

# Beck.

## The differential pressure transmitter for air



# Differential pressure transmitter 984



## General description

The differential pressure transmitters of the 984 series are used to measure differential pressure, overpressure and vacuum.

They provide up to 8 pressure ranges and 2 output signals, which are easily selectable by jumper or rotary selector switch.

## Applications

Monitoring of gaseous, non-aggressive media. Possible usage areas are:

- Building automation and air conditioning systems
- Overpressure measurement in clean rooms and laboratories
- Measurement of constant pressure in VAV applications
- Dynamic filter and ventilator monitoring

## Configurable pressure range

For an optimum adaptation to the application, the transmitter can be switched between various pressure ranges. The factory setting is the most sensitive range. For the series 984M and 984A the less sensitive second range will be selected by simply removing a jumper. For the series 984Q the available eight ranges can be selected by a rotary selector switch.

## Output signal selection

The output signal of the 3-wire version is configurable. The factory setting is for a 0 ... 10 Volt output signal which can be changed to a 4 ... 20 mA signal by removing a jumper. The series 984M is even available in a 2-wire version with 4 ... 20 mA output signal.

## Configurable response time

The response time of the output signal can be configured using a jumper. If the jumper is in place the response time is slow (factory setting), which is useful for suppressing brief pressure peaks. If the application requires a fast response time the jumper must be removed.

## Easy offset calibration

The output signal of the 984M series can be calibrated to zero by pressing the M push-button in a pressureless state of the transmitter.

The series 984A and 984Q perform an automated zero offset compensation. Here any drift of the zero-point is automatically corrected in regular intervals. No re-calibration is needed which reduces monitoring and maintenance efforts.

## Volume flow measurement

(optional)

The shape of the output signal can be switched from linear to square root using a jumper in order to measure the volume flow via a differential pressure.

## Switching output

(optional, not available with 2-wire version)

To give a switch signal at a user defined pressure level the transmitter has an adjustable transistor switching output with a maximum switching capacity of 30 Vdc/100 mA.

## Display

(optional, not available with 2-wire version)

In addition to the analogue output signal the pressure value can be read out on a red LED-display in Pascal or other pressure units.

## Measuring method

Piezoresistive pressure transducer

## Mounting position

Can be mounted in any position. The zero offset calibration eliminates any possible position error.

# Overview on technical data

Series	984M	984M	984A	984Q
Electrical connection	<b>3-wire</b>	<b>2-wire</b>	<b>3-wire</b>	<b>3-wire</b>
Measuring method	Piezoresistive pressure transducer			
Supply voltage	18 ... 30 Vac/Vdc	18 ... 30 Vdc	22 ... 30 Vac/Vdc	22 ... 30 Vac/Vdc
Output signal selectable	with jumper	–	with jumper	with jumper
Output signal 0 ... 10 Volt	■	–	■	■
Output signal 4 ... 20 mA	■	■	■	■
Output signal 0 ... 5 Volt	□	–	□	□
Output signal 0 ... 20 mA	□	–	□	□
LED display, red, 4 digits, units in Pascal	□	–	□	□
LED display, red, 4 digits, units in mbar	□	–	□	□
LED display, red, 4 digits, units in inWC	□	–	□	□
Switching output (npn) for max 30 Vdc/100 mA	□	–	□	□
Output signal selection from linear to square root	□	□	□	□
max. current draw without display	60 mA	21 mA	160 mA	160 mA
max. current draw with display	110 mA	–	210 mA	210 mA
Load for 0 ... 10 V output	≥ 1kΩ (≤ 10 mA)			
Load for 0 ... 20 mA output	20 ... 500 Ω			
Pressure medium	Air and non-aggressive gases			
Configuration of pressure range	with jumper	with jumper	with jumper	with Rotary Selector Switch
max. number of pressure range	2	2	2	8
only one customized pressure range	□	□	□	–
Manuel offset compensation	■	■	–	–
Automated offset compensation	–	–	■	■
Working temperature	0 ... +50°C			
Storage temperature	–10 ... +70°C			
Linearity error	± 1% of full scale			
Typical long-term stability	≤ 2.5% of fs/year	≤ 2.5% of fs/year	0.0%	0.0%
Repetition accuracy	≤ ± 0.2% of full scale			
Position dependence	≤ 0.2% of full scale/g			
Humidity	0 ... 95% rel, non-condensing			
Response time, selectable	with jumper	with jumper	with jumper	with jumper
Response time (0,1 s and 1 s)	■	■	■	■
Response time free selectable between 0.1 s and 20 s	□	□	□	□
Process connection P1 and P2	Hose connection with 6 mm outer diameter			
Electrical connection	Screw terminal block for wires and strands up to 1.5 mm <sup>2</sup>			
Mounting	Screw mounting with serrated screws			
Housing material	housing with process connection P2 (–) made from ABS base part with process connection P1 (+) made from POM			
Housing dimensions	approx. Ø 85 x 58 mm			
Weight	approx. 135 gr	approx. 120 gr	approx. 150 gr	approx. 150 gr
Protection class acc. to EN 60529	IP54 with protection cap or IP00 without protection cap			
Cable conduit on protection cap M16x1.5	■	■	■	■
Cable conduit on protection cap M20x1.5	□	□	□	□
CE Conformance EN 60770, EN 61326	■	■	■	■
RoHS Conformance according to 2011/65/EEC	■	■	■	■

