

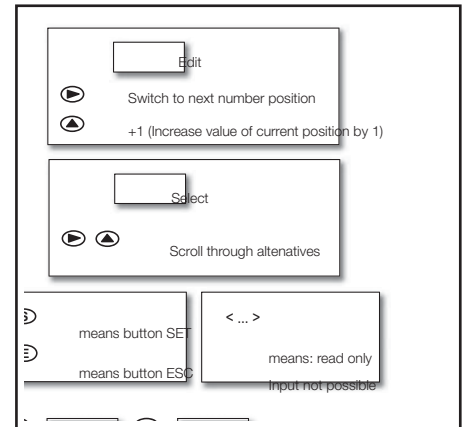
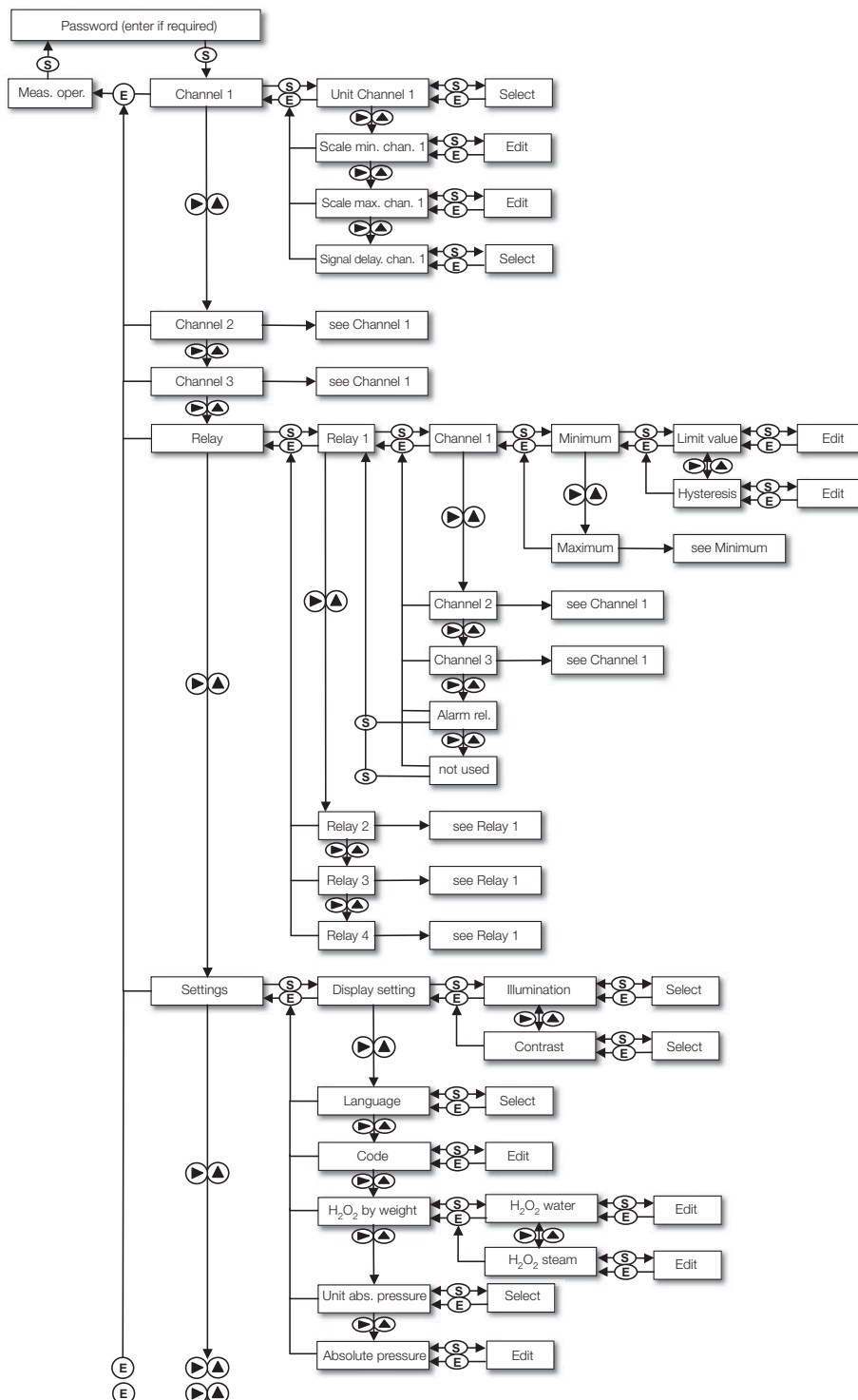
The operation (parameterization, adjustments, display of reports etc.) can be carried out in testo 6681 optionally directly via the 4 operating buttons or via the parameterization software P2A from Testo. The large display (optional) is a great help in operating the measurement transmitter easily and clearly. Almost all menu points are spelt out and not presented as abbreviations.

