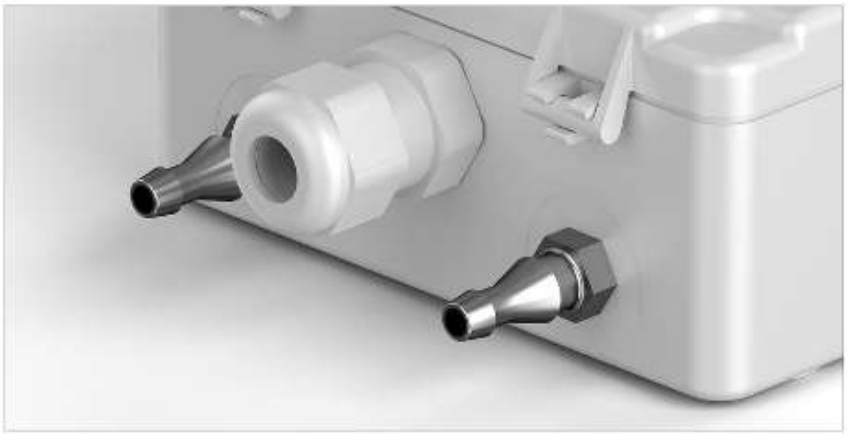
AES
ALPHA ENGINEERING & SYSTEMS

The differential pressure transmitter for air with IP65



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Differential pressure transmitter 985 with IP65

General description
The differential pressure transmitters of the 985 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 985M and 985A the less sensitive second range will be selected by simply removing a jumper. For the series 985Q 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 985M 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 985M series can be calibrated to zero by pressing the M push-bottun in a pressureless state of the transmitter. The series 985A and 985Q 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
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 an user defined pressure level the transmitter has an adjustable transistor switching output (npn NO) with a maximum switching capacity of 30 Vdc/100 mA. (npn NC or pnp NO / NC on request).

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	985M	985M	985A	985Q
Electrical connection	**2-wire**	**3-wire**	**3-wire**	**3-wire**
Measuring method	Piezoresistive pressure transducer			
Supply voltage	18...30 VDC	18...30 VAC / VDC	18…30 VAC / VDC	18…30 VAC / VDC
Output signal selectable	–	with jumper	with jumper	with jumper
Output signal 0 ... 10 V	–	■	■	■
Output signal 4 ... 20 mA	■	■	■	■
Output signal 0 ... 5 V	–	□	□	□
Output signal 0 ... 20 mA	–	□	□	□
LED display, red, 4 digits	–	□	□	□
Switching output for max 30 VDC / 100 mA	–	□	□	□
Output signal selection from linear to square root	■	■	■	■
max. current draw without display VDC / VAC	21 / – mA	25 / 110 mA	75 / 180 mA	75 / 180 mA
max. current draw with display VDC / VAC	– / –	50 / 170 mA	100 / 230 mA	100 / 230 mA
Load for 4 ... 20 mA output	20 ... 500 Ω			
Load for 0 ... 10 V output	–	≥ 1kΩ (≤ 10mA)	≥1kΩ (≤10mA)	≥ 1kΩ (≤ 10mA)
Pressure medium	Air and non-aggressive gases			
Configuration of pressure range	with jumper	with jumper	with jumper	with rotary 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 incl. hysteresis and repetition accuracy	± 1% of full scale, min. ± 1 Pa			
Typical long-term stability	≤± 1.0% of fs/year		n.r.	n.r.
Humidity	0 ... 95% rel, non-condensing			
Response time 0.1 s and 1 s (standard)	■	■	■	■
Response time free selectable between 0.1 s and 20 s	□	□	□	□
Process connection P1 and P2	Hose connection with 4 / 6 mm outer diameter			
Electrical connection	Plug-in terminals for wires and strands up to 1.5 mm^2 or circular connectors M12 / 4-pole			
Housing material	ABS			
Cable conduit	Cap nut conduit AF15 made of polyamide			
Housing dimensions	approx. 81 x 83 x 41 mm			
Weight	approx. 110 gr	approx. 125 gr	approx. 140 gr	approx. 140 gr
Protection class acc. to EN 60529	IP65			
CE Conformance, EN 61326	■	■	■	■
RoHS Conformance according to 2011/65/EEC	■	■	■	■

