

# Relative, and differential pressure transmitter type 699

Pressure range

-1 ... 1 mbar / 0 ... 0.3 – 50 mbar



The type 699 transmitters are available in switchable pressure ranges and with or without display. The full-version includes customer specific adjustment possibilities. Especially developed sensors for each pressure range ensure accurate long term stable measurement and the large variety of options provide the perfect platform for use in air conditioning technology as well as for fine measurement in the industrial and medical environment.

- Fast, easy mounting. Housing incorporates integral bracket for wall or ceiling mounting
- Available with or without LCD display
- Adjustable measurement range
- Switchable output signals
- Switchable response curve (linear or root-extracted)
- Resettable Zero Point (Reset button)
- Full scale adjustable
- Attractive price / performance ratio
- Application at over and low pressure range possible

## Technical overview

### Pressure range

Relative and differential	-1 ... 1 mbar / 0 ... 0.3 – 50 mbar
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### Operating conditions

Medium	Air and neutral gases		
Temperature	Medium / ambient		0 ... +70 °C
	Storage		-10 ... +70 °C
	No condensation		
Tolerable overload on one side	Application at over pressure range	P1 = 100 mbar	P2 = 4 mbar
	Application at under pressure range	P1 = -4 mbar	P2 = -100 mbar
Rupture pressure	ambient temperature 70 °C	2 x overload	
		1.5 x overload	

### Materials in contact with medium

Sensor	Ceramic Al <sub>2</sub> O <sub>3</sub> (96%)
Diaphragm	Silicone
Housing	Polycarbonat PC

### Electrical overview

	Output <sup>1)</sup>	Power supply <sup>1)</sup>	Load	Current consumption <sup>2)</sup>
2 wire	4 ... 20 mA	8.0 ... 33 VDC	$\frac{\text{supply voltage} - 8 \text{ V}}{0.02 \text{ A}}$ [Ohm]	< 20 mA
	0 ... 10 V	13.5 ... 33 VDC / 24 VAC ±15%	> 10 kOhm	< 10 mA
3 wire	0 ... 20 mA	13.5 ... 33 VDC / 24 VAC ±15%	< 500 Ohm	< 30 mA
	4 ... 20 mA	13.5 ... 33 VDC / 24 VAC ±15%	< 500 Ohm	< 30 mA
	0 ... 5 V <sup>3)</sup>	6.5 ... 33 VDC / 24 VAC ±15%	> 10 kOhm	< 10 mA
Filter	Response time switchable by			off / 0.2s / 1s / 5s / 20s
Polarity reversal protection	Short circuit proof and protected against polarity reversal. Each connection is protected against crossover up to max. supply voltage.			

### Dynamic response

Response time	< 20 ms
Load cycle	< 10 Hz

### Protection standard

Without cover	IP 00
With cover	IP 54
	IP 65

### Display

LCD Display	Double spaced	per 8 digit alphanumeric
Module MODBUS	At additional backlight LCD-Display 30 mA current consumption	
	RTU RS-485	

### Ranges of adjustment

The zero point is adjustable by reset button.  
The Full scale is adjustable by DIP-Switch and additional by the turbopoti.

### Adjustability

Optional version with self configurable parameters (see order code selection table)

### Electrical connection

Screw terminals for wire and stranded conductors up to 1.5 mm<sup>2</sup>  
Cable gland with built-in strain relief PG11

### Pressure connection

Connection pipe	Ø 6.2 mm
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### Mounting instructions

Installation arrangement	Recommendation:	Vertical, with pressure connections downwards
Mounting	Mounting bracket (integrated in case)	

### Tests / Admissions

UL	
Electromagnetic compatibility	CE-conformity acc. EN 61326-2-3

### Weight

Without display	~ 90 g
With display	~ 100 g

### Packaging

Single packaging in cardboard

## Accuracy

Parameter		Unit	±0.5 mbar	0 ... 1 mbar	0 ... 3 mbar	0 ... 5 mbar	0 ... 10 - 50 mbar
Tolerance zero point	max.	% fs	±1.0	±1.0	±0.7	±0.7	±0.7
Tolerance zero full scale	max.	% fs	±1.0	±1.0	±0.7	±0.7	±0.7
Resolution		% fs	0.2	0.2	0.1	0.1	0.1
Total of linearity, hysteresis and repeatability	max.	% fs	±1.0	±1.0	±1.0	±1.0	±0.6
Long term stability acc. to DIN EN 60770		% fs	±1.0	±1.0	±1.0	±1.0	±1.0
TC zero point <sup>4)</sup>	typ.	% fs/10K	±0.2	±0.2	±0.2	±0.1	±0.1
TC zero point <sup>4)</sup>	max.	% fs/10K	±1.0	±1.0	±0.5	±0.4	±0.4
TC sensitivity <sup>4)</sup>	typ.	% fs/10K	±0.3	±0.3	±0.2	±0.1	±0.1
TC sensitivity <sup>4)</sup>	max.	% fs/10K	±0.6	±0.6	±0.5	±0.5	±0.2

