V
Input resistance, voltage input...................... ≥ 500 kΩ

Output specifications
Current output: Signal range......................... 0...20.5 mA (span)
Programmable current ranges........................ 0 / 4...20 mA
Load (max.).................................................. 23 mA/600 Ω
Load stability, current output......................... S 0.01% of span / 100 Ω
Current limit................................................ S 28 mA
Voltage output: signal range.......................... 0...10 VDC
Programmable voltage ranges........................ 0/1...5 and 0/2...10 V
Load (min.).................................................. > 10 kΩ

Approvals
EMC............................................................. EN 61326-1
LVD............................................................. EN 61010-1
ATEX........................................................... KEMA 10ATEX0147 X
IECEx.......................................................... KEM 10.0068X
FM.............................................................. 3041043-C
GOST R......................................................... Yes
DNV Marine................................................ Stand. f. Certific. No. 2.4
GL............................................................. V1-7-2
UL.............................................................. UL 61010-1
**Isolated converter**

**3105**

- Isolation and conversion of standard DC signals
- Slimline housing of 6 mm
- Response time <7 ms
- Low cost
- DIP-switch configured

**Application**

- Isolation and conversion of standard DC signals.
- Galvanic separation of analog current and voltage signals.
- Elimination of ground loops and measurement of floating signals.
- A competitive choice in terms of both price and technology for galvanic isolation of current and voltage signals to SCADA systems or PLC equipment.
- Suitable for environments with high vibration stress, e.g. ships.

**Technical characteristics**

- Easy configuration via DIP-switches.
- The input is protected against overvoltage and polarity error.
- Factory-calibrated measurement ranges.
- Inputs and outputs are floating and galvanically separated.

**Connections**
### Environmental Conditions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications range</td>
<td>0°C to +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Calibration temperature</td>
<td>20...28°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>&lt; 95% RH (non-cond.)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP20</td>
</tr>
<tr>
<td>Installation and measurement/overvoltage</td>
<td>Pollution degree 2 &amp; cat. II</td>
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</table>

### Mechanical Specifications

<table>
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<tr>
<th>Specification</th>
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</thead>
<tbody>
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<td>Dimensions (HxWxD)</td>
<td>113 x 6.1 x 115 mm</td>
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<tr>
<td>Weight approx</td>
<td>70 g</td>
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<tr>
<td>DIN rail type</td>
<td>DIN EN 60715/35 mm</td>
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<tr>
<td>Wire size</td>
<td>0.13 x 2.5 mm² / AWG 26...12 stranded wire</td>
</tr>
<tr>
<td>Screw terminal torque</td>
<td>0.5 Nm</td>
</tr>
</tbody>
</table>

### Common Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>16.8...31.2 VDC</td>
</tr>
<tr>
<td>Max. power consumption</td>
<td>0.8 W</td>
</tr>
<tr>
<td>Internal consumption</td>
<td>0.4 W (typ.) / 0.65 W (max.)</td>
</tr>
<tr>
<td>Isolation voltage, test</td>
<td>2.5 kVAC</td>
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<tr>
<td>Isolation voltage, working</td>
<td>300 VAC</td>
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<tr>
<td>Signal / noise ratio</td>
<td>&gt; 60 dB</td>
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<tr>
<td>Response time</td>
<td>&lt; 7 ms</td>
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<tr>
<td>Accuracy</td>
<td>&lt; ±0.2% of span</td>
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<tr>
<td>Temperature coefficient</td>
<td>&lt; ±0.015% of span / °C</td>
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<tr>
<td>EMC immunity influence</td>
<td>&lt; ±0.5% of span</td>
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<tr>
<td>Extended EMC immunity: NAMUR NE 21, A criterion, burst</td>
<td>&lt; ±1% of span</td>
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</table>

### Input Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Current input: Measurement range</td>
<td>0...20.5 mA</td>
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<tr>
<td>Functional range, current input</td>
<td>0...23 mA</td>
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<td>&lt; 1.5 VDC</td>
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<td>Voltage input: Measurement range</td>
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### Output Specifications

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<td>0 / 4...20 mA</td>
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<td>Load (max.)</td>
<td>23 mA/600 Ω</td>
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<tr>
<td>Load stability, current output</td>
<td>±0.01% of span / 100 Ω</td>
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<tr>
<td>Current limit</td>
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<tr>
<td>Voltage output: signal range</td>
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<td>Programmable voltage ranges</td>
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### Approvals

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<td>DNV Marine</td>
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<td>GL</td>
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<tr>
<td>UL</td>
<td>UL 508</td>
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</tbody>
</table>
Isolated repeater / splitter

3108

- Isolation and conversion of current signals
- Slimline housing of 6 mm
- Response time <7 ms
- Splitter function: 1 in - 2 out
- Simple - no setup needed

Application

- Isolation and conversion of standard DC signals.
- Galvanic separation of analog current signals.
- Elimination of ground loops and measurement of floating signals.
- A competitive choice in terms of both price and technology for galvanic isolation of current signals to SCADA systems or PLC equipment.
- Installation in ATEX Ex zone 2 / IECEx Zone 2 / FM division 2.
- Suitable for environments with high vibration stress, e.g. ships.

Technical characteristics

- The input is protected against overvoltage and polarity error.
- Factory-calibrated measurement ranges.
- Inputs and outputs are floating and galvanically separated.

Connections

Safe Area or Zone 2 & Cl. 1, Div. 2, gr. A-D
Environmental Conditions
Specifications range....................................... -25°C to +70°C
Storage temperature...................................... -40°C to +85°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx................................................ 70 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage............................................... 16.8...31.2 VDC
Max. power consumption............................... 0.8 W
Internal consumption.................................... 0.4 W (typ.) / 0.65 W (max.)
Isolation voltage, test.................................... 2.5 kVAC
Isolation voltage, working............................... 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio...................................... > 60 dB
Response time (0...90%, 100...10%).............. < 7 ms
Accuracy....................................................... < ±0.05% of span
Temperature coefficient.............................. < ±0.01% of span / °C
EMC immunity influence.............................. < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst................................. < ±1% of span

Output specifications
Current output: Signal range......................... 0...20.5 mA (span)
Load (max.).................................................... 23 mA/300 Ω
Load stability, current output........................ ≤0.01% of span / 100 Ω
Current limit................................................ ≤ 28 mA
*of span..................................................... ≤ 0...20 mA

Approvals
EMC............................................................... EN 61326-1
LVD................................................................ EN 61010-1
ATEX.............................................................. KEMA 10ATEX0147 X
IECEx............................................................. KEM 10.0068X
FM................................................................. 3041043-C
GOST R......................................................... Yes
DNV Marine.................................................. Stand. f. Certific. No. 2.4
GL................................................................ V1-7-2
UL................................................................ UL 61010-1
Isolated converter / splitter

3109

- Isolation and conversion of standard DC signals
- Slimline housing of 6 mm
- Power supply and signal isolator for 2-wire transmitter
- Splitter function: 1 in - 2 out
- DIP-switch configured

Application
- Isolation and conversion of standard DC signals.
- Galvanic separation of analog current and voltage signals.
- Elimination of ground loops and measurement of floating signals.
- A competitive choice in terms of both price and technology for galvanic isolation of current and voltage signals to SCADA systems or PLC equipment.
- Installation in ATEX Ex zone 2 / IECEx zone 2 / FM division 2.
- Suitable for environments with high vibration stress, e.g. ships.

Technical characteristics
- Easy configuration via DIP-switches.
- The input is protected against overvoltage and polarity error.
- Factory-calibrated measurement ranges.
- Inputs and outputs are floating and galvanically separated.

Connections
Environmental Conditions
Specifications range: -25°C to +70°C
Storage temperature: -40°C to +85°C
 Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20
Installation in: Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD): 113 x 6.1 x 115 mm
Weight approx: 70 g
DIN rail type: DIN EN 60715/35 mm
Wire size: 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage: 16.8...31.2 VDC
Max. power consumption: 1.2 W
Internal consumption: 0.4 W (typ.) / 0.65 W (max.)
Isolation voltage, test: 2.5 kVAC
Isolation voltage, working: 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio: > 60 dB
Response time (0...90%, 100...10%): < 7 ms
Accuracy: < ±0.05% of span
Temperature coefficient: < ±0.01% of span / °C
EMC immunity influence: < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst: < ±1% of span

Input specifications
Current input: Measurement range: 0...20.5 mA
Functional range, current input: 0...23 mA
Current input: Programmable measurement ranges: 0...20 and 4...20 mA
Input voltage drop: < 1.5 VDC
2-wire transmitter supply: > 17 V / 20 mA
Voltage input: Measurement range: 0...10.25 V
Programmable measurement ranges, VDC: 0/1...5 and 0/2...10 V
Functional range, voltage input: 0...11.5 V / 0...5.75 V
Input resistance, voltage input: ≥ 500 kΩ

Output specifications
Current output: Signal range: 0...20.5 mA (span)
Programmable current ranges: 0 / 4...20 mA
Load (max.): 23 mA/300 Ω
Load stability, current output: ≤ ±0.01% of span / 100 Ω
Current limit: ≤ 28 mA
Voltage output: signal range: 0...10 VDC
Programmable voltage ranges: 0/1...5 and 0/2...10 V
Load (min.): > 10 kΩ

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
ATEX: KEMA 10ATEX0147 X
IECEx: KEM 10.0068X
FM: 3041043-C
GOST R: Yes
DNV Marine: Stand. f. Certific. No. 2.4
GL: V1-7-2
UL: UL 61010-1
Isolated universal converter

3114

- Input for RTD, TC, Ohm, potentiometer, mA and V
- Slimline housing of 6 mm
- 2-wire supply >15 V
- Output for current and voltage
- Can be supplied separately or installed on power rail, PR 9400

Application

- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with standard analog output.
- Galvanic separation of analog signals and measurement of floating signals.
- The device can be mounted in Safe area or in Zone 2 and Cl. 1 Div 2. area.

Advanced features

- When 3114 is used in combination with the 4501 display / programming front and ConfigMate 4590, all operational parameters can be modified to suit any application. As the 3114 is designed with electronics hardware switches, it is not necessary to open the device for setting of DIP-switches.

Technical characteristics

- A green / red front LED indicates normal operation and malfunction.
- 3-port 2.5 kVAC galvanic isolation.

Connections

Input signals:

Output signals and power supply:

Safe Area or Zone 2 & Cl. 1, Div. 2, gr. A-D.
Order:

| Type | 311-4 |

---

**Environmental Conditions**

- **Specifications range**: -25°C to +70°C
- **Storage temperature**: -40°C to +85°C
- **Calibration temperature**: 20...28°C
- **Relative humidity**: < 95% RH (non-cond.)
- **Protection degree**: IP-2
- **Pollution degree 2 & measurement / overvoltage cat. II

**Mechanical specifications**

- **Dimensions (HxWxD)**: 113 x 6.1 x 115 mm
- **Weight approx.**: 70 g
- **DIN rail type**: DIN EN 60715/35 mm
- **Wire size**: 0.13 x 2.5 mm² / AWG 26...12 stranded wire
- **Screw terminal torque**: 0.5 Nm

**Common specifications**

- **Supply voltage**: 16.8...31.2 VDC
- **Fuse**: 400 mA SB / 250 VAC
- **Input power consumption**: 1.2 W
- **Internal consumption**: 0.4 W (typ.) / 0.65 W (max.)
- **Isolation voltage, test**: 2.5 kVAC
- **Isolation voltage, working**: 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
- **Signal / noise ratio**: > 60 dB
- **Response time (0...90%, 100...10%)**: ≤ 1 s
- **Response time (0...90%, 100...10%)**: ≤ 400 ms
- **EMC immunity influence**: < ±0.5% of span
- **Extended EMC immunity; NAMUR NE 21, A criterion, burst**: < ±1% of span

**Input specifications**

- **RTD input**: Pt10, Pt20, Pt50, Pt100, Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000, N150, N1100, N120, N1000, Linear resistance
- **RTD input**: Potentiometer
- **Cable resistance per wire (max.), RTD**: 50 Ω
- **Sensor current, RTD**: Nom. 0.2 mA
- **Effect of sensor cable resistance**: < 0.002 Ω / Ω
- **Short circuit detection, RTD**: ≤ 15 Ω
- **TCJ via internally mounted sensor**: ≤ (2.0°C + 0.4°C * Δt)
- **Sensor error detection, TC**: Yes
- **Sensor error current replenishing**: Nom. 2 μA / 0 μA
- **Current input: Measurement range**: 0...20 mA
- **Current input: Programmable measurement ranges**: 0...20 and 4...20 mA
- **Input resistance, current**: Nom. 20 Ω + PTC 50 Ω
- **2-wire transmitter supply**: > 15 V / 20 mA
- **Voltage input: Measurement range**: 0...12 VDC

**Programmable measurement ranges**, VDC: 0/0.2...1, 0/1...5, 0/2...10 VDC
**Input resistance, voltage**: Nom. 10 MΩ

**Output specifications**

- **Current output**: Signal range: 0...20 mA (span)
- **Programmable current ranges**: 0...20 / 4...20 / 0...0 and 20...4 mA
- **Load (max.)**: 20 mA / 600 Ω / 15 VDC
- **Load stability, current output**: ≤ 0.01% of span / 100 Ω
- **Sensor error indication, current output**: ≤ 0 / 3.5 / 23 mA / none
- **NAMUR NE 43 Upscale/Downscale**: 23 mA / 3.5 mA
- **Current limit**: ≤ 28 mA
- **Voltage output: signal range**: 0...10 VDC
- **Programmable voltage ranges**: 0/0/2...1, 0/1...5 : 0/2...10; 1...0.2/0.5; 5...10; 10...20 V
- **Load (min.)**: > 10 kΩ
c

**Approvals**

- **EMC**: EN 61326-1
- **LVD**: EN 61010-1
- **ATEX**: KEMA 10ATEX0147 X
- **IECEx**: KEM 10.0068X
- **ATEX**: KEMA 10ATEX0147 X
- **LVD**: EN 61010-1
- **EMC**: EN 61326-1
- **UL**: 3041043-C
- **GOST R**: Yes
- **DIN Marine**: Stand. f. Certific. No. 2.4
- **UL**: UL 61010-1
- **UL**: UL 61010-1

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Bipolar isolated converter

3117

- Conversion of voltage and current bipolar process signals to unipolar signals
- Multiple signal ranges are selectable via DIP-switches
- Fast response time < 7 ms and high output load stability
- Excellent accuracy, better than 0.05 % of selected range
- Slimline 6 mm housing

Application

- The 3117 is an isolating converter which can be used for signal conversion of standard bipolar analog process signals into a unipolar analog signal.
- The unit offers 3-port isolation and provides surge suppression and protects control systems from transients and noise.
- The 3117 also eliminates ground loops and can be used for measuring floating signals.
- Mounting of the 3117 can be in Safe area or in Zone 2 and Cl. 1 Div 2 area and is approved for marine applications.

Technical characteristics

- Flexible 24 VDC (±30%) supply via power rail or connectors.
- Excellent conversion accuracy, better than 0.05% of selected range.
- Inputs and outputs are floating and galvanically separated.
- A green front LED indicates operation status for the device.
- All terminals are protected against overvoltage and polarity error.
- Meeting the NAMUR NE21 recommendations, the 3117 ensures top measurement performance in harsh EMC environments.
- High galvanic isolation of 2.5 kVAC.
- Fast input to output response time < 7 ms
- > 100 Hz – 10 Hz bandwidth damping possible via DIP-switch.
- Excellent signal/noise ratio > 60 dB.

