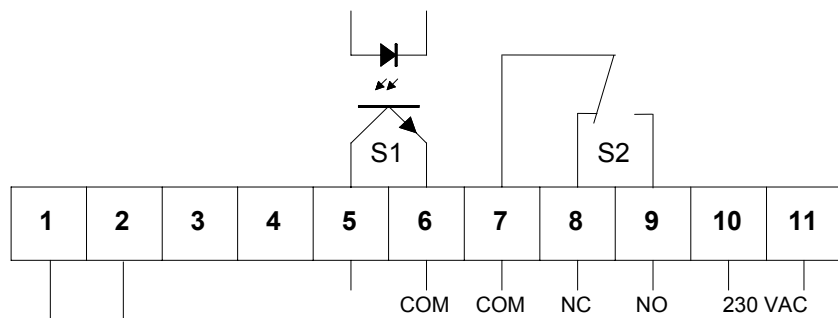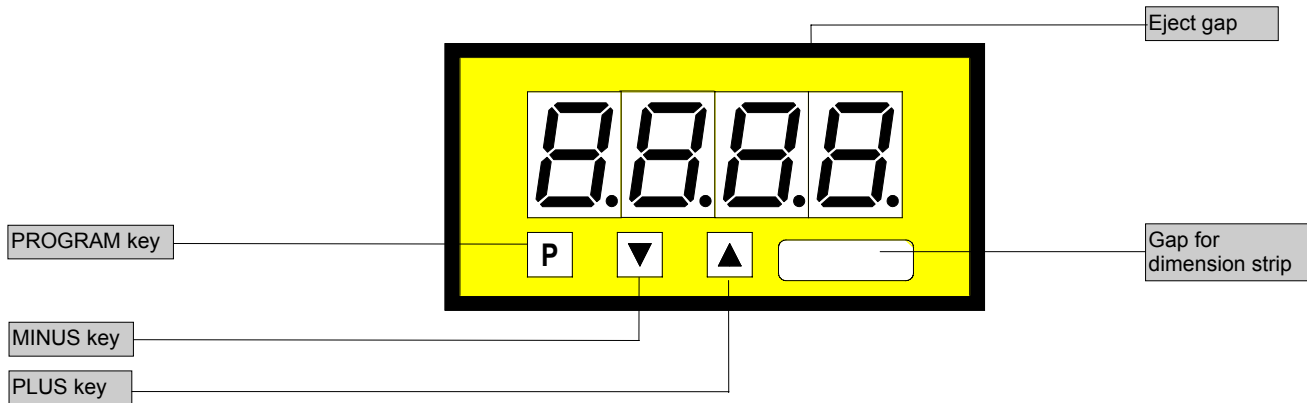# Temperature metering KTY84-1xx - microprocessor based technology
- **Standard: 2 setpoints, min/max memory - optional analogue output**
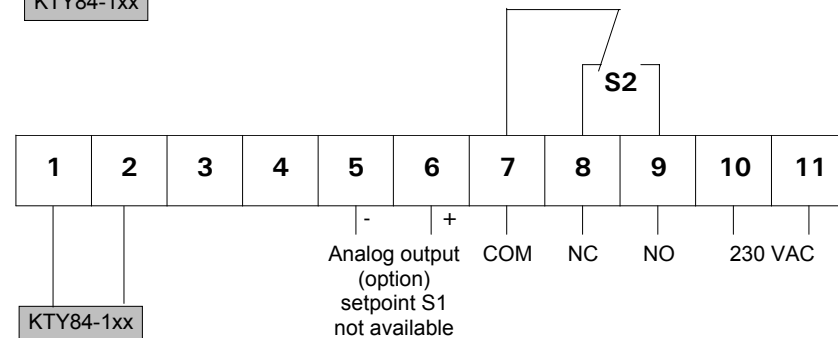- **Mounting into panels with thickness up to 50 mm**

**72x36**

**8888**



PROGRAM key

MINUS key

PLUS key

Eject gap

Gap for dimension strip

ORDER NUMBER OF TYPE
*(0,0...+300,0°C)*
**PTE 4.504.6522B**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|
|   |   |   |   |   | COM | COM | NC | NO | 230 VAC | |

S1   S2

KTY84-1xx

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|
|   |   |   |   | - | + | COM | NC | NO | 230 VAC | |

S2

Analog output (option) setpoint S1 not available

KTY84-1xx

Power supply 115 VAC
**galv. insulated** (connection via terminal)

*(0,0...+300,0°C)*
**PTE 4.504.6422B**

Power supply 24 VDC
**galv. insulated** (11=plus, 10=minus)