Accuracy specifications according to EN 60770

■ standard equipment □ optional equipment

Differential pressure transmitter 985M

with manual offset compensation

Pressure ranges

Model	Range 1	Range 2	Overload capacity	Bursting pressure	Temperature error*
985M.3X3	-50 … 0 … +50 Pa	-	60 kPa	100 kPa	≤ ± 2.5 % of full scale
985M.3W3	-100 … 0 … +100 Pa	-	60 kPa	100 kPa	≤ ± 2.5 % of full scale
985M.323	0… 100 Pa	0… 250 Pa	60 kPa	100 kPa	≤ ± 2.5 % of full scale
985M.333	0… 250 Pa	0… 500 Pa	60 kPa	100 kPa	≤ ± 2.5 % of full scale
985M.343	0… 500 Pa	0… 1000 Pa	75 kPa	125 kPa	≤ ± 1.0 % of full scale
985M.353	0… 1 kPa	0… 2.5 kPa	85 kPa	135 kPa	≤ ± 1.0 % of full scale
985M.373	0… 5 kPa	0… 10 kPa	85 kPa	135 kPa	≤ ± 1.0 % of full scale
985M.393	0… 25 kPa	0… 50 kPa	200 kPa	400 kPa	≤ ± 1.0 % of full scale
985M.3A3	0… 50 kPa	0… 100 kPa	200 kPa	400 kPa	≤ ± 1.0 % of full scale

Further pressure ranges on request.
**based on the highest pressure range*

Order matrix

Configurable pressure range	**- 50 … 0 … +50 Pa**	**(-0,5 … 0 … +0,5 mbar)**	**985M.3**	X				
	- 100 … 0 … +100 Pa	**(-1,0 … 0 … +1,0 mbar)**		W				
	0 ... 100 Pa (1.0 mbar)	0 ... 250 Pa (2.5 mbar)		2				
	0 ... 250 Pa (2.5 mbar)	0 ... 500 Pa (5.0 mbar)		3				
	0 ... 500 Pa (5.0 mbar)	0 ... 1000 Pa (10 mbar)		4				
	0 ... 1 kPa (10 mbar)	0 ... 2,5 kPa (25 mbar)		5				
	0 ... 5 kPa (50 mbar)	0 ... 10 kPa (100 mbar)		7				
	0 ... 25 kPa (250 mbar)	0 ... 50 kPa (500 mbar)		9				
	0 ... 50 kPa (500 mbar)	0 ... 100 kPa (1.0 bar)		A				
Pressure unit	mbar				1				
	Pascal				3				
Output signal and supply voltage	**0 ... 10 V** or 4 ... 20 mA, 3-wire, 24 VAC / VDC, with switching output					1			
	0 ... 10 V or 4 ... 20 mA, 3-wire, 24 VAC / VDC, without switching output					7			
	4 ... 20 mA or 0 … 10 V, 3-wire, 24 VAC / VDC, with switching output					3			
	4 ... 20 mA or 0 … 10 V, 3-wire, 24 VAC / VDC, without switching output					D			
	4 ... 20 mA, 2-wire, 24 VDC					2			
Display	no display						0		
	with LED-display, 4 digits (only for 3-wire)						1		
Electrical connection	via plug-in terminals with cap nut conduit AF15								4b
	via circular connectors M12 / 4-pole								8b

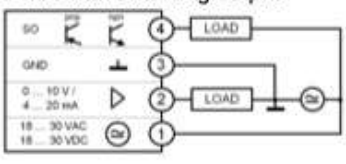
Factory settings printed in bold type.

Terminal assignments

Plug-in terminals 2- or 4-pole

Circular connectors M12, 4-pole

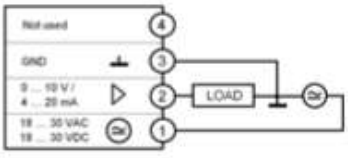
3-wire with switching output



1	Supply voltage (18...30 VAC / VDC)
2	Output signal (0…10 V / 4…20 mA)
3	Ground (GND)
4	Switching output (SO)

1	Brown	Supply voltage (18...30 VAC / VDC)
2	White	Switching output (SO)
3	Blue	Ground (GND)
4	Black	Output signal (0…10 V / 4…20 mA)

