

Application

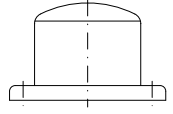
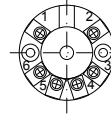
- Conversion and linearization of thermocouples and Pt100 resistance thermometers signals into a temperature proportional 4-20mA standard current signal

Technical features

- 2-wire transmitter
Input for TC, Pt100, ohm or mV (FPTU, universal, FPTT only for thermocouple, FPTM only for Pt100)
- Programmable by means of a standard PC using an interface module
- For mounting in the sensor connection head as a terminal block or in a high cap
- Supplied in version with galvanic isolation and EEx/ATEX approved
- Version with EEx/ATEX approval acc. to EExIaIICT1-T6
- Programmable sensor error value acc. to Namur NE 43

As terminal block

In high cap



Order information for FPTU

Specification number	9168-			
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Type

FPTU standard version. In high cap (B-head)	1
FPTU galvanic isolated. In high cap (B-head)	2
FPTU EExIaIICT4/T6. In high cap (B-head)	3
FPTU galvanic isolated. EExIaIICT4/T6. In high cap (B)	4
FPTU standard version. As terminal block	5
FPTU galvanic isolated. As terminal block	6
FPTU EExIaIICT4/T6. As terminal block	7
FPTU galvanic isolated. EExIaIICT4/6. As terminal block	8
Special	s

Configuration

Input type	Total range	Min. range		
Without configuration			0	0
Type B Pt30%Rh-Pt6%Rh	+400 +1820°C	200°C	0	1
Type E NiCr-CuNi	-100 +1000°C	50°C	0	2
Type J Fe-CuNi	-100 +1200°C	50°C	0	3
Type K NiCr-Ni	-180 +1372°C	50°C	0	4
Type N NiCrosil-Nisil	-180 +1300°C	50°C	0	5
Type R Pt13%Rh-Pt	-50 +1760°C	200°C	0	6
Type S Pt10%Rh-Pt	-50 +1760°C	200°C	0	7
Type T Cu-CuNi	-200 + 400°C	50°C	0	8
Type U Cu-CuNi (DIN)	-200 + 600°C	50°C	0	9
Type L Fe-CuNi (DIN)	-100 + 900°C	50°C	1	0
Pt100 2-wire	-200 + 850°C	25°C	1	2
Pt100 3-wire	-200 + 850°C	25°C	1	3
Pt100 4-wire	-200 + 850°C	25°C	1	4
Special			9	9

Order information for FPTM

Specifications number	9168-			
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Type

FPTM standard version. In high cap (B-head)	1
FPTM EExIaIICT4/T6. In high cap (B-head)	3
FPTM standard version. As terminal block	5
FPTM EExIaIICT4/T6. As terminal block	7
Special	s

Configuration

Input type	Total range	Min. range		
Without configuration			9	0
Pt100 3-wire	-200 +850°C	25°C	3	3

Order information for FPTT

Specification number	9168-			
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Type

FPTT galvanic isolated. In high cap (B-head)	2
FPTT galvanic isolated. EExIaIICT4/T6. In high cap (B)	4
FPTT galvanic isolated. As terminal block	6
FPTT galvanic isolated. EExIaIICT4/T6. As terminal block	8
Special	s

Configuration

Input type	Total range	Min. range		
Without configuration			4	0
Type B Pt30%Rh-Pt6%Rh	+400 +1820°C	200°C	4	1
Type E NiCr-CuNi	-100 +1000°C	50°C	4	2
Type J Fe-CuNi	-100 +1200°C	50°C	4	3
Type K NiCr-Ni	-180 +1372°C	50°C	4	4
Type N NiCrosil-Nisil	-180 +1300°C	50°C	4	5
Type R Pt13%Rh-Pt	-50 +1760°C	200°C	4	6
Type S Pt10%Rh-Pt	-50 +1760°C	200°C	4	7
Type T Cu-CuNi	-200 + 400°C	50°C	4	8
Type U Cu-CuNi (DIN)	-200 + 600°C	50°C	4	9
Type L Fe-CuNi (DIN)	-100 + 900°C	50°C	5	0
Special			9	9

Measuring range

Please specify measuring range in °C 4mA: °C. 20mA: °C

Standard configuration

Response time: 1 sec.
Open sensor: up-scale
Namur NE43 < span I = 3.5mA
> span I = 23mA

Accessories for FPTU - FPTT-FPTM

Description	Catalogue no.
Junction box IP 65, 80x75x57mm	120190
Silumin box (RM2) IP 54	120181
Looplink configuration software	121280
DIN-Rail clips	122634