■ standard equipment    □ optional equipment

# Differential pressure transmitter 984M

## with manual offset compensation

### Pressure ranges

Model	Range 1	Range 2	Overload capacity	Bursting pressure	Temperature error
984M.5X3	-50 ... 0 ... +50 Pa	–	20 kPa	40 kPa	≤ ± 5 % of full scale
984M.5W3	-100 ... 0 ... +100 Pa	–	20 kPa	40 kPa	≤ ± 5 % of full scale
984M.523	0 ... 100 Pa	0 ... 250 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
984M.533	0 ... 250 Pa	0 ... 500 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
984M.543	0 ... 500 Pa	0 ... 1.000 Pa	20 kPa	40 kPa	≤ ± 3.5 % of full scale
984M.553	0 ... 1 kPa	0 ... 2.5 kPa	40 kPa	70 kPa	≤ ± 1 % of full scale
984M.573	0 ... 5 kPa	0 ... 10 kPa	60 kPa	120 kPa	≤ ± 1 % of full scale
984M.593	0 ... 25 kPa	0 ... 50 kPa	300 kPa	500 kPa	≤ ± 1 % of full scale
984M.5B3	0 ... 100 kPa	0 ... 250 kPa	1.2 MPa	2 MPa	≤ ± 1 % of full scale

