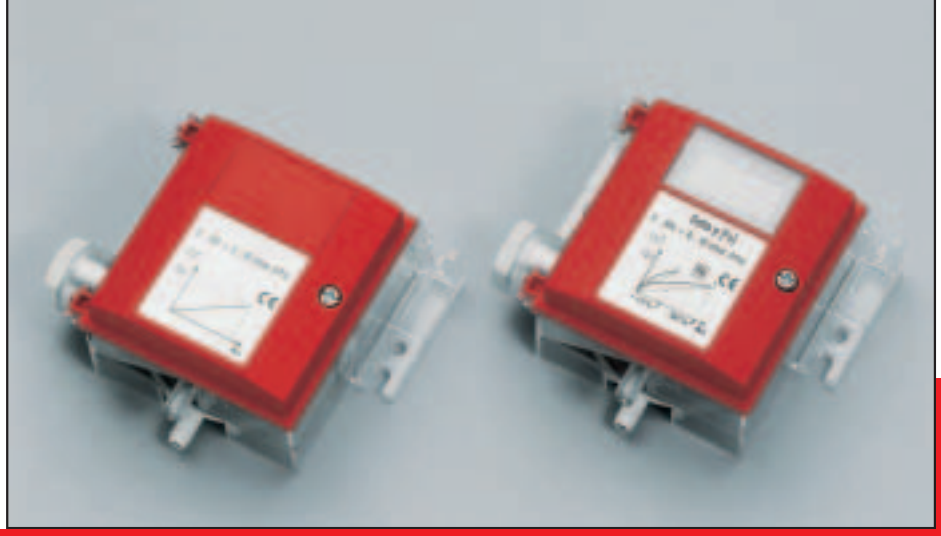
694

Pressure, vacuum and differential pressure transmitter 0 to 50 mbar

EDITION 07/2001

Huba Control

FOR FINE PRESSURE AND FLOW MEASUREMENT



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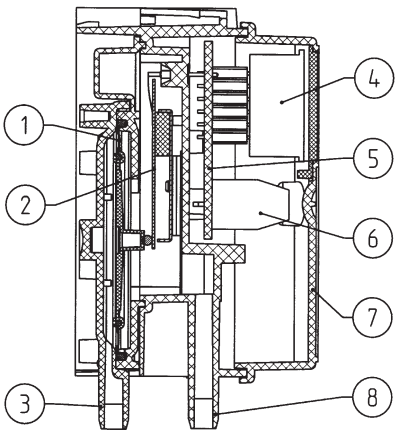
The differential pressure transmitters of the Type 694 series incorporate a proved ceramic fulcrum lever technology. They deliver calibrated, temperature-compensated sensor signals, available as standard voltage or current outputs. They are ideal for registering low air flow in air conditioning systems 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.

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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)

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

Type 0 – 1 mbar:

$\leq +/- 0.6 \sqrt{\frac{p_{FS}}{p}} + 1.5$ [% 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)

$< +/- 0.06 \sqrt{\frac{p_{FS}}{p}}$ in % fs/°C

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 ∅ 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 $< \frac{\text{supply voltage} - 11\ V}{0.02\ A}$ 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

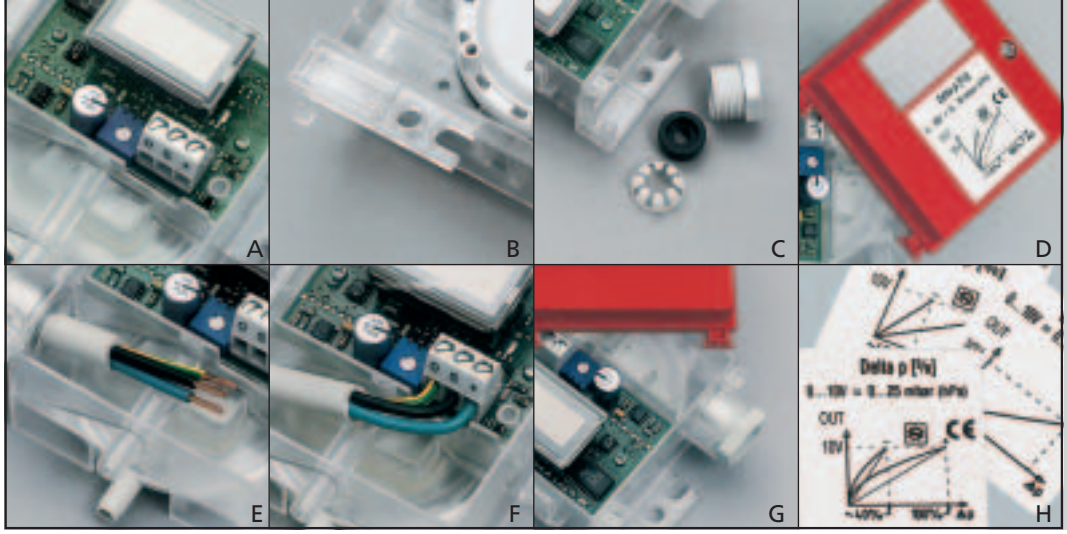
Screw terminals for wire and stranded conductors up to 1.5 mm².
Cable gland with built-in strain relief Pg 11.
IP 00 without cover
IP 54 with cover

