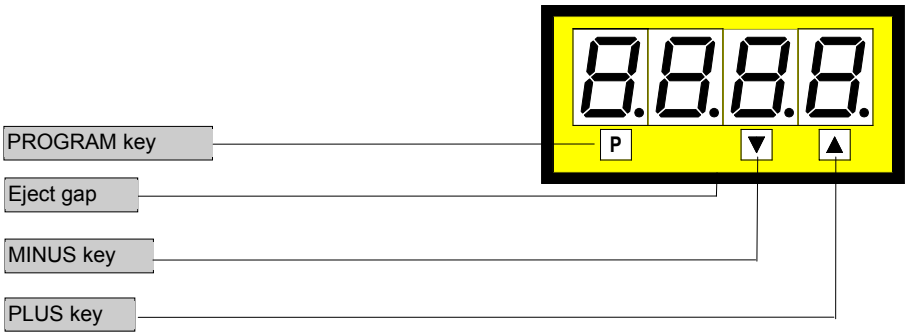
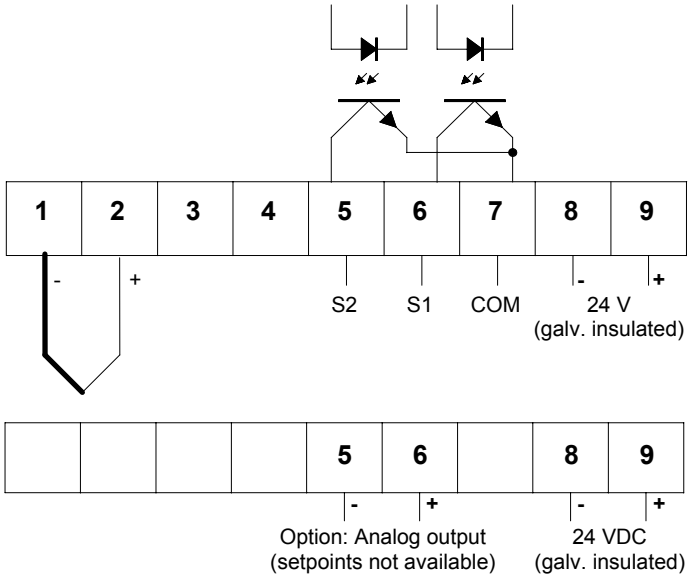
Temperature metering thermocouple - microprocessor based technology

- Standard: 2 set points, min/max memory, optional analogue output
- Mounting into panels with thickness up to 50 mm
- Allows to be placed side by side in grid and mosaics systems

48x24

8888





ORDER NUMBER OF TYPE

PTE 4.40x.7782B

PTE 4.4x**L**.7xx2B	FeCuNi (DIN)	-100 up to + 900°C
PTE 4.4x**J**.7xx2B	FeCuNI (americ.)	-200 up to + 1200°C
PTE 4.4x**K**.7xx2B	NiCrNi	-250 up to + 1350°C

Type „x“ includes all above thermocouples.

Options

- Green LED
- Protection IP54
- Analog output 0-10 VDC - (12 bit)
- Analog output 0-20 mA/load 500 Ω
- Analog output 4-20 mA/load 500 Ω

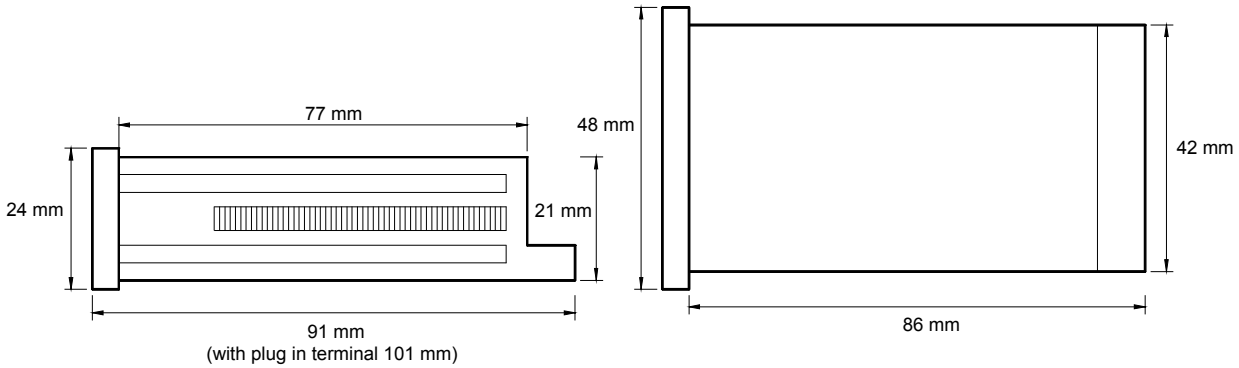
With analog output setpoints S1 and S2 are not available!

