

## Pressure, vacuum and differential pressure transmitter 0 to 50 mbar

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EDITION 07/2001

HUBA-REGISTERED TRADE MARK

# Huba Control

FOR FINE PRESSURE AND FLOW MEASUREMENT



TC sensitivity  
 < +/- 0.02 % fs/°C  
 (linear and root-extracted)  
 For 1 mbar versions, multiply values  
 by a factor of 2.5.

### Dynamic response / Resolution

Suitable for dynamic measurements.  
 Response time < 10 ms  
 Load change < 10 Hz  
 Resolution:  
 1 mbar fs version:  
 < 0.2 % fs  
 3 to 50 mbar fs versions:  
 < 0.1 % fs

### Pressure connections

Connection pipe Ø 6.2 mm

### Weight

100 grams with display.  
 90 grams without display.

### Installation arrangement

Vertical (factory calibrated),  
 Pressure connections downwards.  
 Effect of orientation, see facing  
 page.

### Output signal and power supply

See order code selection table.  
 Short circuit proof and protected  
 against polarity reversal. Each  
 connection against other with max.  
 +/- supply voltage.  
**Electromagnetic compatibility: CE  
 conformity to EC directive 89/336  
 EEC (EMC) by application of  
 harmonized standards  
 IEC 61000-6-3 und EN 61000-6-2.**

### Load impedance

3-wire cable:  
 0 ... 10 V > 10 kOhm  
 0 ... 20 mA < 400 Ohm  
 4 ... 20 mA < 400 Ohm  
 2-wire cable:  
 4 ... 20 mA <  $\frac{\text{supply voltage} - 11 \text{ V}}{0.02 \text{ A}}$  Ohm

### Current consumption

3-wire cable:  
 0 ... 10 V < 10 mA  
 0 ... 20 mA < 30 mA  
 4 ... 20 mA < 30 mA  
 2-wire cable: 4 – 20 mA

### Electrical connection/Protection standard

Screw terminals for wire and  
 stranded conductors up to 1.5 mm<sup>2</sup>.  
 Cable gland with built-in strain  
 relief Pg 11.  
 IP 00 without cover  
 IP 54 with cover

### Display

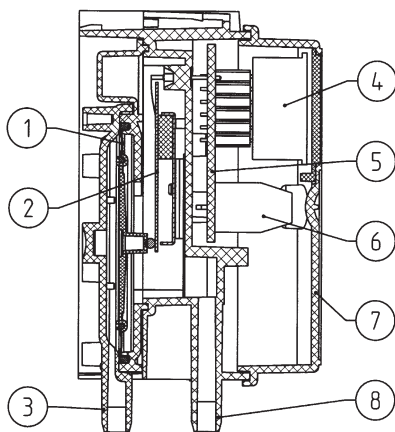
Liquid-cristal, 3 1/2 digit.

### Accessories

See order code selection table.

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The differential pressure transmitters of the Type 694 series incorporate a proved ceramic fulcrum lever technology. They deliver calibrated, temperature-compensated sensor signals, available as standard voltage or current outputs. They are ideal for registering low air flow in air conditioning systems and for the measurement of fine pressures in environmental, laboratory and clean-room applications (air and non-corrosive gases).



### Legend to cross-section drawing

1 Diaphragm 2 Sensor element  
 3 P1 higher pressure/lower vacuum  
 4 Display 5 Amplifier electronics  
 6 Connection terminals 7 Cover  
 8 P2 lower pressure/higher vacuum

### The distinct advantages

- Compact construction
- Fast, easy mounting.  
 Housing incorporates integral bracket for wall or ceiling mounting. Snap-on cover with a single screw
- Available with our without LCD display
- Available with or without root-extracted output
- Attractive price/performance ratio

See order code selection table.

See order code selection table.

500 mbar

Linear output:  
 Zero point < +/- 0.7 % fs  
 (Type 0 – 1 mbar < +/- 1.0 % fs)  
 Linearity inclusive  
 hysteresis < +/- 1.0 % fs  
 (Type 0 – 1 mbar < +/- 2.0 % fs)

Total of linearity, hysteresis, repeatability and zero point:  
 from - 50 to + 50 Pa  
 < ± 3 Pa (3% FS)

Square-root extracted output:  
 Absolute error  
 (from 2 ... 100 % pressure)  
 $\leq \pm 0.3 \sqrt{\frac{\text{PFS}}{P}} + 1.5$  [% of full scale]  
 Type 0 – 1 mbar:  
 $\leq \pm 0.6 \sqrt{\frac{\text{PFS}}{P}} + 1.5$  [% of full scale]

