TC converter - isolated

3111

- Excellent accuracy, better than 0.05% 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 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 CJC and TC error detection.
- Excellent conversion accuracy in all available ranges, better than 0.05% of selected range.
- 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-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: 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
- Isolation voltage, test: 2.5 kVAC (reinforced)
- Isolation voltage, working: 300 VAC/250 VAC (I.S.)
- 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: 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: Better than 0.05% of selected range or 0.5°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
- 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 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)
- Open output: ≤ 18 V
- Load stability, current output: ≤ 50.01% of span/100 Ω
- Programmable signal ranges, VDC: 0/1...5 V and 0/2...10 V
- 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: 3041043-C
- DNV Marine: Stand. f. Certific. No. 2.4
- GL: V1-7-2
- GOST R: Yes
- UL: UL 61010-1