



Differential pressure transmitter

# Huba Control

## 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

<b>Pressure range</b>		Relative and differential		-1 ... 1 mbar / 0 ... 0.3 - 50 mbar	
<b>Operating conditions</b>		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 = 50 mbar P2 = 4 mbar	
		Application at under pressure range		P1 = 100 mbar P2 = 4 mbar	
		≤ 3 mbar		P1 = -4 mbar P2 = -50 mbar	
		> 3 mbar		P1 = -4 mbar P2 = -100 mbar	
		≤ 3 mbar		2 x overload	
		> 3 mbar		1.5 x overload	
Rupture pressure		ambient temperature			
		70 °C			
<b>Materials in contact with medium</b>		Sensor		Ceramic Al <sub>2</sub> O <sub>3</sub> (96%)	
		Diaphragm		Silicone	
		Housing		Polycarbonat PC	
<b>Electrical overview</b>		Output <sup>1)</sup>		Power supply <sup>1)</sup>	
2 wire		4 ... 20 mA		8.0 ... 33 VDC	
		0 ... 10 V		13.5 ... 33 VDC / 24 VAC ±15% > 10 kOhm	
		0 ... 20 mA		13.5 ... 33 VDC / 24 VAC ±15% < 500 Ohm	
3 wire		4 ... 20 mA		13.5 ... 33 VDC / 24 VAC ±15% < 500 Ohm	
		0 ... 5 V <sup>3)</sup>		6.5 ... 33 VDC / 24 VAC ±15% > 10 kOhm	
Filter				Load	
Polarity reversal protection		Short circuit proof and protected against polarity reversal. Each connection is protected against crossover up to max. supply voltage.		< $\frac{\text{supply voltage} - 5V}{100 \Omega}$ [Ohm]	
				Current consumption <sup>2)</sup>	
				< 20 mA	
				Response time switchable by	
				off / 0.2s / 1s / 5s / 20s	
<b>Dynamic response</b>		Response time		< 20 ms	
		Load cycle		< 10 Hz	
<b>Protection standard</b>		Without cover		IP 00	
		With cover		IP 54	
				IP 65	
<b>Display</b>		LCD Display		Double spaced	
		Module MODBUS		per 8 digit alphanumeric	
				At additional backlight LCD-Display 30 mA current consumption	
				RTU RS-485	
<b>Ranges of adjustment</b>		The zero point is adjustable by reset button.			
		The Full scale is adjustable by DIP-Switch and additional by the turbopoti.			
<b>Adjustability</b>		Optional version with self configurable parameters (see order code selection table)			
<b>Electrical connection</b>		Screw terminals for wire and stranded conductors up to 1.5 mm <sup>2</sup>			
		Cable gland with built-in strain relief PG11			
<b>Pressure connection</b>		Connection pipe		Ø 6.2 mm	
<b>Mounting instructions</b>		Installation arrangement		Recommendation: Vertical, (Factory calibration) with pressure connections downwards	
		Mounting		Mounting bracket (integrated in case)	
<b>Tests / Admissions</b>		UL			
		Electromagnetic compatibility		CE-conformity acc. EN 61326-2-3	
<b>Weight</b>		Without display		~ 90 g	
		With display		~ 100 g	
<b>Packaging</b>		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

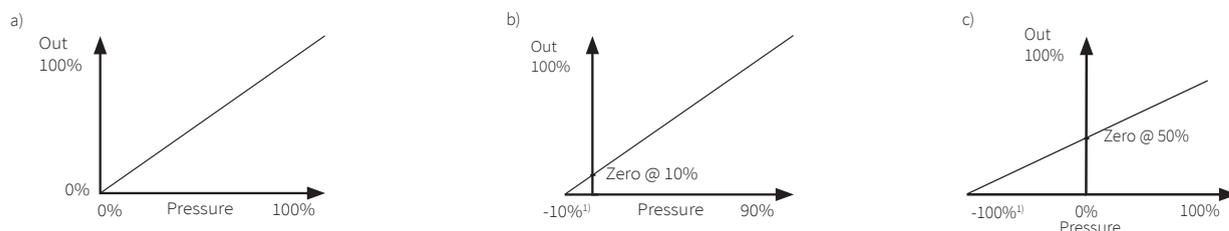
<sup>1)</sup> Adjustable by DIP-Switch  
<sup>4)</sup> TC = Temperature coefficient