How to use the operating menu via buttons is shown in the following. The P2A software is described at the end of the chapter.

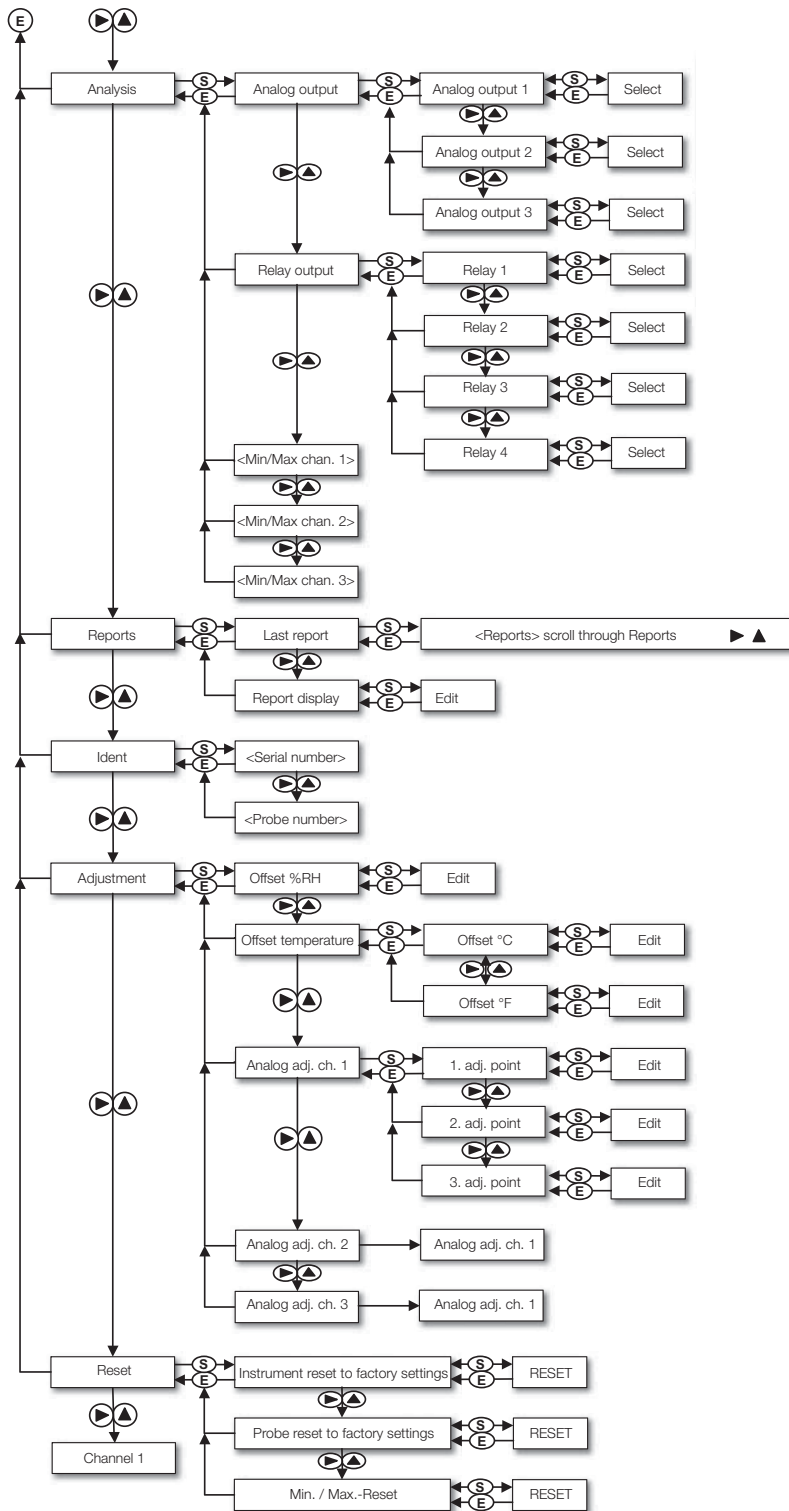
All essential parameterizations and functions can be set using the operating buttons on the measurement transmitter:

- Activation of the password
- Scaling the channels
- Relays: switch thresholds, hysteresis per channel
- Display settings
- Display of all status, warning and error reports
- Adjustments
- Reset

Structure and content of the operating menu of the measurement transmitter:



A6 1 Operating menu



<p>Edit</p> <p>▶ Switch to next number position</p> <p>▲ +1 (Increase value of current position by 1)</p>	
<p>Select</p> <p>▶ ▲ Scroll through alternatives</p>	
<p>Ⓢ means button SET</p> <p>ⓔ means button ESC</p>	<p>&lt; ... &gt;</p> <p>means: read only</p> <p>Input not possible</p>

For optimum operational security, the measurement transmitter provides the following reports as standard via the operating menu or the P2A software:

- **Status reports**
- **Warning reports and**
- **Error reports**

They are presented for the measurement transmitter 6681 and the connected probe testo 661x respectively.

The probe 6617 has takes over a particular function. It monitors the functionality of the sensor via the cover electrode. This reports additional wear through corrosion to the sensor, i.e. already at the point when it occurs, and not only when the sensor ceases to function. This mechanism does not prolong the life of the sensor, it merely provides the information early (self-monitoring).

## Status reports

Status reports give the current operational status of the measurement transmitter/probe

	Report (display)	Description	Report number
Measurement transmitter	Limit value changed	The limit value was changed or moved	00300
	Scaling changed	The scaling was changed	00301
	Reset executed	The measurement transmitter was reset to factory settings	00500
	Reset MIN/MAX	Resets the stored MIN/MAX values for all channels	0052F
	Reset executed	The measurement transmitter is restarted	00500
	Connection probe	A probe is connected	02506
	Service plug	The Mini DIN socket is connected to the USB adapter for P2A software, the adjustment adapter or the service plug / in not recorded/no number	01D19
	User setting changed	General settings were changed in the measurement transmitter	00307
	Probe disconnected	There is no probe connected	03001
	Analog out adjust	An analog adjustment was carried out	02104
Probe	1-point adjust	A 1-point adjustment is carried out	02101
	2-point adjust 11.3	For a 2-point adjustment, an adjustment at 11.3 %RH is carried out	02102
	2-point adjust 75.3	For a 2-point adjustment, an adjustment at 75.3 %RH is carried out	02103
	Probe reset	The probe is reset	02500

## Warning reports

Warning reports represent an early warning or a current malfunction which could negatively influence measurement operation.

	Report (display)	Cause	Error correction	Report number
Measurement transmitter	Drift 2point adjust*	Similar corrections occur repeatedly in 2-point adjustment; this can be an indication of sensor drift	Send the probe to Testo service	02101
	Ambient temp high**	The ambient temperature exceeds the permitted temperature for the measurement transmitter	Ensure lower ambient temperature, e.g by cooling or ventilating	00E00
	Ambient temp low**	The ambient temperature is lower than the permitted temperature for the measurement transmitter	Ensure higher ambient temperature, e.g by heating	00E01
	Supply voltage low**		Ensure sufficient voltage supply	00E02
Probe	Process temp high**	The process temperature exceeds the intended temperature for the probe	Remove the probe from the process and if necessary ensure lower process temperature	00E00
	Condensation start*	100 %RH has been reached, condensation occurs	Ensure lower process humidity	02806
	Values below 0 %RH**	The adjustment of the probe is incorrect	Check adjustment (via P2A adjustment history, if required carry out 2-point adjustment). If problem still exists, contact Testo service	02807
	Sensor early warning	Only in probe 6617: the sensor is still functional but the cover electrode is already damaged. The consequence can already be inaccurate measurement values, certainly however a continuous loss of accuracy until complete sensor breakage.	Replace probe and send back to Testo for testing	2809