Fire classification to UL94  
 Cover: HB  
 Pressure housing complete: V-2

Two-component silicone LSR

Medium and ambient temperature  
 0 °C to +70 °C  
 Storage temperature -10 to +70 °C  
 TC zero point with linear output:  
 < +/- 0.04 % fs/°C  
 with root-extracted output:  
 (from 2 ... 100 % pressure)  
 $< \pm 0.06 \sqrt{\frac{\text{PFS}}{P}}$  in % fs/°C



- A – Potentiometer for scale end value
- B – Housing with built-in fixing brackets
- C – Pg gland with cable strain relief
- D – Self-retaining screw in cover
- E – Angled surface for easy cable entry
- F – Robust terminal strip suitable for No. 2 screwdriver
- G – Snap-removable cover
- H – Front-plate label with quick guide to functions

Versions

**Order code selection table**

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**694**

**9 X X X X X X X X**

	mbar	p max.	Pa	<sup>1)</sup>	p max.	InchH <sub>2</sub> O	p max.											
<b>Pressure ranges<sup>2)</sup></b>	-0.5/+ 0.5	(+/-50)	-50/+50		+5 000	-0.2/+0.2	(+/-20)		3	1								
<b>(Overload)</b>	0 ... 1	(50)	0 ... 100		5 000	0 ... 0.4	(20)		1	1								
	0 ... 3	(50)	0 ... 300		5 000	0 ... 1.2	(20)		1	2								
	0 ... 5	(100)	0 ... 500		10 000	0 ... 2	(40)		1	3								
	0 ... 10	(100)	0 ... 100 (x10=Pa)		10 000	0 ... 4	(40)		1	4								
	0 ... 16	(100)	0 ... 160 (x10=Pa)		10 000	0 ... 6.4	(40)		1	5								
	0 ... 25	(200)	0 ... 250 (x10=Pa)		20 000	0 ... 10	(80)		1	6								
	0 ... 50	(200)	0 ... 500 (x10=Pa)		20 000	0 ... 20	(80)		1	7								
<b>Unit of pressure shown</b>	mbar									0								
	InchH <sub>2</sub> O									1								
	Pa									2								
<b>Output signal/</b>	Output signal/LCD-Display		Full scale adjustable with potentiometer by customer															
<b>Full scale adjustment</b>	linear		No								1							
	linear		Yes (at P = 40 ... 100%)								2							
	with square root extraction		No								4							
	with square root extraction		Yes (at P = 40 ... 100%)								3							
<b>Outputs<sup>3)</sup> and power supply</b>	<b>OUT</b>		<b>IN</b>															
	0 ... 10	V 3-wire cable	13.5 ... 33	VDC / 24 VAC +/-15 %								1						
	0 ... 20	mA 3-wire cable	13.5 ... 33	VDC / 24 VAC +/-15 %								3						
	4 ... 20	mA 3-wire cable	13.5 ... 33	VDC / 24 VAC +/-15 %								4						
	4 ... 20	mA 2-wire cable	11 ... 33	VDC								5						
<b>Δp display</b>	Without Δp display																0	
	Δp display in pressure unit (not for adjustable/square root extraction versions)																1	
	Δp display as % fs																2	
<b>Pressure connections/ pressure orifices</b>	Connection pipe Ø 6.2 mm		without pressure orifices														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	
<b>Connection kit with tube (2 m)</b>	Without connection kit																0	
	With connection kit		as Fig. 1 in individual packing														1	
	With connection kit		as Fig. 2 in individual packing														2	

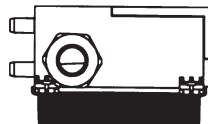
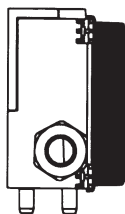
**Accessories** Connection set for vent duct  
Fig. 1 tube 2 m long  
Fig. 2 tube 2 m long