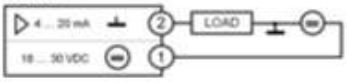
3-wire without switching output



1	Supply voltage (18...30 VAC / VDC)
2	Output signal (0…10 V / 4…20 mA)
3	Ground (GND)
4	Not used

1	Brown	Supply voltage (18...30 VAC / VDC)
2	White	Not used
3	Blue	Ground (GND)
4	Black	Output signal (0…10 V / 4…20 mA)

2-wire



1	Supply voltage (18...30 VDC)
2	Output signal (4…20 mA)

1	Brown	Supply voltage (18...30 VDC)
2	White	Output signal (4…20 mA)
3	Blue	Not used
4	Black	Not used

Differential pressure transmitter 985A

with automated offset compensation and 2 pressure ranges

Pressure ranges

Model	Range 1	Range 2	Overload capacity	Bursting pressure	Temperature error*
985A.3E3	-25 … 0 … +25 Pa	-	60 kPa	100 kPa	≤ ± 1.5 % of full scale
985A.3X3	-50 … 0 … +50 Pa	-	60 kPa	100 kPa	≤ ± 1.5 % of full scale
985A.3W3	-100 … 0 … +100 Pa	-	60 kPa	100 kPa	≤ ± 1.5 % of full scale
985A.303	0… 25 Pa	0… 50 Pa	60 kPa	100 kPa	≤ ± 1.5 % of full scale
985A.313	0… 50 Pa	0… 100 Pa	60 kPa	100 kPa	≤ ± 1.5 % of full scale
985A.323	0… 100 Pa	0… 250 Pa	60 kPa	100 kPa	≤ ± 1.0 % of full scale
985A.333	0… 250 Pa	0… 500 Pa	60 kPa	100 kPa	≤ ± 1.0 % of full scale
985A.343	0… 500 Pa	0… 1000 Pa	75 kPa	125 kPa	≤ ± 1.0 % of full scale
985A.353	0… 1 kPa	0… 2.5 kPa	85 kPa	135 kPa	≤ ± 1.0 % of full scale
985A.373	0… 5 kPa	0… 10 kPa	85 kPa	135 kPa	≤ ± 1.0 % of full scale
985A.393	0… 25 kPa	0… 50 kPa	200 kPa	400 kPa	≤ ± 1.0 % of full scale

Further pressure ranges on request.
**based on the highest pressure range*

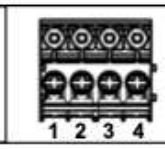
Order matrix

Configurable pressure range	**- 25 … 0 … +25 Pa**	**(-0.25 … 0 … +0.25 mbar)**	**985A.3**	E				
	- 50 … 0 … +50 Pa	**(-0.5 … 0 … +0.5 mbar)**		X				
	- 100 … 0 … +100 Pa	**(-1.0 … 0 … +1.0 mbar)**		W				
	0 … 25 Pa (0.25 mbar)	0 … 50 Pa (0.5 mbar)		0				
	0 … 50 Pa (0.5 mbar)	0 … 100 Pa (1.0 mbar)		1				
	0 … 100 Pa (1.0 mbar)	0 … 250 Pa (2.5 mbar)		2				
	0 … 250 Pa (2.5 mbar)	0 … 500 Pa (5.0 mbar)		3				
	0 … 500 Pa (5.0 mbar)	0 …1000 Pa (10 mbar)		4				
	0 … 1 kPa (10 mbar)	0 … 2,5 kPa (25 mbar)		5				
	0 … 5 kPa (50 mbar)	0 … 10 kPa (100 mbar)		7				
	0 … 25 kPa (500 mbar)	0 … 50 kPa (50 mbar)		9				
Pressure unit	mbar				1				
	Pascal				3				
Output signal and supply voltage	**0 … 10 V** or 4 … 20 mA, 3-wire, 24 VAC / VDC, with switching output					1			
	0 … 10 V or 4 … 20 mA, 3-wire, 24 VAC / VDC, without switching output					7			
	4 … 20 mA or 0 … 10 V, 3-wire, 24 VAC / VDC, with switching output					3			
	4 … 20 mA or 0 … 10 V, 3-wire, 24 VAC / VDC, without switching output					D			
Display	no display						0		
	with LED-display, 4 digits (only for 3-wire)						1		
Electrical connection	via plug-in terminals with cap nut conduit AF15								4b
	via circular connectors M12 / 4-pole								8b

Factory settings printed in bold type.

