Analogue Temperature Transmitter

Configurable ranges

for Pt 100 Resistance Thermometers

General features

The transmitters in the TET87 or TET88 series are provided with configurable ranges. One of several available measuring ranges can be selected simply by setting solder bridges. Therefore, these transmitters are especially suitable for applications where frequently changing requirements have to be taken into account.

These temperature transmitters serve to convert temperature-dependent changes in resistance in the case of resistance into a 4 ... 20 mA - loop signal. This method guarantees an easy and reliable transmission of the temperature values measured.

Accuracy, sensor monitoring and the permissible ambient conditions are matched to the requirements of industrial applications.

The case is designed as a head-mounted transmitter for direct installation into the temperature probe and can be mounted into any DIN connection head of form B.

As an alternative there is also a case form for direct montage on hat rails.

Special features

- For Pt100 sensors
- Configurable ranges
- Output 4 … 20 mA, 2 wire design
- Fault signal for sensor burn
- Large range of ambient temperature
- Compact and at a low price

Applications

Plant construction

Power engineering

Heating, ventilation, air conditioning, refrigeration

Model: TET87, TET88

Technical data

Model			
Head-Transmitter	**TET 88**		
Rail-Transmitter	**TET 87**		
Input	**PT100 EN 60 751 2- or 3-leads**		
Possible measuring ranges	measuring ranges small	measuring ranges large	measuring ranges for HVAC
configurable	from -50°C up to +200°C	from -50°C up to +400°C	from -30°C up to +120°C
selection of measuring range	via solder bridges		
standard measuring ranges	see page 3		
special measuring ranges	on request (special measuring ranges can not be reconfigured)		
adjustment range			
zero potientiometer (Z)	approx. ± 10°C	approx. ± 25°C	approx. ± 30°C
span potientiometer (SP)	ca. 10 %		
sensor current	approx. 8 mA		
cold junction compensation	---		
input connection leads			
effect	± 0,2 K / 10 Ω [1)]		
permissible load resistance	30 Ω each lead, 3-lead symmetric		
Analogue output	4 .... 20mA 2-wire design		
linearization	propotional to temperature EN 60751		
measuring deviation per DIN 770	± 0,5 % with factory configured measuring range, value is valid ambient temperature ± 23°C		
linearity error	± 0,15 %		
amplification error	---		
temperature-coeffizient T_K zero	± 0,1 % / 10 K_{TU} or [2)] ± 0,2 K / 10 K_{TU}		
temperature-coeffizient T_K span	0,2 % / 10 K_{TU}		
error effect of cold junction compensation	---		
rising time t_{90}	< 1 ms		
switch-on delay, electric	< 10 ms		
signalling with sensor burnout	down scale, < 3 mA [3)]		
signalling with sensor short circuit.	down scale, < 3 mA [4)]		
load R_A	$R_A \leq (U_B - 10\ V) / 0{,}02\ A$ with R_A in Ω and UB in V		
load efect	± 0,05 % / 100 Ω		
power supply effect	± 0,025 % / V		
Power supply U_B	DC 10 ... 30V aus 4 ... 20 mA-loop		
input power supply protection	reserve polarity		
Electromagnetic compatibily (EMC)	CE - Conformity per DIN EN 61326-1		
Special features			
ambient and storage temperature	-40 ... +85 °C		
climate application class	GPF DIN 40040		
maximum permissible humidity	95 % relative humidity, noncondensing DIN IEC 68-2-30 Var.2		
vibration	10 ... 2000 Hz 5g DIN IEC 68-2-6		
shock	DIN IEC 68-2-27 g_N = 15		
Case	head mounting design		
material	polyamide glass fibre reinforced		
degree of projection case	IP 50 IEC 529 / EN 60529		
degree of projection terminal con.	IP 00 IEC 529 / EN 60529		
cross section of terminal connectors	0,14 ... 1,5 mm²		
weight	approx.. 0,03 Kg		
dimensions	see drawings		