1 0 4 3 1 2  
1 0 0 0 6 4

**Orientation** Recommended:  
Vertical, with pressure connections downwards (factory calibration). (± types forcible)

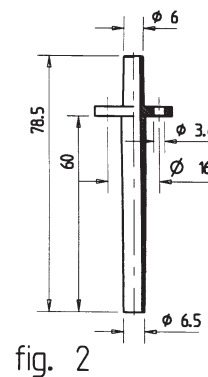
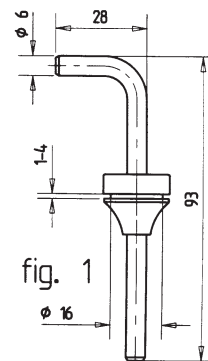
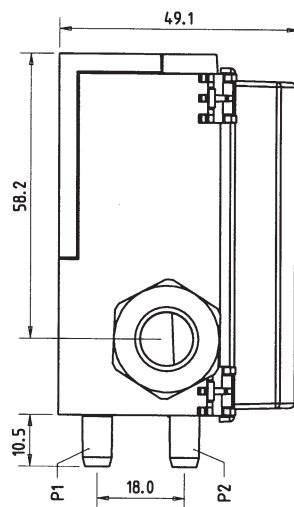
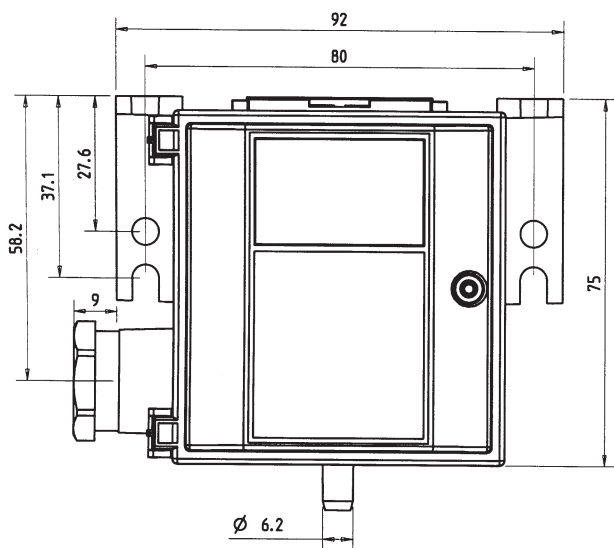
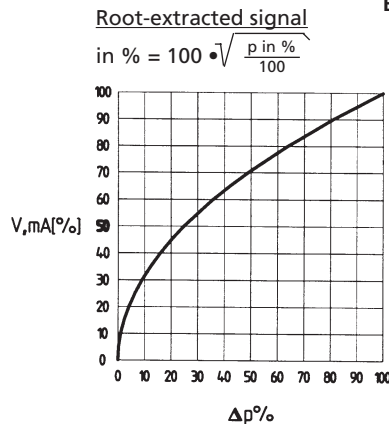
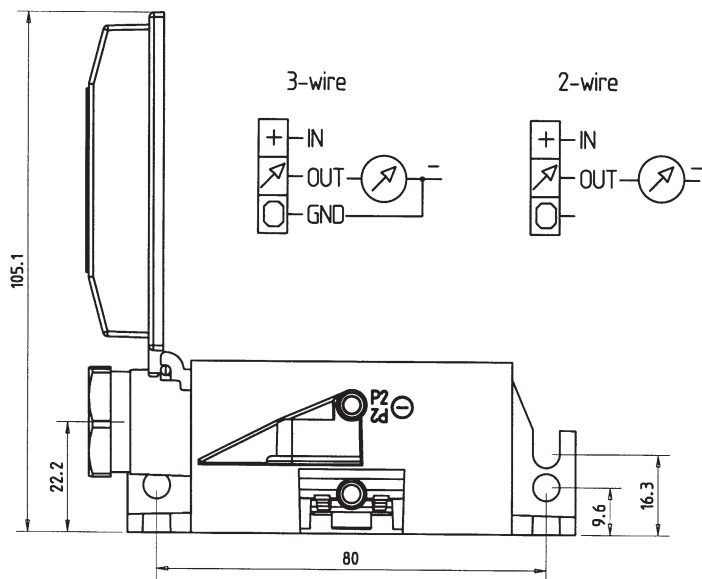
Horizontal with cover downwards. Signal approx. 10 Pa higher than actual pressure.

Horizontal with cover upwards. Signal approximately 10 Pa below actual pressure.



<sup>1)</sup> Pascal value displayed in LCD.  
<sup>2)</sup> Other pressure ranges on request.  
<sup>3)</sup> Other outputs on request.





**Electromagnetic compatibility:**

CE conformity to EC directive 89/336 EEC (EMC) by application of harmonized standards EN 50081-1 und EN 50082-2.

**Type of interference/Interference susceptibility** Test standard

Type of interference/Interference susceptibility	Test standard	Effects
Electrostatic discharge ESD	EN 61000-4-2 8 kV air discharge / 4 kV contact discharge	No failure
High-frequency electromagnetic radiation (HF)	EN 61000-4-3 0.15 ... 80 MHz, 10 V/m	No effect
Fast transients (burst)	EN 61000-4-4 $\pm 2$ kV	No failure
Surge	EN 61000-4-5 Line-Line: $\pm 1$ kV Line-Ground: $\pm 2$ kV	No failure
Conducted HF interference	EN 61000-4-6 80 ... 1000 MHz, 10 $V_{RMS}$	No effect

**Type of interference/Emitted interference** Test standard

Type of interference/Emitted interference	Test standard	Effects
Conducted interference	EN 55022 0.15 ... 30 MHz	None
Radiation from housing	EN 55022 30 ... 1000 MHz	None

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