- no additional root-extracted errors

- For changing diaphragm position, compensable with zero point reset

Test conditions: 25 °C, 45% rF, Power supply 24 VDC

TC z.p. / TC z.p. 0 70 °C

<sup>1)</sup> Adjustable by DIP-Switch

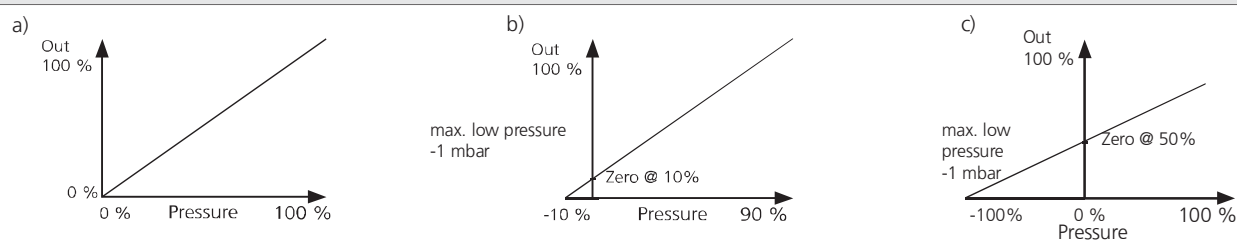
<sup>2)</sup> At nominal pressure

<sup>3)</sup> Additional adjustable by software (with LCD-Display only)

<sup>4)</sup> TC = Temperature coefficient

Order code selection table		699. X X X X X X X X X X											
Pre-adjustment	max. range		9										
	middle range		B										
	min. range		C										
Pressure range switchable	Pressure range of 0 % bis 100% fs		1										
	Pressure range of -10 % bis 90% fs		2										
	Pressure range of -100 % bis 100% fs		3										
Pressure range (switchable)	mbar (hPa) Pa mmWS inH <sub>2</sub> O												
	0 ... 0.3/0.5 30/50 3/5 0.1/0.2 <sup>1)</sup>		0										
	0 ... 0.3/0.5/1 30/50/100 3/5/10 0.1/0.2/0.3 <sup>2)</sup>		1										
	0 ... 0.5/1/3 50/100/300 5/10/30 0.3/0.5/1 <sup>1)</sup>		2										
	0 ... 1/3/5 100/300/500 10/30/50 0.5/1/2 <sup>1)</sup>		3										
	0 ... 3/5/10 300/500/1000 30/50/100 1/2/3 <sup>1)</sup>		4										
	0 ... 5/10/16 500/1000/1600 50/100/160 2/3/5 <sup>1)</sup>		5										
	0 ... 10/16/25 1000/1600/2500 100/160/250 3/5/10 <sup>1)</sup>		6										
	0 ... 16/25/50 1600/2500/5000 160/250/500 5/10/20 <sup>1)</sup>		7										
Pressure unit	mbar					0							
	hPa					4							
	Pa					2							
	kPa					5							
	mmWS					3							
	inH <sub>2</sub> O					6							
Output signal / adjustment	Linear without Filter					1		0					
	Linear with Filter (transposable)					2							
	Square root extracted without Filter					4		0					
	Square root extracted with Filter (transposable)					3							
Output / power supply	0 ... 10 V 13.5 ... 33 VDC / 24 VAC ± 15 %							1					
	0 ... 20 mA 13.5 ... 33 VDC / 24 VAC ± 15 %							3					
	4 ... 20 mA 13.5 ... 33 VDC / 24 VAC ± 15 %							4					
	4 ... 20 mA 8.0 ... 33 VDC							5					
	Output signal complimentary selectabel, at delivery no pre-adjustment	9				2	6						
Option	without display									0			
	in pressure unit chosen above									1			
	in % fs									2			
Pressure connection / Pressure orifices	Module MODBUS					2,3	1	3					
	Connection pipe Ø 6.2 mm without pressure orifice									1			
	Connection pipe Ø 6.2 mm pressure orifice on P1									2			
	Connection pipe Ø 6.2 mm pressure orifice on P2									3			
	Connection pipe Ø 6.2 mm pressure orifice on P1 and P2									4			
Accessories / Connection Kit	IP 54 without										0		
	IP 54 with connection kit (metal), 90° angled including tube 2 m long (Fig. 1)										1		
	IP 54 with connection kit (plastic), straight including tube 2 m long (Fig. 2)										2		
	IP 65 without										3		
	IP 65 with connection kit (metal), 90° angled including tube 2 m long (Fig. 1)										4		
Pressure range variation	IP 65 with connection kit (plastic), straight including tube 2 m long (Fig. 2)										5		
	Indicate W and state range on order (e.g.: W0 ... + 8mbar/OUT1...6V)	9	1										W

## Range of characteristic line



## Depending on the version parameters are adjustable by customer

Version	Variable parameters
Dual DIP-Switch	Pressure ranges in grades
Tenfold DIP-Switch	Pressure ranges in grades; stepless adjustable with Turbo-Poti / output signals / Filter (off / 1s) / response curve (linear / root extracted)
Tenfold DIP-Switch with Display	Pressure ranges in grades; stepless adjustable with Turbo-Poti / pressure units / pressure range character / output signals; additional 0 ... 5 V / Filter (off / 0.2s / 1s / 5s / 20s) / response curve (linear / root extracted) / Backlight (off / 5s / on)

