Plug-in module SIRAX PT 602, 1 or 2 channels
Configurable transmitter for Pt 100

CE

Application

The transmitter **SIRAX PT 602** (Fig. 1) converts the input variable – a signal from a resistance thermometer Pt 100 – to a temperature linear output signal.

The analogue output signal is either an impressed current or superimposed voltage which is processed by other devices for purposes of displaying, recording and/or regulating a constant.

Versions are available for two, three or four-wire connection.

DIP switches are provided for the coarse setting of the measuring range and the fine adjustment is accomplished using the potentiometers.

Red LED's signal an open or short-circuit feeler. In both cases, the output signal adopts its maximum value.

In the case of an current output, provision is made for switching between 0…20 mA and 4…20 mA.

The transmitter fulfils all the important requirements and regulations concerning electromagnetic compatibility **EMC** and **Safety** (IEC 1010 resp. EN 61 010). It was developed and is manufactured and tested in strict accordance with the **quality assurance standard** ISO 9001.

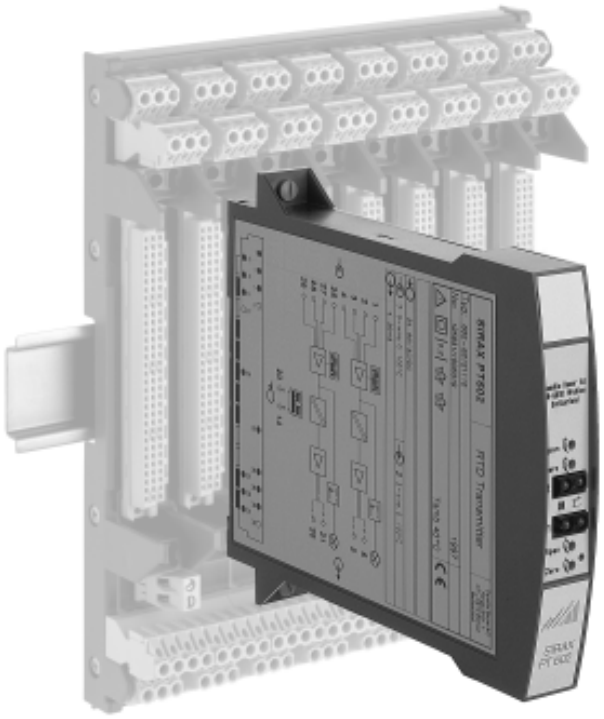

Fig. 1. Plug-in module SIRAX PT 602 for plugging onto backplane BP 902.

Features / Benefits

- **Transmitter plugs onto backplane** (mechanically latched by fasteners), **all electric connections made to the backplane and not to the SIRAX PT 602 / Thus no wiring when replacing devices**
- **Measuring ranges configurables with DIP switch and potentiometer**
- **Red LED's signal an open or short-circuit feeler**
- **Electric insulation between input, output 2.3 kV and power supply 3.7 kV / Fulfils EN 61 010**
- **Non-standard user-specific ranges available**
- **AC/DC power supply / Universal**

Standard versions

Input(s) set to a range of 0…100 °C and output(s) to a range of 4…20 mA. Configured for three-wire connection. DIP switches enable the temperature range to be configured between a minimum of – 170 °C to a maximum of + 800 °C; potentiometers for fine calibration of "Zero" and "Span".

Table 1: Standard version with 1 input and 1 output

Input	Output	Power supply DC/AC	**Order No.**
0…100 °C configurable	0/**4…20 mA** $R_{ext.} \leq 500\ \Omega$	24… 60 V	125 915
		85…230 V	125 923

Table 2: Standard version with 2 inputs and 2 outputs

Inputs 1 and 2	Outputs 1 and 2	Power supply DC/AC	**Order No.**
0…100 °C configurable	0/**4…20 mA** $R_{ext.} \leq 500\ \Omega$	24… 60 V	125 931
		85…230 V	125 949

Please complete the Order Code 602-6… .... according to "Table 4: Ordering informations" for versions with user-specific configuration.

