



984M with LED display

984M without LED display



984M are supplied with duct fixing kit packed together into one carton

2 plastic tubes with integrated mounting plate, 2 metres PVC hose and 4 screws

Features

- Selectable output via jumper
0-10 Vdc or 4-20 mA output, 3-wire with power supply 24 Vac/dc
- 4-20 mA output, 2-wire with power supply 24 Vdc
- LED display as option on the 3-wire version
- 2 adjoining pressure ranges in one unit, pressure ranges selectable via jumper
- Response time 100 ms and 1 s selectable via jumper
- Standard pressure ranges from 0-100 Pa up to 0-250 kPa
- Customized pressure ranges on request:
-50 Pa to +50 Pa,
-100 Pa to +100 Pa,
-500 Pa to +500 Pa,
0 to -50 kPa
etc.

Ordering

| Type no. | Analogue output 1 | Analogue output 2 | Pressure range 1 | Pressure range 2 | Conn. | Power supply | LED display | Switch. output |
|-------------|-------------------|-------------------|------------------|------------------|--------|--------------|-------------|----------------|
| 984M.523104 | 0-10 Vdc | 4-20 mA | 0 to 100 Pa | 0 to 250 Pa | 3-wire | 24 Vac/dc | no | yes |
| 984M.533104 | 0-10 Vdc | 4-20 mA | 0 to 250 Pa | 0 to 500 Pa | 3-wire | 24 Vac/dc | no | yes |
| 984M.543104 | 0-10 Vdc | 4-20 mA | 0 to 500 Pa | 0 to 1.000 Pa | 3-wire | 24 Vac/dc | no | yes |
| 984M.553104 | 0-10 Vdc | 4-20 mA | 0 to 1 kPa | 0 to 2.5 kPa | 3-wire | 24 Vac/dc | no | yes |
| 984M.573104 | 0-10 Vdc | 4-20 mA | 0 to 5 kPa | 0 to 10 kPa | 3-wire | 24 Vac/dc | no | yes |
| 984M.593104 | 0-10 Vdc | 4-20 mA | 0 to 25 kPa | 0 to 50 kPa | 3-wire | 24 Vac/dc | no | yes |
| 984M.5B3104 | 0-10 Vdc | 4-20 mA | 0 to 100 kPa | 0 to 250 kPa | 3-wire | 24 Vac/dc | no | yes |
| 984M.523114 | 0-10 Vdc | 4-20 mA | 0 to 100 Pa | 0 to 250 Pa | 3-wire | 24 Vac/dc | yes | yes |
| 984M.533114 | 0-10 Vdc | 4-20 mA | 0 to 250 Pa | 0 to 500 Pa | 3-wire | 24 Vac/dc | yes | yes |
| 984M.543114 | 0-10 Vdc | 4-20 mA | 0 to 500 Pa | 0 to 1.000 Pa | 3-wire | 24 Vac/dc | yes | yes |
| 984M.553114 | 0-10 Vdc | 4-20 mA | 0 to 1 kPa | 0 to 2.5 kPa | 3-wire | 24 Vac/dc | yes | yes |
| 984M.573114 | 0-10 Vdc | 4-20 mA | 0 to 5 kPa | 0 to 10 kPa | 3-wire | 24 Vac/dc | yes | yes |
| 984M.593114 | 0-10 Vdc | 4-20 mA | 0 to 25 kPa | 0 to 50 kPa | 3-wire | 24 Vac/dc | yes | yes |
| 984M.5B3114 | 0-10 Vdc | 4-20 mA | 0 to 100 kPa | 0 to 250 kPa | 3-wire | 24 Vac/dc | yes | yes |
| 984M.523204 | 4-20 mA | | 0 to 100 Pa | 0 to 250 Pa | 2-wire | 24 Vdc | no | no |
| 984M.533204 | 4-20 mA | | 0 to 250 Pa | 0 to 500 Pa | 2-wire | 24 Vdc | no | no |
| 984M.543204 | 4-20 mA | | 0 to 500 Pa | 0 to 1.000 Pa | 2-wire | 24 Vdc | no | no |
| 984M.553204 | 4-20 mA | | 0 to 1 kPa | 0 to 2.5 kPa | 2-wire | 24 Vdc | no | no |
| 984M.573204 | 4-20 mA | | 0 to 5 kPa | 0 to 10 kPa | 2-wire | 24 Vdc | no | no |
| 984M.593204 | 4-20 mA | | 0 to 25 kPa | 0 to 50 kPa | 2-wire | 24 Vdc | no | no |
| 984M.5B3204 | 4-20 mA | | 0 to 100 kPa | 0 to 250 kPa | 2-wire | 24 Vdc | no | no |

Description

The differential pressure transmitters of the 984M series are used for measuring differential pressure, positive pressure and vacuum.

