PROGRAMMABLE TRANSMITTER

CE ☐ PGT
ATEX ⟨Ex⟩ | DNV | c(UL)us LISTED | FM APPROVED | 5 YEARS PRODUCT GUARANTEE

- **Input for RTD, TC, mV, Ohm, potentiometer, mA and V**
- **2-wire supply > 16.5 V to Ex zone 0**
- **Bipolar voltage input**
- **Output for current, voltage and 2 relays**
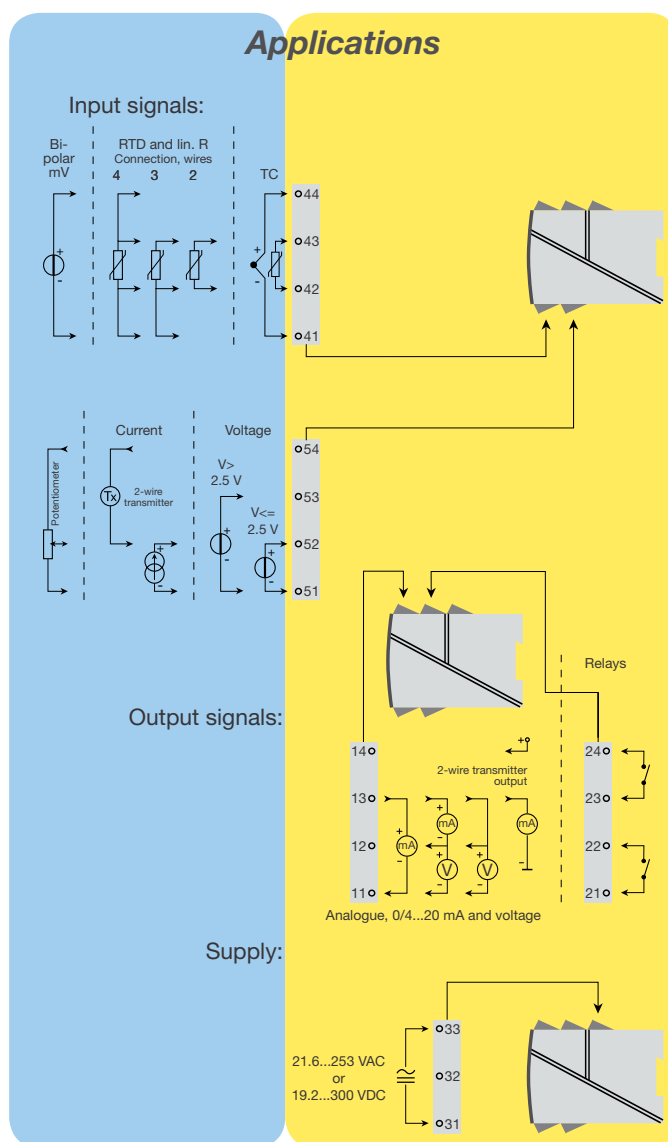- **Universal AC or DC supply**

Application:

- Linearised, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analogue current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with 2 potential-free relay contacts which can be configured for advanced functions.
- Galvanic separation of analogue signals and measurement of floating signals.

Technical characteristics:

- Within a few seconds the user can program PR5116B to suit the specific application.
- By way of the front push-button the input can be calibrated to the exact span of the process. Zero drift on the process signal can be adjusted by a single press of the front buttton.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 3.75 kVAC galvanic isolation.

Mounting / installation:

- Mounted vertically or horizontally on a DIN rail. As the modules can be mounted without any distance between neighbouring units, up to 42 modules can be mounted per metre.

Applications

Input signals:

Bi-polar mV | RTD and lin. R Connection, wires 4 3 2 | TC | 44 43 42 41

Potentiometer | Current 2-wire transmitter | Voltage V> 2.5 V V<= 2.5 V | 54 53 52 51

Output signals:

14 13 12 11 | 2-wire transmitter output | Relays 24 23 22 21

Analogue, 0/4...20 mA and voltage

Supply:

21.6...253 VAC or 19.2...300 VDC | 33 32 31

Order: 5116B

*NB! Please remember to order CJC connector type 5910Ex in connection with TC input with internal CJC.

Electrical specifications:
Specifications range:
-20°C to +60°C
Common specifications:

Supply voltage, universal	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. consumption............................	≤ 3 W
Fuse..	400 mA SB / 250 VAC
Isolation voltage, test / operation......	3.75 kVAC / 250 VAC
Communications interface	Loop Link
Signal / noise ratio............................	Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%), programmable:	
Temperature / ±mV input..............	400 ms...60 s
mA, / V / mV input	250 ms...60 s
Signal dynamics, input	22 bit
Signal dynamics, output...................	16 bit
Calibration temperature....................	20...28°C

Accuracy, the greater of the general and basic values:

General values		
Input type	Absolute accuracy	Temperature coefficientc
All	≤ ±0.05% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
mA	≤ ±4 μA	≤ ±0.4 μA / °C
Volt	≤ ±10 μV	≤ ±1 μV / °C
RTD	≤ ±0.2°C	≤ ±0.01°C / °C
Lin.R	≤ ±0.1 Ω	≤ ±10 mΩ / °C
TC type: E, J, K, L, N, T, U	≤ ±1°C	≤ ±0.05°C / °C
TC type: B, R, S, W3, W5, LR	≤ ±2°C	≤ ±0.2°C / °C