Mounting / installation / programming

- Fast and easy configuration of factory calibrated measurement ranges via DIP-switches.
- A very low power consumption allows DIN rail mounting without the need for any air gap.
- Wide temperature operation range: -25...+70°C.
Environmental Conditions
Specifications range....................................... -25°C to +70°C
Storage temperature...................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx................................................ 70 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage............................................... 16.8...31.2 VDC
Max. power consumption................................ 0.8 W
Internal consumption...................................... 0.4 W (typ.) / 0.65 W (max.)
Isolation voltage, test..................................... 2.5 kVAC
Isolation voltage, working................................ 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
MTBF, acc. to IEC 61709 (SN29500)............ > 241 years
Signal / noise ratio......................................... > 60 dB
Cut-off frequency (3 dB)................................. > 100 Hz or 10 Hz (selectable via DIP-switch)
Response time (0...90%, 100...10%)............. < 7 ms or < 44 ms
Accuracy........................................................ < ±0.05% of span
Temperature coefficient................................. < ±0.01% of span / °C
EMC immunity influence................................. < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst................................. < ±1% of span

Input specifications
Current input: Programmable measurement ranges........................................... ± 10 and ± 20 mA
Functional range, current input................................ -23...+23 mA
Input voltage drop......................................... < 1 VDC @ 23 mA
Voltage input: Programmable ranges........................................... ±5 and ±10 V
Functional range, voltage input................................. -11.5...+11.5 V
Input resistance, voltage input................................ ≥ 1 MΩ

Output specifications
Programmable current ranges....................... 0 / 4...20 mA
Functional range, current output...................... 0...23 mA
Load (max.)................................................... ≥ 23 mA/600 Ω
Load stability, current output........................... ≤ 0.002% of span / 100 Ω
Current limit.................................................. ≤ 28 mA
Programmable voltage ranges....................... 0/1...5 and 0/2...10 V
Functional range, voltage output...................... 0...11.5 V
Load (min.)................................................... > 10 kΩ

Approvals
EMC............................................................... EN 61326-1
LVD................................................................ EN 61010-1
ATEX.............................................................. KEMA 10ATEX0147 X
IECEx............................................................. KEM 10.0068X
FM.................................................................. 3041043-C
GOST R......................................................... Yes
DNV Marine.................................................... Stand. f. Certific. No. 2.4
UL................................................................... UL 61010-1
Bipolar isolated converter / splitter

3118

- Conversion of voltage and current bipolar process signals to uni-/bipolar signals
- Multiple signal ranges are selectable via DIP-switches
- Splitter function: 1 signal in and 2 signals out
- Excellent accuracy, better than 0.05 % of selected range and high output load stability

**Application**
- The 3118 is an isolating converter and splitter which can be used for signal conversion of standard bipolar analog process signals into two individual unipolar analog signals.
- The unit offers 4-port isolation and provides surge suppression and protects control systems from transients and noise.
- The 3118 also eliminates ground loops and can be used for measuring floating signals.
- Mounting of the 3118 can be in Safe area or in Zone 2 and Cl. 1 Div 2 area and is approved for marine applications.
- The analog output can be easily configured and programmed to be bipolar in the ranges ±10 mA and ±20 mA (*special setup).

**Technical characteristics**
- Flexible 24 VDC (±30%) supply via power rail or connectors.
- Excellent conversion accuracy, better than 0.05% of selected range.
- A green front LED indicates operation status for the device.
- All terminals are protected against overvoltage and polarity error.
- Meeting the NAMUR NE21 recommendations, the 3118 ensures top measurement performance in harsh EMC environments.
- High galvanic isolation of 2.5 kVAC.
- Fast input to output response time < 7 ms / > 100 Hz – 10 Hz bandwidth damping possible via DIP-switch.
- Excellent signal/noise ratio > 60 dB.

**Mounting / installation / programming**
- Easy configuration of factory calibrated measurement ranges via DIP-switches.
- A very low power consumption allows DIN rail mounting without the need for any air gap.
- Wide temperature operation range: -25...+70°C.

**Connections**

(*) Bipolar input to bipolar output wiring set-up:
Environmental Conditions

Specifications range ....................................... -25°C to +70°C
Storage temperature ...................................... -40°C to +65°C
Calibration temperature................................. 20...28°C
Relative humidity ............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in .................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx................................................ 70 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications

Supply voltage............................................... 16.8...31.2 VDC
Max. power consumption................................... 0.8 W
Internal consumption........................................ 0.4 W (typ.) / 0.65 W (max.)
Isolation voltage, test....................................... 2.5 kVAC
Isolation voltage, working................................. 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
MTBF, acc. to IEC 61709 (SN29500).................. > 187 years
Signal / noise ratio......................................... > 60 dB
Cut-off frequency (3 dB)................................. > 100 Hz or 10 Hz (selectable via DIP-switch)
Response time (0...90%, 100...10%)............... < 7 ms or < 44 ms
Accuracy....................................................... < ±0.05% of span
Temperature coefficient................................. < ±0.01% of span / °C
EMC immunity influence................................. < ±0.5% of span
NE 21, A criterion, burst................................. < ±1% of span

Input specifications

Current input: Programmable measurement ranges................................................ ± 10 and ± 20 mA
Functional range, current input...................................... -23...+23 mA
Input voltage drop........................................... < 1 VDC @ 23 mA
Voltage input: Programmable ranges...................... ±5 and ±10 V
Functional range, voltage input.......................... -11.5...+11.5 V
Input resistance, voltage input................................ ≥ 1 MΩ

Output specifications

Programmable current ranges ......................... 0 / 4...20 mA
Functional range, current output.......................... 0...23 mA
Load (max.)................................................... 23 mA / 300 Ω / per ch.
Load stability, current output.......................... ≤ 0.002% of span / 100 Ω
Current limit................................................. ≤ 28 mA
Programmable voltage ranges.......................... 0/1...5 and 0/2...10 V
Functional range, voltage output.......................... 0...11.5 V
Load (min.)................................................... > 10 kΩ
Bipolar wiring and programming set-up.................. ±10 and ± 20 mA
*of span...................................................... = of the presently selected range

Approvals

EMC............................................................... EN 61326-1
LVD................................................................ EN 61010-1
ATEX.............................................................. KEMA 10ATEX0147 X
IECEx............................................................ KEM 10.0068X
FM............................................................... 3041043-C
GOST R......................................................... Yes
DNV Marine.................................................. Stand. f. Certific. No. 2.4
UL................................................................. UL 61010-1
Loop powered isolator

3185

- 1 or 2 channel input loop powered isolator
- Signal 1:1 functional range 0...23 mA
- Low input voltage drop and fast response time
- Excellent accuracy and high load stability
- Slimline 6 mm housing

Application
- 1:1 input loop powered isolator of current signals in the range 0(4)...20 mA.
- 3185 is an easy mounting DIN rail unit.
- A very competitive choice in terms of both price and technology for galvanic isolation of current signals.
- Provides surge suppression and protects control systems from transients and noise.
- 3185 eliminates ground loops and can be used for measuring floating signals.
- The device can be mounted in Safe area or in Zone 2 and Cl. 1 Div 2. area.

Technical characteristics
- 3185 is powered by the analog input current signal loop.
- Low input voltage drop, typ 1.35 V + Vout.
- Excellent conversion accuracy, better than 0.1% in the range 0...20.5 mA.
- Functional range is 0...23 mA which means that 3185 is NAMUR NE43 compliant.
- Inputs and outputs are floating and galvanically separated.
- The output is voltage limited to 17.5 VDC.
- High galvanic isolation of 2.5 kVAC.
- Fast response time < 5 ms.
- Excellent signal/noise ratio > 60 dB.

Mounting / installation / programming
- DIN rail mounting with up to 330 channels per meter.
- Temperature operation range is from -25...+70°C.
Environmental Conditions
Specifications range....................................... -25°C to +70°C
Storage temperature...................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx................................................ 70 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Internal consumption, per channel.................... 30 mW
Isolation voltage, test...................................... 2.5 kV AC
Isolation voltage, working.............................. 300 V AC (reinforced) / 250 V AC (Zone 2, Div. 2)
Signal / noise ratio........................................... > 60 dB
Cut-off frequency (3 dB).................................. 100 Hz
Response time (0...90%, 100...10%)................... < 5 ms
EMC immunity influence.................................. < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst...................... < ±1% of span

Input specifications
Signal range, input to output.......................... 0...20.5 mA
Signal conversion.......................................... 1:1
Functional range, current input.......................... 0...23 mA
Start up current, typ..................................... 10 uA
Current input overload, max.............................. 50 mA
Input to output voltage drop, typ.......................... 1.25 V * (0.015 x Vout.)
Input to output voltage drop, typ.......................... (Vout = Iout x Output load)
Input voltage drop.......................................... (Unit voltage drop) * Vout.

Output specifications
Output load, max......................................... 600 Ω
Output load stability...................................... < 0.01% of span / 100 Ω
Voltage limit................................................ 17.5 V
* of span.................................................. = 0...20 mA

Approvals
EMC.......................................................... EN 61326-1
LVD........................................................... EN 61010-1
ATEX........................................................ KEMA 10ATEX0147 X
IECEx....................................................... KEM 10.0068X
FM............................................................ 3041043-C
GOST R.................................................... Yes
DNV Marine............................................. Stand. f. Certific. No. 2.4
GL........................................................... V1-7-2
UL............................................................ UL 61010-1
2-wire transmitter isolator

3186

- 1 or 2 channel 2-wire transmitter isolator
- Signal 1:1 functional range 3.5...23 mA
- Low channel voltage drop and fast response time
- Excellent accuracy
- Slimline 6 mm housing

Application
• 1:1 output loop powered isolator of 2-wire transmitter 4...20 mA signals.
• 3186 is an easy mounting DIN rail unit.
• A very competitive choice in terms of both price and technology for galvanic isolation of 2-wire transmitter signals.
• Provides surge suppression and protects control systems from transients and noise.
• 3186 eliminates ground loops and can be used for measuring floating signals.
• The device can be mounted in Safe area or in Zone 2 and Cl. 1 Div 2. area.

Technical characteristics
• 3186 is powered by the host loop voltage.
• Wide supply range from 6...35 V.
• Low input to output voltage drop typ. 2.5 V.
• Excellent conversion accuracy, better than 0.05% in the range 3.8...20.5 mA.
• Functional range is 3.5...23 mA which means that 3186 is NAMUR NE43 compliant.
• Inputs and outputs are floating and galvanically separated.
• High galvanic isolation of 2.5 kVAC.
• Fast response time < 5 ms.
• Excellent signal/noise ratio > 60 dB.

Mounting / installation / programming
• DIN rail mounting with up to 330 channels per meter.
• Temperature operation range is from -25...+70°C.
Environmental Conditions
Specifications range....................................... -25°C to +70°C
Storage temperature...................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 113 x 6.1 x 115 mm
Weight approx................................................ 70 g
DIN rail type................................................... DIN EN 60715/35 mm
Wire size........................................................ 0.13 x 2.5 mm² / AWG 26...12 stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage............................................... 6...35 VDC
Internal consumption, per channel.................. 50 mW
Isolation voltage, test......................................... 2.5 kVAC
Isolation voltage, working.................................. 300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal / noise ratio.......................................... > 60 dB
Cut-off frequency (3 dB)..................................... 100 Hz
Response time (0...30%, 100...10%)............... < 5 ms
EMC immunity influence.................................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst................ < ±1% of span

Input specifications
Available 2-wire transmitter
(Tx) supply..................................................... 3.5...32.5 V
Signal range, input to output......................... 3.8...20.5 mA
Signal conversion.......................................... 1:1
Functional range, current input......................... 3.5...23 mA

Output specifications
Output loop current limitation, typ..................... 24 mA
Current output overload, max......................... 50 mA
*of span..................................................... 4...20 mA

Approvals
EMC............................................................... EN 61326-1
LVD............................................................... EN 61010-1
ATEX............................................................. KEMA 10ATEX0147 X
IECEx........................................................... KEM 10.0068X
FM............................................................... 3041043-C
GOST R.......................................................... Yes
DNV Marine.................................................. Stand. f. Certific. No. 2.4
GL............................................................... V1-7-2
UL............................................................... UL 61010-1
Repeater / power supply

5104A

- 1- or 2-channel version
- 3- / 5-port 3.75 kVAC galvanic isolation
- Loop supply > 17.1 V
- 20 programmable measurement ranges
- Universal supply by AC or DC

Application
- Power supply and signal isolator for 2-wire transmitters.
- Signal isolator for analog current / voltage signals.
- 1 : 1 or signal conversion of analog current / voltage signals.

Technical characteristics
- The 20 factory-calibrated measurement ranges in the 5104A can be selected by the internal DIP-switches without the need for recalibration. Special measurement ranges can be delivered.
- PR5104A is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.
- The output can be connected either as an active current / voltage transmitter or as a 2-wire transmitter.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. By way of the 2-channel version up to 84 channels per meter can be mounted.
### Environmental Conditions

**Specifications range** ..................................... -20°C to +60°C
**Calibration temperature** ............................. 20...28°C
**Relative humidity** ....................................... < 95% RH (non-cond.)
**Protection degree** ....................................... IP20

### Mechanical specifications

**Dimensions (HxWxD)** ................................... 109 x 23.5 x 130 mm
**Weight approx.** ........................................... 225 g
**DIN rail type** ............................................. DIN 46277
**Wire size** ................................................ 1 x 2.5 mm² stranded wire
**Screw terminal torque** ................................. 0.5 Nm

### Common specifications

**Supply voltage, universal** .............................. 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
**Fuse** .......................................................... 400 mA SB / 250 VAC
**Max. power consumption** .............................. ≤ 3 W (2 channels)
**Isolation voltage, test / working** ................... 3.75 kVAC / 250 VAC
**Signal / noise ratio** ...................................... Min. 60 dB (0...100 kHz)
**Response time** ............................................ < 25 ms
**Auxiliary supply: 2-wire supply** ................. 28...17.1 VDC / 0...20 mA
**EMC immunity influence** ............................... < ±0.5% of span
**NE 21, A criterion, burst** ............................ < ±1% of span

### Input specifications

**Max. offset** ............................................. 20% of max. value
**Current input: Measurement range** ................. 0...20 mA
**Min. measurement range (span), current input** ...... 16 mA
**Input resistance, current input** ........................ Nom. 10 Ω + PTC 10 Ω
**Voltage input: Measurement range** ................. 0...10 VDC
**Min. measurement range (span), voltage input** ...... 8 VDC
**Input resistance, voltage input** ......................... > 2 MΩ

### Output specifications

**Max. offset** ............................................. 20% of max. value
**Current output: Signal range** ......................... 0...20 mA
**Min. signal range** ....................................... 16 mA
**Load (max.)** ............................................. 20 mA/600 Ω/12 VDC
**Load stability, current output** ........................ 50.01% of span / 100 Ω
**Current limit** ............................................ ≤ 28 mA
**Max. external 2-wire supply** ......................... 29 VDC
**Effect of external 2-wire supply voltage variation** < 0.005% of span / V
**Voltage output: signal range** ........................ 0...1 VDC / 0...10 VDC
**Voltage output, min. signal range** .................... 0.8 VDC / 8 VDC
**Load (min.)** ............................................. 500 kΩ

*of span........................................................ = of the presently selected range

### Approvals

**EMC** ...................................................... EN 61326-1
**LVD** ...................................................... EN 61010-1
**PELV/SELV** ............................................... IEC 384-4-41 and EN 60742
**UL** ........................................................ UL 508
**GOST R** .................................................. Yes
**DNV Marine** ............................................. Stand. f. Certific. No. 2.4
### HART® transparent repeater

**5106A**

- 3-/ 5-port 3.75 kVAC galvanic isolation
- Low response time
- 2-wire supply > 17 V
- 1- or 2-channel version
- Universal supply by AC or DC

---

**Application**

- Power supply and signal isolator with 2-way HART® communication for 2-wire transmitters installed in the hazardous area.
- Signal isolator with 2-way HART® communication for supplied current transmitters installed in the hazardous area.
- Signal isolator with low response time on analog current signals.