*(0,0...+300,0°C)*
**PTE 4.504.6722B**

## Options
- Green LED
- Protection IP54
- Protection IP65
- Analog output 0-10 VDC (12 bit)
- Analog output 0-20 mA/load 500 Ω (12 bit)
- Analog output 4-20 mA/load 500 Ω (12 bit)
- Analog output 0-10 VDC (12 bit) *(supply voltage 24 VDC galv. insulated)*
- Analog output 0-20 mA/load 500Ω (12 bit) *(supply voltage 24 VDC galv. insulated)*
- Analog output 4-20 mA/load 500 Ω (12 bit) *(supply voltage 24 VDC galv. insulated)*
- **With analog output setpoint S1 is not available!**
- Dimension strips at selectable (max. 7 characters)
- Other power supplies on demand

# Technical data

| Dimensions | Housing | 72 x 36 x 97 mm, including screw terminal |
|---|---|---|
| | Assembly cut out | $68.0^{+0.7}$ x $33.0^{+0.6}$ 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. 0.190 kg |
| | Connection | at the rear side via screw terminals up to 2.5 mm$^2$ |
| **Input** | KTY84-1xx | 2 wire |
| | Measuring range | 0.0...+ 300.0 °C |
| | Resolution | 0.1 °C |
| | Sensor current | approx. 1 mA |
| **Output** | Relay output | charge 240 VAC/0.25 A – 24 VDC/1 A, with ohm resistive burden |
| | Switching cycles | $2 * 10^5$ at max. contact rating |
| | | $10 * 10^6$ mechanically |
| | Open collector | supply by customers ($U_B$=5-40 V/$I_{max}$=100 mA) |
| | Analogue output | 0-10 VDC (12 bit) } The analogue output is galvanic insulated from the |
| | | 0-20 mA (12 bit) - load 500 Ohm   measuring input! |
| | | 4-20 mA (12 bit) - load 500 Ohm |
| **Accuracy** | Resolution | 0.1 °C |
| | Measuring fault | +/-4 °C, +/- 5 Digit (0....200 °C), +/-7 °C, +/- 5 Digit (> 200 °C) |
| | Temp. drift | 100 ppm/K |
| | Measuring principle | voltage/frequency converter |
| **Power unit** | Supply voltage | 230/115 VAC +/- 10% (50-60 Hz), 24 VDC +/-10% galvanic insulated |
| | Power consumption | approx. 3 VA |
| **Indication** | Display | LED with 7 segments, 14 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:**



77 mm
72 mm
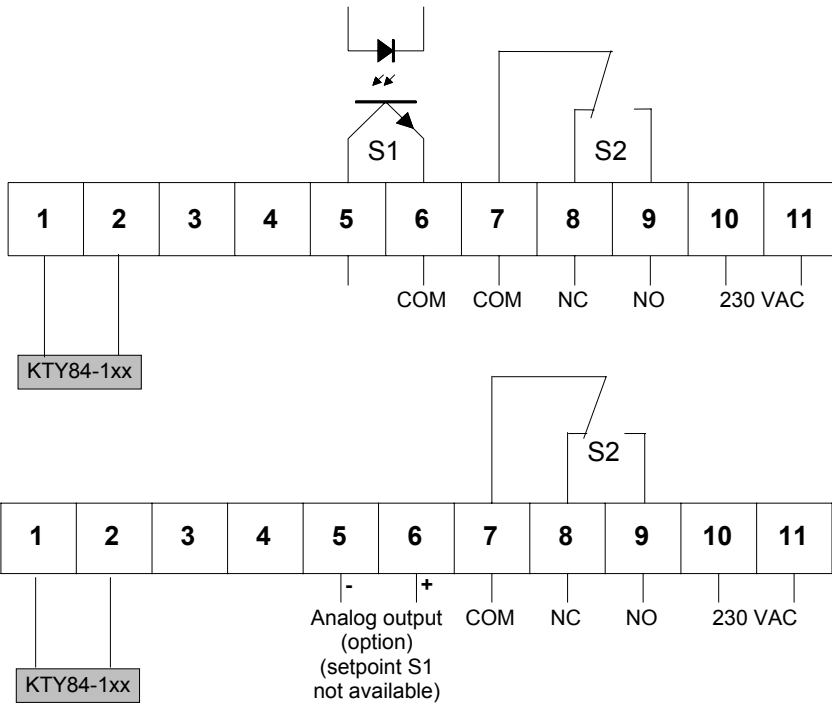65 mm
36 mm
32 mm
97 mm
(with plug in terminal 115 mm)
92 mm
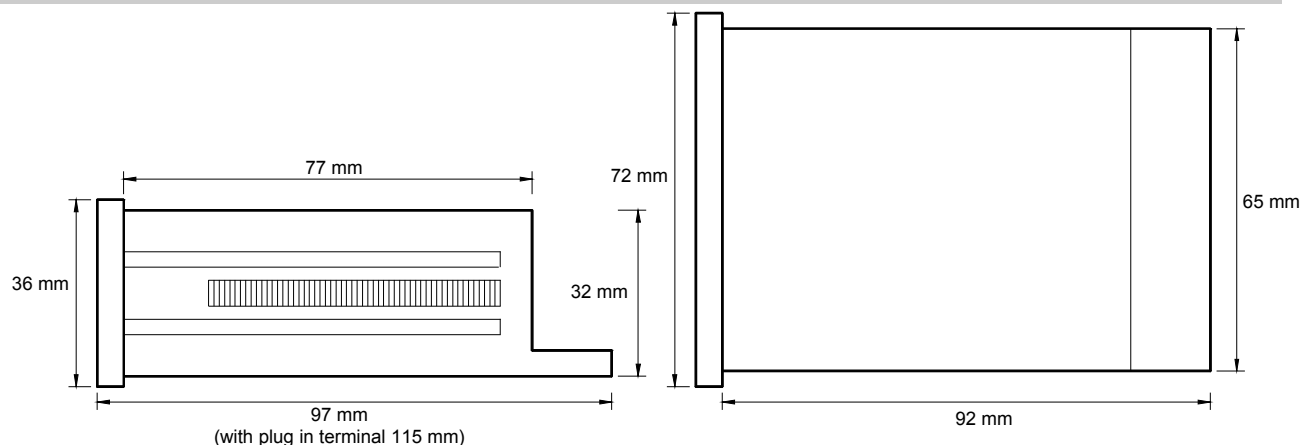
**CE-sign**
For unlimited use of the instrument within the directives for electromagnetic compatibility 89/336/EC measuring
wires have to be used with shielded cable and cable's shield connected to earth ground at one end only.