Common specifications

- Supply voltage U_s
 - Standard version FPTU 7.0-35VDC
 - FPTT 7.0-35VDC
 - FPTM 8.0-35VDC
 - EEX version FPTU 7.0-28VDC
 - FPTT 7.0-28VDC
 - FPTM 8.0-28VDC
- Consumption 25 mW - 0.8 W
- Isolation voltage (FPTU isolated and FPTT) 1500VAC in 60 sec.
- Warm up time 5 min.
- Signal-/noise ratio min. 60 dB
- Response time (programmable) 1-60 sec.
- Updating time 440 msec.
- Ambient temperature
 - Standard version -40+85°C
- Linearity $\leq \pm 0.01\%$ FS
- Effect of supply variations $< 0.005\%$ FS / VDC
- EMC-data, emission EN50 081
- EMC-data, immunity EN50 082
- EMC-data, immunity influence $\leq \pm 0.5\%$ FS
- Vibration IEC 68-2-6 Test FC
- Lloyd's specification no. 1 4g / 2 - 100 Hz
- Max. wire size 1 x 1.5 mm²
- Humidity 0 - 90% RH
- Dimensions dia. 44 x 20.2 mm
- Degree of protection (enclosure/terminal) IP 68 / IP00
- Weight 50 g
- Mounting Connection head type
B/BHS- or separate box

Thermocouple input (only FPTU and FPTT)

- Type and range See page 1
- Max. offset 50% of selected max. value
- Primary accuracy for
 - Type E, J, K, L, T, U $\leq \pm 1.0^\circ\text{C}$
 - Type B, R, S $\leq \pm 2^\circ\text{C}$
- Cold junction compensation (CJC) $\leq \pm 1.0^\circ\text{C}$
- Temperature coefficient
 - Type E, J, K, L, N, T, U range $< 500^\circ\text{C}$ $\leq \pm 0.05^\circ\text{C} / ^\circ\text{C}_{\text{amb}}$
 - Type E, J, K, L, N, T, U range $> 500^\circ\text{C}$ $\leq \pm 0.01\%$ FS / $^\circ\text{C}_{\text{amb}}$
 - Type B, R, S $\leq \pm 0.2^\circ\text{C} / ^\circ\text{C}_{\text{amb}}$
- Sensor error detection yes

Pt100 and resistance input

- Type and range See front page
- Max. offset 50% of selected max. value
- Cable resistance per wire (max.) 5 ohm
- Sensor current nom. 0.2 mA
- Basic accuracy FPTU $\pm 0.2^\circ\text{C}$
FPTM $\pm 0.3^\circ\text{C}$
- Temperature coefficient for
 - range $< 100^\circ\text{C}$ $\leq \pm 0.01^\circ\text{C} / ^\circ\text{C}_{\text{amb}}$
 - range $> 100^\circ\text{C}$ $\leq \pm 0.01\%$ FS / $^\circ\text{C}_{\text{amb}}$
- Effect of sensor cable resistance (3/4-wire) < 0.002 ohm / ohm
- Sensor error detection yes

Output

- Signal range 4 - 20 mA
- Min. signal range 16 mA
- Load resistance FPTU (U_s-7)/0.023 ohm
FPTT (U_s-7)/0.023 ohm
FPTM (U_s-8)/0.023 ohm
- Load stability $\leq \pm 0.01\%$ FS / 100 ohm

Sensor error detection:

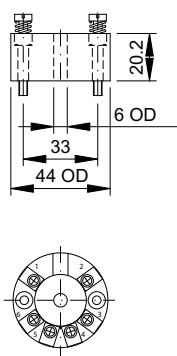
- Programmable 3.5 - 4 mA
20 - 23 mA
- Namur NE43 Upscale 23 mA
- Namur NE43 Downscale 3.5 mA
- To max. > 23 mA
- To min. < 3.8 mA
- No function Not defined

Ex-data

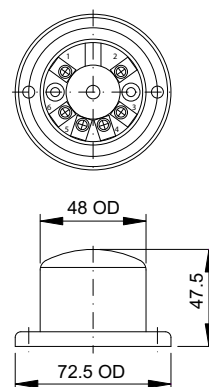
- $U_{s\text{max}}$ 28.0 VDC
- $I_{\text{max.in}}$ 120 mA DC
- P_{max} 0.84 W
- L_{eq} ≤ 10 mH
- C_{eq} ≤ 1 nF
- Approvals EEXiaIICT1-T6
ATEX 0539 (Ex) II 1 G
- Applicable in zone 0,1 or 2
- Max ambient temperature T1-T4 -40+85°C
T5-T6 -40+60°C

FS=Full span

As terminal block



In high cap BHX



Connection diagram