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Technical data

Measuring input resp. measuring inputs

Resistance thermometer:	Type Pt 100 (DIN IEC 751)
Measuring current:	< 1 mA
Input resistance:	Ri > 4 MΩ
Lead resistance:	Two-wire connection ≤ 25 Ω per lead (total 50 Ω) Three-/four-wire connection ≤ 25 Ω per lead
Temperature range:	Two-wire connection –150…800 °C Three-/four-wire connection –170…800 °C
Min. span:	50 °C
Max. span:	700 °C
Max. initial value:	Two-wire connection 400 °C Three-/four-wire connection 500 °C
Max. ratio between offset and span:	$\frac{T_A}{T_E - T_A}$ < 10 (T_A and T_E in °C)
Measuring range settings:	– Coarse setting with DIP switches – Fine adjustment with potentiometers “Zero” and “Span”
Potentiometer setting range:	Dependent on temperature range, typical values: – Span, approx. ± 60% of full scale – Offset, approx. ± 100 °C (12-turn helical potentiometers)

Measuring output resp. measuring outputs

DC current:	0/4…20 mA switchable by plug-in jumper
Burden voltage:	10 V
Open-circuit voltage:	< 20 V
External resistance:	$R_{ext.}$ max. ≤ 500 Ω
Residual ripple:	< 1.5% p.p., DC…10 kHz
DC voltage:	0…10 V
Short-circuit current:	≤ 40 mA
Load capacity:	$R_{ext.}$ min. ≥ 2 kΩ
Residual ripple:	< 1.5% p.p., DC…10 kHz
Response time:	≤ 500 ms

Open-circuit sensor circuit and short-circuit supervision

Pick-up level:	– At open-circuit approx. 1 to 400 kΩ – At short-circuit approx. 0…30 Ω
Fault signalling mode:	– Frontplate signals Red LED for signalling faults – Output signal at 0/4…20 mA, output approx. 25 mA at 0…10 V, output approx. 12.5 V

Power supply H

AC/DC power pack (DC and 45...400 Hz)

Table 3: Rated voltages and permissible variations

Nominal voltages U_N	Permissible variation
24... 60 V DC / AC	DC – 15… + 33% AC ± 15%
85...230 V [1] DC / AC	

Power consumption:	1 channel version ≤ 1.2 W resp. ≤ 2.3 VA 2 channels version ≤ 1.8 W resp. ≤ 3.4 VA

Accuracy data (acc. to DIN/IEC 770)

Basic accuracy:	Max. error ≤ ± 0.5% including linearity and repeatability errors for a standard range 0…100 °C and for reference conditions
Additional error (additive):	<± 0.35% for linearised characteristic
Influence of lead resistance:	– Two-wire connection: Compensated by potentiometer – Three-wire connection: 0.15 K of measuring range per 10 Ω Lead resistance ≥ 0.375 K total – Four-wire connection: 0.1 K of measuring range per 10 Ω Lead resistance ≥ 0.375 K total
Selector switch for 0…20 / 4…20 mA:	± 0.1%

Reference conditions:

Ambient temperature	23 °C, ± 2 K
Power supply	24 V DC ± 10% and 230 V AC ± 10%
Output burden	Current: 0.5 · R_{ext} max. Voltage: 2 · R_{ext} min.

[1] An external supply fuse must be provided for DC supply voltages > 125 V.

Influencing factors:

Temperature	< ± 0.2% per 10 K
Burden	< ± 0.1% for current output < 0.2% for voltage output, if $R_{ext} > 2 \cdot R_{ext}$ min.
Long-term drift	< ± 0.3% / 12 months
Switch-on drift	< ± 0.5%

Installation data

Mechanical design:	Transmitter in housing B17 for plugging onto backplane BP 902. Dimensions see Section “Dimensional drawing”
Material of housing:	Lexan 940 (polycarbonate) Flammability Class V-0 acc. to UL 94, self-extinguishing, non-dripping, free of halogen
Designation:	SIRAX PT 602
Position of use:	Any
Electrical connections:	96-pin connector acc. to DIN 41 612, pattern C Layout see Section “Electrical connections”
Coding:	Transmitter supplied already coded. The backplane is coded by the user by fitting the coding inserts supplied
Weight:	1 channel, approx. 160 g 2 channels, approx. 180 g

Electrical insulation: All circuits (measuring inputs / measuring outputs / power supply) are electrically insulated

Standards

Electromagnetic compatibility:	The standards DIN EN 50 081-2 and DIN EN 50 082-2 are observed
Protection (acc. to IEC 529 resp. EN 60 529):	Housing IP 40 Terminals IP 00
Electrical standards:	Acc. to IEC 1010 resp. EN 61 010
Operating voltages:	< 300 V between all insulated circuits
Pollution degree:	2
Installation category acc. to IEC 664:	III for power supply II for measuring input and measuring output
Double insulation:	– Power supply versus all circuits – Measuring input versus measuring output
Test voltage:	Power supply versus: – all 3.7 kV, 50 Hz, 1 min. Measuring inputs versus: – measuring outputs 2.3 kV, 50 Hz, 1 min. Measuring input 1 versus: – measuring input 2 2.3 kV, 50 Hz, 1 min. Measuring output 1 versus: – measuring output 2 2.3 kV, 50 Hz, 1 min.