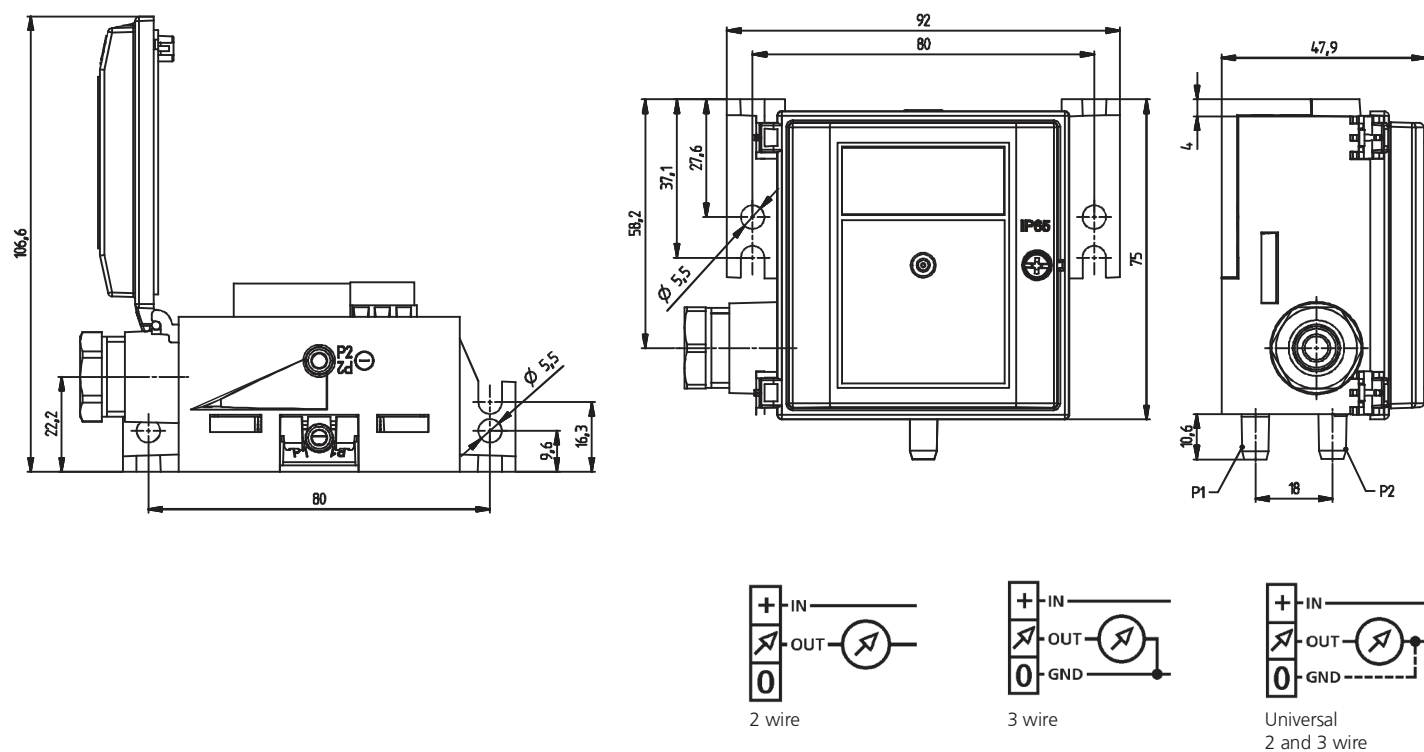
## Accessories <sup>3)</sup>

		Order number
Connection kit for vent duct (metal), 90° angled	including tube 2 m long (Fig. 1)	104312
Connection kit for vent duct (plastic), straight	including tube 2 m long (Fig. 2)	100064
DIN-rail mounting adaptor (Fig. 3)		112854
Calibration certificate		104551

<sup>1)</sup> minimal operating pressure = -50 Pa

<sup>2)</sup> minimal operating pressure = -100 Pa

<sup>3)</sup> Accessories supplied loose



## Accessories

Fig. 1

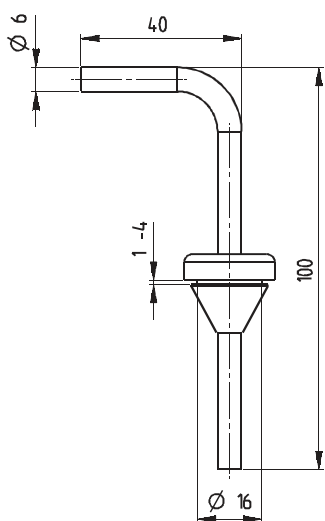


Fig. 2

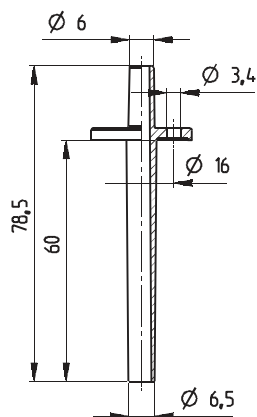


Fig. 3