**Technical characteristics**

- PR5106A primarily processes current signals of 4...20 mA.
- PR5106A is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.
- The output can be connected either as an active current transmitter or as a 2-wire transmitter.

**Mounting / installation**

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without distance between neighboring units, up to 84 channels can be mounted per meter.

---

**Connections**

2-wire transmitter

[Diagram of 2-wire transmitter connections]

Current, mA

[Diagram of current signal connections]
Environmental Conditions
Specifications range ............................................. -20°C to +60°C
Calibration temperature ...................................... 20...28°C
Relative humidity ............................................... < 95% RH (non-cond.)
Protection degree ................................................ IP20

Mechanical specifications
Dimensions (HxWxD) .......................................... 109 x 23.5 x 130 mm
Weight approx ................................................... 65 g
Weight approx ................................................... 245 g
DIN rail type ..................................................... DIN 46277
Wire size .......................................................... 1 x 2.5 mm² stranded wire
Screw terminal torque ........................................ 0.5 Nm

Common specifications
Supply voltage, universal ..................................... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse ............................................................... 400 mA SB / 250 VAC
Max. power consumption .................................... ≤ 3 W (2 channels)
Internal consumption....................................... ≤ 2 W (2 channels)
Isolation voltage, test / working ......................... 3.75 kVAC / 250 VAC
Signal / noise ratio .......................................... Min. 60 dB (0...100 kHz)
Accuracy ......................................................... Better than 0.1% of selected range
Response time (0...90%, 10%....10%) ................... < 25 ms
Effect of supply voltage change ......................... < ±10 μA
Auxiliary supply: 2-wire supply (pin 44...42 and 54...52) ........................................... 25...17 VDC / 0...20 mA
EMC immunity influence .................................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst ..................................... < ±1% of span

Input specifications
Current input: Measurement range ...................... 4...20 mA
Min. measurement range (span), current input ........ 16 mA
Input resistance: Supplied unit ................................ Nom. 10 Ω
Input resistance: Non-supplied unit ...................... Rs + V drop < 4 V

Output specifications
Current output: Signal range .............................. 4...20 mA
2-wire 4...20 mA output: Signal range .................... 4...20 mA
Min. signal range ............................................ 16 mA
Load (max.) .................................................... 20 mA / 800 Ω / 12 VDC
Load stability, current output ............................. ±0.01% of span / 100 Ω
Current limit .................................................. ± 28 mA
Effect of external 2-wire supply voltage variation .... < 0.005% of span / V
Output ripple ................................................... < 3 mVRMS on HART communication
Max. external 2-wire supply .............................. 29 VDC
*of span.......................................................... = of the presently selected range

Approvals
EMC .............................................................. EN 61326-1
LVD .............................................................. EN 61010-1
PELV / SELV .................................................. IEC 60664-4-41 and EN 60742
UL ................................................................. UL 508
GOST R ........................................................ Yes
Loop-powered isolator

**6185**

- 1-, 2- and 4-channel galvanic isolation
- Slimline channel width of less than 6 mm
- No separate supply necessary
- Low response time
- High noise suppression

**Application**

- Galvanic separation of analog current signals.
- Elimination of ground loops and measurement of floating signals.
- A competitive choice in terms of both price and technology for galvanic isolation of current signals to SCADA systems or PLC equipment.
- Especially useful in applications necessitating an unproblematic transmission of current signals according to NAMUR (sensor error detection).

**Technical characteristics**

- PR 6185 is powered by the measured signal and loads the loop with max. 1.8 VDC.
- The input is protected against overvoltage and polarity error.
- The drop voltage for each channel can be calculated according to the following expression: \( V_{\text{drop}} = 1.8 + (I_{\text{out}} \times R_{\text{load}}) \).
- The output is voltage-limited to 15 VDC.
- Inputs and outputs are floating and galvanically separated.

**Mounting / installation**

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without distance between neighboring units, up to 168 channels can be mounted per meter.

**Connections**

- Inputs, current 4...20 mA
- Outputs, galvanically isolated, to SCADA system
- Outputs, current 4...20 mA
### Environmental Conditions

<table>
<thead>
<tr>
<th>Specifications range</th>
<th>-20°C to +60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration temperature</td>
<td>20 ... 28°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>&lt; 95% RH (non-cond.)</td>
</tr>
<tr>
<td>Protection degree</td>
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</table>

### Mechanical specifications

<table>
<thead>
<tr>
<th>Dimensions (HxWxD)</th>
<th>109 x 23.5 x 104 mm</th>
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<tbody>
<tr>
<td>Weight approx</td>
<td>155 / 180 / 230 g (1 / 2 / 4 channels)</td>
</tr>
<tr>
<td>DIN rail type</td>
<td>DIN 46277</td>
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<tr>
<td>Wire size</td>
<td>1 x 2.5 mm² stranded wire</td>
</tr>
<tr>
<td>Screw terminal torque</td>
<td>0.5 Nm</td>
</tr>
</tbody>
</table>

### Common specifications

| Internal consumption, per channel | 40 mW |
| Voltage drop | < 1.8 VDC, min. |
| Voltage drop | 1.8 V + (Iout.*Rload), max. |
| Isolation voltage, test | 2 kVAC |
| Signal / noise ratio | Min. 60 dB (0...100 kHz) |
| Response time (0...90%, 100...10%) | < 4 ms |
| EMC immunity influence | < ±0.5% of span |

### Input specifications

| Current input: Measurement range | 0...23 mA |
| Input resistance, current input | = 90 Ω + Rload (@ 20 mA) |

### Output specifications

| Current output: Signal range | 0...23 mA |
| Min. signal range | 1:1 |
| Load (max.) | 20 mA/600 Ω/12 VDC |
| Load stability, current output | < 0.03% of span / 100 Ω |
| Current limit | 50 mA |
| Voltage limit | 15 VDC |
| *of span | = of the presently selected range |

### Approvals

| EMC | EN 61326-1 |
| GOST R | Yes |
Isolation amplifier

2204

- Input galvanically separated from output and supply
- Current or voltage input
- Signal conversion
- Current and voltage output
- 24 VDC supply or universally supplied
- Applicable in PELV/SELV circuits

Advanced features

- Factory-calibrated measurement ranges for input and outputs in the 2204 can be selected by the internal DIP-switches without the need for recalibration.

Application

- Signal isolator for analog current / voltage signals.
- 1 : 1 or signal conversion of analog current / voltage signals within the ranges: 0...10 VDC or 0...50 mA on the input and 0...20 mA and 0...10 VDC in fixed ranges on the output.
- Analog signal conditioning with microprocessor based gain and zero offset giving a response time of less than 25 ms.

Technical characteristics

- Universally supplied units have a 3-port galvanic separation between input, supply, and output.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
Environmental Conditions
Specifications range........................................... -20°C to +60°C
Calibration temperature..................................... 20...28°C
Relative humidity............................................... < 95% RH (non-cond.)
Protection degree.............................................. IP50

Mechanical Specifications
Dimensions (HxWxD)........................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight DC / universally supplied....................... 110 g / 160 g

Common Specifications
Supply voltage................................................... 19.2...28.8 VDC
Supply voltage, universal................................. 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Internal consumption........................................ ≤ 1.3 W (2204--D )
Internal consumption........................................ ≤ 1.8 W (2204--P)
Isolation voltage, test / working.......................... 3.75 kVAC / 250 VAC
Signal / noise ratio............................................. Min. 60 dB
Response time (0...90%)....................................... < 25 ms
Temperature coefficient...................................... < ±0.01% of span / °C
Linearity error................................................... < 0.1% of span
Effect of supply voltage change.......................... < ±0.002% of span / %V
EMC immunity influence..................................... < ±0.5% of span

Input specifications
Max. offset.................................................... 20% of max. value
Current input: Measurement range.......................... 0...50 mA DC
Min. measurement range (span), current input.................. 4 mA
Input resistance, current input................................ Nom. 50 Ω
Voltage input: Measurement range......................... 0...10 VDC
Min. measurement range (span), voltage input............. 0.2 VDC
Input resistance, voltage input................................ 10 MΩ

Output specifications
Max. offset.................................................... 20% of max. value
Current output: Signal range............................... 0...5 mA / 0...20 mA
Min. signal range.............................................. 4 mA / 16 mA
Load (max.)..................................................... 20 mA/600 Ω/12 VDC
Load stability, current output............................. 50.01% of span / 100 Ω
Current limit.................................................... 23...28 mA
* of span...................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
LVD................................................................ EN 61010-1
PELV/SELV..................................................... IEC 364-4-41 and EN 60742
GOST R......................................................... Yes
AC / DC transmitter

2279

- Input galvanically separated from output and supply
- AC current measurement
- AC voltage measurement
- Current and voltage output
- 24 VDC supply or universally supplied
- Applicable in PELV/SELV circuits

Advanced features

- ±20% adjustment of the 0 and the 100% measurement range is possible at the front panel.
- Input and output ranges are programmable by use of internal DIP-switches.

Application

- AC current measurement e.g. in connection with a current transformer or a current clamp.
- Direct AC voltage measurement.

Technical characteristics

- Analog signal conditioning with microprocessor based gain and zero offset.
- Signals in the ranges 0.5...250 VRMS sinusoidal voltage can be connected directly to the input, ranges are programmed via DIP-switches and jumpers.
- Analog standard current output of 0/4...20 mA or standard voltages of 0...1 or 0...10 VDC ranges are programmed via DIP-switches and jumpers.
- Special currents and voltages within the signal range.
- Signal reversal e.g. 20...4 mA is possible in a special version.
- Universally supplied units have a 3-port galvanic separation between input, supply, and output.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
**Environmental Conditions**

- **Specifications range**: -20°C to +60°C
- **Relative humidity**: < 95% RH (non-cond.)
- **Protection degree**: IP50

**Mechanical specifications**

- **Dimensions**: 80.5 x 35.5 x 84.5 mm (D is without pins)
- **Weight**: DC / universally supplied: 100 g / 160 g

**Common specifications**

- **Supply voltage**: 19.2...28.8 VDC
- **Max. power consumption**: ≤ 1.3 W (2279--D)
- **Isolation voltage**: Test / working: 3.75 kVAC / 250 VAC
- **Signal / noise ratio**: Min. 60 dB
- **Response time**: < 1.5 s
- **Linearity error**: < ±1% of span
- **EMC immunity influence**: < ±0.5% of span

**Input specifications**

- **Max. offset**: 50% of max. value
- **Current input**: Measurement range: 0...1 ARMS / 40...400 Hz
- **Min. measurement range (span)**
  - current input: 500 mARMS
  - input resistance, current input: Nom. 1 Ω
  - Voltage input: Measurement range: 0...250 VRMS / 40...400 Hz
- **Min. measurement range (span)**
  - voltage input: 0.5 VRMS
  - Input resistance, voltage input: > 1 MΩ

<table>
<thead>
<tr>
<th>Type</th>
<th>Input</th>
<th>Output</th>
<th>Supply</th>
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</thead>
<tbody>
<tr>
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<td>0...0.5 VRMS</td>
<td>A</td>
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<tr>
<td></td>
<td>0...1 VRMS</td>
<td>B</td>
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<td></td>
<td>0...2.83 VRMS</td>
<td>C</td>
<td>4...20 mA</td>
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<td></td>
<td>(0...4 V peak)</td>
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<td>0...1 V</td>
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<td>0...2...1 V</td>
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<td>0...129 VRMS</td>
<td>E</td>
<td>0...10 V</td>
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<td>0...230 VRMS</td>
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</table>

**Output specifications**

- **Max. offset**: 20% of max. value
- **Current output**: Signal range: 0...5 mA / 0...20 mA
- **Min. signal range**: ≤ 4 mA / 16 mA
- **Load (max.)**: 20 mA / 600 Ω / 12 VDC
- **Load stability, current output**: ≤ ±0.01% of span / 100 Ω
- **Current limit**: 23...28 mA
- **Voltage output through internal shunt**: See manual for details

**Approvals**

- **EMC**: EN 61326-1
- **LVD**: EN 61010-1
- **PELV/SELV**: IEC 61241-4-41 and EN 60742
- **GOST R**: Yes
Isolation amplifier

2284

- Galvanically separated input, output, and supply
- Bipolar current / voltage input
- Signal conversion
- Current and voltage output
- 24 VDC supply or universally supplied
- Applicable in PELV/SELV circuits

Advanced features
- Programmable input and output ranges using internal DIP-switches.
- Front panel fine adjustment of 0 and 100% values for special ranges.

Application
- Galvanic separation of analog signals.
- Measurement of floating signals.