- Setpoints as open emitter
- Dimension strip selectable (max. 8 characters)

Technical data

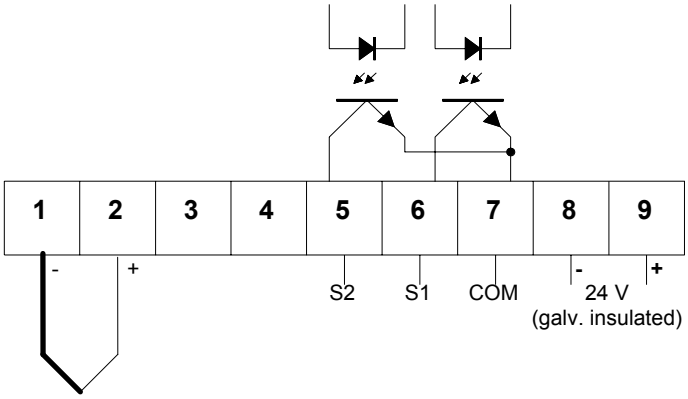
Dimensions	Housing	48 x 24 x 90 mm, including screw terminal
	Assembly cut out	$45.0^{+0.6}$ x $22.2^{+0.3}$ mm
	Fastening	special quick plastic clamp proper to fix in wall thickness up to 50 mm
	Housing material	PC/ABS-blend, colour black, UL94V-0
	Protective system	at the front IP40 connection IP00
	Weight	approx. 75 g
	Connection	at the rear side via plug in connector up to 1.5 mm^2
Input	L Fe-CuNi (DIN)	-100 up to + 900°C (-148 up to 1652°F)
	J Fe-CuNi (americ.)	-200 up to + 1200°C (-328 up to 2192°F)
	K NiCr-Ni	-250 up to + 1350°C (-418 up to 2462°F)
Output	Open collector	2 outputs supply by customers (U_B=5-40 V/I_{max}=100 mA)
	Analogue output	0-10 VDC (12 bit) 0-20 mA/load 500 Ohm (12 bit) 4-20 mA/load 500 Ohm (12 bit)
Accuracy	Resolution	1°C
	Measuring fault	+/-0.2% of measuring value, +/- 1 digit
	Temp. drift	100 ppm/K
	Measuring principle	voltage/frequency converter
Power unit	Supply voltage	24 VDC +/-10% galvanic insulated
	Power consumption	approx. 2 VA
Indication	Display	LED with 7 segments, 10 mm high, red 4-digit = indication 9999
	Overflow	indication of 4 transversal bars
	Indication time	from 0.2 up to 10.0 seconds adjustable
Ambient conditions	Working temperature	0 up to + 60 °C
	Storing temperature	-20 up to + 80 °C

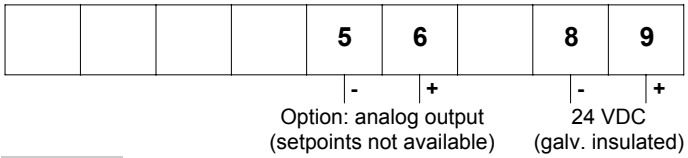
Housing:



CE-sign
For unlimited use of the instrument within the directives for electromagnetic compatibility 89/336/EC measuring wires have to be used with shielded cable and cable's shield connected to earth ground at one end only.

Connection diagram, programing, remarks





Setting

1. Connect the instrument according to the wiring diagram.
2. After power on, the instrument runs into a lamp test and returns back to the standard mode.
3. Pressing the **P**-key enters the program mode with indication of "**P2**" on the display.
4. Pressing the **P**-key and ▲-key simultaneously steps through the different program numbers .
5. Pressing ▲ or ▼ -key shows the current values.
6. To change values use ▼- or ▲-key.
7. Otherwise the remaining values will be memorized automatically 7 seconds after the last touch of key with leaving program mode.

