

Pressure, vacuum and
differential pressure
transmitter
0 to 50 mbar



EDITION 07/2001

HUBA-REGISTERED TRADE MARK

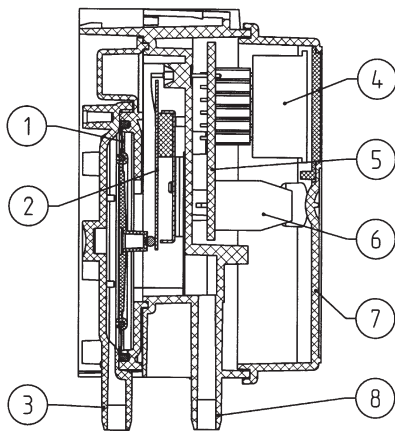
Huba Control

FOR FINE PRESSURE AND FLOW MEASUREMENT



EDITION 07/2001

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 or without LCD display
- Available with or without root-extracted output
- Attractive price/performance ratio

See order code selection table.

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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)

$$\leq \pm 0.3 \sqrt{\frac{p_{FS}}{p}} + 1.5 \text{ [% of full scale]}$$

Type 0 – 1 mbar:

$$\leq \pm 0.6 \sqrt{\frac{p_{FS}}{p}} + 1.5 \text{ [% of full scale]}$$

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:

$$< \pm 0.04 \text{ % fs/}^\circ\text{C}$$

with root-extracted output:

(from 2 ... 100 % pressure)

$$< \pm 0.06 \sqrt{\frac{p_{FS}}{p}} \text{ in % fs/}^\circ\text{C}$$

TC sensitivity

$$< \pm 0.02 \text{ % fs/}^\circ\text{C}$$

(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:

$$4 \dots 20 \text{ mA} < \frac{\text{supply voltage} - 11 \text{ V}}{0.02 \text{ A}} \text{ Ohm}$$

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 mm². Cable gland with built-in strain relief Pg 11.

IP 00 without cover

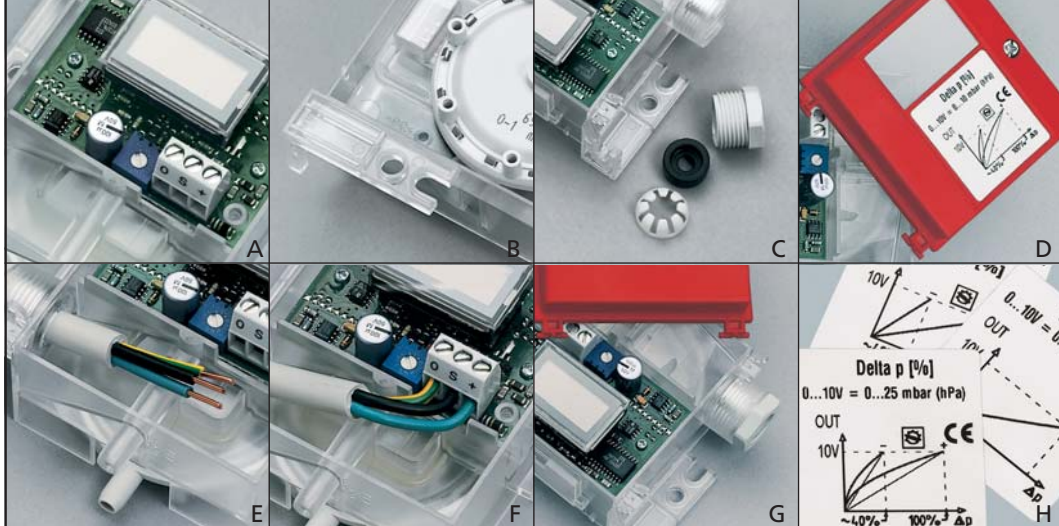
IP 54 with cover

Display

Liquid-cristal, 3 1/2 digit.

Accessories

See order code selection table.



- 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

EDITION 03/2004

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9 X X X X X X X X

Pressure ranges ²⁾	mbar	p max.	Pa	¹⁾	p max.	InchH ₂ O	p max.										
	-0.5/+ 0.5	(+/-50)	-50/+50		+5 000	-0.2/+0.2	(+/-20)*		3	1							
(Overload)	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							
* no square root extraction versions																	
Unit of pressure shown	mbar																0
	InchH ₂ O																1
	Pa																2
Output signal/	Output signal/LCD-Display			Full scale adjustable with potentiometer by customer													
Full scale adjustment	linear			No													
	linear			Yes (at P = 40 ... 100%)													
	with square root extraction			No													
	with square root extraction			Yes (at P = 40 ... 100%)													
Outputs ³⁾ and power supply	OUT			IN													
	0 ... 10	V	3-wire cable	13.5 ... 33 VDC / 24 VAC +/-15 %													
	0 ... 20	mA	3-wire cable	13.5 ... 33 VDC / 24 VAC +/-15 %													
	4 ... 20	mA	3-wire cable	13.5 ... 33 VDC / 24 VAC +/-15 %													
	4 ... 20	mA	2-wire cable	11 ... 33 VDC													
Δp display	Without Δp display																
	Δp display in pressure unit (not for adjustable/square root extraction versions)																
	Δp display as % fs																
Pressure connections/ pressure orifices	Connection pipe Ø 6.2 mm			without pressure orifices													
	Connection pipe Ø 6.2 mm			pressure orifice on P1													
	Connection pipe Ø 6.2 mm			pressure orifice on P2													
	Connection pipe Ø 6.2 mm			pressure orifice on P1 and P2													
Connection kit with tube (2 m)	Without connection kit																
	With connection kit			as Fig. 1 in individual packing													
	With connection kit			as Fig. 2 in individual packing													