# Connection diagram, programming, remarks



Terminal block (top diagram):

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|

S1 (across terminals 5–6), S2 (across terminals 8–9)

COM (6) COM (7) NC (8) NO (9) 230 VAC (10–11)

KTY84-1xx (terminals 1–2)

Terminal block (bottom diagram):

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|

S2 (across terminals 7–8)

− (5) + (6)
Analog output (option) (setpoint S1 not available)
COM (7) NC (8) NO (9) 230 VAC (10–11)

KTY84-1xx (terminals 1–2)

## 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. 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.
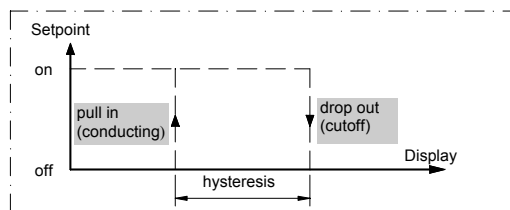
The following diagrams are showing the switching operation of PTE4 relay contacts. The hysteresis is free programmable.
There are two kinds of operation:

**Example: operation current**



**Example: quiescent current**
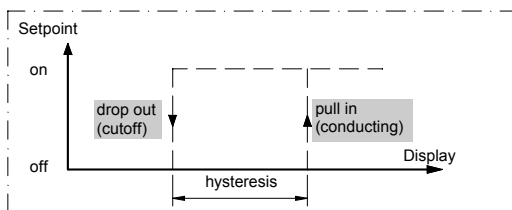


Operation current means that the open collector will be pulled in (conducting) if reaching the adjusted setpoint.

Quiescent current means that the open collector will be dropped out (cutoff) if reaching the adjusted setpoint.

# Operation, setting instructions

## Program table 1

| Program-Number (PN) | Function | Remark | Display | Basic parameters after reset |
|---|---|---|---|---|
| 2 | Sensor and line balancing | Temperature is displayed | 0 to +/-20.0 | 0.0 |
| 3 | Selection between °C or °F | Celsius=0 / Fahrenheit=1 | 0/1 | 0 |
| 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 | 500.0 |
| 6 | Input of offset for analog output | Option | -999 to +9999 | 0.0 |

## Program table 2
(setpoints)

| S1 | S2 | Function | Display | Basic parameters after reset |
|---|---|---|---|---|
| PN | PN | | | |
| 61 | 66 | Setpoint | -999 to +9999 | 100.0/150.0 |
| 62 | 67 | Hysteresis | 0 to +9999 | 0.1/0.1 |
| 63 | 68 | Quiescent current | 0 | - |
| | | Operating current | 1 | 1/1 |

## Example for programming

**Temp. sensor:** KTY84-1xx
**Connection:** 2-wire
**Analog output:** 0.0 up to 70°C
**Display refr. time:** 2.0 seconds
**Setpoints:** S1 ==> 30.0 and quiescent current
open collector conducting = 28.0 ==> hysteresis 2.0
S2 ==> 70.0 and operation current
relay drop out = 40.0 ==> hysteresis 30.0

