

RISH Ducer PT 602, 1 or 2 channels Configurable transmitter for Pt 100

In housing S17 for rail and wall mounting

Application

The transmitter *RISH*Ducer PT 602 (Fig. 1 and 2) 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.

Features / Benefits

- Measuring ranges configurable 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
- Provision for either snapping the transmitter onto top-hat rails or securing it with screws to a wall or panel
- Housing only 17.5 mm wide (size S17) / Low space requirement

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".

Technical data

Measuring input resp. measuring inputs	$\rightarrow \oplus$
Resistance thermometer:	Type Pt 100 (DIN IEC 751)
Measuring current:	< 1 mA
Input resistance:	R _i > 4 M Ω
Lead resistance:	Two-wire connection ≤ 25 W 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 output	$\rightarrow \ominus$
DC current:	0/4...20 mA switchable by plug-in jumper
Burden voltage:	10 V
Open-circuit voltage:	< 20 V



Fig. 1 *RISH* Ducer PT 602, 1 channel version, in housing S17 clipped on to atop-hat rail

Table 1: Standard version with 1 input and 1 output

Input	Output	Power supply DC/AC
0...100°C	0/4...20 mA	24... 60 V
configurable	R _{ext.} ≤ 500 Ω	85...230 V



Fig. 2 *RISH* Ducer PT 602, 2 channels version, in housing S17 screw hole mounting brackets pulled out.

Table 2: Standard version with 2 inputs and 2 outputs

Input 1 and 2	Output 1 and 2	Power supply DC/AC
0...100°C	0/4...20 mA	24... 60 V
configurable	R _{ext.} ≤ 500 Ω	85...230 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 $\frac{I_{sc}}{I_{nom}}$	
Pick-up level:	— At open-circuit approx. 1 to 400 kΩ — At short-circuit approx. 0...30 Ω

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Fault signaling mode:

- Front plate signals
Red LED for signaling fault
- Output signal
at 0/4...20 mA,
output approx. 25 mA
at 0... 10 V, output approx. 12.5 V

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Accuracy data (acc. to DIN/IEC 770)

Basic accuracy:	Max. error $\leq +0.5\%$ including linearity and repeatability errors for a standard range 0...100°C and for reference Conditions
Additional error (additive):	$< \pm 0.35\%$ for linearised characteristic
Influence of lead resistance:	— Two-wire connection: Compensated by potentiometer — Three-wire connection: 0.15 K of measuring range per 10Ω Lead resistance $\geq \geq 0.375$ K total — Four-wire connection: 0.1 K of measuring range per 10Ω Lead resistance $\geq \geq 0.375$ K total
Selector switch for 0...20 / 4...20 mA:	+0.1%
Reference conditions:	23°C, ± 2 K
Ambient temperature	24 V DC $\pm 10\%$ and 230 V AC + 10%
Power supply	Current: 0.5 · R _{ext} max. ext
Output burden	Voltage: 2 · R _{ext} min.

A1n external supply fuse must be provided for DC supply voltages > 125 V.

Influencing factors:

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

Installation data

Mechanical design:	Housing S17 Refer to Section "Dimensional drawings" for dimensions
Material of housing:	Texan 940 (polycarbonate) Flammability Class V-0 acc. to UL 94, self-extinguishing, non-dripping, free of halogen
Mounting:	For snapping onto top-hat rail (35x15 mm or 35x7.5 mm) acc. to EN 50 022 or directly onto a wall or panel using the pull-out screw hole brackets
Mounting position:	Any
Terminals:	DIN/VDE 0609 Screw terminals with wire guards for light PVC wiring and max. 2x0.75 mm ² or 1x 2.5 mm ²
Permissible vibrations:	2 g acc. to EN 60 068-2-6
Shock:	50 g 3 shocks each in 6 directions acc. to EN 60 068-2-27
Weight:	1 channel approx. 180 g 2 channels approx. 200 g

Power supply H $\rightarrow \bigcirc$

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%
85...230 V ¹ DC / AC	AC $\pm 15\%$

Power consumption:	1 channel version ≤ 1.2 W resp. ≤ 2.3 VA 2 channels version ≤ 1.8 W resp. ≤ 3.4 VA
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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 20

Electrical standards:
Operating voltages:

Acc. to IEC1010 resp. EN61010
 < 300 V between all insulated circuits

Pollution degree:
Installation category acc. to IEC 664:

2
III for power supply
II for measuring input and measuring output

Double insulation:

— Power supply versus all circuits

Test voltage:

— Measuring input versus measuring output
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

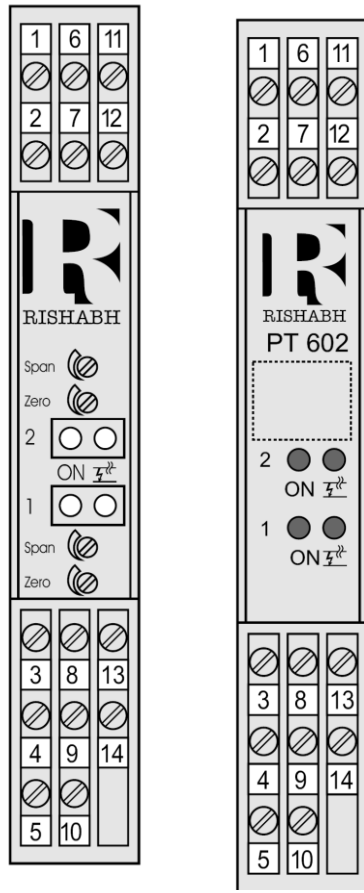
Commissioning temperature:	—10 to + 55°C
Operating temperature:	—25 to + 55°C
Storage temperature:	—40 to + 70°C
Annual mean relative humidity:	$\leq 75\%$

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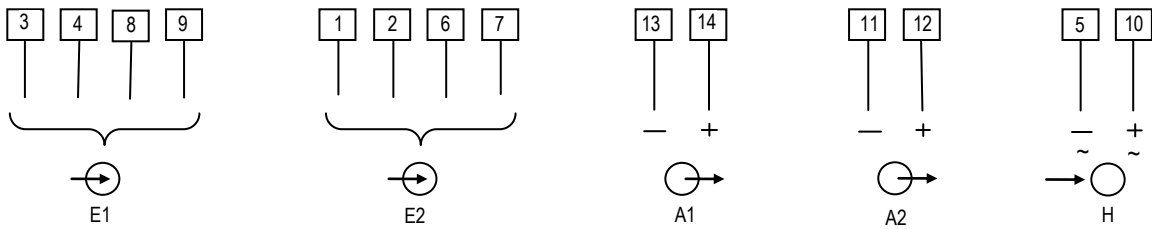
Electrical connections

Front



- ON
Green LED'S
for indicating device
standing by
- ∞
Red LED'S
for indicating operation
of open-circuit or
short-circuit

Without transparent With transparent cover



E1=Measuring input 1 } Terminal allocation acc. to
E2= Measuring input 2 } connection mode, Table 5
A1= Measuring input 1
A1= Measuring input 2
H=Power supply

Dimensional drawings

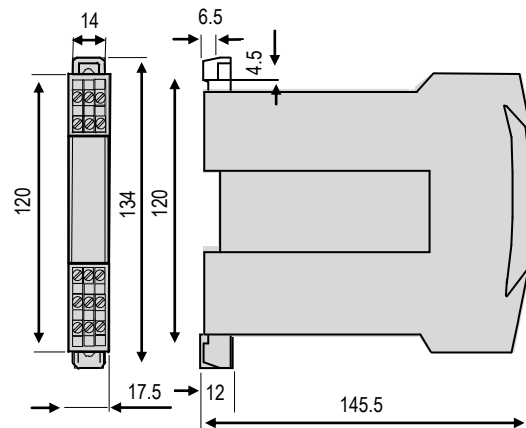
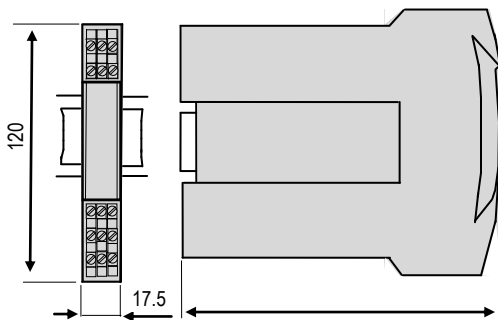


Fig.3.RISH Ducer PT602 in housing S17 clipped onto a top-hat rail (35x15 mm or 35x7.5 mm, acc.to EN 50 022).

Fig.4.RISH Ducer PT 602 in housing S17 with the screw hole brackets pulled out for wall mounting.

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