Environmental conditions

Commissioning temperature:	– 10 to + 40 °C
Operating temperature:	– 25 to + 40 °C
Storage temperature:	– 40 to + 70 °C
Annual mean relative humidity:	≤ 75%

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Table 4: Ordering informations (see also Table 1 and 2: “Standard versions”)

DESCRIPTION	MARKING
1. Mechanical design	
Housing B 17 (for plugging onto backplane BP 902, see data sheet BP 902)	602 - 6
2. Number of measuring inputs / measuring ranges	
1) With 1 measuring input / measuring range	1
2) With 2 measuring inputs / measuring ranges	2
3. Version / Power supply	
1) Standard, / 24 … 60 V DC/AC	1
2) Standard, / 85 … 230 V DC/AC	2
4. Connection mode (applies to inputs 1 and 2)	
1) Two-wire connection RL1 [Ω]	1
RL2 [Ω]	
2) Three-wire connection	2
3) Four-wire connection	3
5. Measuring input 1	
1) Measuring range 0…100 °C	1
9) Measuring range [°C]	9
Line 1: Measuring ranges configurable, see Operating Instructions	
Line 9: – 170 to + 800 °C, span min. 50 K, max. 700 K, see Technical Data	
6. Measuring input 2	
0) Measuring input 2 not used	0
1) Measuring range 0…100 °C	1
9) Measuring range 2 [°C]	9
Line 1: Measuring ranges configurable, see Operating Instructions	
Line 9: Possible measuring ranges see measuring input 1	
7. Measuring outputs 1 or 2 (applied to outputs 1 and 2)	
1) Output 0/4 … 20 mA (configurable by plug-in jumper(s), set to 4 … 20 mA)	1
2) Output 0 … 10 V	2
3) Output 4/0 … 20 mA (configurable by plug-in jumper(s), set to 0 … 20 mA)	3
8. Certificate	
0) Without test certificate	0
1) With test certificate	1

Possible special versions, e.g. increased climatic rating on inquiry.

Electrical connections

Version with 1 input and 1 output

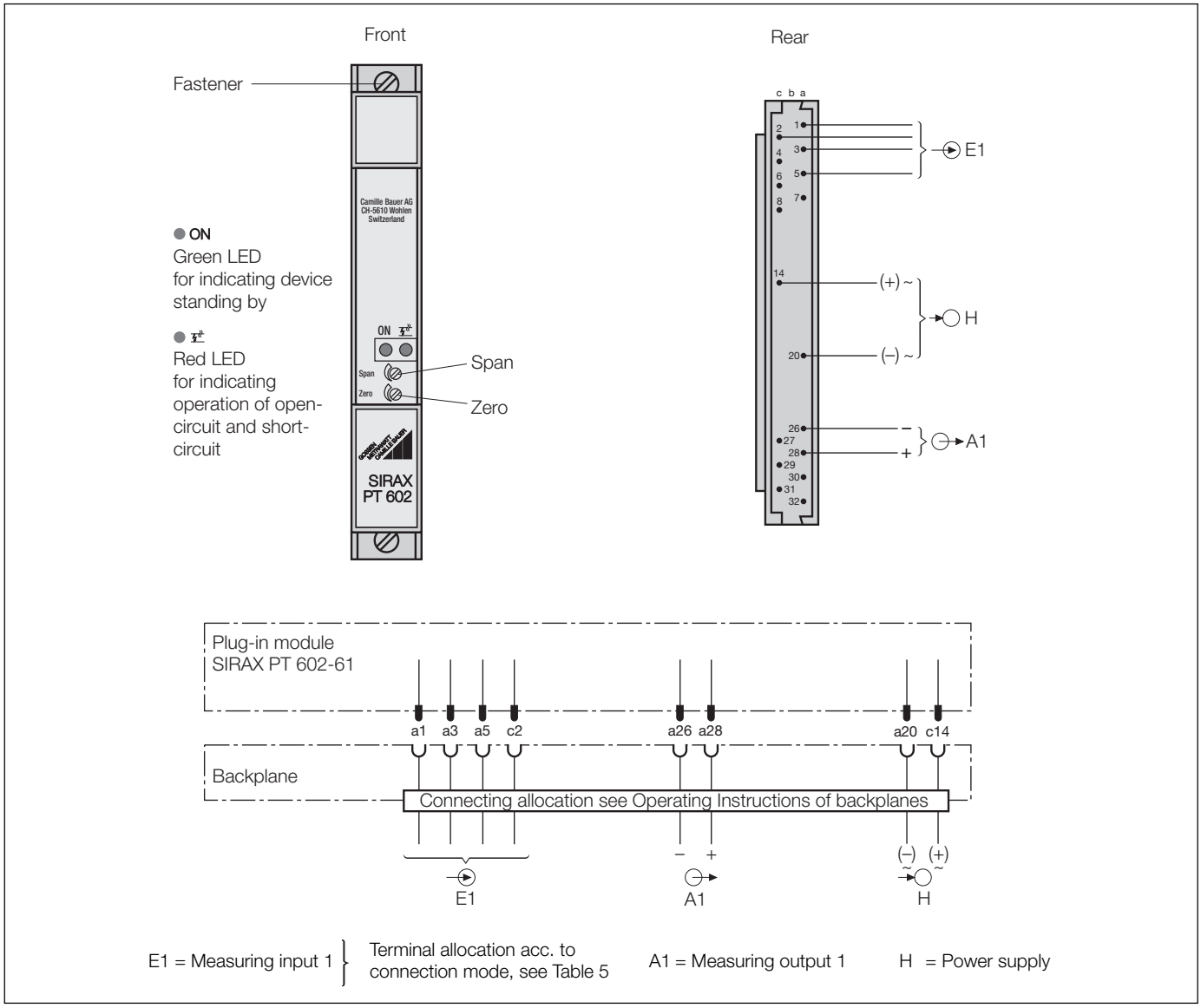
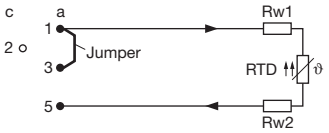
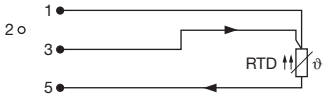
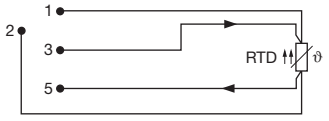


