

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

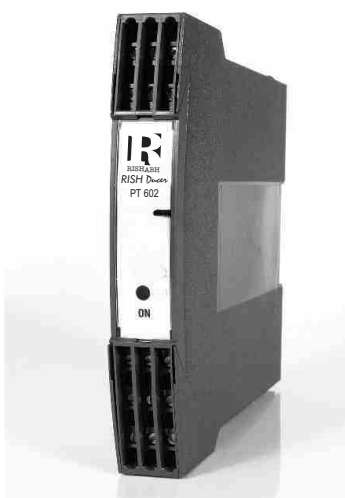


Fig. 1 RISH *Ducer* PT 602, 1 channel version, in housing S17 clipped on to a top-hat rail.



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

In housing S17 for railed 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 fore - 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 fulfil all the important requirements and regulations concerning electromagnetic compatibility EMS & safely (IEC 1010 resp. EN 61 010). It was developed & is manufactured & tested in strict accordance with the quality assurance standard & ISO 9001

Function

The temperature transmitter RISH *Ducer* PT 602 converts the input variable a signal from resistance thermometer PT100-to a proportionate temperature linear output signal. The analogue output signal is either an DC current or DC voltage which is processed by other devices for the purpose of displaying, recording and / or regulating a constant temperature. Versions are available for two, three or four - wire connection.

Features / Benefits

- Measuring ranges configurable with DIP switch and potentiometer .
- Non - Standard user - specific ranges available .
- Red LED's indicator : an open or short - circuit.
- Electric isolation between input & output 2.3 kV and power supply & all other circuits 3.7 kV - Fulfils EN 61 010.
- Universal (DC / AC) power supply.
- Snapping
- Housing

Standard

Electromagnetic Compatibility : The standard DIN EN 50 081-2 & DIN EN 50 082-2 are observed

Protection (acc. to IEC 529

resp. EN 60 529) : Housing IP 40
Terminals IP 20

Electrical standards : Acc. to IEC 1010 resp. EN 60 010
Operating voltages : < 300 V between all insulated circuit
Pollution degree : 2

Standard Versions

Inputs (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; potentiometer for fine calibration of " Zero " and " Span ".

Table 1: Standard version with 1 input 1 output

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

Table 2: Standard version with 2 input 2 output

Inputs 1 & 2	Outputs 1 & 2	Power supply DC/AC
0...100 °C	0/4...20 mA	24...60 V
configurable	R _{ext.} 500	85...230V

Standard accessories

- 1 Operating Instructions
- 2 Pull out clamp S17 (for opening the housing)
- 3 Front label



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Technical data

Measuring input resp. measuring inputs \ominus

Resistance thermometer : Type Pt 100 (DIN IEC 751)

Measuring current : < 1 mA

Input resistance : $R_i > 4 \text{ M}$

Lead resistance : Two - wire connection 25 per lead (total 50
Three - / four - wire connection 25 per Lead

Temperature range : Two - wire connection
— 150 ... 800° C
Three - / four - wire connection
— 170 ... 800° C

Min. span : 25° C

Max. span : 950° 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 potentiometer "Zero" and "Span"

Potentiometer setting range : Dependent on temperature range, typical values :
— Span, approx. $\pm 60\%$ of full scale
— Offset, approx. $\pm 100^\circ \text{C}$ (12 - turn helical potentiometer)

Measuring output resp. measuring outputs $\ominus \rightarrow$

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

Residual ripple : < 1.5% p.p., DC...10 kHz

DC voltage : 0...10 V

Short-circuit current : 40 mA

Load capacity : R_{ext} min. $\geq 2 \text{ k}$

Residual ripple : < 1.5% p.p., DC...10 kHz

Response time : 500 ms

Open-circuit sensor circuit and short-circuit supervision $\overline{\text{tr}}$

Pick-up level : — At open - circuit
approximately 1 to 400 k
— At short - circuit
approximately 0...30

Fault signaling mode : — Frontplate signals
Red LED for signaling fault
— Output signal at 0 / 4...20 mA,
output approx. 25 mA at
0...10V, output approx. 12.5 V

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 respectively 2.3 VA
2 channel version
1.8 W respectively 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
Lead resistance
0.375 K total
— Four - wire connection :
0.1 K of measuring range
per 10
Lead resistance
0.375 K total

Selector switch for 0...20 / 4...20 mA : $\pm 0.1\%$



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Reference conditions :

Ambient temperature	: 23°C, ± 2 K
Power supply	: 24 VDC 10% and 230 VAC ±10%
Output burden	: Current: 0.5 . R _{ext} max. Voltage: 2 . R _{ext} min.