Specifications in % refers to the measuring span

R_A load

T_U ambient temperature
T_K temperature coefficient
U_B loop power supply voltage, see power supply

1) Pt 100 connection to 3-wire system
Error with 2-wire connection at output resistance

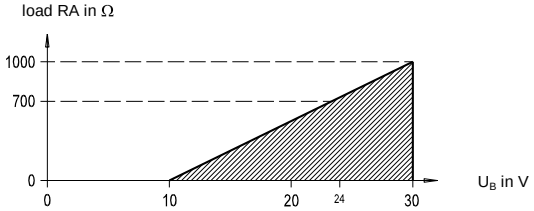
2) larger value is valid

3) Increasing, if only line No. 1 openly

4) Temperature measured value, if short-circuit between the lines No. 2 and No. 3
(Operation of the Pt 100 in 2 - wire system)

Load diagram

The permissible load is dependent upon the loop power suply voltage.



Configuration headtransmitter TET88

1. Remove case bottom
2. Set solder bridges for desired measuring range in accordance with the tables
3. Snapfit bottom to the again
4. Adjust zero and span by means of potentiometer

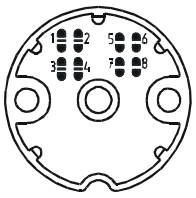
PT 100-measuring range small	
measuring range	bridge
- 50 … + 50 °C	1● ●2 5○ ●6 3● ○4 7○ ○8
0 … 50 °C	1● ●2 5○ ○6 3● ●4 7○ ●8
0 … 100 °C	1● ●2 5○ ○6 3● ○4 7○ ○8
0 … 120 °C	1● ●2 5○ ○6 3○ ○4 7○ ○8
0 … 150 °C	1● ○2 5○ ○6 3○ ○4 7● ●8
0 … 200 °C	1○ ○2 5○ ○6 3○ ○4 7● ○8

PT 100-measuring range large	
measuring range	bridge
- 50 … + 200 °C	1● ●2 5● ●6 3● ○4 7● ●8
0 … 200 °C	1● ●2 5● ●6 3○ ○4 7● ●8
0 … 250 °C	1● ●2 5● ○6 3● ○4 7● ●8
0 … 300 °C	1● ●2 5● ○6 3○ ○4 7● ●8
0 … 350 °C	1● ○2 5● ○6 3○ ○4 7○ ○8
0 …400 °C	1○ ○2 5● ○6 3○ ○4 7● ○8

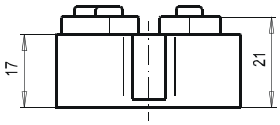
PT 100-measuring range for HVAC	
measuring range	bridge
- 30 … + 30 °C	1● ●2 5● ●6 3● ○4 7● ●8
- 30 … + 50 °C	1● ●2 5● ●6 3○ ○4 7● ●8
0 … 60 °C	1● ●2 5● ○6 3● ○4 7● ●8
0 … 80 °C	1● ●2 5● ○6 3○ ○4 7● ●8
0 … 100 °C	1● ○2 5● ○6 3○ ○4 7○ ○8
0 … 120 °C	1○ ○2 5● ○6 3○ ○4 7● ○8

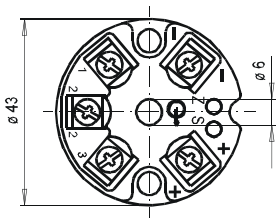
Bridge positions

PT 100

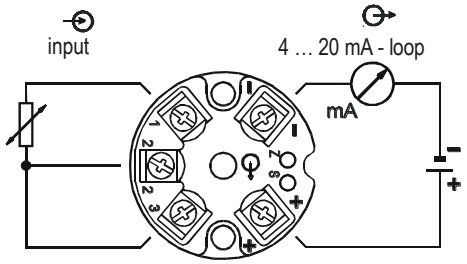


Dimensions in mm





Designation of terminal connectors



Configuration railtransmitter TET87

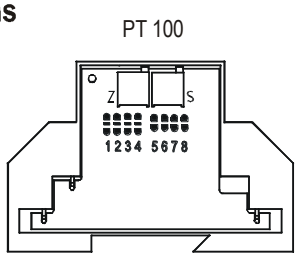
1. Remove case bottom
2. Set solder bridges for desired measuring range in accordance with the tables
3. Snapfit bottom to the again
4. Adjust zero and span by means of potentiometer