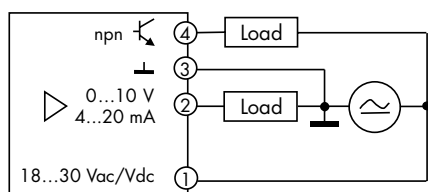
### Order matrix

IP protection class	IP 54 with cable conduit M16x1.5 IP 54 with cable conduit M20x1.5	<b>984M.5</b>					
		3					
Configurable pressure range	<b>-50 ... 0 ... +50 Pa (-0,5 ... 0 ... +0,5 mbar)</b> <b>-100 ... 0 ... +100 Pa (-1.0 ... 0 ... +1,0 mbar)</b> <b>0 ... 100 Pa (1.0 mbar)</b> 0 ... 250 Pa (2.5 mbar) <b>0 ... 250 Pa (2.5 mbar)</b> 0 ... 500 Pa (5.0 mbar) <b>0 ... 500 Pa (5.0 mbar)</b> 0 ... 1.000 Pa (10 mbar) <b>0 ... 1 kPa (10 mbar)</b> 0 ... 2.5 kPa (25 mbar) <b>0 ... 5 kPa (50 mbar)</b> 0 ... 10 kPa (100 mbar) <b>0 ... 25 kPa (250 mbar)</b> 0 ... 50 kPa (500 mbar) <b>0 ... 100 kPa (1.000 mbar)</b> 0 ... 250 kPa (2.500 mbar)	X	W				
		2					
		3					
		4					
		5					
		7					
		9					
		B					
Pressure unit	Pascal mbar		3				
			1				
Output signal and supply voltage	<b>0 ... 10 V</b> or 4 ... 20 mA, 3-wire, 24 Vac/Vdc, with switching output <b>0 ... 10 V</b> or 4 ... 20 mA, 3-wire, 24 Vac/Vdc, without switching output <b>4 ... 20 mA</b> , 2-wire, 24 Vdc <b>4 ... 20 mA</b> or 0 ... 10 V, 3-wire, 24 Vac/Vdc, with switching output <b>4 ... 20 mA</b> or 0 ... 10 V, 3-wire, 24 Vac/Vdc, without switching output			1			
				7			
				2			
				3			
				D			
Display	no display with LED-display, 4 digits (not for 2-wire)					0	
						1	
Electrical connection via screw terminal block							4

Factory settings printed in bold type.

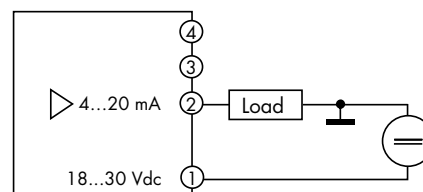
### Terminal assignments

#### 3-wire version



4	SA	Switching output, npn
3	GO	Ground GND
2	Y	Output signal 0 ... 10 V/4 ... 20 mA
1	G	Supply voltage 24 VAC/ VDC

#### 2-wire version



4		
3		
2	Y	Output signal 4 ... 20 mA
1	G	Supply voltage 24 VDC

# Differential pressure transmitter 984A

## with automated offset compensation

### Pressure ranges

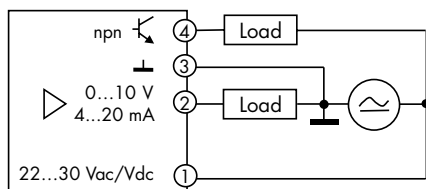
Model	Range 1	Range 2	Overload capacity	Bursting pressure	Temperature error
984A.5E3	-25 ... 0 ... +25 Pa	–	20 kPa	40 kPa	≤ ± 5 % of full scale
984A.5X3	-50 ... 0 ... +50 Pa	–	20 kPa	40 kPa	≤ ± 5 % of full scale
984A.5W3	-100 ... 0 ... +100 Pa	–	20 kPa	40 kPa	≤ ± 5 % of full scale
984A.503	0 ... 25 Pa	0 ... 50 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
984A.513	0 ... 50 Pa	0 ... 100 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
984A.523	0 ... 100 Pa	0 ... 250 Pa	20 kPa	40 kPa	≤ ± 2.5 % of full scale
984A.533	0 ... 250 Pa	0 ... 500 Pa	20 kPa	40 kPa	≤ ± 2.5 % of full scale
984A.543	0 ... 500 Pa	0 ... 1.000 Pa	20 kPa	40 kPa	≤ ± 1.5 % of full scale
984A.553	0 ... 1 kPa	0 ... 2.5 kPa	40 kPa	70 kPa	≤ ± 1 % of full scale
984A.573	0 ... 5 kPa	0 ... 10 kPa	60 kPa	120 kPa	≤ ± 1 % of full scale
984A.593	0 ... 25 kPa	0 ... 50 kPa	300 kPa	500 kPa	≤ ± 1 % of full scale
984A.5B3	0 ... 100 kPa	0 ... 250 kPa	1.2 MPa	2 MPa	≤ ± 1 % of full scale