Selection of output signal

The output signal of the 3-wire version is configurable. The factory setting is for a 0-10 Volt output signal, but this can be changed to 4-20 mA by removing the jumper. The 2-wire version is only available with a 4-20 mA output signal.

Selection of pressure range

To adapt best for the application the transmitter can be selected between two adjoining pressure ranges. Factory setting is for the most sensitive range, by opening of a jumpered bridge the less sensitive range is activated.

Selection of response time

The response time of the output signal can be selected by a jumpered bridge. Factory setting is for a slow response time (1 s), which dampens short pressure peaks. To work with a fast response time (100ms) this bridge needs to be replaced.

Easy offset calibration

The output signal can be calibrated to zero by pressing the M key (pressure transmitter must be depressurised).

Switching output (only for the 3-wire version)

As well as an analogue output signal, the differential pressure transmitter contains an adjustable transistor switching output with a maximum switching capacity of 35 Vdc/100 mA.

Measuring method

Piezoresistive pressure transducer

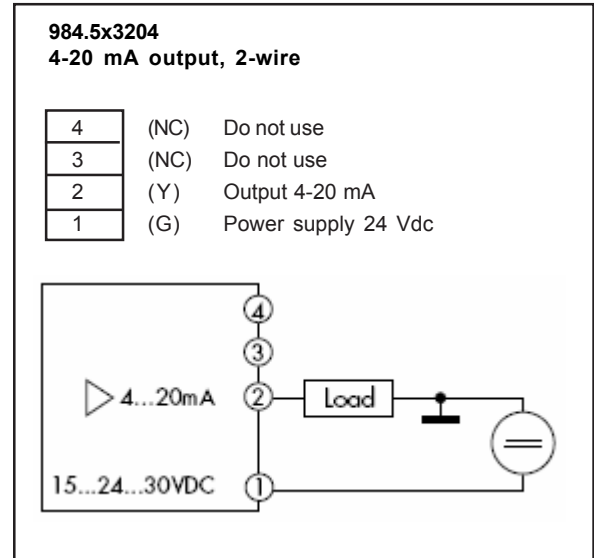
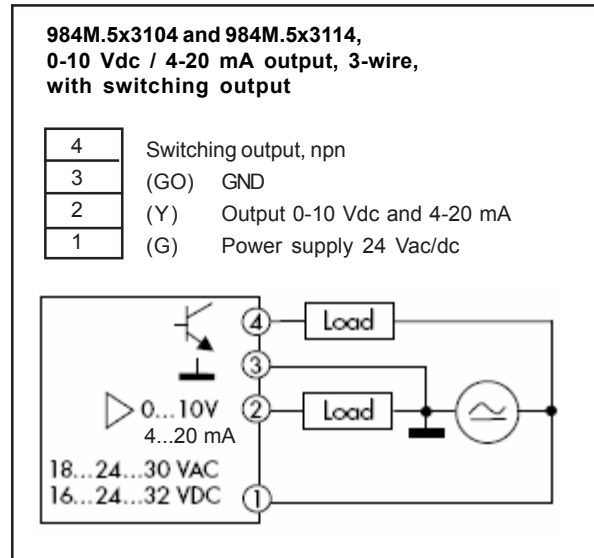
Mounting position

They can be mounted in any position. Due to the selfcompensating piezoresistive pressure transducer any possible mounting error is eliminated.

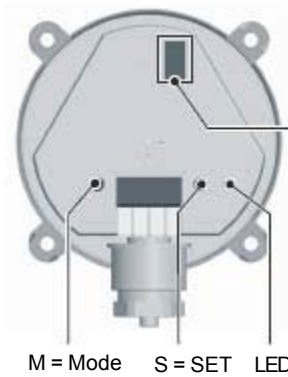
Technical data

| | |
|---|--|
| Pressure medium | Air and non-aggressive gases |
| Linearity and hysteresis error | < ± 1 % of FS |
| Working temperature | 0 to +50 °C |
| Storage temperature | -10 to +70 °C |
| Long-term stability, typ. | < ± 0.5 % to 2.5% of FS / year (depending on pressure range) |
| Repetition accuracy | < ± 0.2 % of FS |
| Position dependence | < ± 0.02 % of FS / g |
| Humidity | 0 to 95 % rel, non-condensing |
| Response time | 100 ms or 1 s (jumper selectable) |
| Maximum load | < 500 ohm |
| Process connection | 6 mm hose pipe |
| Electrical connection | Screw terminal block for wire up to 1.5 mm ² |
| Mounting | Screw mounting with serrated screws |
| Housing material | Housing with process connection P2 made of ABS, mounting part with process connection P1 made of POM |
| Housing dimensions | approx. Ø 85 x 58 mm |
| Weight approx. | approx. 130 g |
| Protection category to EN60529 | IP54 |
| Cable conduit for protection cap | M16 |
| Standards / Conformance | EN60770, EN61326 |
| Display, optional | Red LED display, 3.5 digits (only on 984M.3x3314) |