Technical characteristics
- Analog signal conditioning with microprocessor based gain and zero offset with a fast response time of less than 25 ms.
- Signal conversion within the ranges: -250...+250 VDC or -50...+50 mA on the input and 0...10 (20) VDC and 0...20 mA on the output.
- Galvanically separated between input, supply, and output.
- 2-wire transmitter supply and a reference voltage of 2.5 VDC, max. 15 mA for short circuit-protected supply of potentiometers.
- Buffered voltage output 0...20 V, 10 mA.
- The output can be ordered for standard 0/4...20 mA, and 0/1...5mA or special currents and selectable voltages within the signal range 0...1 VDC or and ranges 0...10 VDC.
- Output signal reversal.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
### Environmental Conditions

**Specifications range** ............... -20°C to +60°C  
**Calibration temperature** .............. 20...28°C  
**Relative humidity** ..................... < 95% RH (non-cond.)  
**Protection degree** ...................... IP50

### Mechanical specifications

**Dimensions (HxWxD)** ................... 80.5 x 35.5 x 84.5 mm (D is without pins)  
**Weight DC / universally supplied** .... 125 g / 165 g

### Common specifications

**Supply voltage** ....................... 19.2...31.2 VDC  
**Supply voltage, universal** .......... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC  
**Max. power consumption** ............ ≤ 2.4 W (2284–D)  
**Max. power consumption** ............ ≤ 2.5 W (2284–P)  
**Isolation voltage, test / working** ... 3.75 kVAC / 250 VAC  
**Signal / noise ratio** ................. Min. 60 dB  
**Response time (0...90%)** ............. < 25 ms  
**Effect of supply voltage change** ..... < 0.005% of span / VDC  
**2-wire transmitter supply** .......... (pin 7...5) 19...28 VDC / 20...0 mA  
**Auxiliary voltages: Reference voltage** ......................................................... 2.5 VDC ±0.5% / 15 mA  
**Temperature coefficient** ............ < ±0.01% of span / °C  
**Linearity error** ....................... < 0.1% of span  
**EMC immunity influence** ............ < ±0.5% of span

### Input specifications

**Max. offset** ......................... 50% of max. value  
**Current input: Measurement range** .............. -50...+50 mADC  
**Min. measurement range (span), current input** .......... 0.53 mADC  
**Input resistance, current input** ......... Nom. 50 Ω  
**Voltage input: Measurement range** .............. -250...+250 VDC  
**Min. measurement range (span), voltage input** .......... 27 mVDC  
**Input resistance, voltage input** .......... >1 MΩ...<10 MΩ

### Output specifications

**Max. offset** ......................... 20% of max. value  
**Current output: Signal range** .......... 0...20 mA  
**Min. signal range** ..................... 4 mA  
**Load (max.)** .................................. 20 mA/1000 Ω/20 VDC  
**Load stability, current output** ......... 50.01% of span / 100 Ω  
**Current limit** .............................. 23...28 mA  
**Voltage output through internal shunt** ......................................................... See manual for details

### Approvals

**EMC** ........................................ EN 61326-1  
**LVD** .......................................... EN 61010-1  
**PEL/SSELV** ............................... IEC 364-4-41 and EN 60742  
**GOST R** ..................................... Yes

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<table>
<thead>
<tr>
<th>Type</th>
<th>Input</th>
<th>Output type</th>
<th>Supply</th>
<th>Output type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2284</td>
<td>0...20 mA</td>
<td>A Special</td>
<td>0</td>
<td>D Standard</td>
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<tr>
<td>0...20 mA</td>
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<td>0...1 V</td>
<td>G 4...20 mA</td>
<td>2</td>
<td>1</td>
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<td>0...10 V</td>
<td>E 0...1 V</td>
<td>4</td>
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<td>0...2.6 V</td>
<td>F 0...10 V</td>
<td>5</td>
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<td>H 2...10 V</td>
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<td>X 0...2.6 V</td>
<td>8</td>
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</tbody>
</table>
Complete range of panel meters

Our display range is characterized by its flexibility and stability. The devices meet nearly every demand for display readout of process signals and have universal input and power supply capabilities. They provide a real-time measurement of your process value no matter the industry and are engineered to provide a user-friendly and reliable relay of information, even in demanding environments.
# Displays

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>5531A</td>
<td>Loop-powered LCD indicator</td>
<td>F.2</td>
</tr>
<tr>
<td>5531B</td>
<td>Loop-powered LCD indicator</td>
<td>F.4</td>
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<tr>
<td>5714</td>
<td>Programmable LED indicator</td>
<td>F.6</td>
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<tr>
<td>5715</td>
<td>Programmable LED indicator</td>
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Loop-powered LCD indicator

5531

- 4 digit 1/8 DIN (48 x 96 mm) loop-powered LCD display
- Easy push-button configuration
- Backlit LCD display is readable in low light conditions
- Display can be mounted in the safe area or in I.S. / Ex zone 2

Application

- The 5531 indicator is powered by the 4 to 20 mA current loop and is easily scaled to display the correct process value.
- Because it does not require separate power wiring, the 5531 is perfect for remote display of process loops.
- The 5531A display can be panel mounted in the safe area or I.S. / Ex Zone 2 (gas).

Technical characteristics

- With a full measurement range of 3.6 to 23 mA, the 5531 is NAMUR NE43 compliant.
- The display can be push-button scaled to any range between -9999 to 9999, and reverse display action is possible.
- The LCD backlight can be set to half or full intensity for easy viewing in low light conditions.
- The display only requires 1.5 VDC, (75 Ω loop load), with the backlight turned off.
- The input is HART® transparent.
- The front push-buttons can be disabled to prevent unauthorized adjustment.

Mounting / installation

- Once panel mounted with the included gasket, the 5531 provides IP65 ingress protection.

Connections
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Storage temperature...................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP65, from front

Mechanical specifications
Dimensions (HxWxD)..................................... 48 x 96 x 120 mm
Cut out dimensions........................................ 44.5 x 91.5 mm
Weight approx................................................ 200 g
Wire size, connector terminal
1 ... 4........................................................... 0.13 ... 2.08 mm² / AWG
26 ... 14 stranded wire
Screw terminal torque.................................... 0.5 Nm
Cable glands and cable diameter........... M16 x 1.5 / Ø 5...8 mm

Common specifications
Supply voltage............................................... Input loop-powered
Signal / noise ratio........................................ > 60 dB
Response time (0...90%, 100...10%).... < 1 s
Updating time................................................. 500 ms
EMC immunity influence............................... < ±0.5% of span

Input specifications
Input range............................................... 4 ... 20 mA
Measurement range.................................... 3.6 ... 23 mA
Input voltage drop, without backlight........... < 1.5 V @ 20 mA
Input voltage drop, with full backlight........... < 10.5 V @ 20 mA
Loop error detection, 4 ... 20 mA: Low............. ~ < 3 mA
Loop error detection, 4 ... 20 mA: High............. ~ > 24 mA

Output specifications
Display readout........................................... ± 9999 (4 digits)
Digit height................................................ 16 mm

Approvals
LVD............................................................. EN 61010-1
EMC........................................................... EN 61326-1
ATEX........................................................ KEMA 05ATEX1044 X
GOST R..................................................... Yes

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Loop-powered LCD indicator

5531B

- 4 digit 1/8 DIN (48 x 96 mm) loop-powered LCD display
- Easy push-button configuration
- Backlit LCD display is readable in low light conditions
- Display can be mounted in the safe area or in I.S. / Ex zone

Application

- The 5531 indicator is powered by the 4 to 20 mA current loop and is easily scaled to display the correct process value.
- Because it does not require separate power wiring, the 5531 is perfect for remote display of process loops.
- The 5531B can be mounted in Ex Zone 1.

Technical characteristics

- With a full measurement range of 3.6 to 23 mA, the 5531 is NAMUR NE43 compliant.
- The display can be push-button scaled to any range between -9999 to 9999, and reverse display action is possible.
- The LCD backlight can be set to half or full intensity for easy viewing in low light conditions.
- The display only requires 1.5 VDC, (75 Ω loop load), with the backlight turned off.
- The input is HART® transparent.
- The front push-buttons can be disabled to prevent unauthorized adjustment.

Mounting / installation

- Once panel mounted with the included gasket, the 5531 provides IP65 ingress protection.
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Storage temperature...................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP65, from front

Mechanical specifications
Dimensions (HxWxD)..................................... 48 x 96 x 120 mm
Cut out dimensions....................................... 44.5 x 91.5 mm
Weight approx............................................. 200 g
Cable glands and cable diameter............... M16 x 1.5 / Ø 5...8 mm
Wire size, connector terminal
1 - 4....................................................... 0.13...2.08 mm² / AWG
                           26...14 stranded wire

Common specifications
EMC immunity influence......................... < ±0.5% of span
Supply voltage.......................................... Input loop-powered
Signal / noise ratio....................................... > 60 dB
Response time (0...90%, 100...10%)............. < 1 s
Updating time.......................................... 500 ms

Input specifications
Current input: Measurement range...................... 3.6...23 mA
Input voltage drop, without backlight............... < 1.5 V @ 20 mA
Input voltage drop, with full backlight............... < 10.5 V @ 20 mA
Loop error detection, 4...20 mA: Low:............... < 3 mA
                           Loop error detection, 4...20 mA: High:............ > 24 mA

Output specifications
Display readout......................................... ± 9999 (4 digits)
Digit height............................................... 16 mm

Approvals
EMC.......................................................... EN 61326-1
ATEX........................................................ KEMA 05ATEX1044 X (5531A/B1)
ATEX........................................................ KEMA 05ATEX1105 X (5531B/B2)
GOST R........................................................ Yes
GOST Ex...................................................... Yes
Programmable LED indicator

5714

- 4-digit 14-segment LED display
- Input for mA, V, Ohm, RTD, TC and potentiometer
- 2 relays and analog output
- Universal supply
- Front key programmable

Application
- Display for digital readout of current / voltage / resistance / temperature or potentiometer signals.
- Process control with 2 potential-free relays and / or analog output.
- For local readout in extremely wet atmospheres with a specially designed splash-proof cover.

Technical characteristics
- 4-digit LED indicator with 13.8 mm 14-segment characters. Max. display readout -1999...9999 with programmable decimal point and relay ON / OFF indication.
- All standard operational parameters can be adjusted to any application by way of the front function keys.
- Help texts in eight languages can be selected via a menu item.
- PR5714 is available fully-configured according to specifications ready for process control and visualization.
- In versions with relay outputs the user can minimize the installation test time by activating / deactivating each relay independently of the input signal.

Mounting / installation
- To be mounted in panel front. The included rubber packing must be mounted between the panel cutout hole and the display front to obtain a protection degree of IP65 (type 4X). For extra protection in extreme environments, PR5714 can be delivered with a specially designed splash-proof cover as accessory.

Connections

Input signals:

Output signals:

Supply:
Environmental Conditions
Specifications range.............................. -20°C to +60°C
Relative humidity...................................... < 95% RH (non-cond.)
Protection degree (mounted in panel)............... IP65 / Type 4X, UL50E

Mechanical specifications
Dimensions (HxWxD).……………………………… 48 x 96 x 120 mm
Cut out dimensions........................................ 44.5 x 91.5 mm
Weight approx........................................... 230 g
Wire size, pin 41-46 (max.).......................... 1 x 1.5 mm² stranded wire
Wire size, others, max.................................. 1 x 2.5 mm² stranded wire
Vibration.................................................. 2...25 Hz, ±0.16 mm
Vibration: 25...100 Hz, ±0.4 g

Common specifications
Supply voltage, universal.......................... 21.6...253 VAC, 50...60 Hz
Max. power consumption.......................... 2.5 W (5714A)
Max. power consumption.......................... 3.0 W (5714B/C)
Internal consumption............................... 2.2 W (5714A)
Internal consumption............................... 2.7 W (5714B/C)
Internal consumption............................... 3.2 W (5714D)
Isolation voltage, test / working.................. 2.3 kVAC / 250 VAC
Signal / noise ratio................................... Min. 60 dB (0...100 kHz)
Accuracy................................................ Better than 0.1% of selected range
Response time (0...90%, 100...10%): Temperature input (programmable).............. 1...60 s
Auxiliary supply: 2-wire supply ................. 0.4...80 s
EMC immunity influence............................ < ±0.6% of readout

Input specifications
RTD input................................................. Pt10, Pt20, Pt50, Pt100,
RTD input................................................. Pt200, Pt250, Pt300, Pt400,
RTD input................................................. Pt500, Pt1000 Ni50, Ni100,
RTD input................................................. Ni120, Ni1000, Cu10, Cu20,
RTD input................................................. Cu50, Cu100
Input resistance, current input....................... Nom. 20 Ω / PTC 25 Ω
Sensor error detection, current input.............. Loop break 4...20 mA
Voltage input: Measurement range................. 0...12 VDC
Programmable measurement ranges, VDC.............................................. 0/0.2...1; 0/2...10 VDC
Input resistance, voltage input........................ Nom. 10 MΩ

Output specifications
Display readout........................................ -1999 to ±9999 (4 digits)
Decimal point........................................... Programmable
Digit height............................................. 13.5 mm
Display updating..................................... 2.2 times / s
Input outside input range......................... Explanatory text
Current output: Signal range.......................... Nom. 0...20 mA
Programmable current range...................... Nom. 0/20 / 4/20 / 20/0 and 20/4 mA
Load (max.).............................................. 20 mA/800 Ω / 16 VDC
Load stability, current output...................... 50.01% of span / 100 Ω
Sensor error indication, current output............... 0 / 3.5 / 23 mA / none
NAMUR NE 43 Upscale/Downscale................. 23 mA / 3.5 mA
Output limitation, on 4...20 and 20...4 mA signals......................... 3.8...20.5 mA
Output limitation, on 0...20 and 20...0 mA signals......................... 0...20.5 mA
Current limit.......................................... ≤ 28 mA
Relay output: Relay functions...................... Setpoint
Hysteresis............................................. 0...100%
ON and OFF delay................................. 0...3600 s
Sensor error reaction.............................. Break / Make / Hold
Max. voltage.......................................... 250 VRMS
Max. current.......................................... 2 AAC
Max. AC power......................................... 500 VA
Max. load at 24 VDC................................. 1 A

Approvals
EMC..................................................... EN 61326-1
LVD........................................................ EN 61010-1
GOST R.................................................... Yes
DNV Marine........................................... Stand. f. Certific. No. 2.4
UL.......................................................... UL 508
Programmable LED indicator

5715

- 4-digit 14-segment LED display
- Input for mA, V, Ohm, RTD, TC and potentiometer
- 4 relays and analog output
- Universal supply
- Programmable via front keys and PC

Application
- Display for digital readout of current / voltage / resistance / temperature or 3-wire potentiometer signals.
- Process control with 4 pairs of potential-free change-over relays and analog output.
- For tank level control, with the possibility of customer linearization ensuring correct level measurement and control in non-linear tanks.

Technical characteristics
- 4-digit LED indicator with 13.8 mm 14-segment characters. Max. display readout -1999...9999 with programmable decimal point and relay ON / OFF indication.
- All standard operational parameters can be adjusted to any application by way of the front function keys. When programming is carried out by way of a PC and the configuration program PReset, additional configuration options are available, such as customer-defined linearization and special input signals.
- Help texts in eight languages can be selected via a menu item.
- A menu item allows the user to minimize the installation test time for the relay outputs by activating / deactivating each relay independently of the input signal.

Mounting / installation
- To be mounted in panel front. The included rubber packing must be mounted between the panel cutout hole and the display front to obtain a protection degree of IP65 (type 4X). For extra protection in extreme environments, PR5715 can be delivered with a specially designed splash-proof cover as accessory.