Table 5: Connection of the measuring input lead E1

Measuring input		Connection mode	Wiring diagram Plug arrangement
Version with 1 input	Measuring input E1	**Two-wire** connection	
		Three-wire connection	
		Four-wire connection	

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Version with 2 inputs and 2 outputs

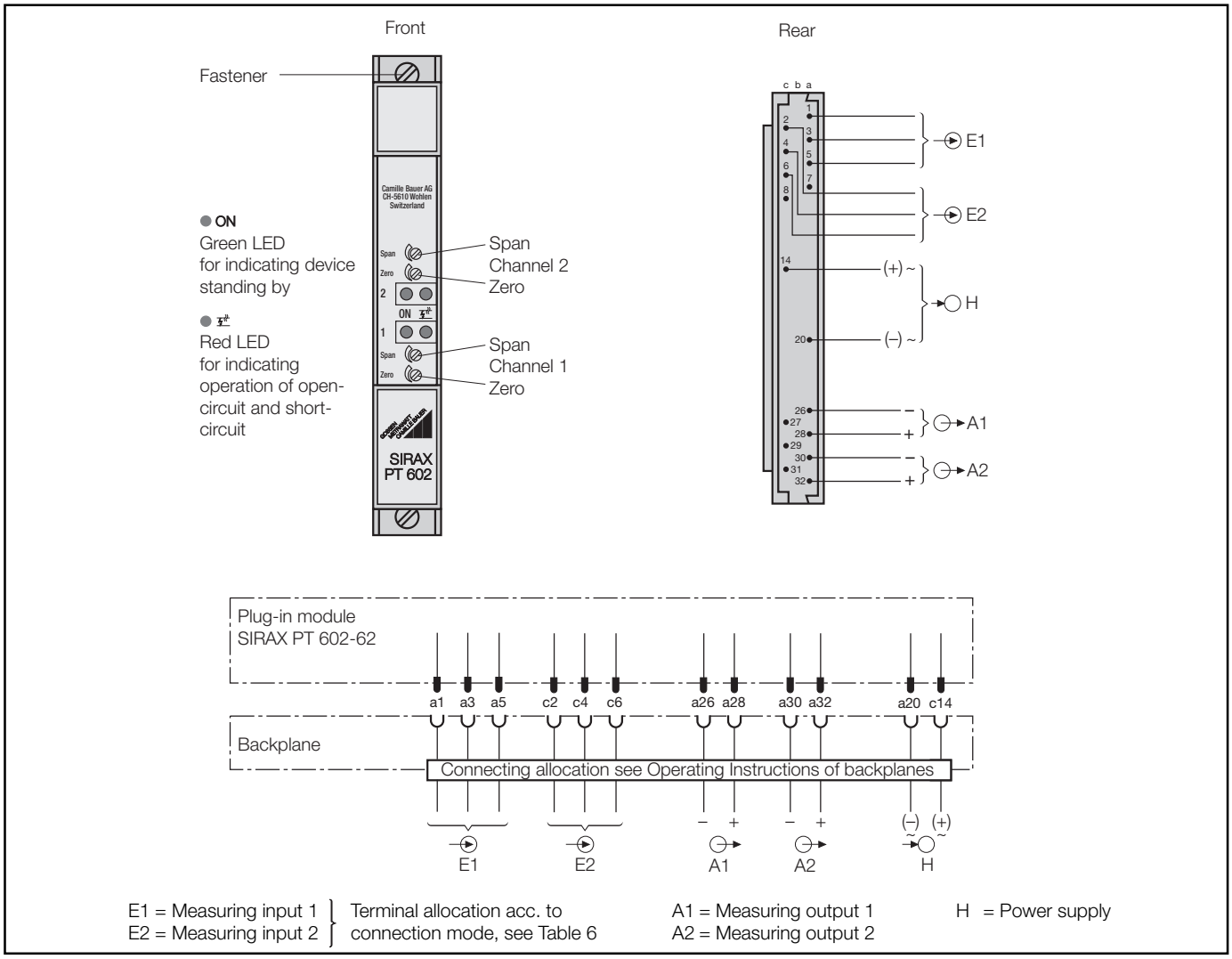
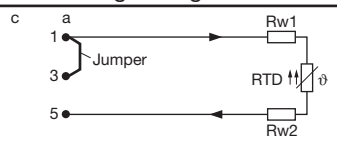
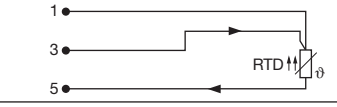
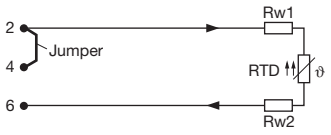
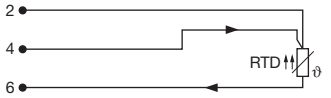


Table 6: Connecting of the measuring input leads E1 and E2

Measuring input		Connection mode*	Wiring diagram Plug arrangement
Version with 2 inputs	Measuring input E1	**Two-wire** connection	
		Three-wire connection	
	Measuring input E2	**Two-wire** connection	
		Three-wire connection	

