



Differential pressure transmitter



Relative and differential pressure transmitter - Type 699

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.

Pressure range
-1 ... 1 mbar /
0 ... 0.3 – 50 mbar

- + 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
- + Fast, easy mounting. Housing incorporates integral bracket for wall or ceiling mounting

Technical overview

Pressure range

Relative and differential

-1 ... 1 mbar / 0 ... 0.3 - 50 mbar

Operating conditions

Medium

Air and neutral gases

Temperature

Medium / ambient
Storage
No condensation

0 ... +70 °C
-10 ... +70 °C

Tolerable overload on one side

Application at over pressure range
Application at under pressure range

≤ 3 mbar
 > 3 mbar
 ≤ 3 mbar
 > 3 mbar
ambient temperature
70 °C

P1 = 50 mbar P2 = 4 mbar
P1 = 100 mbar P2 = 4 mbar
P1 = -4 mbar P2 = -50 mbar
P1 = -4 mbar P2 = -100 mbar
2 x overload
1.5 x overload

Rupture pressure

Materials in contact with medium

Sensor Ceramic Al_2O_3 (96%)
Diaphragm Silicone
Housing Polycarbonat PC

Electrical overview

	Output ¹⁾	Power supply ¹⁾	Load	Current consumption ²⁾
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
	0 ... 20 mA	13.5 ... 33 VDC / 24 VAC ±15%	< 500 Ohm	< 30 mA
3 wire	4 ... 20 mA	13.5 ... 33 VDC / 24 VAC ±15%	< 500 Ohm	< 30 mA
	0 ... 5 V ³⁾	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
At additional backlight LCD-Display 30 mA current consumption
Module MODBUS 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 mm²
Cable gland with built-in strain relief PG11

Pressure connection

Connection pipe $\varnothing 6.2$ mm

Mounting instructions

Installation arrangement Recommendation: Vertical, (Factory calibration) 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

¹⁾ Adjustable by DIP-Switch

²⁾ At nominal pressure

³⁾ Additional adjustable by software (with LCD-Display only)

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 therm stability acc. to DIN EN 60770	% fs	±1.0	±1.0	±1.0	±1.0	±1.0
TC zero point ¹⁾	typ. % fs/10K	±0.2	±0.2	±0.2	±0.1	±0.1
TC zero point ¹⁾	max. % fs/10K	±1.0	±1.0	±0.5	±0.4	±0.4
TC sensitivity ¹⁾	typ. % fs/10K	±0.3	±0.3	±0.2	±0.1	±0.1
TC sensitivity ¹⁾	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

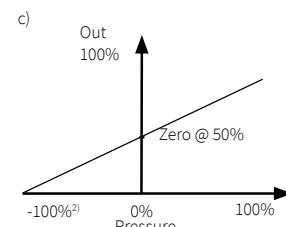
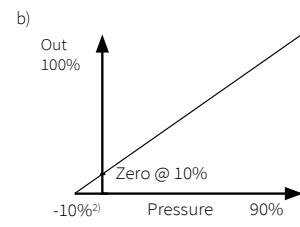
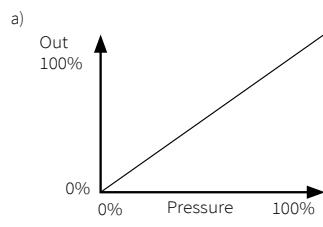
1 2 3 4 5 6 7 8 9 10

Order code selection table

699. X X X X X X X X X X X X

Pre-adjustment	max. range	9									
	middle range (factory setting)	B									
	min. range (factory setting)	C									
Signal range selectable	Pressure range of 0 % to 100% fs		1								
	Pressure range of -10 % to 90% fs		2								
	Pressure range of -100 % to 100% fs		3								
Pressure range selectable	mbar (hPa)	Pa	mmWS	inH₂O	under pressure max.						
	0...0.3/0.5	30/50	3/5	0.1/0.2	-50 Pa	0					
	0 ... 0.3/0.5/1	30/50/100	3/5/10	0.1/0.2/0.3	-100 Pa	1					
	0 ... 0.5/1/3	50/100/300	5/10/30	0.3/0.5/1	-50 Pa	2					
	0 ... 1/3/5	100/300/500	10/30/50	0.5/1/2	-50 Pa	3					
	0 ... 3/5/10	300/500/1000	30/50/100	1/2/3	-50 Pa	4					
	0 ... 5/10/16	500/1000/1600	50/100/160	2/3/5	-50 Pa	5					
	0 ... 10/16/25	1000/1600/2500	100/160/250	3/5/10	-50 Pa	6					
	0 ... 16/25/50	1600/2500/5000	160/250/500	5/10/20	-50 Pa	7					
	mbar					0					
Pressure unit	hPa					4					
	Pa					2					
	kPa					5					
	mmWS					3					
Output signal / adjustment	inH ₂ O					6					
	Linear	without Filter	dual DIP-Switch			1	0				
		with Filter (transposable)	tenfold DIP-Switch			2					
	Square root extracted	without Filter	dual DIP-Switch			4	0				
Output / power supply	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					
Option	8.0 ... 33 VDC	(2 wire)				5					
	Output signal complimentary selectable, at delivery no pre-adjustment					9	2	6			
	without display								0		
	with display in pressure unit chosen above								2, 3	1	
Pressure connection / Pressure orifices	with display in % fs								2, 3	2	
	with module MODBUS								2, 3	1	3
	without pressure orifice										1
	Connection pipe Ø 6.2 mm	pressure orifice on P1									2
Accessories / Connection Kit	pressure orifice on P2										3
	pressure orifice on P1 and P2										4
	without										0
	IP 54	with connection kit (metal), 90° angled including tube 2 m long (Fig. 1)									1
Pressure range variation (optional)	with connection kit (plastic), straight including tube 2 m long (Fig. 2)										2
	without										3
	IP 65	with connection kit (metal), 90° angled including tube 2 m long (Fig. 1)									4
	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)											W

