

HART 7 temperature converter - isolated

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.

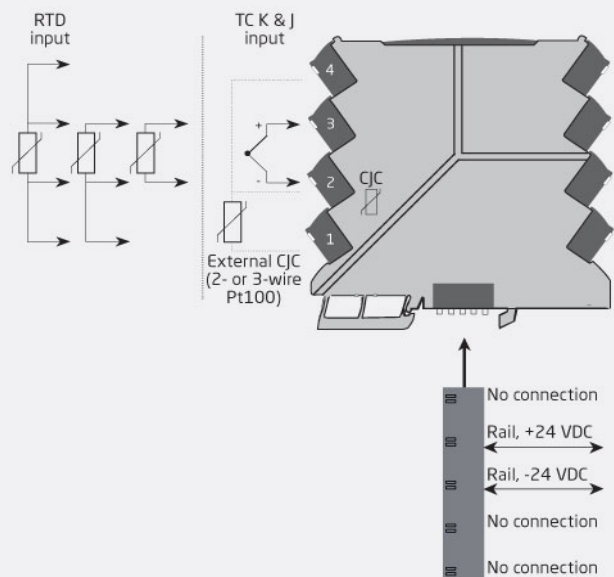
Technical characteristics

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

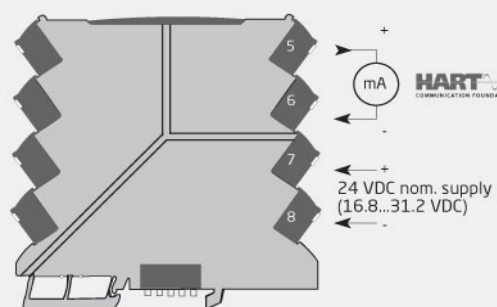
Mounting / installation / programming

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

Applications



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



Order

Type	Version
3113	With power rail connector / terminals :- Supplied via terminals :-N

Example: 3113-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 x 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

HART mode, (0...90%, 100...10%).....	60 ms...60 s, programmable
DIP mode, (0...90%, 100...10%).....	< 60 ms

Accuracy..... Better than 0.05% of selected
range

Signal / noise ratio.....	Min. 60 dB
Long-term stability, better than.....	±0.1% of span / year (±0.3% of span / 5 years)

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.....	3.5 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

TC input

Temperature range, TC J.....	-100...+1200°C
Temperature range, TC K.....	-180...+1372°C
Min. measurement range (span) - TC J & K.....	50°C
Accuracy: the greater of.....	Better than 0.05% of span or 0.5°C

Temperature coefficient: the
greater of..... 0.1°C/°C or ≤ ±0.01%/°C

Sensor cable resistance.....	< 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

Internal CJC error detection.....	Yes
External CJC error detection.....	Yes - selectable via DIP- switch
Open Thermocouple detection.....	Yes - selectable via DIP- switch

Output specifications

Common output specifications

Updating time.....	10 ms
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Current output

Signal range.....	0...23 mA
Programmable signal ranges.....	4...20 and 20...4 mA
Load (@ current output).....	≤ 600 Ω
Load stability.....	≤ 0.01% of span / 100 Ω

Sensor error indication..... 3.5 mA or 23 mA / acc. to
NAMUR NE43 or OFF

Open output.....	< 20 V
HART protocol revisions.....	HART 7

I.S. / Ex marking

ATEX.....	II 3 G Ex nA IIC T4 Gc
IECEX.....	Ex nA 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

Observed authority requirements

EMC.....	2014/30/EU
LVD.....	2014/35/EU
RoHS.....	2011/65/EU
EAC.....	TR-CU 020/2011

Approvals

ATEX 2014/34/EU.....	KEMA 10ATEX0147 X
IECEX.....	KEM 10.0068X
FM.....	FM17US0004X / FM17CA0003X
DNV-GL Marine.....	Stand. f. Certific. No. 2.4
UL.....	UL 61010-1