EMC immunity influence	< ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst	< ±1% of span

Auxiliary supplies:

Reference voltage............................	2.5 VDC ±0.5% / 15 mA
2-wire supply, pin 54...52	28...16.5 VDC / 0...20 mA
Max. wire size..................................	1 x 2.5 mm² stranded wire
Screw terminal torque	0.5 Nm
Relative humidity	< 95% RH (non-cond.)
Dimensions (HxWxD)........................	109 x 23.5 x 130 mm
Protection degree.............................	IP20
Weight	235 g

Electrical specifications, INPUT

Max. offset.......................................	50% of selec. max. value

TC input:

Sensor error current	Nom. 30 μA
CJC	< ±1°C
Sensor error detection......................	Yes

mV input:

Measurement range	-2500...+2500 mV
Min. measurement range..................	5 mV
Input resistance	> 5 MΩ

RTD and linear resistance input:

Type	Min. value	Max. value	Min. span	Standard
Pt100	-200°C	+850°C	25°C	IEC 60751
Ni100	-60°C	+250°C	25°C	DIN 43760
Lin. R	0 Ω	5000 Ω	30 Ω	-----

Cable resistance per wire..................	10 Ω (max. 50 Ω)
Sensor current..................................	Nom. 0.2 mA
Effect of sensor cable resistance (3- / 4-wire)	< 0.002 Ω / Ω
Sensor error detection......................	Yes

Current input:

Measurement range	0...100 mA
Min. measurement range..................	4 mA
Input resistance:	
supplied unit..............................	Nom. 10 Ω + PTC 10 Ω
non-supplied unit	$R_{SHUNT} = ∞$, $V_{DROP} < 6$ V
Sensor error detection:	
loop error on 4...20 mA	Yes

Voltage input:

Measurement range	0...250 VDC
Input resistance ≤ 2.5 VDC	Nom. 10 MΩ
> 2.5 VDC	Nom. 5 MΩ

Potentiometer via 2.5 V ref.:

Potentiometer min.	170 Ω

Electrical specifications - OUTPUT:

Max. offset.......................................	50% of selec. max. value

Current output:

Signal range	0...20 mA
Min. signal range (span)	10 mA
Load (max.).......................................	20 mA / 600 Ω / 12 VDC
Current limit......................................	≤ 28 mA

Voltage output:

Signal range	0...10 VDC
Min. signal range (span)	500 mV
Load (min.)..	500 kΩ

2-wire 4...20 mA output:

Signal range	4...20 mA
Max. external 2-wire supply	29 VDC

Relay outputs:

Max. voltage.....................................	250 VRMS
Max. current	2 A / AC
Max. current at 24 VDC....................	1 A
Sensor error detection......................	Break / Make / Hold / None

Sensor error detection and loop error:

Programmable...................................	0...23 mA
NAMUR NE43 Upscale......................	23 mA
NAMUR NE43 Downscale.................	3.5 mA

EEx / I.S. approval:

KEMA 04ATEX1316 X	⟨Ex⟩ II (1) GD
	[EEx ia] IIC
Applicable for zone...........................	0, 1, 2, 20, 21 or 22

Ex / I.S. data:

U_m	: 253 V
U_m, Loop Link	: 60 V

Ex / I.S. data for temperature / bipolar mV input,
terminal 41, 42, 44 and 43
and for for unipolar mA / V input:
terminal 51, 52 and 53

U_o	: 7.5 V
I_o	: 2.2 mA
P_o	: 4.2 mW
C_o	: 6.0 μF
L_o	: 1.0 H

Ex / I.S. data when using 2-wire supply / ref. voltage:
Terminal 51, 52, 53 and 54

U_o	: 28 V
I_o..	: 93 mA
P_o	: 650 mW

	IIC	IIB	IIA
C_o:	75 nF	645 nF	2 μF
L_o:	3 mH	16 mH	31 mH

FM approval:

Applicable in.....................................	Cl. I, Div. 2, Gr. A,B,C,D Cl. I, Zone 2, Gr. IIC, IIB, IIA
Applicable for	Cl. I, Div. 1, Gr. A,B,C,D Cl. II, Div. 1 Gr. E, F, G Class III, Division 1 Cl. I, Zone 0/1, Gr. IIC, IIB, IIA Class II, Zone 20 and 21
FM Installation Drawing No	5116QF01

Marine approval:

Det Norske Veritas, Ships & Offshore ..	Stand. f. Certific. No. 2.4

GOST R approval:

VNIIFTRI, Cert No.............................	www.prelectronics.com

Observed authority requirements:	**Standard:**
EMC 2004/108/EC	EN 61326-1
LVD 2006/95/EC	EN 61010-1
PELV/SELV..	IEC 364-4-41, EN 60742
ATEX 94/9/EC...................................	EN 50014, EN 50020, EN 50284, EN 50281-1-1 and IEC 61241-11
FM	3600, 3610, 3611, 3810
UL, Standard for Safety.....................	UL 508

Of span = of the currently selected measurement range