### Order matrix

IP protection class	IP 54 with cable conduit M16x1.5 IP 54 with cable conduit M20x1.5	<b>984A. 5</b>					
		3					
Configurable pressure range	<b>-25 ... 0 ... +25 Pa (-0.25 ... 0 ... +0.25 mbar)</b> <b>-50 ... 0 ... +50 Pa (-0.5 ... 0 ... +0.5 mbar)</b> <b>-100 ... 0 ... +100 Pa (-1.0 ... 0 ... +1.0 mbar)</b> <b>0 ... 25 Pa (0.25 mbar)</b> 0 ... 50 Pa (0.5 mbar) <b>0 ... 50 Pa (0.5 mbar)</b> 0 ... 100 Pa (1.0 mbar) <b>0 ... 100 Pa (1.0 mbar)</b> 0 ... 250 Pa (2.5 mbar) <b>0 ... 250 Pa (2.5 mbar)</b> 0 ... 500 Pa (5.0 mbar) <b>0 ... 500 Pa (5.0 mbar)</b> 0 ... 1.000 Pa (10 mbar) <b>0 ... 1 kPa (10 mbar)</b> 0 ... 2.5 kPa (25 mbar) <b>0 ... 5 kPa (50 mbar)</b> 0 ... 10 kPa (100 mbar) <b>0 ... 25 kPa (250 mbar)</b> 0 ... 50 kPa (500 mbar) <b>0 ... 100 kPa (1.000 mbar)</b> 0 ... 250 kPa (2.500 mbar)	E	X	W			
		0	1	2	3	4	5
		6	7	8	9		
							B
Pressure unit	Pascal mbar					3	
						1	
Output signal and supply voltage	<b>0 ... 10 V</b> or 4 ... 20 mA, 3-wire, 24 Vac/Vdc, without switching output <b>4 ... 20 mA</b> or 0 ... 10 V, 3-wire, 24 Vac/Vdc, without switching output <b>0 ... 10 V</b> or 4 ... 20 mA, 3-wire, 24 Vac/Vdc, with switching output <b>4 ... 20 mA</b> or 0 ... 10 V, 3-wire, 24 Vac/Vdc, with switching output					7	
						D	
						1	
						3	
Display	no display with LED-display, 4 digits						0
							1
Electrical connection via screw terminal block							
Factory settings printed in bold type.							4

### Terminal assignments

#### 3-wire version



4	SA	Switching output, npn
3	GO	Ground GND
2	Y	Output signal 0 ... 10 V/4 ... 20 mA
1	G	Supply voltage 24 VAC/ VDC

# Differential pressure transmitter 984Q

## with 8 pressure ranges

### Pressure ranges

Model	Position	Pressure range	Overload capacity	Bursting pressure	Temperature error
984Q.543	1	0 ... 100 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
	2	0 ... 250 Pa	20 kPa	40 kPa	≤ ± 2.5 % of full scale
	3	0 ... 500 Pa	20 kPa	40 kPa	≤ ± 2.5 % of full scale
	4	0 ... 1000 Pa	20 kPa	40 kPa	≤ ± 1.5 % of full scale
	5	-50 ... 0 ... +50 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
	6	-100 ... 0 ... +100 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
	7	-250 ... 0 ... +250 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
	8	-500 ... 0 ... +500 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
984Q.553	1	-100 ... 0 ... +100 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
	2	0 ... 100 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
	3	0 ... 200 Pa	20 kPa	40 kPa	≤ ± 5 % of full scale
	4	0 ... 500 Pa	20 kPa	40 kPa	≤ ± 2.5 % of full scale
	5	0 ... 1000 Pa	20 kPa	40 kPa	≤ ± 1.5 % of full scale
	6	0 ... 1500 Pa	20 kPa	40 kPa	≤ ± 1.5 % of full scale
	7	0 ... 2000 Pa	20 kPa	40 kPa	≤ ± 1 % of full scale
	8	0 ... 2500 Pa	20 kPa	40 kPa	≤ ± 1 % of full scale

