PERFORMANCE MADE SMARTER



Pt100 converter - isolated

3112

– Excellent accuracy, better than 0.05% of span
– Slimline housing of 6.1 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.

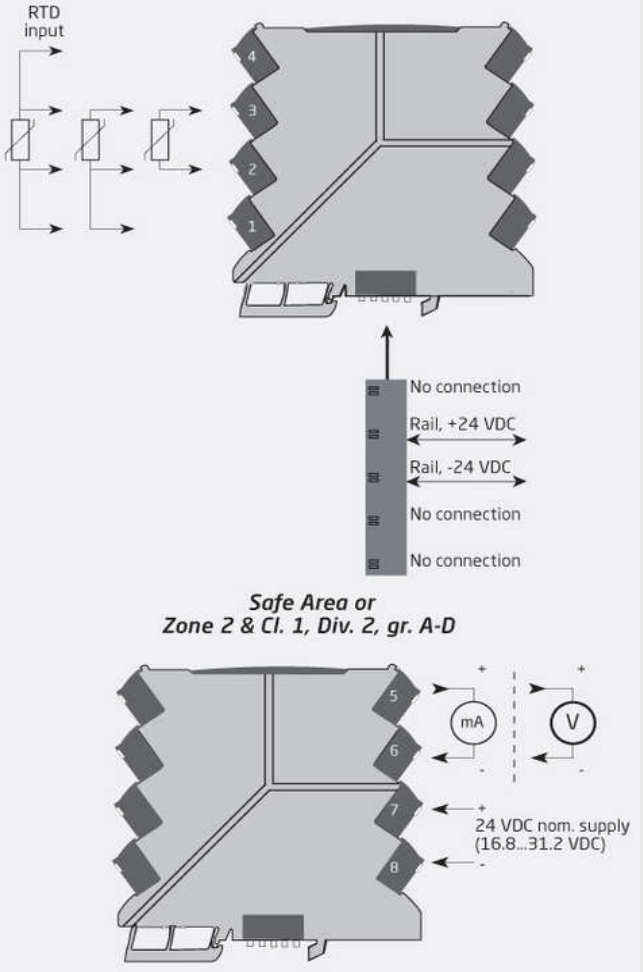
Technical characteristics

- 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 6.1 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.

Applications



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Order

Type	Version	
3112	With power rail connector / terminals	:-
	Supplied via terminals	:-N

Example: 3112-N

Environmental Conditions

Operating temperature ..... -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 & meas. / 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...2.5 mm^2 / AWG 26...12 stranded wire
Screw terminal torque ..... 0.5 Nm
Vibration ..... IEC 60068-2-6
2...25 Hz ..... ±1.6 mm
25...100 Hz ..... ±4 g

Common specifications

Supply

Supply voltage ..... 16.8...31.2 VDC
Max. required power ..... 0.70 W
Max. power dissipation ..... 0.70 W

Isolation voltage

Isolation voltage, test / working ..... 2.5 kVAC / 300 VAC (reinforced)
Zone 2 / Div. 2 ..... 250 VAC

Response time

Response time (0...90%, 100...10%) ..... < 30 ms / 300 ms (selectable)

Accuracy ..... Better than 0.05% of selected range
Signal / noise ratio ..... Min. 60 dB
Programming ..... DIP-switches
Signal dynamics, input ..... 23 bit
Signal dynamics, output ..... 18 bit
EMC immunity influence ..... < ±0.5% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst ..... < ±1% of span
Incorrect DIP-switch setting identification ..... 0 V / 0 mA output; LED 0.5 s / 1 Hz

Input specifications

RTD input

Temperature range, Pt100 ..... -200...+850°C
Min. measurement range (span) ..... 10°C
Accuracy: the greater of ..... Better than 0.05% of span or 0.1°C
Temperature coefficient: the greater of ..... 0.02°C/°C or ≤ ±0.01%/°C
Sensor current ..... < 150 µA
Sensor cable resistance ..... < 50 Ω per wire
Effect of sensor cable resistance (3-/4-wire) ..... < 0.002 Ω / Ω
Sensor error detection ..... Yes - selectable via DIP-switch
Broken sensor detection ..... > 800 Ω
Shorted sensor detection ..... < 18 Ω

Output specifications

Common output specifications

Updating time ..... 10 ms

Current output

Signal range ..... 0...23 mA
Programmable signal ranges ..... 0 / 4...20 mA
Sensor error indication (0...20 mA) ..... 0 mA or 23 mA / OFF
Sensor error indication (4...20 mA) ..... 3.5 mA or 23 mA / acc. to NAMUR NE43 or OFF
Load (@ current output) ..... ≤ 600 Ω
Load stability ..... ≤ 0.01% of span / 100 Ω
Current limitation @ low output load ..... < 60 mA peak / < 4 mA average

Voltage output

Programmable signal ranges ..... 0/1...5 and 0/2...10 V
Sensor error indication ..... 0 V / 10% above the max. / none

Open output ..... < 18 V

I.S. / Ex marking

ATEX ..... II 3 G Ex ec IIC T4 Gc
IECEx ..... Ex ec IIC T4 Gc
FM, US ..... Cl. I, Div. 2, Gp. A, B, C, D T4 or Cl. I, Zone 2, AEx nA IIC T4
FM, CA ..... Cl. I, Div. 2, Gp. A, B, C, D T4 or Cl. I, Zone 2, Ex nA IIC T4
EAC Ex ..... 2Ex nA IIC T4 Gc X

Observed authority requirements

EMC ..... 2014/30/EU & UK SI 2016/1091
LVD ..... 2014/35/EU & UK SI 2016/1101
ATEX ..... 2014/34/EU & UK SI 2016/1107
RoHS ..... 2011/65/EU & UK SI 2012/3032
EAC ..... TR-CU 020/2011
EAC Ex ..... TR-CU 012/2011

Approvals

ATEX ..... KEMA 10ATEX0147 X
IECEx ..... KEM 10.0068X
UKEX ..... DEKRA 21UKEX0055X
c FM us ..... FM17US0004X / FM17CA0003X
c UL us, UL 61010-1 ..... E314307
EAC Ex ..... RU C-DK.HA65.B.00355/19
DNV Marine TAA00001RW