

# 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

### Operating conditions

Medium		Medium / ambient	Air and neutral gases	
Temperature		Storage	0 ... +70 °C	
		No condensation	-10 ... +70 °C	
Tolerable overload on one side	Application at over pressure range	≤ 3 mbar	P1 = 50 mbar	P2 = 4 mbar
		> 3 mbar	P1 = 100 mbar	P2 = 4 mbar
	Application at under pressure range	≤ 3 mbar	P1 = -4 mbar	P2 = -50 mbar
		> 3 mbar	P1 = -4 mbar	P2 = -100 mbar
Rupture pressure		ambient temperature	2 x overload	
		70 °C	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

2 wire	Output <sup>1)</sup>	Power supply <sup>1)</sup>	Load	Current consumption <sup>2)</sup>
	4 ... 20 mA	8.0 ... 33 VDC	$< \frac{\text{supply voltage} - 8 \text{ V}}{0.02 \text{ A}}$ [Ohm]	< 20 mA
3 wire	0 ... 10 V	13.5 ... 33 VDC / 24 VAC ±15%	> 10 kOhm	< 10 mA
	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 turbopot.

### 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

### 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	
Multiple packaging	20 / 40 / 120

## 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

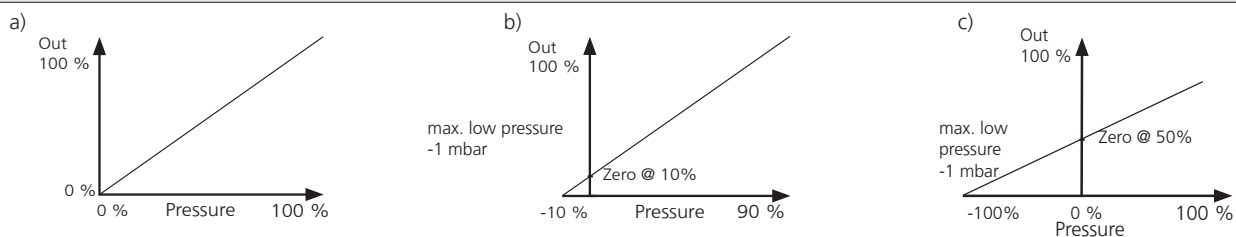
<sup>1)</sup> Adjustable by DIP-Switch  
<sup>4)</sup> TC = Temperature coefficient

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

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

		1	2	3	4	5	6	7	8	9	10
<b>Order code selection table</b>		699. X X X X X X X X X X X									
Pre-adjustment	max. range	9									
	middle range	B									
	min. range	C									
Signal range selectable	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 selectable	mbar (hPa)	Pa	mmWS	inH <sub>2</sub> O							
	0 ... 0.3/0.5	30/50	3/5	0.1/0.2	1)	0					
	0 ... 0.3/0.5/1	30/50/100	3/5/10	0.1/0.2/0.3	2)	1					
	0 ... 0.5/1/3	50/100/300	5/10/30	0.3/0.5/1	1)	2					
	0 ... 1/3/5	100/300/500	10/30/50	0.5/1/2	1)	3					
	0 ... 3/5/10	300/500/1000	30/50/100	1/2/3	1)	4					
	0 ... 5/10/16	500/1000/1600	50/100/160	2/3/5	1)	5					
	0 ... 10/16/25	1000/1600/2500	100/160/250	3/5/10	1)	6					
Pressure unit	0 ... 16/25/50	1600/2500/5000	160/250/500	5/10/20	1)	7					
	mbar						0				
	hPa						4				
	Pa						2				
	kPa						5				
Output signal / adjustment	mmWS						3				
	inH <sub>2</sub> O						6				
	Linear	without Filter	dual DIP-Switch				1	0			
	Linear	with Filter (transposable)	tenfold DIP-Switch				2				
	Square root extracted	without Filter	dual DIP-Switch				4	0			
Output / power supply	Square root extracted	with Filter (transposable)	tenfold DIP-Switch				3				
	0 ... 10 V	13.5 ... 33 VDC / 24 VAC ± 15 %	(3 wire)					1			
	0 ... 20 mA	13.5 ... 33 VDC / 24 VAC ± 15 %	(3 wire)					3			
	4 ... 20 mA	13.5 ... 33 VDC / 24 VAC ± 15 %	(3 wire)					4			
	4 ... 20 mA	8.0 ... 33 VDC	(2 wire)					5			
Option	Output signal complimentary selectabel, at delivery no pre-adjustment					9		2	6		
	without display									0	
	with display in pressure unit chosen above									1	
	with display in % fs									2	
Pressure connection / Pressure orifices	with 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 / on) / 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 / 5min / on)