**NEW**

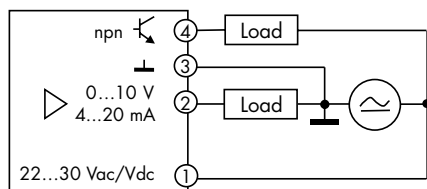
### Order matrix

IP protection class	IP 54 with cable conduit M16x1.5 IP 54 with cable conduit M20x1.5	<b>984Q.5</b>					
		3					
Pressure ranges	from -50 ... 0 ... +50 Pa to 0 ... 1000 Pa from -100 ... 0 ... +100 Pa to 0 ... 2500 Pa		4				
			5				
Pressure unit	Pascal mbar			3			
				1			
Output signal and supply voltage	<b>0 ... 10 V</b> or 4 ... 20 mA, 3-wire, 24 Vac/Vdc, without switching output <b>4 ... 20 mA</b> or 0 ... 10 V, 3-wire, 24 Vac/Vdc, without switching output <b>0 ... 10 V</b> or 4 ... 20 mA, 3-wire, 24 Vac/Vdc, with switching output <b>4 ... 20 mA</b> or 0 ... 10 V, 3-wire, 24 Vac/Vdc, with switching output				7		
					D		
					1		
					3		
Display	no display with LED-display, 4 digits					0	
						1	
Electrical connection via screw terminal block							4

Factory settings printed in bold type.

### Terminal assignments

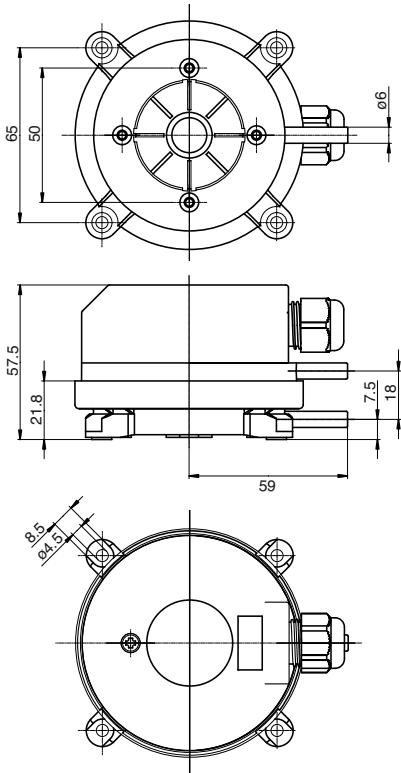
#### 3-wire version



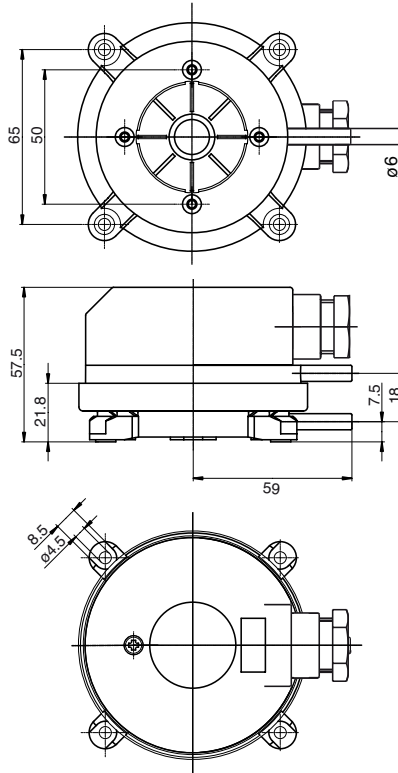
4	SA	Switching output, npn
3	GO	Ground GND
2	Y	Output signal 0 ... 10 V/4 ... 20 mA
1	G	Supply voltage 24 VAC/ VDC