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

Order code selection table

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694 . | **9** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |

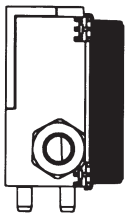
	mbar	p max.	**Pa** [1]	p max.	**InchH2O**	p max.									
Pressure ranges[2]	-0.5/+ 0.5	(+/-50)	-50/+50	+5 000	-0.2/+0.2	(+/-20)			3	1					
	0 ... 1	(50)	0 ... 100	5 000	0 ... 0.4	(20)			1	1					
(Overload)	0 ... 3	(50)	0 ... 300	5 000	0 ... 1.2	(20)			1	2					
	0 ... 5	(100)	0 ... 500	10 000	0 ... 2	(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					

Unit of pressure shown	mbar				0					
	InchH2O				1					
	Pa				2					
Output signal/ Full scale adjustment	Output signal/LCD-Display	Full scale adjustable with potentiometer by custromer								
	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				
Outputs[3] **and power supply**	**OUT**			**IN**				1		
	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		
Δp display	Without Δp display								0	
	Δp display in pressure unit (not for adjustable/square root extraction versions)								1	
	Δp display as % fs								2	
Pressure connections/ pressure orifices	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
Connection kit with tube (2 m)	Without connection kit									0
	With connection kit	as Fig. 1 in individual packing								1
	With connection kit	as Fig. 2 in individual packing								2

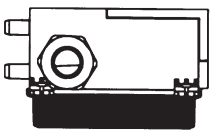
Accessories	Connection set for vent duct Fig. 1 tube 2 m long Fig. 2 tube 2 m long	1 0 4 3 1 2 1 0 0 0 6 4

Orientation

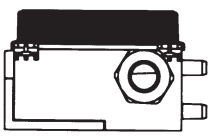
Recommended:
Vertical, with pressure connections downwards (factory calibration).
(± types forcible)



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



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



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

Dimensions in mm / Electrical connections / Square root function

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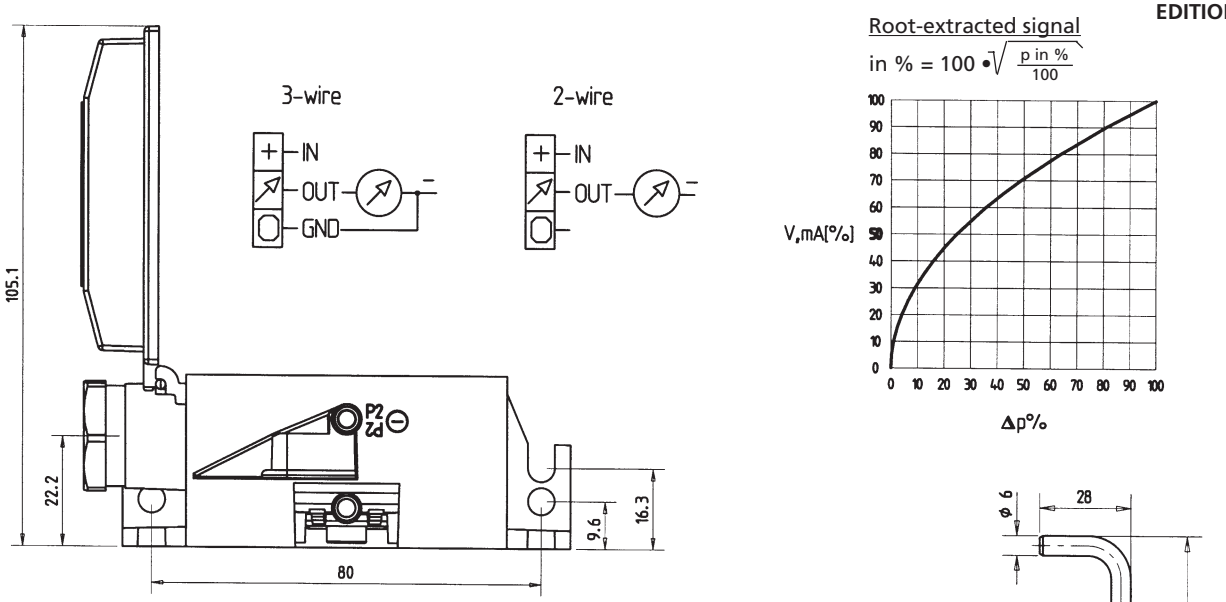