\*Early warning

\*\*Current malfunction

**A6 3 Wiring / electrical connection**
**Error reports**

Error reports represent a current malfunction

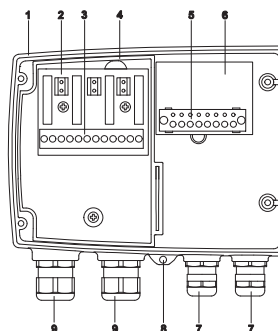
	Report (display)	Cause	Error correction	Report number
Measurement transmitter	No communication	The probe communication is interrupted	- Ensure probe plug is fully pushed into measurement transmitter - If communication can still not be established, contact Testo service	01000
	Wrong probe	The probe connected is not compatible with the measurement transmitter	Use compatible probe. Note: the probes 660x belong to measurement transmitter 665x the probe 661x to the measurement transmitter 668x.	03508
	Watchdog error	Due to a process error, the measurement transmitter carries out an automatic restart	If problem occurs repeatedly, contact Testo service	01505
Probe	%RH short circuit	Short circuit in humidity sensor	Contact Testo service	0300A
	%RH sensor broken	Humidity sensor is damaged (sensor breakage)	Contact Testo service	0300B
	T short circuit	Short circuit in temperature sensor	Contact Testo service	0300C
	T sensor broken	Temperature sensor is damaged (sensor breakage)	Contact Testo service	0300D
	Self-adjustment error	Only in probe testo 6615: the automatic self-adjustment was incorrect	Contact Testo service	03105

**Note on alarm reports**

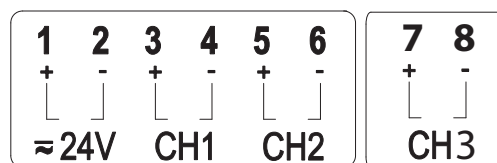
For alarm upper and lower limits, single alarms as well as collective alarms can be specified. If the function collective alarm is activated, an alarm is triggered as soon as an alarm limit or alarm group is exceeded.

**a) Connection overview**

- 1 Housing base
  - 2 Relay board
  - 3 Relay connections
  - 4 Insulation box for relay board
  - 5 Terminal strip for voltage supply and analog outputs
  - 6 Analog board
  - 7 Screw fitting M 16 x 1.5\*
  - 8 Eye for measurement site tag
  - 9 Screw fitting M 20 x 1.5\*
- \* alternatively NPT screw fitting or M plug connection


**b) Voltage supply**

1. Feed cable with voltage supply and analog signal lines through open screw fitting M 16 x 1.5 (pos. (7) in the connection overview).
2. Deinsulate cable ends, pinch on wire terminal caps and connect to voltage terminals
3. Close screw fitting M 16 x 1.5 (pos. (7) in the connection overview).


**c) Analog outputs**

As analog outputs, the testo 6651 has either

- 2 current outputs (testo 6681 optionally 3) 4 to 20 mA (2-wire) / 0 to 20 mA (4-wire) / 4 to 20 mA (4-wire)
- or
- 2 voltage outputs (testo 6681 optionally 3) 0 to 1 V / 0 to 5 V / 0 to 10 V (4-wire).

**d) Connection description**

In 2-wire operation, channel 1 is used for supply. The two channels are galvanically isolated from each other in 2-wire as well as in 4-wire operation.

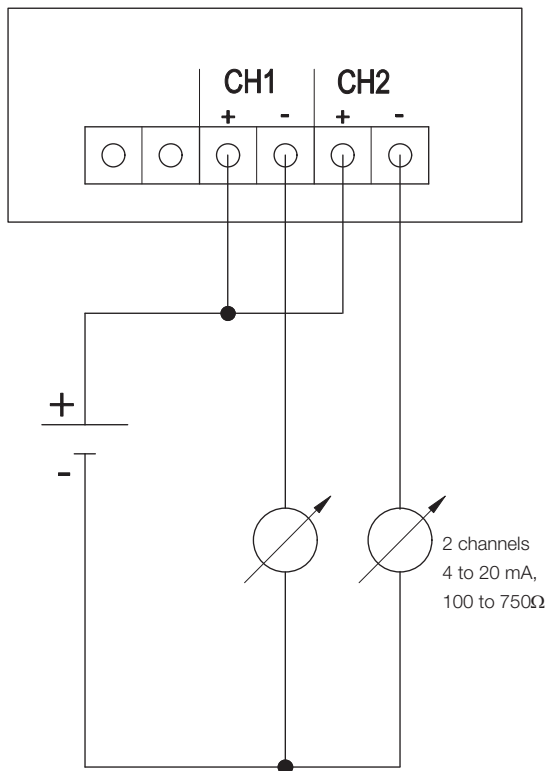

**Important information:**

The relay option and the display backlighting are available only in 4-wire operation.