Terminal assignments

Plug-in terminals 2- or 4-pole

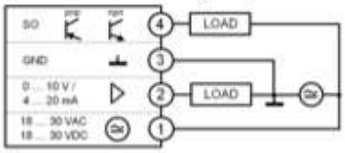


1	Supply voltage (18...30 VAC / VDC)
2	Output signal (0…10 V / 4…20 mA)
3	Ground (GND)
4	Switching output (SO)

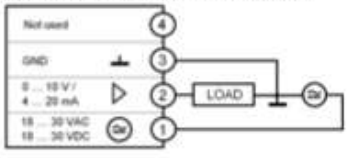
Circular connectors M12, 4-pole

1	Brown	Supply voltage (18...30 VAC / VDC)
2	White	Switching output (SO)
3	Blue	Ground (GND)
4	Black	Output signal (0…10 V / 4…20 mA)

3-wire with switching output



3-wire without switching output



1	Supply voltage (18...30 VAC / VDC)
2	Output signal (0…10 V / 4…20 mA)
3	Ground (GND)
4	Not used

1	Brown	Supply voltage (18...30 VAC / VDC)
2	White	Not used
3	Blue	Ground (GND)
4	Black	Output signal (0…10 V / 4…20 mA)

Differential pressure transmitter 985Q

with automated offset compensation and 8 pressure ranges

Pressure ranges

Model	Position	Pressure range	Overload capacity	Bursting pressure	Temperature error*
985Q.343	1	0 … 100 Pa	75 kPa	125 kPa	≤ ± 2.5 % of full scale
	2	0 … 250 Pa	75 kPa	125 kPa	≤ ± 1.5 % of full scale
	3	0 … 500 Pa	75 kPa	125 kPa	≤ ± 1.0 % of full scale
	4	0 … 1000 Pa	75 kPa	125 kPa	≤ ± 1.0 % of full scale
	5	-50 … 0 … +50 Pa	75 kPa	125 kPa	≤ ± 2.5 % of full scale
	6	-100 … 0 … +100 Pa	75 kPa	125 kPa	≤ ± 2.5 % of full scale
	7	-250 … 0 … +250 Pa	75 kPa	125 kPa	≤ ± 1.5 % of full scale
	8	-500 … 0 … +500 Pa	75 kPa	125 kPa	≤ ± 1.0 % of full scale
	0	fixed output signal 0 V / 4 mA	-	-	-
	9	fixed output signal 10 V / 20 mA	-	-	-
985Q.353	1	-100 … 0 … +100 Pa	85 kPa	135 kPa	≤ ± 3.0 % of full scale
	2	0 … 100 Pa	85 kPa	135 kPa	≤ ± 3.0 % of full scale
	3	0 … 200 Pa	85 kPa	135 kPa	≤ ± 2.0 % of full scale
	4	0 … 500 Pa	85 kPa	135 kPa	≤ ± 1.5 % of full scale
	5	0 … 1000 Pa	85 kPa	135 kPa	≤ ± 1.5 % of full scale
	6	0 … 1500 Pa	85 kPa	135 kPa	≤ ± 1.0 % of full scale
	7	0 … 2000 Pa	85 kPa	135 kPa	≤ ± 1.0 % of full scale
	8	0 … 2500 Pa	85 kPa	135 kPa	≤ ± 1.0 % of full scale
	0	fixed output signal 0 V / 4 mA	-	-	-
	9	fixed output signal 10 V / 20 mA	-	-	-

Further pressure ranges on request.