Connections

Input signals:

Output signals:

Supply:
Environmental Conditions
Specifications range: -20°C to +60°C
Relative humidity: < 95% RH (non-cond.)
Protection degree (mounted in panel): IP65 / Type 4X, UL50E

Mechanical specifications
Dimensions (HxWxD): 48 x 96 x 120 mm
Cut out dimensions: 44.5 x 91.5 mm
Weight approx.: 260 g
Wire size, pin 41-46 (max.): 1 x 1.5 mm² stranded wire
Wire size, others, max.: 1 x 2.5 mm² stranded wire
Vibration: 2...25 Hz: ±1.6 mm
Vibration: 25...100 Hz: ±4 g

Common specifications
Supply voltage, universal: 21.6...253 VAC, 50...60 Hz
Common specifications
Dimensions (HxWxD): 48 x 96 x 120 mm
Cut out dimensions: 44.5 x 91.5 mm
Weight approx.: 260 g
Wire size, pin 41-46 (max.): 1 x 1.5 mm² stranded wire
Wire size, others, max.: 1 x 2.5 mm² stranded wire
Vibration: 2...25 Hz: ±1.6 mm
Vibration: 25...100 Hz: ±4 g

Input specifications
RTD input: Programmable measurement ranges, 0/0.2...1; 0/2...10 VDC
Input resistance, voltage input: Nom. 10 MΩ

Output specifications
Display readout: ±0.002 Ω / Ω
Decimal point: Programmable
Current output: Signal range: 0...20 mA
Programmable current ranges: 0...20 / 4...20 / 20...0 and 20...4 mA
Load (max.): 20 mA/200 Ω/16 VDC
Load stability, current output: 50.01% of span / 100 Ω
Sensor error indication, current output: 0 / 3.5 / 23 mA / none
NAMUR NE 43 Upscale/Downscale: 23 mA / 3.5 mA
Output limitation, on 4...20 and 20...4 mA signals: 3.8...20.5 mA
Output limitation, on 0...20 and 20...0 mA signals: 0...20.5 mA
Current limit: ≤ 28 mA
Relay output: Relay functions: Setpoint
Hysteresis: 0...100%
ON and OFF delay: 0...3000 s
Sensor error reaction: Break / Make / Hold
Max. voltage: 250 VRMS
Max. AC power: 500 VA
Max. load at 24 VDC: 1 A

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
GOST R: Yes
DNV Marine: Stand. f. Certific. No. 2.4
UL: UL 508
Programmable frequency indicator

5725

- Measures NPN, PNP, Contact, NAMUR, S0, Tacho and TTL sensors
- Programmable frequency input span of 0.001 Hz to 50 kHz
- The 5725D has two SPDT relays and one analog output
- Easy to read 4-digit, 14-segment LED display with scrolling help text
- Universally powered by 21.5…253 VAC or 19.2…300 VDC

Application

- The 5725 measures, scales, and displays frequency signals found in many process speed and flow rate applications.
- The indicator can measure the period of the frequency, useful for displaying the elapsed time between events.
- The 5725D has two SPDT setpoint contacts and a 0/4...20 mA output for process control.
- The installed display provides IP65 environmental sealing, and additional protection is provided by the optional 8335 splash proof cover.

Technical characteristics

- 4-digit display with 13.8 mm high, 14-segment LED digits and adjustable decimal point.
- Indicator is scalable from -1999 to 9999.
- Scrolling help text makes programming easy.
- Customizable trigger levels allow measurement of nearly any pulse sensor.
- Built-in excitation source for measuring NPN, PNP, NAMUR and S0 sensors.
- Fast response time of 1 cycle + 100 ms, and excellent accuracy of better than 0.05% of selected range.
- The analog output current on the 5725D can be dampened from 0.1 to 60 seconds, and can handle up to 800 Ohms loop load.
- The 5725 meets NAMUR NE21 recommendations for high performance in harsh EMC environments.
- High 2.3 kVAC galvanic isolation, and an excellent signal/noise ratio of > 60dB.

Mounting / installation / programming

- Easy to mount 1/8 DIN (48x96 mm) panel meter with IP65 (type 4X) sealing.
- Approved for marine applications.
- Fully push-button programmable.
- Password-protected.

Connections

Input signals:

Output signals:

Supply:
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Storage temperature...................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20
Protection degree (mounted in panel).................. IP65 / Type 4X, UL50E
Installation in.................................................. Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications
Dimensions (HxWxD)..................................... 48 x 96 x 120 mm
Cut out dimensions........................................ 44.5 x 91.5 mm
Weight approx.............................................. 230 g
Wire size, pin 11-12 & 41-44, max...................... 1 x 1.5 mm² / AWG 30...16 stranded wire
Wire size, others, max..................................... 1 x 2.5 mm² / AWG 30...12 stranded wire
Terminal connection....................................... Spring-cage

Common specifications
Supply voltage, universal............................... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. power consumption................................... < 2.8 W (5725A)
Max. power consumption................................... < 3.6 W (5725D)
Isolation voltage, test / working......................... 2.3 kVAC / 250 VAC
Signal / noise ratio........................................... > 60 dB
Response time (0...90%, 100...10%)............... < 1 period + 100 ms
EMC immunity influence................................... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst......................... < ±1% of span

Input specifications
Frequency range, fil conversion function...................... 0.001 Hz to 50 kHz
Low cut-off frequency...................................... 0.00005 Hz (default value)
Max. frequency, with input filter ON....................... 50 Hz
Time range, period time function.......................... 999.9 s to 20 µs
Low cut off period time (time-out)....................... 1111 s
Min. period time with input filter ON...................... 20 ms
Input types................................................. NAMUR acc. to EN 60947-5-6
Input types................................................. Tacho
Input types................................................. NPN / PNP
Input types................................................. TTL
Input types................................................. S0 acc. to DIN 43864
Input types................................................. Special voltage
Input types................................................. Special current

Output specifications
Display readout.......................................... -1999...9999 (4 digits)
Decimal point.............................................. Programmable
Digit height............................................... 13.8 mm
Display updating......................................... 2.2 times / s
Input outside input range is indicated by................ Explanatory text
Programmable current ranges............................ 0...20 / 4...20 / 20...0 and 20...4 mA
Load (max.)................................................ 20 mA / 800 Ω / 16 VDC
Load stability, current output............................ ±0.01% of span / 100 Ω
Current limit.............................................. ± 28 mA
Sensor error indication, current output.................. 0 / 3.5 / 23 mA / none
Output limitation, on 4...20 and 20...4 mA signals............. 3.8...20.5 mA
Output limitation, on 0...20 and 20...0 mA signals............. 0...20.5 mA
Relay output: Relay functions............................ Setpoint
Hysteresis, in % / display counts.......................... 0...100% / 0...9999
ON and OFF delay......................................... 0...3600 s
Power On delay............................................ 0...60 s
Sensor error reaction..................................... Break / Make / Hold
Max. voltage................................................ 250 VRMS
Max. current.............................................. 2 AAC
Max. AC power............................................ 500 VA
Max. load at 24 VDC...................................... 1 A

Approvals
EMC.......................................................... EN 61326-1
LVD........................................................... EN 61010-1
GOST R..................................................... Yes
DNV Marine................................................ Stand. f. Certific. No. 2.4
UL.............................................................. UL 508
Devices for special applications

Since 1974, we have provided the process industry with ingenious devices for special applications. We have done this in close cooperation with our customers, ensuring that the designs provide the optimal smart solutions for their industry standard.

These special devices include: valve controllers, transmitters, ramp generators, up-down ramp controls, limit switches, trip amplifiers, load cell amplifiers, power supplies, etc.
### Special devices

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Programmable f/I-f/f converter

5223A

- Pulse calculator
- Frequency generator
- Galvanic isolation
- Analog current and voltage output
- PNP / NPN output, optional relays
- Universal supply

Advanced features

- The 5223 transmitter can be configured with a standard PC and the Loop Link communications unit, or delivered fully configured.

Application

- The f/I function performs frequency to current and voltage conversion.
- The f/f function can be used for pulse division or multiplication and as a buffer collecting fast pulse trains.
- A scale factor may be entered in all functions. Using both digital inputs, pulse addition or subtraction are possible.
- The frequency generator function is used as e.g. a time base or clock generator.
- Input and supply polarity reversal protection.
- Current and voltage output signals galvanically separated from the supply and the inputs.
- Programmable digital outputs including NPN, PNP or relay options.

Technical characteristics

- 5 front LEDs, indicating f1 and f2 active inputs (not NPN), Dig.out.1 and 2 active outputs, and a programmable error signal.
- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
- Programming can be performed with or without a power supply.
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP20

Mechanical specifications
Dimensions (HxWxD)..................................... 109 x 23.5 x 130 mm
Weight approx................................................ 240 g
DIN rail type................................................... DIN 46277
Wire size........................................................ 1 x 2.5 mm² stranded wire
Screw terminal torque.................................... 0.5 Nm

Common specifications
Supply voltage, universal............................... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse............................................................... 400 mA SB / 250 VAC
Max. power consumption................................ 3.5 W
Internal consumption...................................... 3 W
Isolation voltage, test / working.......................... 3.75 kVAC / 250 VAC
Power-up delay.............................................. 0...999 s
Warm-up time.............................................. 1 min.
Communications interface................................ Loop Link
Signal / noise ratio......................................... Min. 60 dB
Response time, analog.................................... < 60 ms + period
Response time, digital output........................... < 50 ms + period
Signal dynamics, output................................ 16 bit
Effect of supply voltage change...................... < 0.005% of span / VDC
Auxiliary voltage: NAMUR supply.................... 8.3 VDC ±0.5 VDC / 8 mA
S0 supply...................................................... 17 VDC / 20 mA
NPN / PNP supply.......................................... 17 VDC / 20 mA
Special supply (programmable)....................... 5...17 VDC / 20 mA
Temperature coefficient............................... < ±0.01% of span / °C
Linearity error............................................... < 0.1% of span
EMC immunity influence............................... < ±0.5%

Input specifications
Max. offset...................................................... 90% of selected max.
Measurement range...................................... 0...20 kHz
Min. measurement range............................... 0.001 Hz
Max. frequency, with input filter ON................... 50 Hz
Min. period time with input filter ON................... 20 ms
Input types.................................................... NAMUR acc. to DIN 19234
Input types.................................................... Tacho
Input types.................................................... NPN / PNP
Input types.................................................... 2-phase encoder
Input types.................................................... TTL
Input types.................................................... S0 acc. to DIN 43864

Output specifications
Max. offset...................................................... 50% of selected max. value
Current output: Signal range............................ 0...20 mA
Min. signal range............................................. 5 mA
Updating time.............................................. 20 ms
Load (max.).................................................... 20 mA/600 Ω/12 VDC
Load stability, current output........................ ≤0.01% of span / 100 Ω
Current limit............................................... < 23 mA
Voltage output through internal shunt................ See manual for details
Other output types........................................ Active outputs (NPN / PNP)
Other output types........................................ ff converter output
Other output types........................................ Frequency generator
Relay output: Max. switching frequency............ 20 Hz
Max. voltage.................................................. 250 VRMS
Max. current.................................................. 2 AAC
Max. AC power.............................................. 100 VA
Max. load at 24 VDC..................................... 1 A
*of span...................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
LVD............................................................... EN 61010-1
PELV/SELV................................................. IEC 364-4-41 and EN 60742
ATEX............................................................ KEMA 04ATEX1001
GOST R......................................................... Yes
GOST Ex....................................................... Yes

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Programmable f/I-f/f converter

5225

- Pulse conditioning
- Frequency generator
- Concurrent f/I and f/f function
- Analog current and voltage output
- PNP / NPN output, optional relays
- Programmable by PC and Loop Link

Advanced features

- The 5225 transmitter can be configured with a standard PC and the Loop Link communications unit, or delivered fully configured.

Application

- The f/I function performs frequency to current and voltage conversion.
- The f/f function can be used for pulse division or multiplication and as a buffer collecting fast pulse trains.
- The concurrent f/I and f/f functions enable a scaled digital output signal in conjunction with the analog output.
- The frequency generator function is used as e.g. a time base or clock generator.
- Input and supply polarity reversal protection.
- Current and voltage output signals galvanically separated from the supply and the inputs.
- Programmable digital outputs including NPN, PNP or relay options.

Technical characteristics

- 4 front LEDs, indicating f in active inputs (not NPN), Dig.out.1 (NPN or relay 1) and Dig.out 2 (relay 2) outputs, and a NAMUR input error signal.
- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
- Programming can be performed with or without a power supply.
**Environmental Conditions**

Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

**Mechanical specifications**

Dimensions (HxWxD): 109 x 23.5 x 130 mm
Weight approx: 190 g
DIN rail type: DIN 46277
Wire size: 1 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

**Common specifications**

Supply voltage: 19.2...28.8 VDC
Max. power consumption: 3.5 W
Max. current: 20 mA
Internal consumption: 1.7 W
Auxiliary voltage: NAMUR supply: 8.3 VDC ±0.5 VDC / 8 mA
NPN / PNP supply: 17 VDC / 20 mA
Max. input signal: 20 kHz
Min. input signal: 0.001 Hz
Low-cut off frequency: 0.001 Hz
Max. temperature coefficient: < ±0.01% of span / °C
Linearity error: < 0.1% of span
EMC immunity influence: < ±0.5%

**Input specifications**

Max. offset: 90% of selected max. frequency
Max. measurement range: 20 kHz
Min. measurement range: 0.001 Hz
Low-cut off frequency: 0.001 Hz
Max. frequency: 50 Hz
Min. period time with input filter: 20 ms
Input types: NAMUR acc. to DIN 19234

**Output specifications**

Max. offset: 50% of selected max. value
Current output: Signal range: 0...20 mA
Min. signal range: 5 mA
Updating time: 20 ms
Load (max.): 20 mA/800 Ω/12 VDC
Load stability, current output: < 0.01% of span / 100 Ω
Current limit: < 23 mA
Voltage output through internal shunt: See manual for details
Max. voltage: 250 VAC
Max. current: 2 AAC
Max. AC power: 500 VA
Max. load at 24 VDC: 1 A

**Approvals**

EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 6144-4-1 and EN 60742
GOST R: Yes
Trip amplifier

2231
- AC/DC trip amplifier
- 2 adjustable alarm limits
- Galvanically isolated 3.75 kVAC
- Front-programmable
- 3-digit LED display
- 24 VDC or universal supply

Advanced features
- The front-operated push buttons are used for programming the different standard functions.
- A password can prevent access for changing parameters.

Application
- Alarm detector in connection with measurement of AC/DC current or voltage signals.
- The unit is used where accurate setpoint setting and different alarm functions are required.
- The unit can be used as a single or dual trip amplifier.
- Used in applications where programmable parameters such as hysteresis, setpoint, reset, active relay for increasing or decreasing signal, delay and input signal need to be set.

Technical characteristics
- 3-digit display showing the input signal in %.
- Two LED indicating relay status.
- 3 pushbuttons for programming.
- Standard DC current input signals in the range 0...20 mA.
- DC voltage signals in the range 0...250 VDC.
- AC current signals up to 1 A.
- True RMS measurement of AC voltage signals in the range 0...250 VAC.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.