Additional key-functions in standard-mode for indication of min/max values.

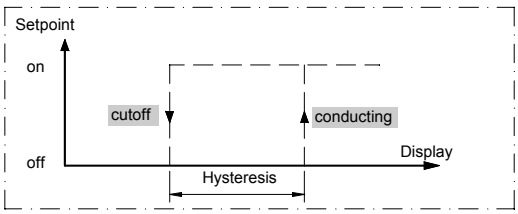
Simultaneously pressing of ▼ and ▲ key deletes and actualizes min/max-memory.
▲ key enters max-memory.
▼ key enters min-memory.

Instructions

After power on the instrument with his inbuilt microcontroller starts with an initialprogram activating lamp test and readout of memorized parameters in an EEPROM.

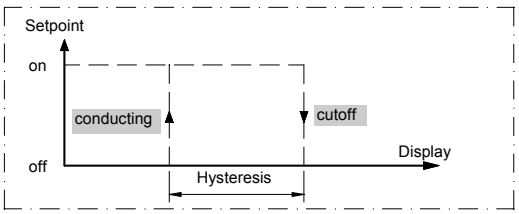
The following diagrams are showing the switching operation of PVE4 open collector outputs, the hysteresis is free programmable.
There are two kinds of operation:

Example: operation current



Operation current means that the open collector will be conducted if reaching the adjusted setpoint.

Example: quiescent current



Quiescent current means that the open collector will be cutoff if reaching the adjusted setpoint.

Operation, setting instructions

Program table 1

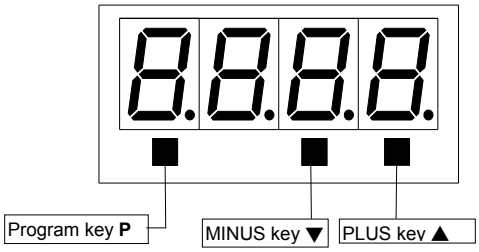
Program Number (PN)	Function	Remark	Display	Basic parameter after reset
2	Sensor and line balancing	Temperature is displayed	0 to +/-20	0
3	Selection of thermocouples	**L** Fe-CuNi (DIN) **J** Fe-CuNi (americ.) **K** NiCr-Ni	1 (°C) – 11 (°F) 2 (°C) – 12 (°F) 3 (°C) – 13 (°F)	2
4	Input of display time	Display time = measuring time Method of measurement integrating	0.2 to 10.0 seconds	1.0
5	Input of final value for analog output	Option	-999 to +9999	500
6	Input of offset for analog output	Option	-999 to +9999	0

Program table 2
(setpoints)

S1	S2	Function	Display	Basic parameters after reset
PN	PN			
61	66	Setpoint	-999 to +9999	100/150
62	67	Hysteresis	0 to +9999	1/1
63	68	Quiescent current	0	-
		Operating current	1	1/1

Example for programming

Temperature sensor: Thermocouple **L** (FeCuNi)
Connection: 2-wire
Display: -100 up to +900°C (ex works)
Display time: 2.0 seconds
Setpoints: S1 ==> 60 and quiescent current
open collector conducting = 58 ==> hysteresis 2
S2 ==> 150 and operating current
open collector cut off = 80 ==> hysteresis 70
Analog output: 0 V output ==> display 0 ==> 0°C
(no setpoints) 10 V output ==> display 600 ==> 600°C



The basic adjustments concerning to the following program example are the ground parameters after a total reset occuring through a power on with pressing **P**-key (see previous page).

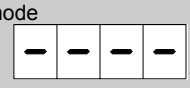
Program advices:
Pressing the **P**-key enters **always** the program mode with program number **2**. The **P2** starts to blink in change with the current value after 3 seconds. After further 4 seconds the system leaves the program mode and goes to the standard mode. In program mode pressing ▼ or ▲ -key selects the current values which are free scalable with both the keys. All the other parameters will be memorized automatically after leaving program mode.

Programming

Switch power on!

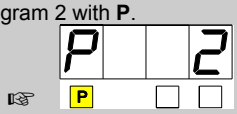
Lamp test

Standard mode

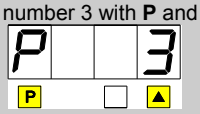


Set thermocouple simulator to 0°C.
The indication value depends on the used cable length.