<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	
<b>Pre-adjustment</b>	max. range					9											
	middle range (factory setting)					B											
	min. range (factory setting)					C											
<b>Signal range selectable</b>	Pressure range of 0% to 100% fs					1											
	Pressure range of -10% to 90% fs					2											
	Pressure range of -100% to 100% fs					3											
<b>Pressure range selectable</b>	<b>mbar (hPa)</b>	<b>Pa</b>	<b>mmWS</b>	<b>inH<sub>2</sub>O</b>	<b>under pressure max.</b>												
	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												
<b>Pressure unit</b>	mbar									0							
	hPa									4							
	Pa									2							
	kPa									5							
	mmWS									3							
	inH <sub>2</sub> O									6							
<b>Output signal / adjustment</b>	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					
		with Filter (transposable)		tenfold DIP-Switch						3							
<b>Output / power supply</b>	0 ... 10V	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					
		8.0 ... 33 VDC		(2 wire)								5					
Output signal complimentary selectable, at delivery no pre-adjustment						9				2	6						
<b>Option</b>	without display														0		
	with display in pressure unit chosen above														1		
	with display in % fs														2		
	with module MODBUS									2,3	1	3					
<b>Pressure connection / Pressure orifices</b>	Connection pipe Ø 6.2 mm		without pressure orifice												1		
			pressure orifice on P1												2		
			pressure orifice on P2													3	
			pressure orifice on P1 and P2													4	
<b>Accessories / Connection Kit</b>	IP 54	without														0	
		with connection kit (metal), 90° angled including tube 2 m long (Fig. 1)														1	
		with connection kit (plastic), straight including tube 2 m long (Fig. 2)														2	
	IP 65	without															3
		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		
<b>Pressure range variation (optional)</b>	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>2)</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> under pressure max. acc. order code selection table = -50 Pa/ 100 Pa