Connections

3-digit LED display

AC
V
mA

2x N.O./N.C relays

Supply
24 VDC or 24...230 VAC & 24...230 VDC
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP50

Mechanical specifications
Dimensions (HxWxD)..................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight DC / universally supplied................... 125 g / 175 g

Common specifications
Supply voltage............................................... 19.2...28.8 VDC
Supply voltage, universal............................... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Internal consumption...................................... 1.5 W (2231D)
Internal consumption...................................... 2 W (2231P)
Isolation voltage, test / working........................ 3.75 kVAC / 250 VAC
Response time (programmable).................... 0.25...60 s (DC)
Response time (programmable).................... 0.75...60 s (AC)
Updating time................................................. 100 ms
Signal dynamics, input.................................... 16 bit
Effect of supply voltage change..................... < ±0.002% of span / %V
Temperature coefficient................................. < ±0.01% of span /°C (DC signals)
Temperature coefficient................................. < ±0.02% of span /°C (AC signals)
Linearity error................................................. < 0.1% of span
Linearity error................................................. < ±0.35% of span 50...1000 Hz (AC sine wave signals)
EMC immunity influence.............................. < ±0.5%

Output specifications
Relay outputs: Setpoint setting...................... 0...99.9% of span
Hysteresis...................................................... 0...99.9% of span
Updating time................................................. 100 ms
ON and OFF delay......................................... 0.0...9.9 s
Max. voltage................................................... 250 VRMS
Max. current................................................... 2 AAC
Max. AC power.............................................. 500 VA
Max. load at 24 VDC....................................... 1 A
*of span.......................................................... = of the presently selected range

Approvals
EMC................................................................ EN 61326-1
LVD................................................................... EN 61010-1
PELV/SELV...................................................... IEC 364-4-41 and EN 60742
GOST R................................................................ Yes

Input specifications
Max. offset...................................................... 50% of selected max. value
Current input: Measurement range..................... 0...20 mA
Min. measurement range (span), current input............... 10 mA
AC current input: Measurement range.................... 0...1 ARMS
Min. measurement range (span), AC current........... 0.5 ARMS
Input resistance, AC current.......................... 1 Ω / 2 W
Voltage input: Measurement range.................... 0...250 VDC
Min. measurement range (span), voltage input......... 0.5 VDC
Input resistance, voltage input.......................... Nom. 5 MΩ
AC voltage input: Measurement range............... 0...250 VRMS
Min. measurement range (span), AC voltage........ 0.5 VRMS
Input resistance, AC voltage.......................... Nom. 5 MΩ
Advanced features
• The user programmable version has a multifunction user
  interface consisting of three pushbuttons and a 3-digit LED
  displays.

Application
• Typical signalling devices may be pulse generators, for
  instance flow meters, tacho-generators or inductive sensors.
• The f/I function is used for frequency to current / voltage
  conversion.
• The f/f function is used for division or multiplication of pulses
  and as a buffer for fast pulse trains.
• A frequency generator function e.g. used as a time base or a
  clock generator.

Technical characteristics
• 3 front LEDs, indicating f.in active input (not NPN), Dig.out
  (NPN or relay 1) active output and a NAMUR input error
  signal.
• Analog current output can be configured within 0...20 mA
  range.
• Voltage output range is selectable between 0...10 VDC by
  use of internal jumpers.
• Feature include input filter, contact filter and an auxiliary
  supply for sensor such as NAMUR and S0.
• Mounting for a standard 11-pole socket which can be adapted
  for DIN rail or plate use with PR’s 7023 adaptor and 7024
  mounting keying.

Connections
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP50

Mechanical specifications
Dimensions (HxWxD)..................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx................................................ 125 g

Common specifications
Supply voltage............................................... 19.2...28.8 VDC
Internal consumption...................................... 2.4 W
Isolation voltage, test / working....................... 1.4 kVAC / 150 VAC
Warm-up time.............................................. 1 min.
Signal / noise ratio....................................... Min. 60 dB
Response time (programmable)......................... 60 ms to 999 s + period time
Signal dynamics, output................................. 16 bit
Effect of supply voltage change....................... < 0.005% of span / VDC
Temperature coefficient............................... < ±0.01% of span / °C
Linearity error.............................................. < 0.1% of span
S0 supply...................................................... 15 VDC / 25 mA
Special supply (programmable)......................... 5...15 VDC / 30 mA (acc. to order)
EMC immunity influence................................. < ±0.5%

Input specifications
Max. offset...................................................... 90% of selec. max. value
Measurement range....................................... 0...20 kHz
Min. measurement range............................... 0.001 Hz
Low cut-off frequency................................. 0.001 Hz
Min. pulse length......................................... 25 μs
Input types...................................................... NAMUR acc. to DIN 19234
Input types...................................................... Tacho
Input types...................................................... NPN / PNP
Input types...................................................... TTL
Input types...................................................... S0 acc. to DIN 43864

Output specifications
Max. offset...................................................... 50% of selected max. value
Current output: Signal range......................... 0...20 mA
Min. signal range......................................... 5 mA
Updating time.............................................. 20 ms
Load............................ 20 mA/600 Ω/12 VDC
Load stability, current output....................... ±0.01% of span / 100 Ω
Voltage output through internal shunt............. See manual for details
Max. current, NPN output............................... 130 mA
Max. voltage, NPN output.............................. 28 VDC
Frequency output range............................... 0...1000 Hz
Min. pulse length......................................... 500 μs
Max. pulse length......................................... 999 ms
Max. duty cycle........................................... 50%
Frequency generator: Pulse length f < 50 Hz....... Min. 10 ms
Frequency generator: Pulse length f ≥ 50 Hz........ Max. 999 ms
Relay output: Max. switching frequency............. 20 Hz
Max. voltage.................................................. 150 VRMS
Max. current................................................ 2 AAC
Max. AC power.............................................. 300 VA
Max. load at 24 VDC..................................... 1 A
*of span.......................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
LVD.............................................................. EN 61010-1
GOST R......................................................... Yes
Switchmode power supply

2220

- Mains voltage input
- Isolation 3.75 kVAC
- Short-circuit protection
- Thermal overload protection
- Standard 11-pole relay socket

Advanced features
- The power supply is based on secondary switchmode technology to achieve a high efficiency.
- The output is adjustable from front potentiometer in the range 5...24 VDC.

Application
- General power supply for smaller measurement systems requiring fixed stabilized 24 VDC, or supply for any other sensors, transmitters or as a general variable power supply 5 to 24 VDC.
- Two units may be connected in series for plus / minus or higher output voltage.
- Suitable for PELV/SELV applications.

Technical characteristics
- A green LED indicates active output.
- Double-isolated safety transformer.
- Isolation test voltage between input and output is 3.75 kVAC.
- The input circuit is protected with a thermal fuse.
- Output short circuit protection with current limiter.
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP50

Mechanical specifications
Dimensions (HxWxD)..................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx................................................ 425 g

Common specifications
Internal consumption...................................... 4 W
Isolation voltage, test / working........................ 3.75 kVAC / 250 VAC
Transformer.................................................... EN 60742
Effect of supply voltage change...................... < ±30 mV (±10%) 
Transient stability (10%-max. load)..................... < 250 mV
Temperature coefficient.................................. 0.05% / °C
EMC immunity influence................................. < ±0.5%

Input specifications
Input voltage (AC).......................................... 21.6...26.4 VAC
Input voltage (AC).......................................... 99...121 VAC
Input voltage (AC).......................................... 108...132 VAC
Input voltage (AC).......................................... 207...253 VAC
Frequency.................................................. 50...60 Hz

Output specifications
Output voltage................................................ 4.75...25.2 VDC
Output power................................................ Max. 7 W
Output current............................................. 1 A / 5 VDC
Output current............................................. 0.55 A / 12 VDC
Output current............................................. 0.45 A / 15 VDC
Output current............................................. 0.3 A / 24 VDC
Load effect (10%-max. load)............................. < 1.5% / A
Current limit............................................... Typ. 2.2 A (short circuit)
Output ripple............................................... < 20 mVRMS

Approvals
EMC............................................................... EN 61326-1
LVD.................................................................. EN 61010-1
PELV/SELV.................................................... IEC 364-4-41 and EN 60742
GOST R......................................................... Yes
Switchmode power supply

2222

- 230 or 115 VAC primary voltage
- 24 or 15 VDC output voltage
- Double isolation by 3.75 kVAC
- 48 Watt output power, short circuit-protected
- Thermal protection against overload

Advanced features

- The power supply is based on primary switchmode technology to achieve a high efficiency.
- An internally mounted potentiometer allows for a ±5% adjustment of the output voltage.

Application

- General 24 or 15 VDC supply for equipment that requires a stabilised DC voltage.
- Two units can be connected in series to achieve a plus / minus supply or a higher output voltage.
- Separation of circuits in safety installations according to the PELV/SELV norm.
- Galvanic isolation between the primary and the secondary voltage is achieved through the double-isolated safety transformer.

Technical characteristics

- A green LED in the front of the module indicates an active primary voltage.
- Input circuit protected with a thermal fuse.
- DC output short circuit protection with current limiter.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.
Environmental Conditions
Specifications range: -20°C to +60°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP30

Mechanical specifications
Dimensions (HxWxD): 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx: 210 g

Common specifications
Fuse: 1 A SB / 250 VAC
Max. power consumption: 60 VA
Isolation voltage, test / working: 3.75 kVAC / 250 VAC
Effect of supply voltage change: < 1% (±10%)
Efficiency: ≥ 80%
Thermal overload protection: 100°C
Transient stability (10%-max. load): < 500 mV
Temperature coefficient: 0.05% / °C
EMC immunity influence: < ±0.5%

Input specifications
Supply voltage: 207...253 VAC
Supply voltage: 102.4...132.2 VAC
Frequency: 50...60 Hz

Output specifications
Output voltage: 24 or 15 VDC
Adjustment: ±5%
Output power: 48 W (max.)
Output current: 2 A / 24 VDC
Output current: 2 A / 15 VDC
Load effect, (0-max. load): < 1.5% / A
Current limit: Nom. 2.5 A (electronic)
Output ripple: ≤ 40 mVRMS (100 kHz)

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
GOST R: Yes
Dual switchmode power supply

2223
- 24 / 115 / 230 VAC supply voltage
- 3.75 kVAC isolation
- 2 adjustable 5...24 VDC outputs
- Output: ±5...24 VDC, 10...48 VDC
- Short-circuit protection
- Thermal protection against overload

Advanced features
- The power supply is based on primary switch mode technology to achieve a high efficiency.
- The outputs are adjustable by 2 front potentiometers in the ranges 5...24 VDC.

Application
- Supply for small measuring systems that demand 2 stabilized voltages.
- Either as a combination of positive and negative voltages, or as 2 separate supplies as required.
- The two supplies are galvanically separated with 500 VAC test voltage and can be connected in series or used as two independent supplies with or without common grid.
- Separation of circuits in safety installations according to PELV/SELV.
- Galvanic isolation between the primary and the secondary voltage is achieved through the double-isolated safety transformer.

Technical characteristics
- Two green LEDs, Power ON 1 and Power ON 2, indicate active outputs.
- By connecting the two outputs in series, 10...48 VDC or ±5...24 VDC can be achieved.
- The Input circuit is protected with a bimetal thermal fuse.
- DC output short circuit protection with current limiter.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.

Connections
Environmental Conditions
Specifications range: -20°C to +60°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP30

Mechanical specifications
Dimensions (HxWxD): 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx: 400 g

Common specifications
Internal consumption: 4 W
Isolation voltage, test / working: 3.75 kVAC / 250 VAC
Isolation output 1 / 2, test / working: 500 VAC / 50 VAC (75 VDC)
Effect of supply voltage change: < ±30 mV (±10%)
Transformer: EN 60742
Transient stability (10%-max. load): < 250 mV
Temperature coefficient: 0.05% / °C
EMC immunity influence: < ±0.5%

Input specifications
Supply voltage: 21.6...26.4 VAC
Supply voltage: 103.5...126.5 VAC
Supply voltage: 207...253 VAC
Frequency: 50...60 Hz

Output specifications
Output voltage: 4.75...25.2 VDC
Output power: Max. 7.5 W (total)
Output current, per channel: 0.5 A / 5 VDC (2.5 W)
Output current, per channel: 0.37 A / 12 VDC (4.5 W)
Output current, per channel: 0.30 A / 15 VDC (4.5 W)
Output current, per channel: 0.18 A / 24 VDC (4.3 W)
Load effect (10%-max. load): < 1.5% / A
Current limit: Typ. 100 mA (short circuit)
Output ripple: < 20 mVRMS

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
GOST R: Yes
Switchmode voltage regulator

2229

- AC/DC input voltage
- Adjustable output 5...24 VDC, max. 40 W
- Adjustable from external potentiometer
- Short-circuit protection
- Thermal overload protection
- Standard 11-pole relay socket

Advanced features

• The regulator is based on primary switchmode technology to achieve a high efficiency.
• The outputs are adjustable from a front potentiometer in the range 5...24 VDC or from an external potentiometer.

Application

• General voltage regulator for external transformer used in connection with measurement systems requiring fixed stabilized 24 VDC.
• Supply for any other sensors, transmitters or a general variable voltage regulator in the range 5...24 VDC.
• Used as a power efficient pre-regulator for 5 VDC linear regulator (e.g. from 32 V to 8 V).
• Used as adjustable power supply controlled from external potentiometer.

Technical characteristics

• A green LED indicates active output.
• AC or DC input voltages.
• A rectifier bridge allows free choice of polarity for the DC input.
• Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
Environmental Conditions
Specifications range ....................................... -20°C to +60°C
Relative humidity ........................................... < 95% RH (non-cond.)
Protection degree .......................................... IP30

Mechanical specifications
Dimensions (HxWxD)....................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx .............................................. 170 g

Common specifications
Internal consumption .................................. 10 W
Transient stability (10%-max. load) ..................... < 250 mV
Temperature coefficient ................................ 0.05% / °C
EMC immunity influence ................................. < ±0.5%

Input specifications
Input voltage (AC) ........................................ Max. 28 VAC
Input voltage (AC) ........................................ Min. VAC = ( Vout. + 5 ) / 1.2
Input voltage (DC) ........................................ Max. 40 VDC
Input voltage (DC) ........................................ Min. VDC = ( Vout. + 5)
Frequency .................................................. 50...60 Hz

Output specifications
Output voltage ............................................. 4.5...26.4 VDC
Output power ............................................. Max. 40 W
Output current ............................................ Max. 2.5 A / 5 VDC
Output current ............................................ Max. 2.5 A / 12 VDC
Output current ............................................ Max. 2.5 A / 15 VDC
Output current ............................................ Max. 1.7 A / 24 VDC
Load effect, (0-max. load) ............................... < 1.5% / A
Current limit ............................................. Typ. 5.8 A (short circuit)
Output ripple ............................................. < 20 mV/RMS

Approvals
EMC ...................................................... EN 61326-1
GOST R ....................................................... Yes

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Transformer

2240

- Double-isolated transformer
- 3.75 kVAC isolation voltage
- 30 VA ring core transformer
- Thermal overload protection
- 12 or 24 VAC secondary voltage
- Standard 11-pole relay socket

Advanced features
- Two transformers may be paralleled for higher output power.

Application
- Transformer for supply of components with 12 or 24 VAC supply voltage.
- Transformer for stabilized DC power supplies, e.g. type 2229.

Technical characteristics
- Standard primary input voltages of 115 or 230 VAC with special primary voltages to order.
- Standard secondary voltages of 12 or 24 VAC with special secondary voltages to order.
- Ring core transformer with separate 3.75 kVAC isolation voltage between primary and secondary windings.
- Fitted with a thermal fuse.
- The device is supplied with a retention clip for a safe attachment to the relay socket.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.