An external supply fuse must be provided for DC supply voltages supply > 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 . R _{ext} min.
Long-term drift	: < ± 0.3 % / 12 months
Switch-on drift	: < ± 0.5 %

Installation Data

Mechanical design	: Housing S17 Refer to Section "Dimensional drawings" for dimensions
Material of housing	: Lexan 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. 2 X 0.75 mm ² or 1 X 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 approximately 180 g 2 channel approximately 200 g

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

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 + 55 °C
Operating temperature	: —25 to + 55 °C
Storage temperature	: —40 to + 70 °C
Annual mean relative humidity	: 75%



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Dimensional Drawings

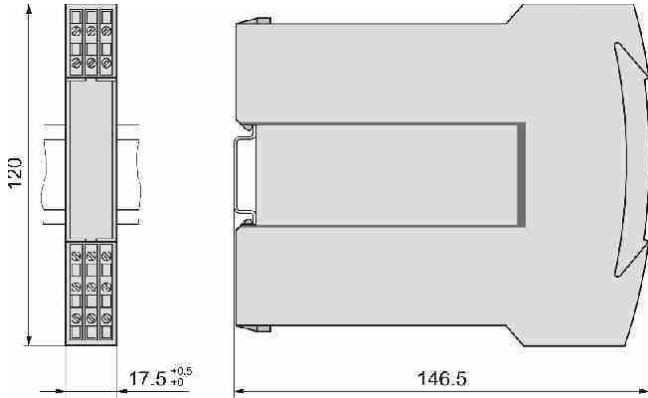


Fig. 3 RISH Ducer PT 602 in housing S 17 clipped onto a top-hat rail (35 X 15 mm or 35 X 7.5 mm, acc. to EN 50 022).

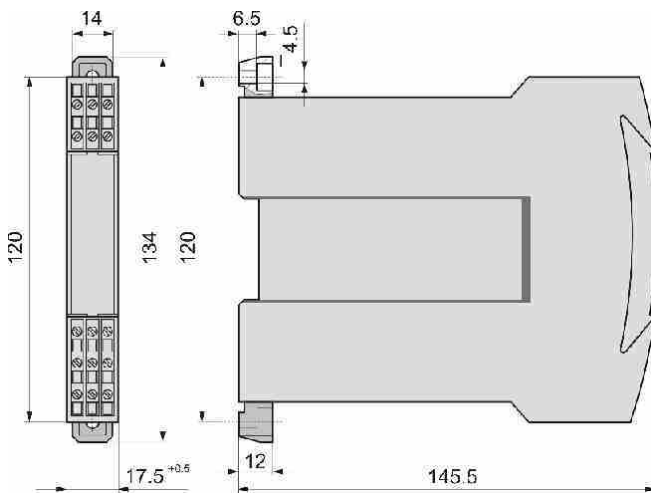
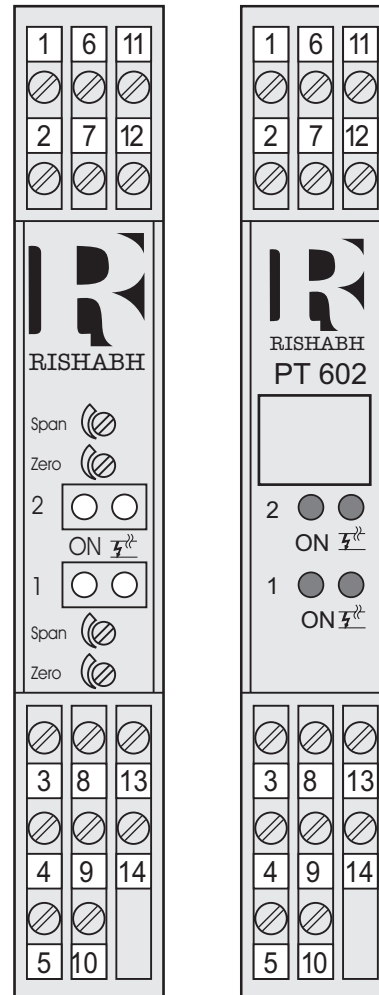


Fig. 4 RISH Ducer PT 602 in housing S 17 with screw hole brackets pulled out for wall mounting.

Electrical connections

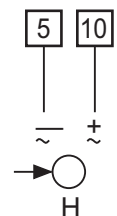
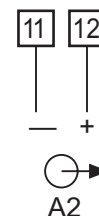
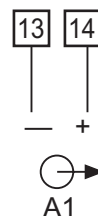
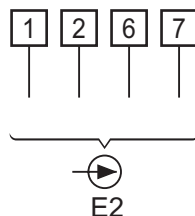
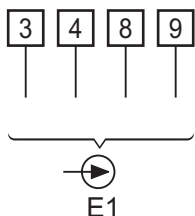
Front



Without transparent cover

With transparent cover

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



- E1 = Measuring input 1 } Terminal allocation acc. to
E2 = Measuring input 2 } Connection mode, see Table 4
A1 = Measuring Output 1
A2 = Measuring Output 2
H = Power supply



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Table 4 : Connection of the measuring input leads E1 and E2

Measuring inputs	Connection mode*	Wiring diagram Terminal arrangement
Version with 1 input Measuring input \rightarrow E1	Two-wire connection	
	Three-wire connection	
	Four-wire connection	
Version with 2 inputs Measuring input \rightarrow E1	Two-wire connection	
	Three-wire connection	
	Four-wire connection	
Version with 2 inputs Measuring input \rightarrow E2	Two-wire connection	
	Three-wire connection	
	Four-wire connection	

* RISH Ducer PT 602 units with type designations 602-1XX 1 and 602-1XX 2 can operate with either two or three-wire connections, but units with the type designation 602-1XX 3 only operate with a four-wire connection.



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