# Dimensional Drawings

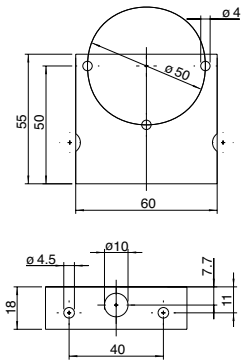
**984 with cable conduit M16x1.5**



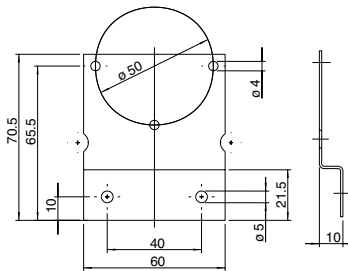
**984 with cable conduit M20x1.5**



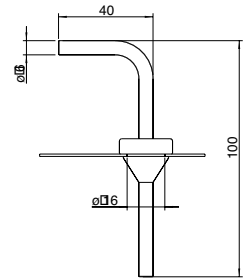
**Mounting bracket 6401**



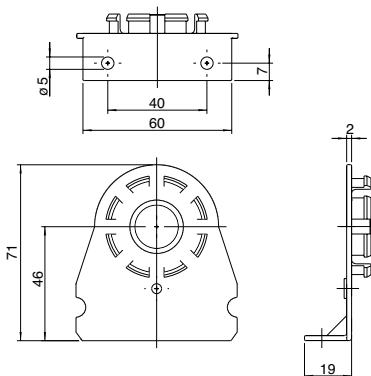
**Mounting bracket 6402**



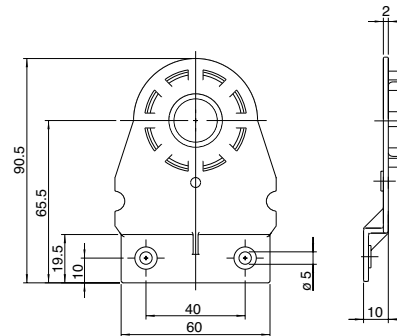
**Duct connection for Climaset® 6550/6556**



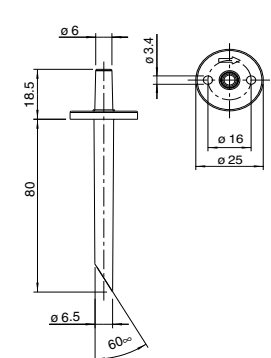
**Mounting bracket 6481**



**Mounting bracket 6482**



**Duct connection for Climaset® 6555/6557**



## Accessories

Metal mounting bracket S-shaped	Article No. 6402
Metal mounting bracket L-shaped	Article No. 6401
Snap-on plastic bracket S-shaped	Article No. 6482
Snap-on plastic bracket L-shaped	Article No. 6481
Climaset® consisting of 2m PVC hose and 2 plastic pipes with 80 mm length	Article No. 6555
Climaset® consisting of 2 m Silicone hose and 2 plastic pipes	Article No. 6557
Climaset® consisting of 2 m PVC hose and 2 angled metal pipes	Article No. 6550
Climaset® consisting of 2 m Silicone hose and 2 angled metal pipes	Article No. 6556
Duct connecting pipe for Climaset® 6555, with 80 mm length	Article No. 6551
Angled metal pipe for Climaset® 6550	Article No. 6552
Rubber grommet for Climaset® 6550	Article No. 6553
Roll with 100 m PVC hose	Article No. 6424
Roll with 100 m Silicone hose	Article No. 6425
M16x1.5 cable conduit including seal and gland nut	Article No. 6562
M20x1.5 cable conduit including seal and counter screw	Article No. 6568
1/2" NPT cable conduit without insert	Article No. 6561
Folding box for individual packing (with accessories)	Article No. 6428
Folding box for individual packing (with accessories)	Article No. 6429

## We exhibit



**15.-18. March 2016**  
**Milan, Italy**



**11.-13. October 2016**  
**Nuremberg, Germany**



**25.-29. April 2016**  
**Hannover, Germany**



**14.-18. March 2017**  
**Frankfurt, Germany**



Beck GmbH  
Druckkontrolltechnik  
P.O. Box 11 31  
D-71140 Steinbronn  
Telephone +49 (71 57) 52 87-0  
Telefax +49 (71 57) 52 87-83  
e-mail sales@beck-sensors.com  
<http://www.beck-sensors.com>