Connections
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP50

Mechanical specifications
Dimensions (HxWxD)..................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx................................................ 600 g

Common specifications
Isolation voltage, test / working........................................................... 3.75 kVAC / 250 VAC
Power derating........................................................... Tamb. > 25°C, 0.4 VA/°C
EMC immunity influence........................................................... < ±0.5% of span

Input specifications
Primary voltage.............................................. 207...253 VAC
Primary voltage.............................................. 97.75...132.25 VAC
Frequency...................................................... 50...60 Hz

Output specifications
Secondary voltage (loaded)........................................... 24 VAC / 1.25 A
Secondary voltage (unloaded)........................................... 28 VAC
Secondary voltage (loaded)........................................... 12 VAC / 2.50 A
Secondary voltage (unloaded)........................................... 14 VAC
*of span........................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
PELV/SELV.................................................... IEC 364-4-41 and EN 60742
GOST R......................................................... Yes
Valve controller

2224

- Front-programmable
- mA, V, and Ω programmable input
- Ramp times, jump values, reversal, chopper frequency, and deadband
- 3-digit LED display shows I-valve % value
- 1 or 2 channels

Advanced features

- Multifunction user interface consisting of three pushbuttons and a 3-digit LED display.
- All parameters are protected against unauthorized changes with a password.

Application

- Control and regulation of single- or double-coil hydraulic and pneumatic proportional valves used for accurate oil flow regulation, linear soft acceleration and deceleration, modulated output signal, and programmable deadband.
- Is highly suitable for joystick regulation of A/B movements.
- Where changes to A and B need to be selected directly or according to the value of an input signal.

Technical characteristics

- During operation the display shows the present output signal as a % of the I valve.
- Programmable current or voltage input for standard signals acc. to order schedule, joystick / potentiometer or a special non-programmable input.
- Digital inputs for external control functions.
- A pulsating current output prevents the connected valve from sticking.
- Optional programming of the modulation frequency (PWM) between 8 and 400 Hz.
- Multiple adjustable parameters such as output currents, ramp times, jump values, chopper frequency, reversal, deadband, and ON/OFF functions.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
Environmental Conditions
Specifications range .................................. -20°C to +60°C
Relative humidity .................................. < 95% RH (non-cond.)
Protection degree .................................. IP50

Mechanical specifications
Dimensions (HxWxD) ................................ 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx .................................. 130 g

Common specifications
Supply voltage .................................. 9.6...14.4 or 19.2...28.8 VDC
Internal consumption ............................. 2 W / 24 V
Internal consumption ............................. 1.8 W / 12 V
Communication .................................. Front-programmable
Updating time .................................. 30 ms
Temperature coefficient .......................... 0.01%/°C
EMC immunity influence ......................... < 2% of span

Input specifications
Current input: Measurement range ............. 0...20 mA
Current input: Measurement range ............. 4...20 mA
Input resistance, current input .................. 50 Ω + PTC (54 Ω)
Voltage input: Measurement range .......... 0/0.2...1 V and 0/2...10 V
Input resistance, voltage input ................. 10 MΩ
Potentiometer input ............................. 0...10 V or ±10 V / 10 kΩ
Operation / shutdown .......................... PNP / 2.2 kΩ, 12 / 24 V
Imax 1 & Imax 2 .................................. PNP / 2.2 kΩ, 12 / 24 V
A / B channel .................................. PNP / 2.2 kΩ, 12 / 24 V
Deadband .................................. 0...99.9% of input span

Output specifications
Output voltage .................................. Supply voltage-0.5 V (max.)
Output power .................................. 36 W (max.)
Output current .................................. 3000 mA mean
Current peak .................................. 7 A
Reference voltage ............................. 10 VDC (A valve)
Reference voltage ............................. ±10 VDC (A & B valve)
Ramp up & down .................................. Time 0...10.0 s
PWM frequency .................................. 8...400 Hz in steps of 1 Hz
*of span .................................. = of the presently selected range

Approvals
EMC .................................. EN 61326-1
GOST R .................................. Yes
**mV transmitter**

**2261**

- Load cell amplifier
- mV to current / voltage conversion
- Front-programmable / LED display
- Relative calibration of input span
- NPN / PNP input for external taring
- Supply for standard transducers

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**Advanced features**

- A multifunction user interface consisting of three pushbuttons and a 3-digit LED display for programming.

**Application**

- The 2261 converts bipolar mV signals from transducers supplied directly by the device to standard current / voltage signals.
- The 2261 is suitable for load cell application as well as other applications such as tank filling and draining, weighing with a taring function, measurement of cable tensile force, level control, signal conversion / amplification etc.

**Technical characteristics**

- Front error LED.
- The analog input can be programmed for voltage in the range -40...100 mVDC.
- The digital signal can be selected as either NPN or PNP.
- Taring can either be by way of the digital input or from the front interface.
- The analog output can be programmed to current in the range 0...20 mA or voltage in the range 0...10 VDC.
- Short circuit protected transducer supply which can be programmed to 5...13 VDC from the front.
- Sense input (with transducer supply used) for compensation for cable resistance to the transducer.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP50

Mechanical specifications
Dimensions (HxWxD): 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx: 130 g

Common specifications
Supply voltage: 19.2...28.8 VDC
Max. power consumption: 7.2 W
Internal consumption: 2.2 W
Signal / noise ratio: Min. 60 dB
Response time (programmable): 0.06...999 s
Upgrading time: 20 ms
Signal dynamics, input: 17 bit
Signal dynamics, output: 16 bit
Effect of supply voltage change: < ±0.002% of span / %V
Temperature coefficient: < ±0.01% of span / °C
Linearity error: < 0.1% of span
Auxiliary voltage: Transducer supply: 5...13 VDC
Load (max.): 230 mA
EMC immunity influence: < ±0.5% of span

Input specifications
Max. offset: 70% of selected max. value
Voltage input: Measurement range: -40...100 mV
Min. measurement range (span), voltage input: 10 mV
Input resistance, voltage input: > 10 MO
Overrange: 0...999% of selected measurement range
NPN, digital input: Pull up 24 VDC / 6.9 mA
PNP, digital input: Pull down 0 VDC / 6.9 mA
Trig level low, NPN/PNP: < 6 VDC
Trig level high, NPN/PNP: > 10.5 VDC
Pulse length: > 30 ms

Output specifications
Max. offset: 50% of selected max. value
Current output: Signal range: 0...20 mA
Min. signal range: 5 mA
Load (max.): 20 mA/600 Ω/12 VDC
Load stability, current output: ±0.01% of span / 100 Ω
Current limit: < 23 mA
Voltage output through internal shunt: See manual for details
*of span: = of the presently selected range

Approvals
EMC: EN 61326-1
GOST R: Yes
Ramp generator

2281

- Multiple functions
- Programmable from front
- 3-digit LED display
- NPN and PNP inputs
- Internal ramp time or external pulses
- Reset or preset function

Advanced features

- The user interface consists of a 3-digit display and 3 function keys in the front to change a function, ramp time or an output signal range.

Application

- To convert digital signals to a time-controlled analog signal with either internally entered up/down time or with external pulses for up/down function.
- 2-phase encoder.
- Ramp generator with internal time measurement.
- Ramp generator with external pulses.

Technical characteristics

- LED’s for up, reset and down.
- 6 digital inputs make it possible to choose reset and up/down functions as either NPN or PNP input (+24 VDC).
- Via an analog switch the up and down inputs can be switched between input filters for a pulse length > 10 ms or > 0.5 ms. The 10 ms filter is used for elimination of contact-bounce.
- Analog standard current output of 0/4...20 mA or jumper selectable 0/2...10 mA, and standard voltages of 0/0.2...1 VDC, 0/2...10 VDC or special.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.

Connections
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP50

Mechanical specifications
Dimensions (HxWxD): 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx: 120 g

Common specifications
Supply voltage: 19.2...28.8 VDC
Max. power consumption: 2.7 W
Internal consumption: 2.4 W
Signal / noise ratio: Min. 60 dB
Response time: < 60 ms
Signal dynamics, output: 16 bit
Up ramp time: 0.1...999999 s
Down ramp time: 0.1...999999 s
External pulses: 1...15,615,744
Effect of supply voltage change: < 0.005% of span / VDC
Temperature coefficient: < ±0.01% of span / °C
Linearity error: < 0.1% of span
EMC immunity influence: < ±0.5%

Input specifications
Digital input: Up / down inputs
NPN, digital input: Pull up 24 VDC / 6.9 mA
PNP, digital input: Pull down 0 VDC / 6.9 mA
Pulse length: >10 ms / > 0.5 ms (programmable)
Input frequency: 50 Hz / 1 kHz (max.)
Digital input: Reset inputs
Pulse length: > 30 ms
Input frequency: 16 Hz

Output specifications
Max. offset: 50% of selected max. value
Current output: Signal range: 0...20 mA
Min. signal range: 5 mA
Load (max.): 20 mA/600 Ω/12 VDC
Load stability, current output: ±0.01% of span / 100 Ω
Current limit: 20.5 mA
Voltage output through internal shunt: See manual for details
* of span: = of the presently selected range

Approvals
EMC: EN 61326-1
GOST R: Yes
Signal controller

2286

- Multiple functions
- Programmable from front
- 3-digit LED display
- Analog or Pt100 input
- Relay outputs
- Max. 50% offset

Advanced features

- Programmed via the user interface which consists of a 3-digit display and 3 function keys in the front panel.

Application

- PID on/off controller, PI step controller or 3-band controller with analog or Pt100 input.
- As trip amplifier with setpoint adjustment through external current / voltage signal with neutral zone surrounding the setpoint.

Technical characteristics

- The A and B channels can be freely programmed via the front keys and JP1 and JP2 to current in the range 0...20 mA or voltage in the range 0...10 VDC.
- Linearized Pt100 temperature input in the range with 3-wire connection.
- PID on/off controller with accurate setting of the regulation parameters XP (proportional band), TI (integrating time) and TD (differentiating time).
- Functions include PI step and-band controller, dl/dt function and comparator or trip amplifier with an external setpoint.
- 2 relay outputs with a make contact connected to a common point.
- Relay outputs can be installed in PELV/SELV circuits.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying.
Environmental Conditions
Specifications range: -20°C to +60°C
Calibration temperature: 20...28°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP50

Mechanical specifications
Dimensions (HxWxD): 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.: 140 g

Common specifications
Supply voltage: 19.2...28.8 VDC
Max. power consumption: 3 W
Internal consumption: 2.5 W
Isolation voltage, test / working: 3.75 kVAC / 250 VAC
Signal / noise ratio: Min. 60 dB
Response time: < 60 ms
Signal dynamics, input: 20 bit
Effect of supply voltage change: < ±0.002% of span / %V
Proportional band (XP): 0.01...999%
Gain, 1/XP =: 0.1...10000
Integrating time (TI): 0...999 s
Differentiating time (TD): 0...999 s
Neutral zone (nEU): 0...99.9 %
Pulse time (TP): 0.01...10 s
Auxiliary voltages: Reference voltage: 2.5 VDC ±0.5% / 15 mA
Temperature coefficient: < ±0.01% of span / °C
Linearity error: < 0.1% of span
EMC immunity influence: < ±0.5%

Input specifications
Max. offset: 50% of selected max. value
Current input: Measurement range: 0...20 mA
Min. measurement range (span), current input: 4 mA
Input resistance, current input: 50 Ω
Voltage input: Measurement range: 0...10 VDC
Min. measurement range (span), voltage input: 200 mV
Input resistance, voltage input: Nom. 10 MΩ
RTD input: Pt100 (2286B)
Cable resistance per wire (max.), RTD: 25 Ω
Sensor current, RTD: Nom. 1.25 mA

Output specifications
Relay output: Relay functions: Setpoint
Max. voltage: 250 VRMS
Max. current: 2 AAC
Max. AC power: 500 VA
Max. load at 24 VDC: 1 A

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
PELV/SELV: IEC 364-4-41 and EN 60742
GOST R: Yes
Signal calculator

2289

- Two analog inputs
- Multiple functions
- Front-programmable
- 3-digit LED display
- Version with a Pt100 input
- Analog output

Advanced features
- Programmed via the user interface which consists of a 3-digit display and 3 function keys in the front panel.

Application
- Operates as a PID controller with an analog or a Pt100 input.
- Functions include a manual / automatic controller, an analog calculator with a scale function on both inputs, a samplehold transmitter, a peak-hold transmitter, a delay transmitter, a signal limiter, averaging of noisy signals, monitoring of a signal’s slope, or an analog multiplexer.

Technical characteristics
- The A and B inputs can be programmed to receive current signals in the range 0...20 mA (eg. 4...20 mA), or voltage signals in the range 0...10 VDC.
- Input A is a linearized Pt100 with a 3-wire connection. Input B is an analog current / voltage input.
- Digital inputs are jumper selectable NPN or PNP.
- Analog standard current / voltage output of 0/4...20 mA / 0/2...10 VDC.
- Both the input signals and the output signal can be inverted.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR’s 7023 adaptor and 7024 mounting keying. In environments with strong vibrations the PR 7002 can be mounted as an additional safety catch for system 2200 devices on the relay socket.
Environmental Conditions
Specifications range....................................... -20°C to +60°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree........................................... IP50

Mechanical specifications
Dimensions (HxWxD)..................................... 80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx................................................ 130 g

Common specifications
Supply voltage............................................... 19.2...28.8 VDC
Max. power consumption................................ 2.7 W
Internal consumption..................................... 2.4 W
Signal / noise ratio......................................... Min. 60 dB
Response time............................................... < 60 ms
Updating time............................................... 20 ms
Signal dynamics, input.................................... 20 bit
Signal dynamics, output.................................. 16 bit
Proportional band (XP)................................... 0.01...999%
Gain, 1/XP =................................................... 0.1...10000
Integrating time (TI)........................................ 0...999 s
Differentiating time (TD)................................. 0...999 s
Effect of supply voltage change..................... < ±0.002% of span / %V
Auxiliary voltages: Reference voltage.............. 2.5 VDC ±0.5% / 15 mA
Temperature coefficient................................. < ±0.01% of span / °C
Linearity error................................................. < 0.1% of span
EMC immunity influence................................. < ±0.5%

Input specifications
Max. offset...................................................... 50% of selected max. value
Current input: Measurement range.................... 0...20 mA
Min. measurement range (span), current input...... 4 mA
Input resistance, current input............................. Nom. 50 Ω
Voltage input: Measurement range.................... 0...10 VDC
Min. measurement range (span), voltage input..... 200 mV
Input resistance, voltage input............................ Nom. 10 MΩ
NPN, digital input........................................... Pull up 24 VDC / 6.9 mA
PNP, digital input.......................................... Pull down 0 VDC / 6.9 mA
Pulse length................................................... > 50 ms
RTD input...................................................... Pt100 (2289B)
Cable resistance per wire (max.), RTD................. 25 Ω
Sensor current, RTD......................................... Nom. 1.25 mA

Output specifications
Max. offset...................................................... 50% of selected max. value
Current output: Signal range......................... 0...20 mA
Min. signal range.......................................... 5 mA
Load (max.).................................................... 20 mA/600 Ω/12 VDC
Load stability, current output........................ 50.01% of span / 100 Ω
Current limit................................................... 20.5 mA
Voltage output through internal shunt................ See manual for details
* of span...................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
GOST R......................................................... Yes
Power connector unit

3405

- Slimline housing of 6 mm
- Supplies DIN rail from supply terminals
- Can pass up to 2.5 A
- Up to 100 units can be powered
- User-friendly label design

Applications
- Power can be connected to the DIN rail from supply terminals.
- Alternatively a powered DIN rail can supply power to the terminals.
- Installation in ATEX Ex zone 2 / IECEx zone 2 / FM division 2.
- Suitable for environments with high vibration stress, e.g. ships.