Range of characteristic line



¹⁾ TC = Temperature coefficient

²⁾ under pressure max. acc. order code selection table = -50 Pa/ 100 Pa

Depending on the version parameters are adjustable by customer

Version
Dual DIP-Switch

Variable parameters
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 (supplied loose)

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

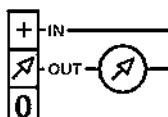
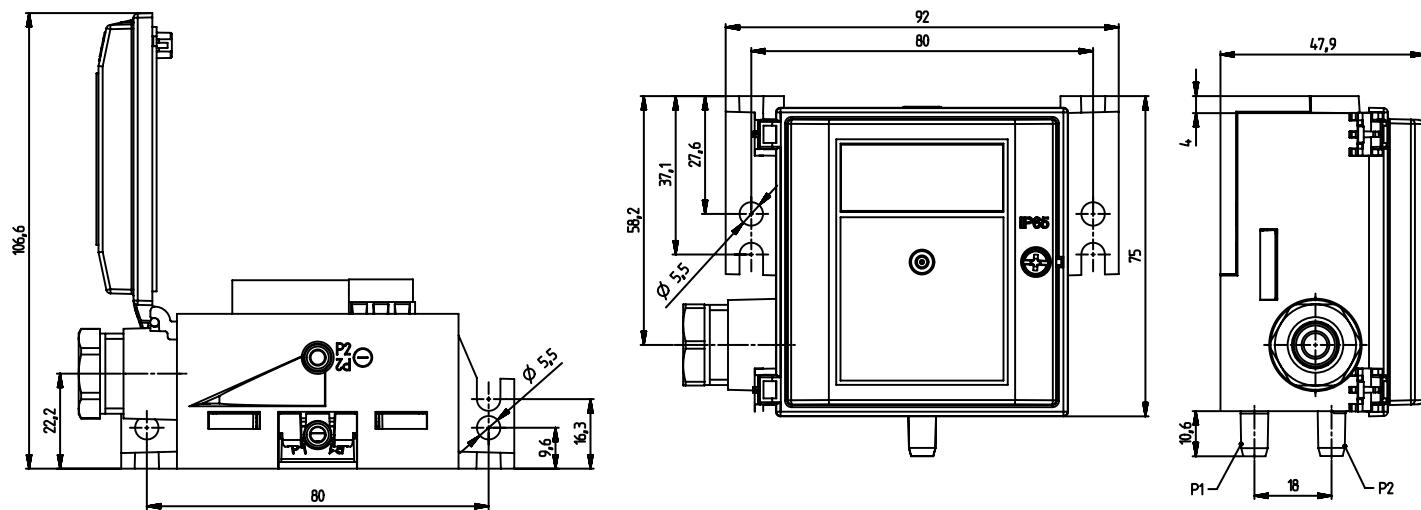
Module MODBUS

117305

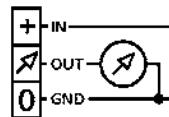
Calibration certificate

104551

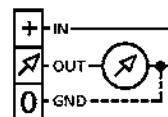
Dimensions in mm / Electrical connections



2 wire



3 wire



Universal
2 and 3 wire

Fig. 1

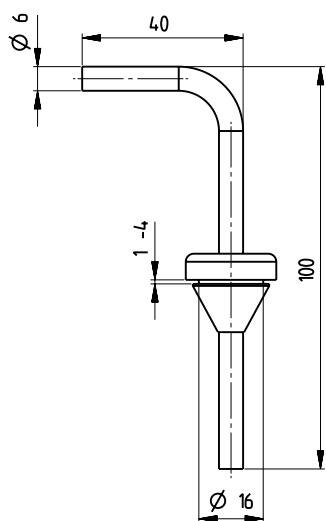


Fig. 2

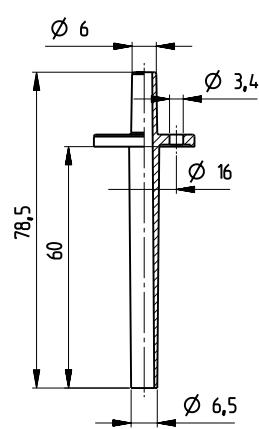
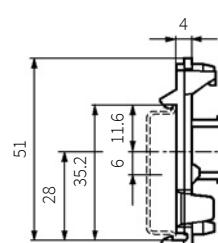
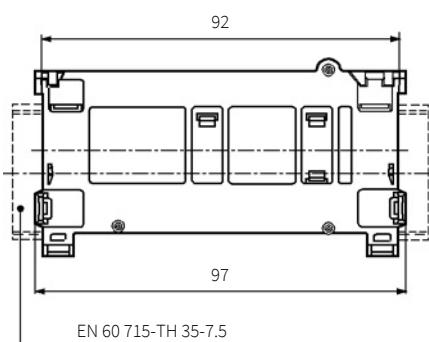


Fig. 3



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