**Analog output:** 0 V output ==> display 0.0 ==> 0.0°C
(no setpoint S1) 10 V output ==> display 70.0 ==> 70.0°C



P | ▼ | ▲

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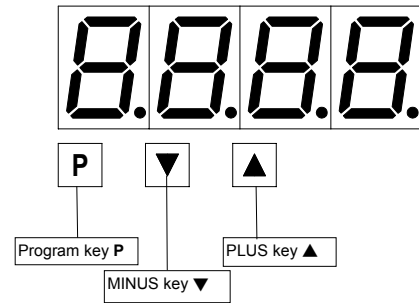
The basic adjustments concerning to the following program example are the ground parameters after a total reset occuring through a power on with pressing **P**-key (see previous page).

**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.
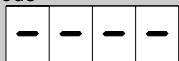
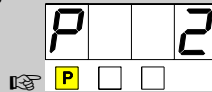**Programming**
Switch power on!

Lamp test

Standard mode

Set PT100 simulator to 0°C.
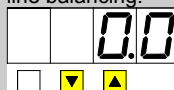The indication value depends on the used cable length.
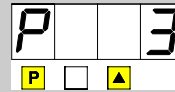
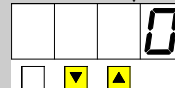To program number 2 with **P.**

☞

To memorized value with ▼ or ▲.

Sensor and line balancing.
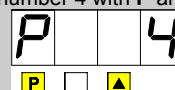
To program number 3 with **P** and ▲.

To memorized value with ▼ or ▲.

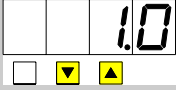To program number 4 with **P** and ▲.

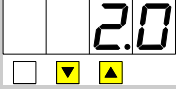# Example for programming

To memorized value with ▼ or ▲.

`1.0`

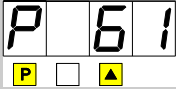▢ ▼ ▲

Set display time.

`2.0`

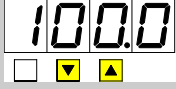▢ ▼ ▲

--------------------------------------------------------------
**The following programming steps are neccessary for the setpoint programming of S1 and S2 only.**
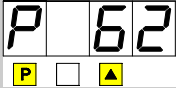
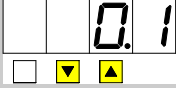To program number 61 with **P** and ▲.

`P 61`

P ▢ ▲

To memorized value with ▼ or ▲.

`100.0`

▢ ▼ ▲

Set free scalable value for setpoint S1.

`30.0`

▢ ▼ ▲

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

`P 62`

P ▢ ▲

To memorized value with ▼ or ▲.

`0.1`

▢ ▼ ▲

Set hysteresis for S1.

`2.0`

▢ ▼ ▲

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

`P 63`

P ▢ ▲

To memorized value with ▼ or ▲.

`1`

▢ ▼ ▲

Set quiescent current.

`0`

▢ ▼ ▲
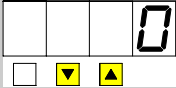
To program number 66 with **P** and ▲.

`P 66`

P ▢ ▲

To memorized value with ▼ or ▲.

`150.0`

▢ ▼ ▲

Set free scalable value for setpoint S2.

`70.0`

▢ ▼ ▲

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

`P 67`

P ▢ ▲

To memorized value with ▼ or ▲.

`0.1`

▢ ▼ ▲

Set hysteresis for S2.

`30.0`

▢ ▼ ▲

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

`P 68`

P ▢ ▲

To memorized value with ▼ or ▲.

`1`
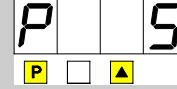
▢ ▼ ▲
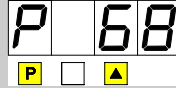
Set operating current.
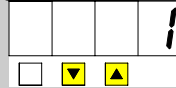
`1`

▢ ▼ ▲

**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.**
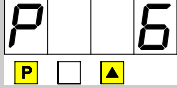
To program number 5 with **P** and ▲.
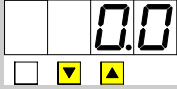
`P 5`

P ▢ ▲

To memorized value with ▼ or ▲.

`500.0`

▢ ▼ ▲

Set free scalable final indication value for analog output.

`70.0`

▢ ▼ ▲

To program number 6 with **P** and ▲.

`P 6`

P ▢ ▲

To memorized value with ▼ or ▲.

`0.0`

▢ ▼ ▲

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

**Setting possibilities of the jumper field on the rear side.**

Jumper — terminal

Programming free — 1 2 3

Programming blocked — 1 2 3

Programming limited (PN61-68 free) — 1 2 3