**based on the highest pressure range*

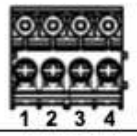
Order matrix

Configurable pressure range	see pressure ranges	**985Q.3**					
	max. 1000 Pa (10 mbar)		**4**				
	max. 2500 Pa (25 mbar)		**5**				
Pressure unit	mbar			**1**			
	Pascal			**3**			
Output signal and supply voltage	**0 ... 10 V** or 4 ... 20 mA, 3-wire, 24 VAC / VDC, with switching output				**1**		
	0 ... 10 V or 4 ... 20 mA, 3-wire, 24 VAC / VDC, without switching output				**7**		
	4 ... 20 mA or 0 … 10 V, 3-wire, 24 VAC / VDC, with switching output				**3**		
	4 ... 20 mA or 0 … 10 V, 3-wire, 24 VAC / VDC, without switching output				**D**		
Display	no display					**0**	
	with LED-display, 4 digits (only for 3-wire)					**1**	
Electrical connection	via plug-in terminals with cap nut conduit AF15						**4b**
	via circular connectors M12 / 4-pole						**8b**

Factory settings printed in bold type.

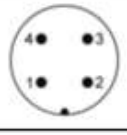
Terminal assignments

Plug-in terminals 2- or 4-pole



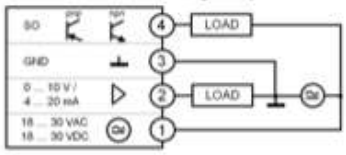
1	Supply voltage (18...30 VAC / VDC)
2	Output signal (0…10 V / 4…20 mA)
3	Ground (GND)
4	Switching output (SO)

Circular connectors M12, 4-pole

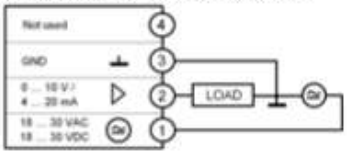


1	Brown	Supply voltage (18...30 VAC / VDC)
2	White	Switching output (SO)
3	Blue	Ground (GND)
4	Black	Output signal (0…10 V / 4…20 mA)

3-wire with switching output



3-wire without switching output

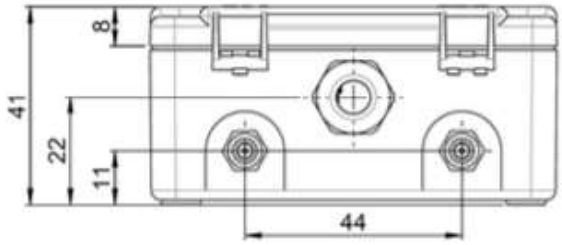


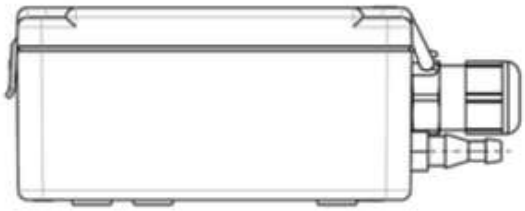
1	Supply voltage (18...30 VAC / VDC)
2	Output signal (0…10 V / 4…20 mA)
3	Ground (GND)
4	Not used

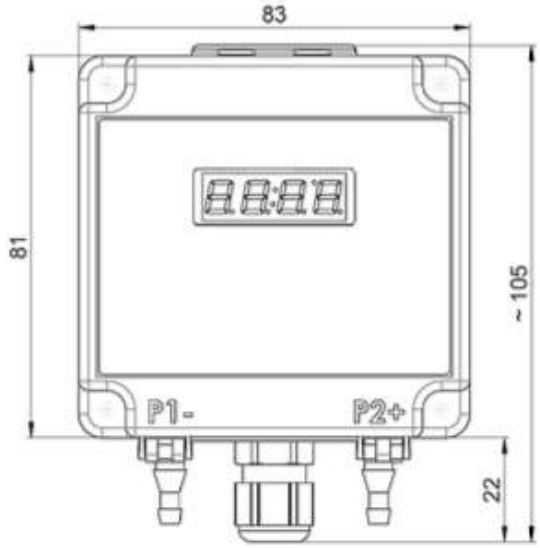
1	Brown	Supply voltage (18...30 VAC / VDC)
2	White	Not used
3	Blue	Ground (GND)
4	Black	Output signal (0…10 V / 4…20 mA)