Technical characteristics:
- 3405 can pass up to 2.5 A
- With 3405, up to 100 units can be powered.

Connections
Environmental Conditions
Specifications range: -25°C to +70°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 113 x 6.1 x 115 mm
Weight approx: 65 g
DIN rail type: DIN EN 60715/35 mm
Wire size: 0.13 x 2.5 mm² stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Supply voltage: 16.8...31.2 VDC
Internal consumption: 0.25 W (max.)
Required external fuse: 2.5 A

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
ATEX: KEMA 10ATEX0147 X
IECEx: KEM 10.0068X
FM: 3041043-C
UL: UL 61010-1
DNV Marine: Stand. f. Certific. No. 2.4
GL: V1-7-2
2-wire level transmitter

5343A

- Potentiometer or Ohmic input
- Programmable sensor error value
- High measurement accuracy
- Unique process calibration function
- Programmable via standard PC

Application
- Conversion of resistance variation to standard analog current signals, e.g. from Ohmic level sensors or valve positions.
- User-defined linearization function can be activated.

Technical characteristics
- Within a few seconds the user can program PR5343A to measure within the defined Ohmic values.
- Continuous check of vital stored data for safety reasons.
- The transmitter is protected against polarity reversal.
- PR5343A is configured to the current task by way of a PC, the PReset software and the communications interface Loop Link.
- The PRelevel configuration tool included in the PReset software has been developed specifically for the configuration of level applications. Among other things, it contains a function for "on line" measurement of input span as well as a linearization function for volume linear output from horizontal cylindrical tanks.

Mounting / installation
- For DIN form B sensor head or DIN rail mounting with a special fitting.

Connections

- Conversion of resistance variation to standard analog current signals, e.g. from Ohmic level sensors or valve positions.
- User-defined linearization function can be activated.

Technical characteristics
- Within a few seconds the user can program PR5343A to measure within the defined Ohmic values.
- Continuous check of vital stored data for safety reasons.
- The transmitter is protected against polarity reversal.
- PR5343A is configured to the current task by way of a PC, the PReset software and the communications interface Loop Link.
- The PRelevel configuration tool included in the PReset software has been developed specifically for the configuration of level applications. Among other things, it contains a function for "on line" measurement of input span as well as a linearization function for volume linear output from horizontal cylindrical tanks.

Mounting / installation
- For DIN form B sensor head or DIN rail mounting with a special fitting.
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature................................. 20...28°C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree (encl./terminal).................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration......................................................... IEC 60068-2-6 : 2007
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 8.0...35 VDC
Internal consumption...................................... 25 mW...0.8 W
Voltage drop................................................... 8.0 VDC
Warm-up time................................................ 5 min.
Communications interface............................. Loop Link
Signal / noise ratio......................................... Min. 60 dB
Accuracy........................................................ Better than 0.1% of selected range
Response time (programmable)........................... 0.33...60 s
Signal dynamics, input................................... 19 bit
Signal dynamics, output................................. 16 bit
Effect of supply voltage change........................ < 0.005% of span / VDC
EMC immunity influence................................... < ±0.5% of span

Input specifications
Max. offset...................................................... 50% of selected max. value
Linear resistance input: Measurement range / min. range (span)........... 0...100 kΩ / 1 kΩ
Min. measurement range................................... 1 kΩ
Cable resistance per wire (max.), lin. R.................. 100 Ω
Sensor current, lin. R..................................... > 25 μA, < 120 μA
Effect of sensor cable resistance (3-wire), lin. R......... < 0.002 Ω / Ω
Sensor error detection, lin. R............................ Yes

Output specifications
Current output: Signal range......................... 4...20 mA
Min. signal range........................................... 16 mA
Updating time................................................ 135 ms
Load resistance, current output...................... s (Vsupply - 8) / 0.023 [Ω]
Load stability, current output......................... 50.01% of span / 100 Ω
Sensor error indication, current output................ Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale............... 23 mA / 3.5 mA
*of span......................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
ATEX.............................................................. KEMA 10ATEX0004 X
IECEx............................................................ DEK 13.0036X
INMETRO........................................................ DEKRA 13.0002 X
GOST R............................................................ Yes
DNV Marine................................................... Stand. f. Certific. No. 2.4
2-wire level transmitter

5343B
- Potentiometer or Ohmic input
- Programmable sensor error value
- High measurement accuracy
- Unique process calibration function
- Programmable via standard PC

Application
- Conversion of resistance variation to standard analog current signals, e.g. from Ohmic level sensors or valve positions.
- User-defined linearization function can be activated.

Technical characteristics
- Within a few seconds the user can program PR5343B to measure within the defined Ohmic values.
- Continuous check of vital stored data for safety reasons.
- The transmitter is protected against polarity reversal.
- PR5343B is configured to the current task by way of a PC, the PReset software and the communications interface Loop Link.
- The PRelevel configuration tool included in the PReset software has been developed specifically for the configuration of level applications. Among other things, it contains a function for “on line” measurement of input span as well as a linearization function for volume linear output from horizontal cylindrical tanks.

Mounting / installation
- For DIN form B sensor head or DIN rail mounting with a special fitting.
- NB: As I.S. / Ex barrier for 5343B we recommend 5104B, 5114B or 5116B.
Environmental Conditions
Specifications range....................................... -40°C to +85°C
Calibration temperature................................. 20 °C to 28 °C
Relative humidity............................................ < 95% RH (non-cond.)
Protection degree (encl./terminal).................. IP68 / IP00

Mechanical specifications
Dimensions.................................................... Ø 44 x 20.2 mm
Weight approx................................................ 50 g
Wire size........................................................ 1 x 1.5 mm² stranded wire
Screw terminal torque.................................... 0.4 Nm
Vibration: 2...25 Hz........................................ ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications
Supply voltage............................................... 8.0...30 VDC
Internal consumption...................................... 25 mW...0.8 W
Voltage drop................................................... 8.0 VDC
Warm-up time................................................. 5 min.
Communications interface............................. Loop Link
Signal / noise ratio......................................... Min. 60 dB
Response time (programmable).................... 0.33...60 s
Accuracy........................................................ Better than 0.1% of selected range
Signal dynamics, input................................... 19 bit
Signal dynamics, output............................. 16 bit
Effect of supply voltage change....................... < 0.005% of span / VDC
EMC immunity influence.............................. < ±0.5% of span

Input specifications
Max. offset...................................................... 50% of selected max. value
Linear resistance input: Measurement range / min. range (span)... 0...100 kΩ / 1 kΩ
Min. measurement range............................... 1 kΩ
Cable resistance per wire (max.), lin. R.................. 100 Ω
Sensor current, lin. R..................................... > 25 μA, < 120 μA
Effect of sensor cable resistance (3-wire), lin. R.............. < 0.002 Ω / Ω
Sensor error detection, lin. R................................ Yes

Output specifications
Current output: Signal range............... 4...20 mA
Min. signal range........................................ 16 mA
Updating time........................................ 135 ms
Load resistance, current output.............................. ≤ (Vsupply - 8) / 0.023 [Ω]
Load stability, current output.............................. ≤0.01% of span / 100 Ω
Sensor error indication, current output.............................. Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale............... 23 mA / 3.5 mA
*of span...................................................... = of the presently selected range

Approvals
EMC............................................................... EN 61326-1
ATEX.............................................................. KEMA 03ATEX1538
FM................................................................. 2D5A7
IECEx............................................................. DEK 13.0036X
INMETRO..................................................... DEKRA 13.0002 X
GOST R......................................................... Yes
GOST Ex...................................................... Yes
DNV Marine............................................... Stand. f. Certific. No. 2.4
Power control unit

**9410**

- Distributes supply voltage to the power rail
- Optional connection of backup supply
- Approved for installation in I.S. / Ex zone 2 / Div. 2
- Optional redundant supply for the power rail
- Must be installed on power rail, PR type 9400

**Application and advanced features**

- The power control unit detects errors from any of the devices mounted on the power rail and transmits a collective alarm to the control system via the internal status relay.
- Optional connection of two power supplies - a primary supply and a backup supply.
- Redundant supply for the power rail can be obtained by mounting two 9410 devices connected to 2 separate power supplies (e.g. PR 9420).

**Technical characteristics**

- The status relay will be energised when the following three conditions are met: 1. Supply voltage is present on pins 31 and 32. 2. Backup supply voltage is present on pins 34 and 33. (If the backup supply is not in use, a jumper must be placed between pins 32 and 33 - the jumper is delivered with the device). 3. There are no error messages from the devices connected to the power rail. When a collective alarm is activated via the power rail, the status relay in the 9410 will be de-energized (pins 11, 12 and 13).
- Two green front LEDs indicate connection of supply and backup.
- A red LED indicates error status.

**Connections**

![Power connections diagram](image_url)

*Device status relay from power rail*

*Zone 2 / FM CL.1, Div. 2 or safe area*
Environmental Conditions
Specifications range: -20°C to +60°C
Storage temperature: -20°C to +85°C
Relative humidity: < 95% RH (non-cond.)
Protection degree: IP20

Mechanical specifications
Dimensions (HxWxD): 109 x 23.5 x 104 mm
Weight approx: 140 g
Wire size: 0.13...2.08 mm² AWG 26...14 stranded wire
Screw terminal torque: 0.5 Nm

Common specifications
Max. power consumption: 96 W
Internal consumption: 2 W (max.)
Efficiency: > 97.9%

Input specifications
Supply voltage: 21.6...26.4 VDC (double / reinforced isolation)
Backup supply: 21.6...26.4 VDC

Output specifications
Output voltage: Input voltage - 0.5 VDC (@ 4 A)
Output power: 96 W (max.)
Output current: 4 A (max.)
Output ripple: Same as input ripple
Max. voltage, status relay: 250 / 30 VDC
Max. current, status relay: 2 AAC / 2 ADC
Max. AC power, status relay: 500 VA / 60 W

Approvals
EMC: EN 61326-1
LVD: EN 61010-1
ATEX: KEMA 07ATEX0152 X
IECEx: KEM 08.0025X
FM: 3034431-C
INMETRO: NCC 12.1308 X
UL: UL 61010-1
GOST R: Yes
DNV Marine: Stand. f. Certific. No. 2.4
Power supply

9420

- Supply voltage 85...132 VAC or 187...264 VAC
- Optional connection of backup supply
- Approved for installation in I.S. / Ex zone 2 / Div. 2
- Active signal output
- Optional parallel connection

Application
- 2 DC-OK outputs for monitoring of device functions.
- Floating signal contacts and an active DC-OK signal are available.
- The DC-OK LED enables visual evaluation of the function locally in the process.

Technical characteristics
- The 85...264 VAC connection is made by using pin no. 31, 32 and 33
- The 24 VDC connection is made using the “+” and “-” connections.
- 22 VDC ±2 VDC is applied on “DC-OK” - pin 15, 20 mA max. This signal output is referenced to –Vout (gnd.) and signals when the output voltage drops between 18 and 22 VDC.
- Maximum 5 devices of the same type can be connected in parallel to enable increased output power.
- The DC-OK LED is a two colour LED which indicates the status of the output and enables visual evaluation of the function locally in the control cabinet.
- DC-OK LED green – normal operation, DC-OK LED red – output failure if input mains is still present.
Environmental Conditions
Specifications range................................. -10°C to +60°C
Storage temperature.............................. -20°C to +85°C
Relative humidity..................................... < 95% RH (non-cond.)
Protection degree.................................. IP20

Mechanical specifications
Dimensions (HxWxD).............................. 110 x 54 x 114 mm
Weight approx....................................... 700 g
Weight approx....................................... 260 g
Wire size.............................................. 0.5...2.50 mm² / AWG 24...12 stranded wire
Screw terminal torque............................ 0.5 Nm
Vibration............................................ IEC 60068-2-6: 1 g, 10...55 Hz, 3 axis sine sweep
Vibration............................................ Shock, IEC 60068-2-27: 15 g, 3 axis half sine, 11 ms

Common specifications
Max. power consumption.......................... 350 VA
Fuse.................................................. 4 A H / 250 VAC
Inrush current, max. (at 25°C, <2 ms)........ 25.0 AAC
Efficiency......................................... Typ. 88%
Thermal overload protection..................... Automatic restart
Effect of supply voltage change............... < 0.5% (Vin. min...Vin. max.)
Temperature coefficient.......................... 0.02%/°C

Input specifications
Supply voltage...................................... 187...264 VAC or 85...132 VAC (auto-range)
Frequency......................................... 50...60 Hz

Output specifications
Output voltage................................... 24 VDC
Output power.................................. 120 W (max.)
Output current.................................. 5 A
Load stability (10%...max. load)............ < 0.5%
Output ripple................................... ≦ 200 mV pk-pk (Vin nom. and Iout max.)

Approvals
EMC................................................. EN 61326-1
LVD................................................ EN 61010-1
ATEX.............................................. BUREAU VERITAS 08-002X
CSA............................................... 1893479
UL.................................................. UL 508
EMC

PR electronics has always been a pioneer in EMC. In 1991, we created our own in-house EMC laboratory and since then we have made significant advancements in designing products for high EMC performance. PR is thus not depending on using shielded enclosures.

Through a combination of:
- sophisticated printed circuit board layout where wanted and unwanted signals are being intelligently routed and,
- filters protecting from DC to GHz - from uV to kV and from uA to A and,
- the fact that our EMC performance is a maximum deviation of 0.5% of the specified range

we guarantee that each product achieves our renowned EMC standards.

Beyond our rigorous design process, we also subject our devices to more stringent testing than many of our competitors:
- We test by 20V/m (the EMC Directive only says 10V/m).
- We test against A criteria (supply and output) and B criteria (input) mixing the toughest requirements for both emission and immunity.

The result is an exceptional EMC performance, ensuring stable and accurate signal conditioning throughout your process. PR devices remain your safest EMC choice today and in the future.

Power Consumption

One of PR's core competences is our ability to design and manufacture high precision technology with low power consumption. Our high performance devices with minimal power budget not only deliver a positive impact on the environment, but also bring you tangible operational savings. Because they consume less power, they also emit less heat.

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You can always find the most recently updated documentation on our website – www.prelectronics.com
We are near you, *all over the world*

Our trusted red boxes are supported wherever you are

All our devices are backed by expert service and a 5-year warranty. With each product you purchase, you receive personal technical support and guidance, day-to-day delivery, repair without charge within the warranty period and easily accessible documentation.

We are headquartered in Denmark, and have offices and authorized partners the world over. We are a local business with a global reach. This means that we are always nearby and know your local markets well.

We are committed to your satisfaction and provide PERFORMANCE MADE SMARTER all around the world.

For more information on our warranty program, or to meet with a sales representative in your region, visit prelectronics.com.
Benefit today from

**PERFORMANCE MADE SMARTER**

PR electronics is the leading technology company specialized in making industrial process control safer, more reliable and more efficient. Since 1974, we have been dedicated to perfecting our core competence of innovating high-precision technology with low power consumption. This dedication continues to set new standards for products communicating, monitoring and connecting our customers’ process measurement points to their process control systems.

Our innovative, patented technologies are derived from our expansive R&D facilities and from having a great understanding of our customers’ needs and processes. We are guided by principles of simplicity, focus, courage and excellence, enabling some of the world’s greatest companies to achieve PERFORMANCE MADE SMARTER.