Pt100 converter

3102

- High accuracy, better than 0.1% of selected range
- 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 selected range.
- 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-mode 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

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

Input specifications
Temperature range.....................................-200...+850°C
Accuracy, RTD..............................................Better than 0.1% of selected range or 0.2°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
Broken sensor detection.............................> 800 Ω
Shorted sensor detection............................< 18 Ω

Output specifications
Programmable signal 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)
Load stability, current output......................50.01% of span/100 Ω
Programmable signal ranges, VDC................0/1...5 V and 0/2...10
Range limits, VDC.......................................0 / -2.5%...+2.5%
Sensor error indication, voltage output (when selected)......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......................................................FM 3041043-C
DNV Marine...........................................Stand f. Certific. No. 2.4
GL.......................................................V1-7-2
GOST R................................................Yes
UL.......................................................UL 61010-1
UL.......................................................UL 61010-1