PT 100-measuring range small	
measuring range	bridge
- 50 … + 50 °C	1 2 3 4 5 6 7 8 ● ● ● ○ ○ ● ○ ○
0 … 50 °C	1 2 3 4 5 6 7 8 ● ● ● ● ○ ○ ○ ●
0 … 100 °C	1 2 3 4 5 6 7 8 ● ● ● ○ ○ ○ ○ ○
0 … 120 °C	1 2 3 4 5 6 7 8 ● ● ○ ○ ○ ○ ○ ○
0 … 150 °C	1 2 3 4 5 6 7 8 ● ○ ○ ○ ○ ○ ● ●
0 … 200 °C	1 2 3 4 5 6 7 8 ○ ○ ○ ○ ○ ○ ● ○

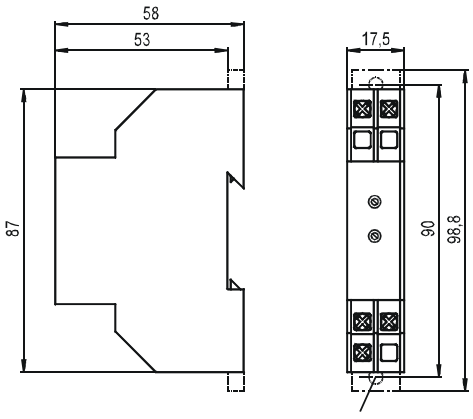
PT 100-measuring range large	
measuring range	bridge
- 50 … + 200 °C	1 2 3 4 5 6 7 8 ● ● ● ○ ● ● ● ●
0 … 200 °C	1 2 3 4 5 6 7 8 ● ● ● ● ○ ○ ○ ●
0 … 250 °C	1 2 3 4 5 6 7 8 ● ● ● ○ ○ ● ● ○
0 … 300 °C	1 2 3 4 5 6 7 8 ● ● ○ ○ ● ○ ○ ○
0 … 350 °C	1 2 3 4 5 6 7 8 ● ○ ○ ○ ● ○ ○ ○
0 … 400 °C	1 2 3 4 5 6 7 8 ○ ○ ○ ○ ● ○ ● ○

PT 100-measuring range for HVAC	
measuring range	bridge
- 30 … + 30 °C	1 2 3 4 5 6 7 8 ● ● ● ○ ● ● ● ●
- 30 … + 50 °C	1 2 3 4 5 6 7 8 ● ● ○ ○ ● ● ● ●
0 … 60 °C	1 2 3 4 5 6 7 8 ● ● ● ○ ● ○ ● ●
0 … 80 °C	1 2 3 4 5 6 7 8 ● ● ○ ○ ● ○ ● ●
	1 2 3 4 5 6 7 8 ● ○ ○ ○ ● ○ ○ ○
0 … 120 °C	1 2 3 4 5 6 7 8 ○ ○ ○ ○ ● ○ ● ○

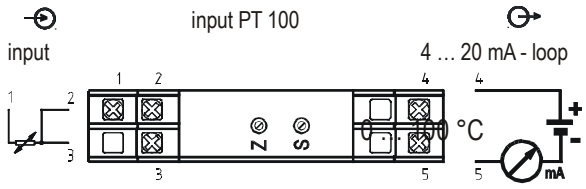
Bridges positions



Dimensions in mm



Designation of terminal connectors



Subject of technical changes