Electrical connections



Switches and jumper settings



984M.5x3104, 0-10 Vdc/4-20 mA without LED display

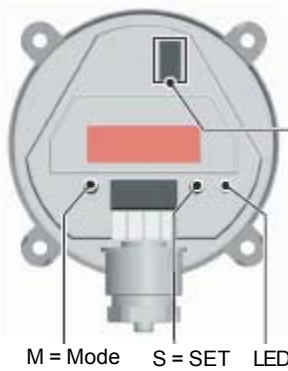
| | switched | open |
|----------------|----------|--------------|
| Pressure range | low | high |
| Response | slow | fast |
| Mode | linear | *square root |
| Output signal | 0-10 Vdc | 4-20 mA |

Offset Calibration

This function can be used to correct the zero-point deviation (offset) of the output signal in depressurised state (example: to 0 V/4mA at zero Pa). Disconnect the unit from the pressure by opening both hose nozzles or removing the hoses. Then press the "M" button for 5 s.

Setting of Switching Output

This function is used to set the switching output to "switched through" for a pressure you have defined. Apply the pressure or pressure differential at which the switching output is to be connected. Then press the "S" button for 5 s until the LED flashes quickly (= value is saved). The LED lights up as soon as the defined pressure is reached or exceeded.



984M.5x3114, 0-10 Vdc/4-20 mA with LED display

| | switched | open |
|----------------|----------|--------------|
| Pressure range | low | high |
| Response | slow | fast |
| Mode | linear | *square root |
| Output signal | 0-10 Vdc | 4-20 mA |

Offset Calibration

This function can be used to correct the zero-point deviation (offset) of the output signal in depressurised state (example: to 0 V/4mA at zero Pa). Disconnect the unit from the pressure by opening both hose nozzles or removing the hoses. Then follow the programming instructions on the next page.

Setting of Switching Output

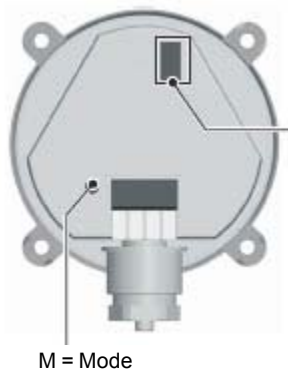
This function is used to set the switching output to "switched through" for a pressure you have defined. The LED lights up as soon as the defined pressure is reached or exceeded.

Peak Value

The shown low/high peak value is the value that was ever set at the sensor. A resetting of the peak value can take place only at the manufacturer.

Error messages

| | |
|---------------|-----------------------|
| Er. SE | sensor defect |
| Er. Li | measurement exceeding |



984M.5x3204, 4-20 mA

| | switched | open |
|----------------|----------|--------------|
| Pressure range | low | high |
| Response | slow | fast |
| Mode | linear | *square root |

Offset Calibration

This function can be used to correct the zero-point deviation (offset) of the output signal in depressurised state (example: to 0 V/4mA at zero Pa). Disconnect the unit from the pressure by opening both hose nozzles or removing the hoses. Then press the "M" button for 5 s.

*Square root = 984M can be used for volume flow measurement, this product feature is at extra cost and have to be requested when ordering (SQUARE ROOT FUNCTION NOT AVAILABLE YET).