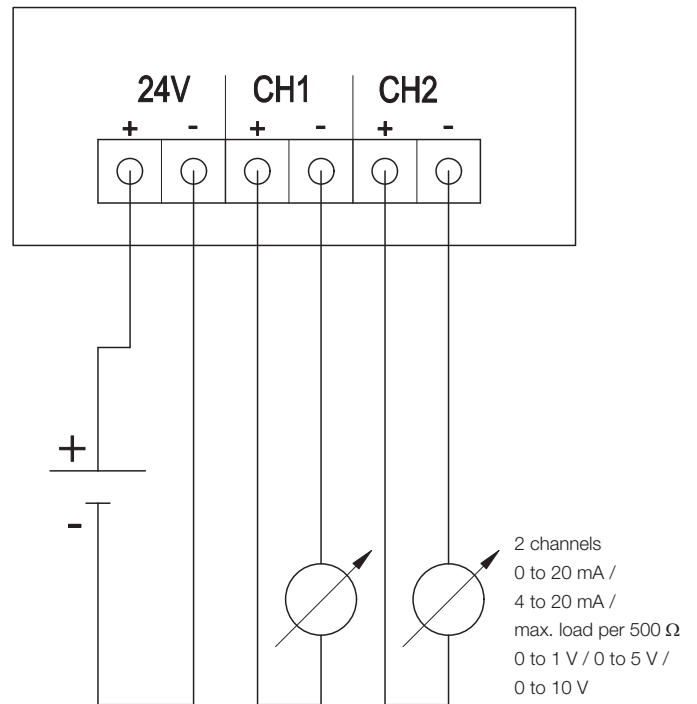

**Important information:**

If galvanic isolation of the channels is necessary, a separate mains unit for each channel must be used.

Connection diagram 2-wire technology  
(4 to 20 mA)



Connection diagram 4-wire technology  
(0 to 20 mA / 4 to 20 mA / 0 to 1 V / 0 to 5 V / 0 to 10 V)

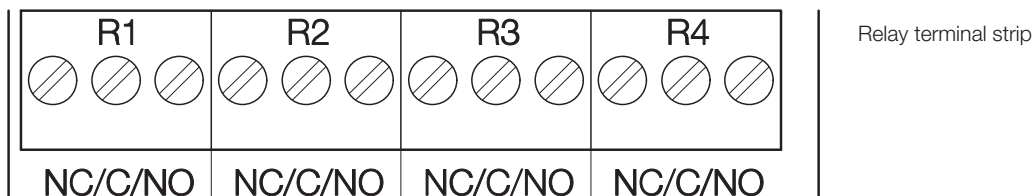


1. Feed connection cables of the two channels through open screw fitting M 16 x 1.5.
2. Deinsulate cable ends, pinch on terminal sleeves and connect to cable connections according to the diagram
3. Close screw fitting M 16 x 1.5.

**A6 3 Wiring / electrical connection**
**e) Relay connection**

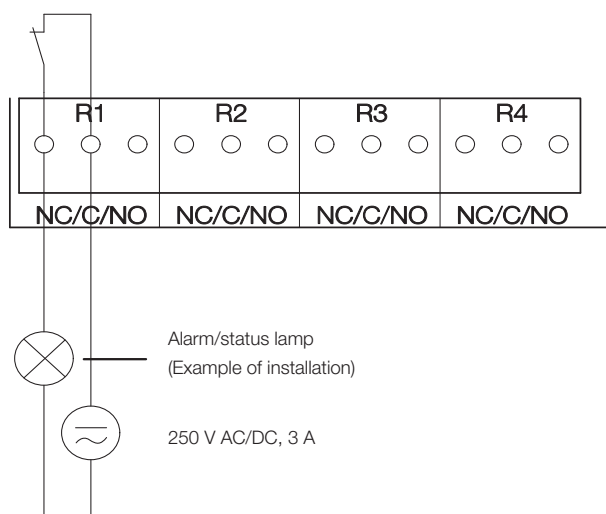
The relay board has a potential-free switching performance of 250 VAC / 3 A. 12 terminals are available for a total of 4 relays (2 relays per channel).