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

1 0 4 3 1 2

Orientation

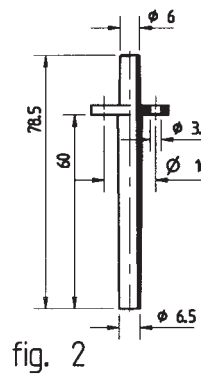
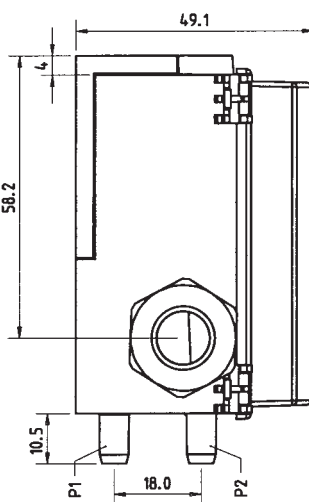
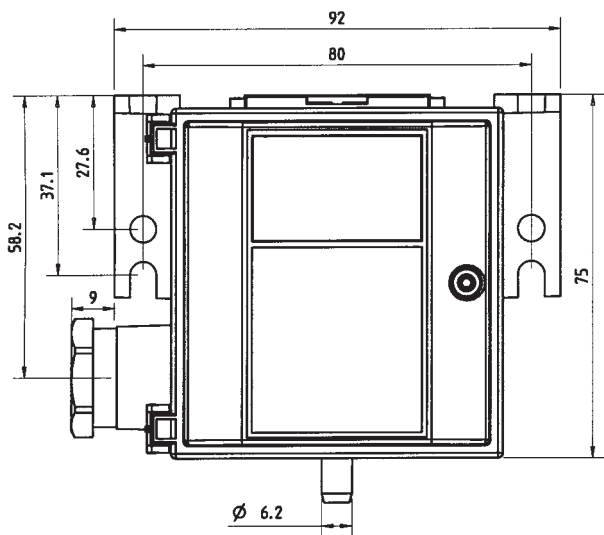
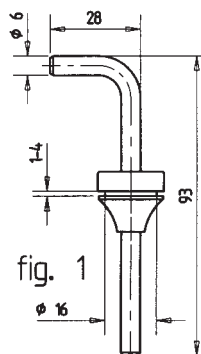
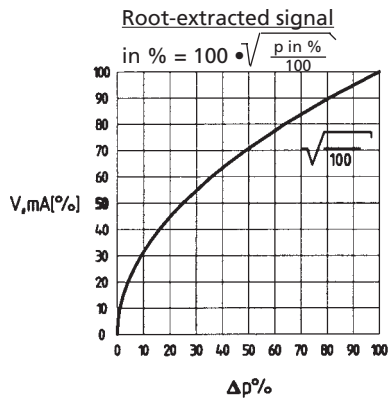
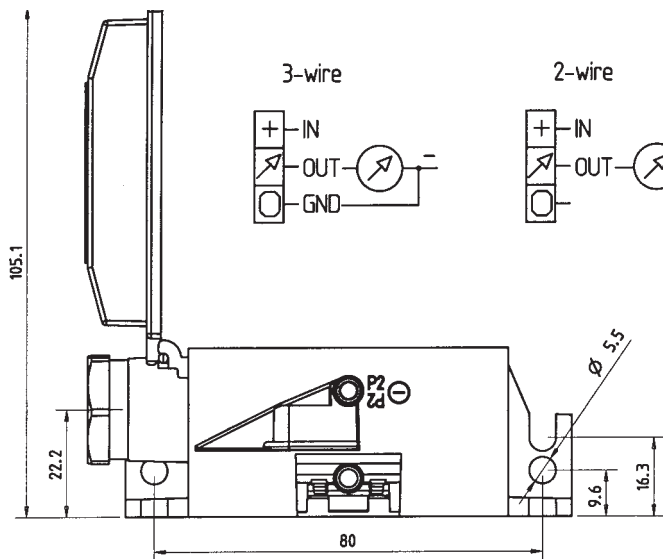
Recommended: Vertical, with pressure connections downwards (factory calibration). (± types forcible)

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

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



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



Electromagnetic compatibility:

CE conformity to EC directive 89/336 EEC (EMC) by application of harmonized standards EN 61000-6-2 und EN 61000-6-3.

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 / 4 kV contact	No effect
High-frequency electromagnetic radiation (HF)	EN 61000-4-3 10 V/m, 0.15 ... 80 MHz	No effect
Fast transients (burst)	EN 61000-4-4 ± 4 kV	No effect
Surge	EN 61000-4-5 Line-Line: ± 1 kV Line-Ground: ± 2 kV	No failure
Conducted HF interference	EN 61000-4-6 10 V, 0.15 ... 80 MHz	No effect
Magnetic fields	EN 61000-4-8 30 A/m, 50 Hz	No effect

Interference emit

Interference emit	Test standard	Effects
Conducted interference	EN 55022 (CISPR 22) 0.15...30 MHz	No effect
Radiation from housing	30...1000 MHz, 10 meters	No effect

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