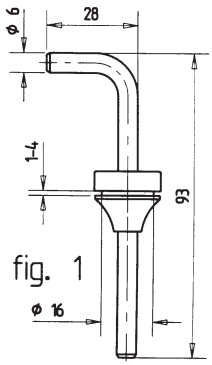
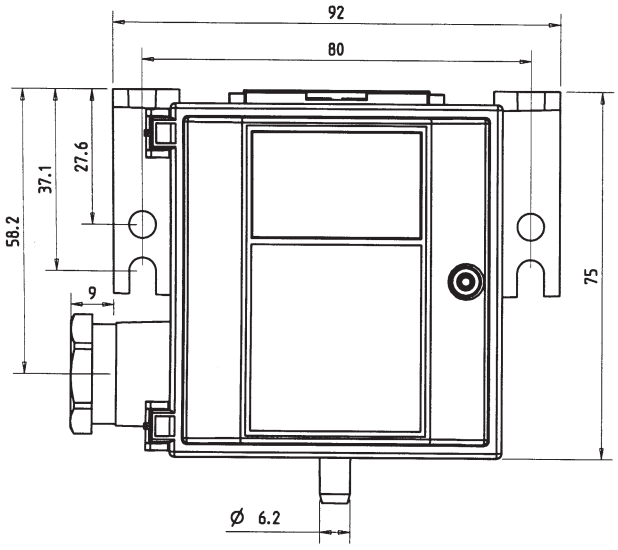
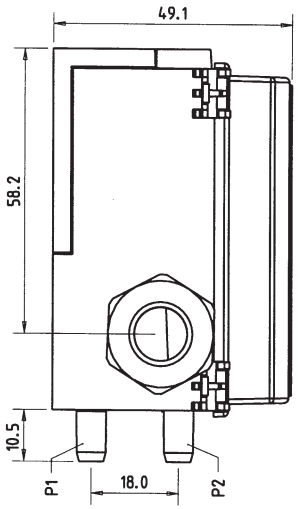


fig. 1





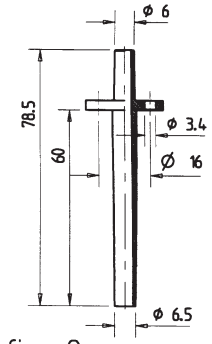


fig. 2

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	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 ± 2 kV	No failure
Surge	EN 61000-4-5 Line-Line: ± 1 kV Line-Ground: ± 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	Effects
Conducted interference	EN 55022 0.15 … 30 MHz	None
Radiation from housing	EN 55022 30 … 1000 MHz	None

Internet: www.hubacontrol.com

Huba Control Switzerland
Headquarters
Industriestrasse 17
CH-5436 Würenlos
Phone ++41 (0) 56 436 82 00
Fax ++41 (0) 56 436 82 82
e-mail: info.ch@hubacontrol.com

Huba Control United Kingdom
Unit 19 A Crawley Mill
Industrial Estate
GB-Witney Oxford OX29 9TJ
Phone 01 993 776 667
Fax 01 993 776 671
e-mail: info.uk@hubacontrol.com

Huba Control France
e-mail: info.fr@hubacontrol.com
Huba Control Germany
e-mail: info.de@hubacontrol.com
Huba Control Netherlands
e-mail: info.nl@hubacontrol.com

Agent for:

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