Switch thresholds and hysteresis can be set via the display or the P2A software

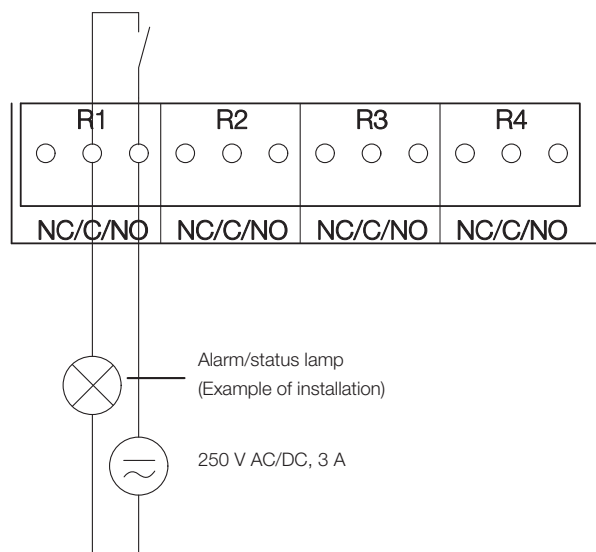


1. Feed connection cables for the relays through open screw fitting M 20 x 1.5.
2. Deinsulate wire ends and pinch on terminal sleeves
3. Connect relay according to the selected function (normally open NO/normally closed NC) - (see following illustrations, relay 1 is shown as an example of connection.)

**i** There are optionally twelve connection terminals for a total of four relays. The descriptions NC/C/NO (normally closed / pole / normally open) are etched into the surface of the board

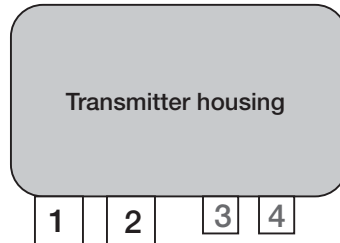
**Use of the relay as normally closed (NC)**


**i** The operating lamp (alarm/status lamp) is continuously lit until the relay opens or the electrical circuit is interrupted. This switch can be used to monitor the functioning of the alarm circuit, as a cable breakage, for example, is indicated if the lamp is no longer lit.

**Use of the relay as normally open (NO)**


**i** The operating lamp (alarm/status lamp) is lit only when the relay is switched (closed). A monitoring of the function of the alarm circuit is therefore not possible with this switch configuration.