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

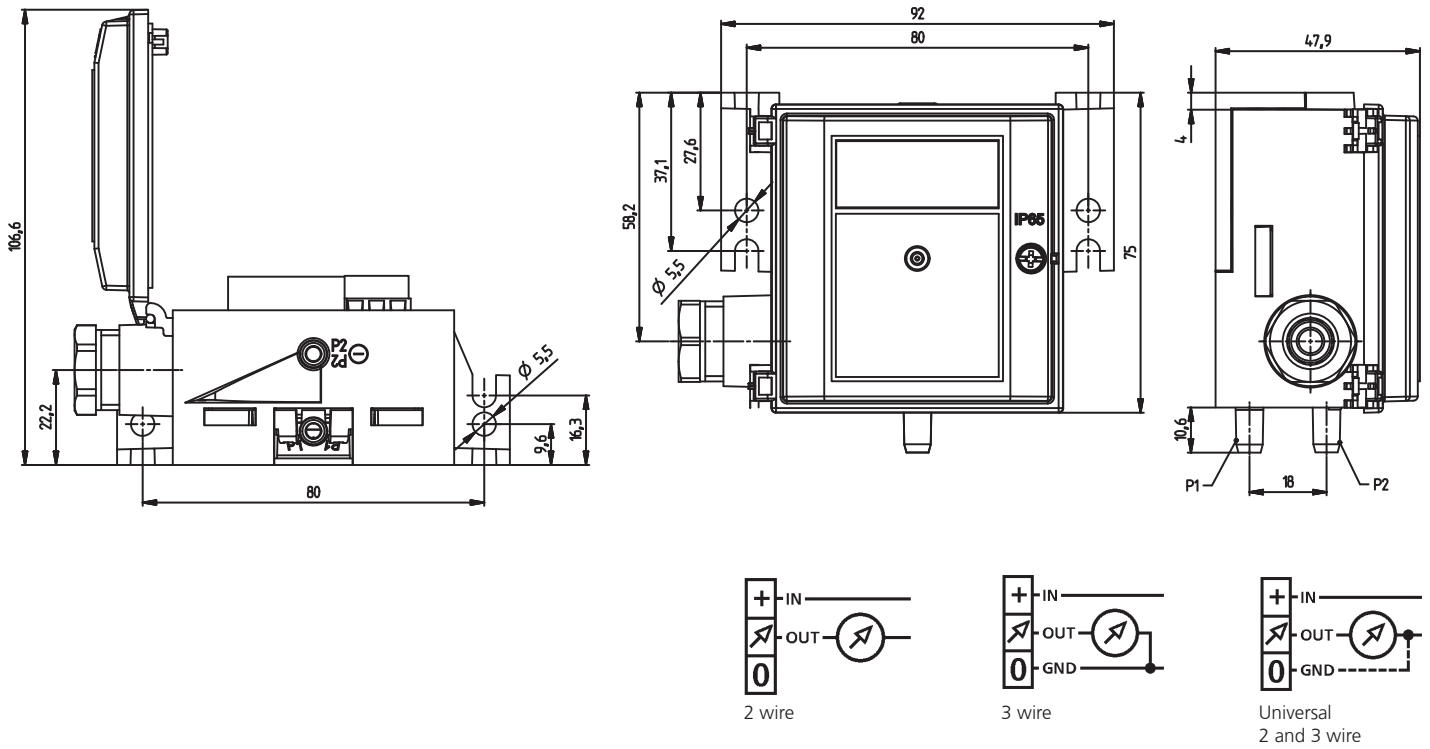
	Order number
Connection kit for vent duct (metal), 90° angled including tube 2 m long (Fig. 1)	104312
Connection kit for vent duct (plastic), straight including tube 2 m long (Fig. 2)	100064
DIN-rail mounting adaptor (Fig. 3)	112854
Module MODBUS	117305
Calibration certificate	104551

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

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

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

## Dimensions in mm / Electrical connections



## Accessories

Fig. 1

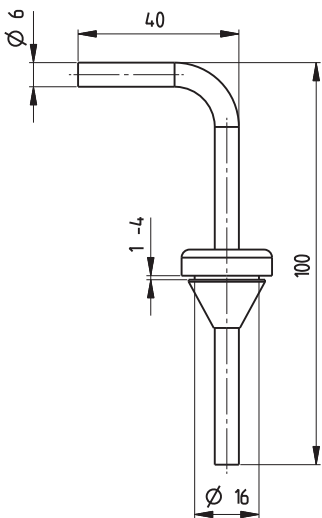


Fig. 2

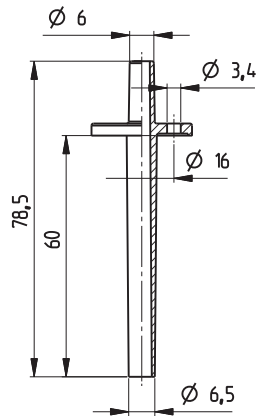


Fig. 3