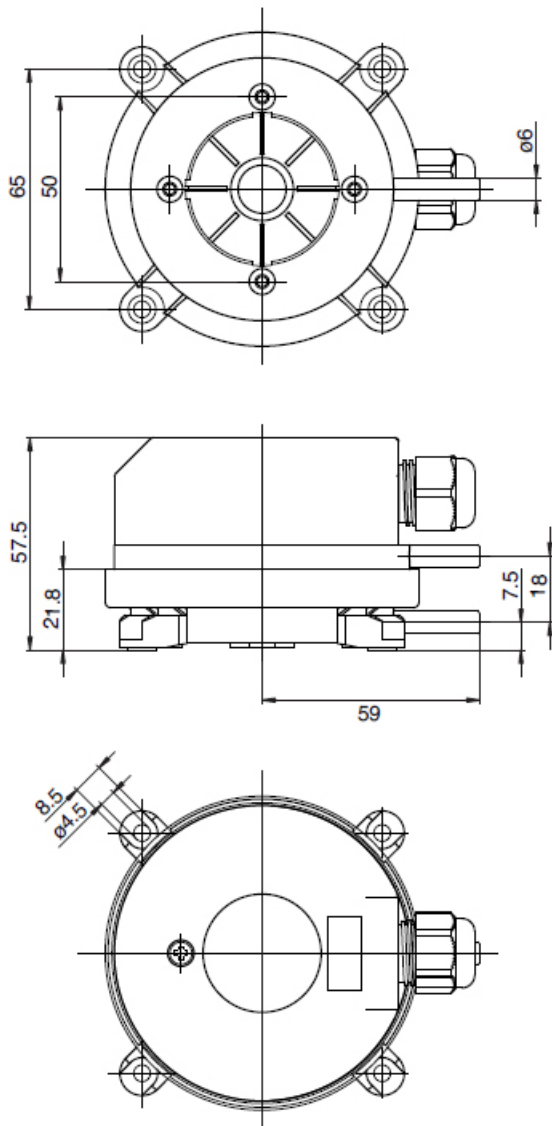
Programming of 984M.5x3114 (the LED display version)

| Switch | Display | Step | Information |
|-----------|---------|------------------|--|
| | 250 | | Current measured value |
| Press >M< | | | |
| | OFF5 | | Offset calibration |
| Press >M< | | Press >S< | Show actual offset value |
| | -3 | | |
| | | Press >S<(5 sec) | Re-calibration of offset |
| | 0 | | |
| | | Press >M< | Store offset. Display blinking for confirmation |
| | OFF5 | | |
| | | | |
| Press >M< | | | |
| | SP | | Setting switching level |
| | | Press >S< | Show actual switching level |
| | 112 | | |
| | | Press >S<(5 sec) | Modify switching level |
| | 112 | | |
| | | Press >M< | Store switching level. Display blinking for confirmation |
| | SP | | |
| | | | |
| Press >M< | | | |
| | HI | | Peak value high |
| | | Press >S< | Show peak value high |
| | 240 | | |
| | | Press >M< | Return |
| | HI | | |
| | | | |
| Press >M< | | | |
| | L0 | | Peak value low |
| | | Press >S< | Show peak value low |
| | -50 | | |
| | | Press >M< | Return |
| | L0 | | |
| | | | |
| Press >M< | | | |
| | 250 | | Current measured value |

Pressure ranges

| Type | Pressure range 1 | Pressure range 2 | Overload capacity | Bursting pressure | Temperature error |
|----------|------------------|------------------|-------------------|-------------------|-------------------|
| 984M.523 | 0 to 100 Pa | 0 to 250 Pa | 20 kPa | 40 kPa | < ± 5 % of FS |
| 984M.533 | 0 to 250 | 0 to 500 Pa | 20 kPa | 40 kPa | < ± 5 % of FS |
| 984M.543 | 0 to 500 Pa | 0 to 1.000 Pa | 20 kPa | 40 kPa | < ± 2.5 % of FS |
| 984M.553 | 0 to 1 kPa | 0 to 2.5 kPa | 40 kPa | 70 kPa | < ± 1 % of FS |
| 984M.573 | 0 to 5 kPa | 0 to 10 kPa | 60 kPa | 120 kPa | < ± 1 % of FS |
| 984M.593 | 0 to 25 kPa | 0 to 50 kPa | 300 kPa | 500 kPa | < ± 1 % of FS |
| 984M.5B3 | 0 to 100 kPa | 0 to 250 kPa | 1.2 MPa | 2 MPa | < ± 1 % of FS |

Dimensions (mm)



Mounting and hose connection



Important:
When connecting and laying the hoses, do not bend or damage them.
Hoses and hose connections that are not airtight cause damage to the device or will give wrong measuring results.

Ø Inner < 5.5 mm for optimum clamping

Use hose clips from 25 kPa (250 mbar)

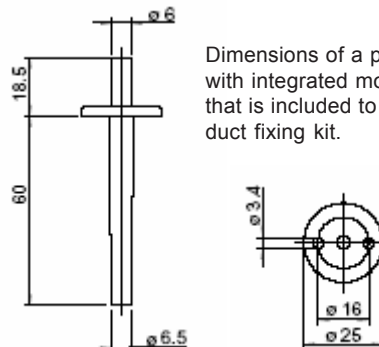
P1 = Positive pressure measurement

P2 = Vacuum measurement

P1 + P2 = Differential pressure measurement



Duct fixing kit includes:
2 plastic tubes with integrated mounting plate
2 metres PVC hose and 4 screws.



Dimensions of a plastic tube with integrated mounting plate, that is included to the duct fixing kit.