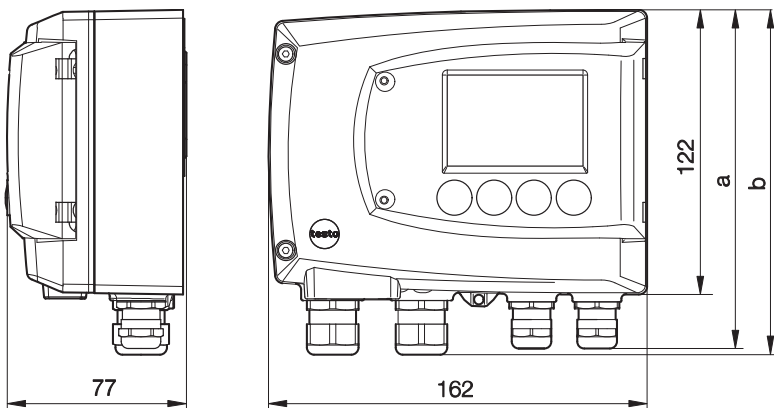
4. Close the screw fitting M 20 x 1.5

**f) Optional plug connection**


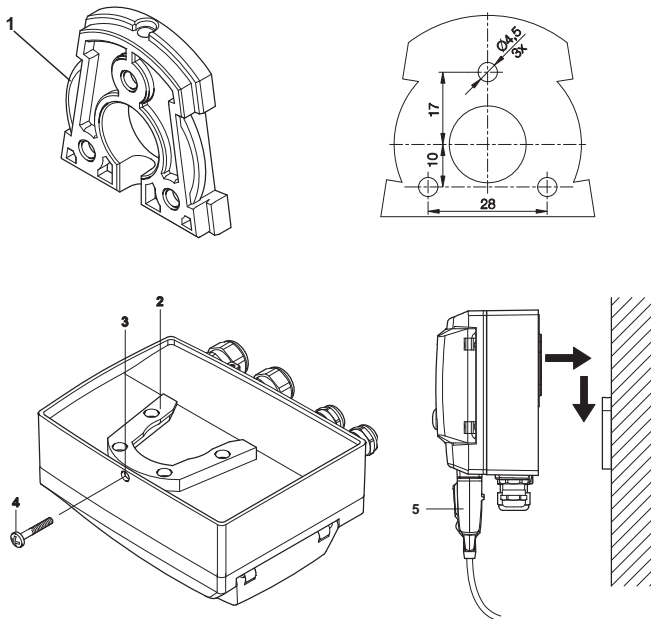
**1) and 2)** Option plug connection instead of M20 (Relay 1/2 und Relay 3/4) Allocation of plug connection pins mounted on housing:

**3) and 4)** Option plug connection instead of M16 (current supply and channels) Allocation of plug connection pins mounted on housing:

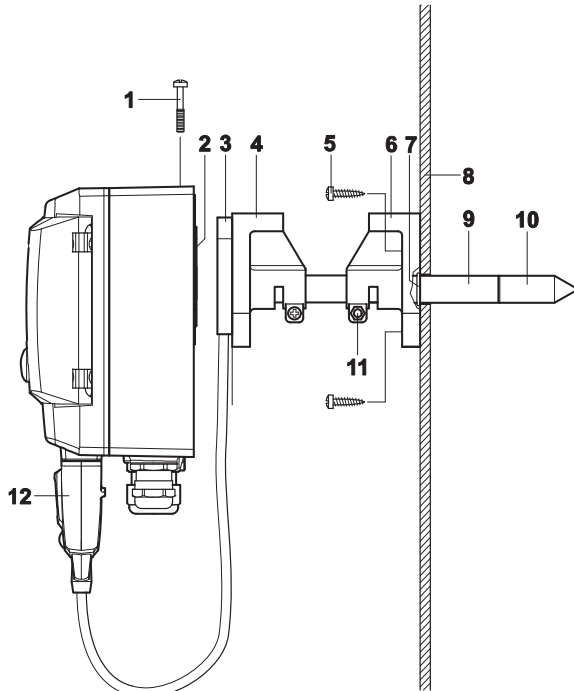
3		4	
5-pin socket		5-pin plug	
Pin	Allocation	Pin	Allocation
1	V24 -	1	- Ch 2
2	V24 +	2	+ Ch 2
3	+ Ch 1	3	+ Ch 3
4	- Ch 1	4	- Ch 3
5	PE	5	PE

**4. Technical drawings**


Dimensions in mm	a	b
with cable screw fitting M	144	147
with cable screw fitting NPT	144	144
with plug connection M		

**A6 5 Installation**
**5.1 Wall version**


1. Remove safety screw (4), and pull rear wall bracket from plastic fitting (2).
2. Hold rear wall bracket in installation position and mark drilling holes
3. Drill three holes (5 mm) and insert plugs if necessary.
4. Screw on rear wall bracket (with M4 screws /3.5 mm wood screws. Ensure that the fixing clips are facing the wall.
5. Push the plastic fitting (2) on to the rear wall bracket until it clicks into place (see arrows).
6. Push screw (4) through hole (3) and screw tight into the rear wall holder.
7. Push probe plug (5) into socket until it clicks into place.

**5.2 Duct version**


1. Hold wall/duct bracket (order no. 0554 6651) (6) to duct wall (8) and mark the drilling holes for the wall/duct bracket and the probe shaft.
2. Drill hole for the probe shaft (diameter 13 mm) in the duct wall.
3. Fix wall/duct holder (6) with screws (3.5 mm sheet metal screws (5) to the duct wall.
4. Push probe shaft (9) with filter (10) through the centre hole of the fixing bracket.
5. Fix the correct position of the probe shaft (9) with screw (11), and mark (push probe shaft as far as possible through).
6. Push the plastic fitting (2) on the rear of the measurement transmitter (3, 4) until it clicks into place.
7. Push the screw (1) through the hole on the upper side of the instrument and screw tight on to bracket (3).
8. Push probe plug (12) into socket until it clicks into place.