<sup>2)</sup> Accessories supplied loose

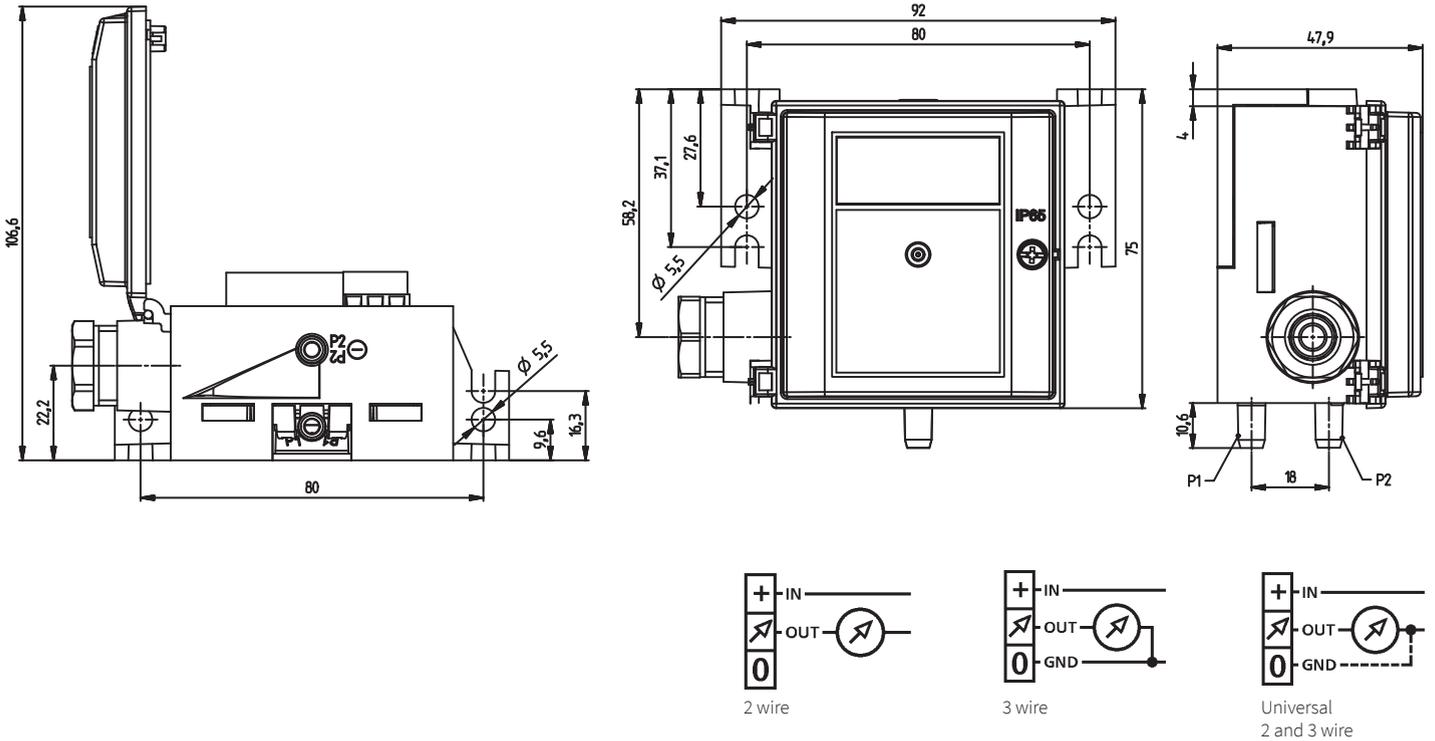
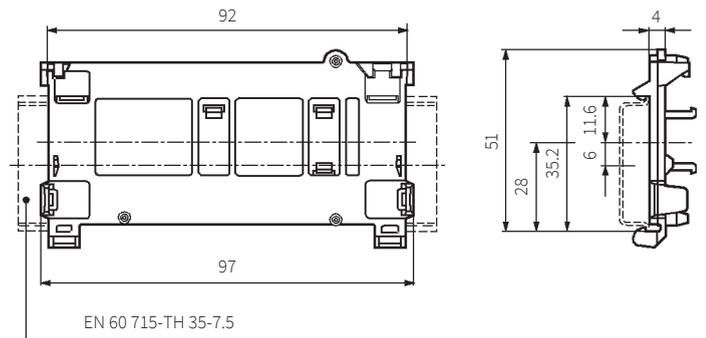
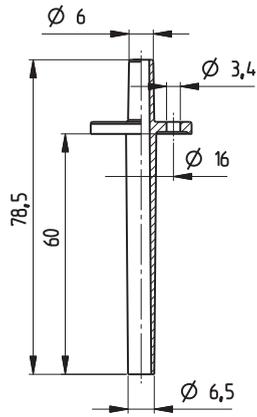
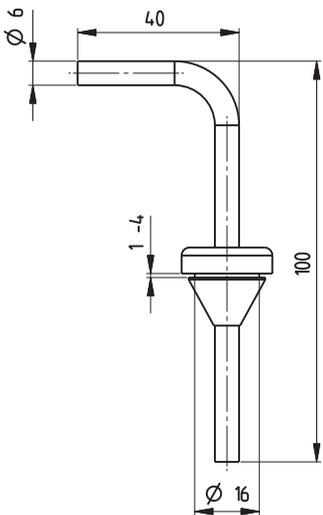


Fig. 1

Fig. 2

Fig. 3



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