Dimensional Drawings

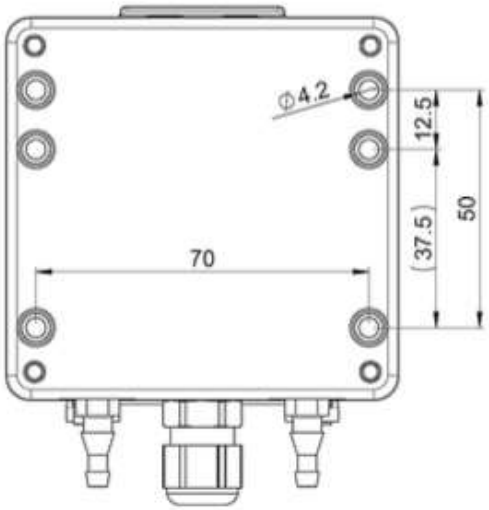
985 with cap nut conduit AF15



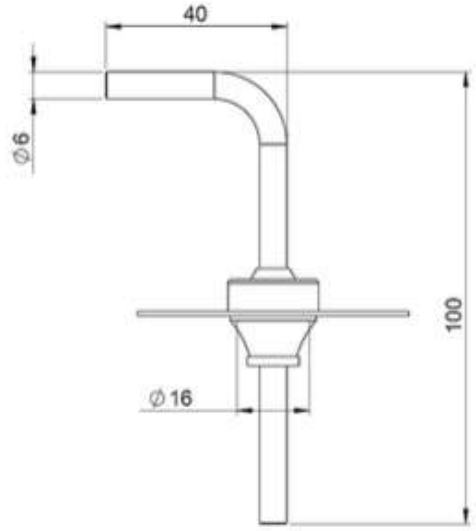




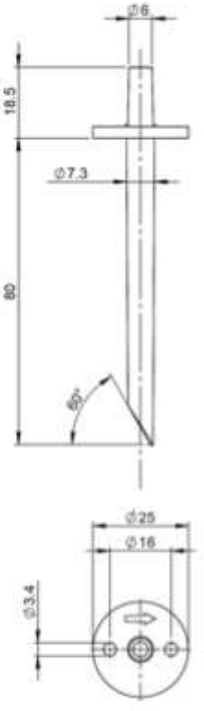
Drilling template



Duct connection for Climaset® 6550 / 6556

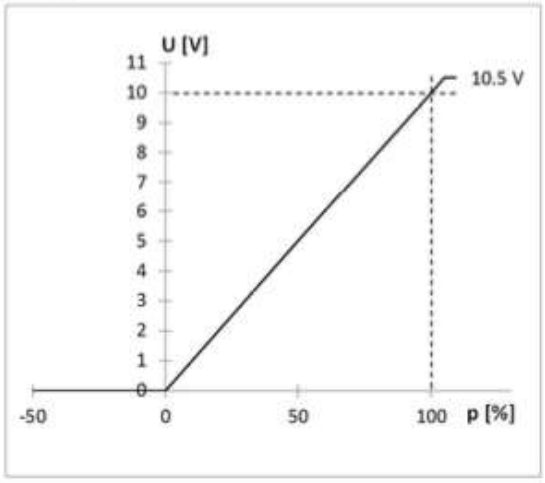


Duct connection for Climaset® 6555 / 6557

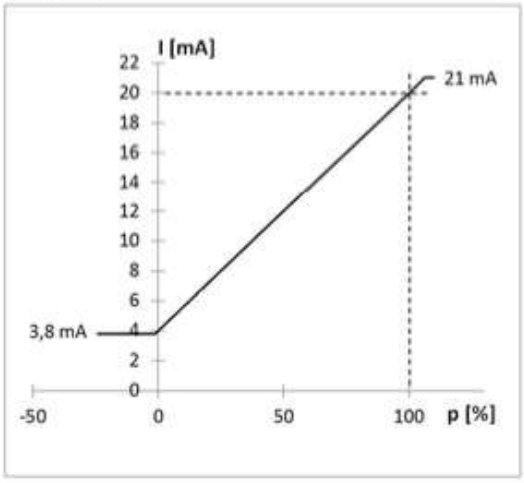


Analog output signal

0 - 10 V



4 - 20 mA



Accessories

Climaset® consisting of 2m PVC hose and 2 plastic pipes	Article No. 6555
Climaset® consisting of 2m Silicone hose and 2 plastic pipes	Article No. 6557
Climaset® consisting of 2m PVC hose and 2 angled metal pipes	Article No. 6550
Climaset® consisting of 2m Silicone hose and 2 angled metal pipes	Article No. 6556
Duct connecting pipe for Climaset® 6555	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