

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.

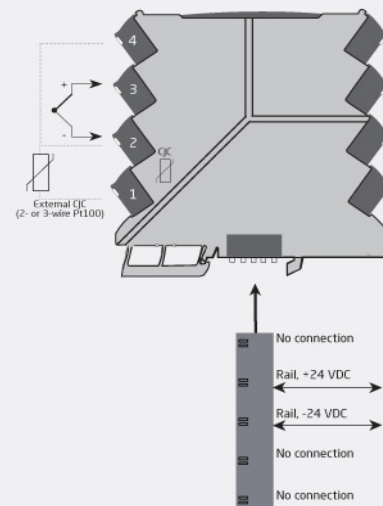
Technical characteristics

- Flexibly powered by 24 VDC ($\pm 30\%$) 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.

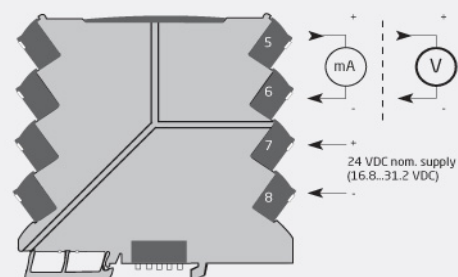
Mounting / installation / programming

- 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 $-25...+70^{\circ}\text{C}$.

Connections



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



Order:

Type
3111

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 mm ² / 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 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.....	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.....	≤ 0.01% 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.....	3041043-C
DNV Marine.....	Stand. f. Certific. No. 2.4
GL.....	V1-7-2
GOST R.....	Yes
UL.....	UL 61010-1