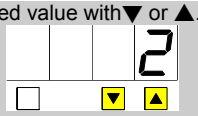
To program 2 with **P**.



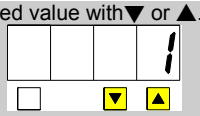
To program number 3 with **P** and ▲



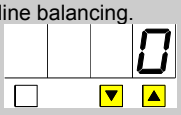
To memorized value with▼ or ▲.



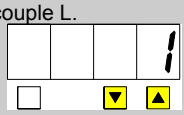
To memorized value with▼ or ▲.



Sensor and line balancing.

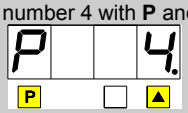


Set thermocouple L.

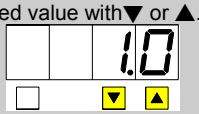


Example for programming

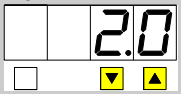
To program number 4 with **P** and ▲



To memorized value with▼ or ▲.

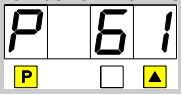


Set display time.

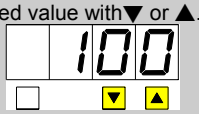


The following programming steps are necessary for the setpoint programming of S1 and S2 only.

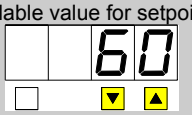
To program number 61 with **P** and ▲



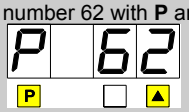
To memorized value with▼ or ▲.



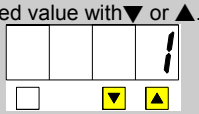
Set free scalable value for setpoint S1.



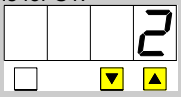
To program number 62 with **P** and ▲



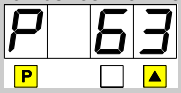
To memorized value with▼ or ▲.



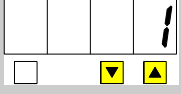
Set hysteresis for S1.



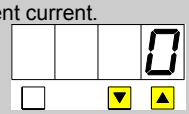
To program number 63 with **P** and ▲



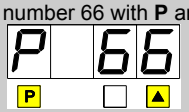
To memorized value with▼ or ▲.



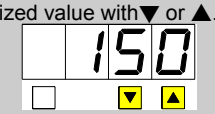
Set quiescent current.



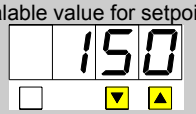
To program number 66 with **P** and ▲



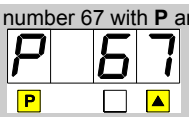
To memorized value with▼ or ▲.



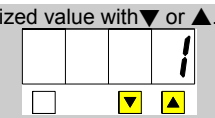
Set free scalable value for setpoint S2.



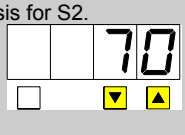
To program number 67 with **P** and ▲



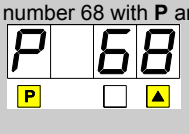
To memorized value with▼ or ▲.



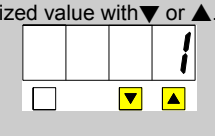
Set hysteresis for S2.



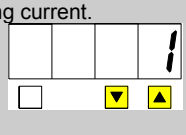
To program number 68 with **P** and ▲.



To memorized value with▼ or ▲.



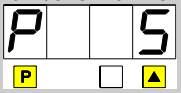
Set operating current.



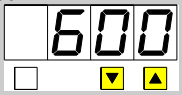
Programming finished.
All programmed values are memorized after 7 seconds. Jumps back into standard mode automatically.

The program numbers 5 and 6 are available with option analogue output only.

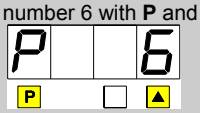
To program number 5 with **P** and ▲



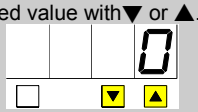
Set free scalable final value for analog output.



To program number 6 with **P** and ▲



To memorized value with▼ or ▲.



Programming finished.
All programmed values are memorized after 7 seconds. Jumps back into standard mode automatically.