* Since the SIRAX BP 902 backplane only has six input terminals, the two-channel version of the SIRAX PT 602 can only be used in **two** and **three**-wire measuring schemes.

Table 7: Accessories and spare parts

Description	Order No.
Coding comb with 12 sets of codes (for coding the backplane BP 902)	107 971
Operating Instructions PT 602-6 B d-f-e	126 179
Data card (for recording configured settings)	130 984

Standard accessories

1 Operating Instructions for SIRAX PT 602 in three languages: German, French, English

1 Coding comb with 12 sets of codes

3 Data cards (for recording configured settings)

Dimensional drawing

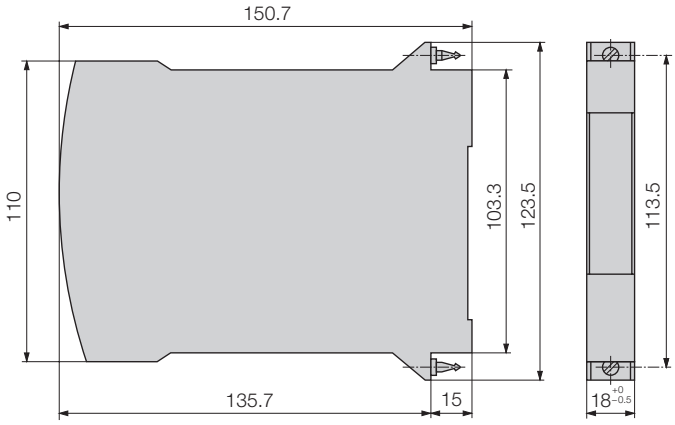


Fig. 2. SIRAX PT 602 in housing **B17**.

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Printed in Switzerland • Subject to change without notice • Edition 03.01 • Data sheet No. PT 602-6 Le

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