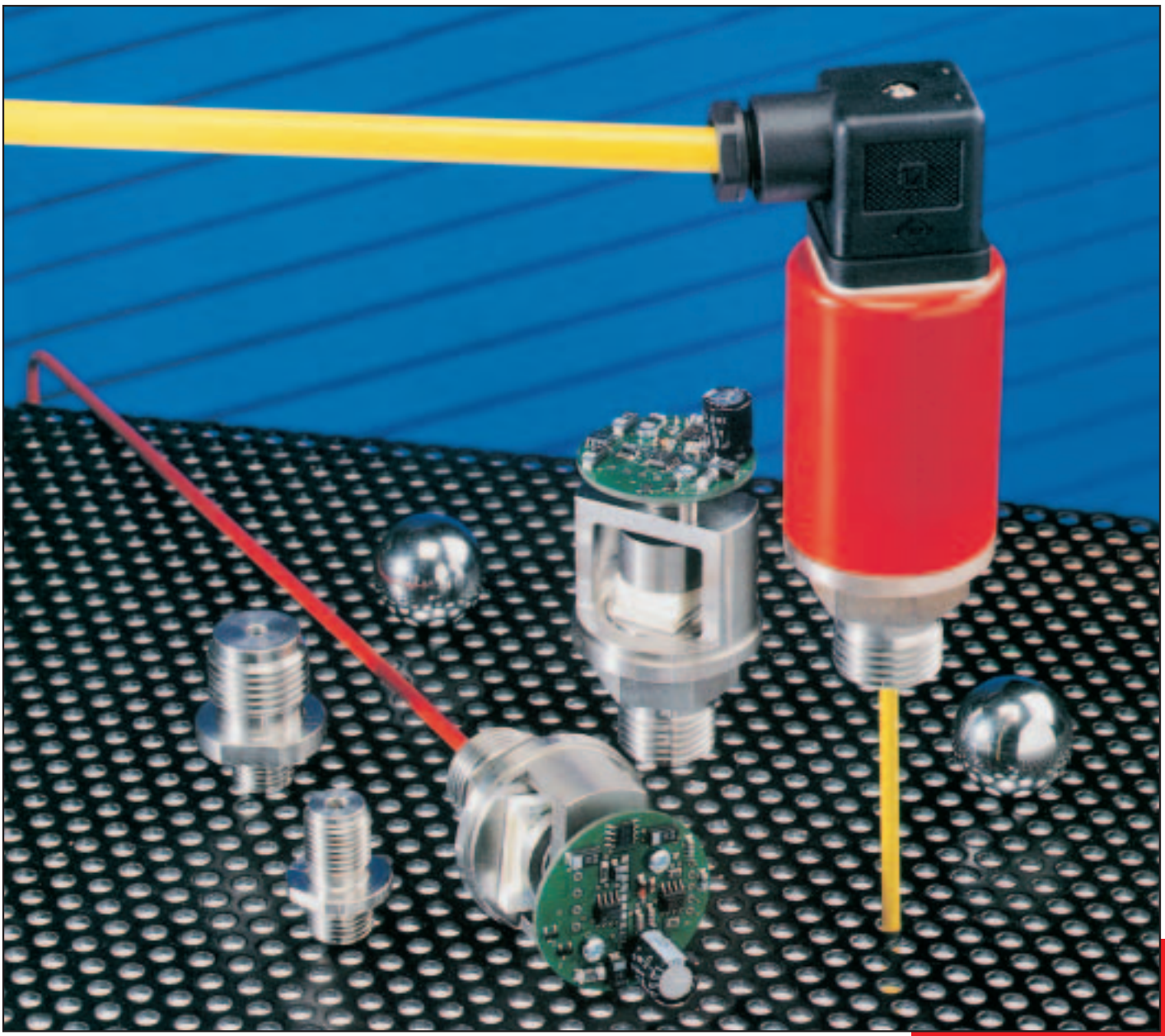
691

Pressure transmitter
Relative -1 to 600 bar
Absolute 0 to 16 bar



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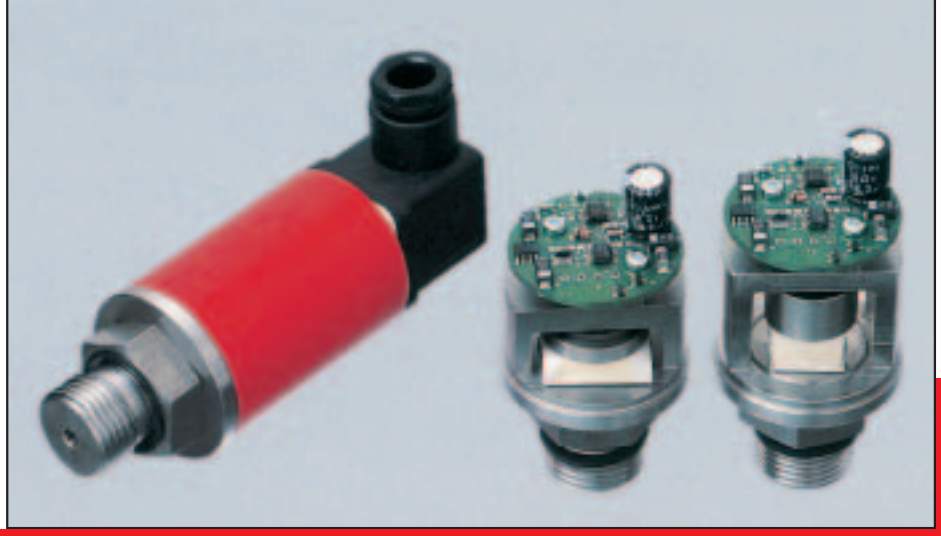
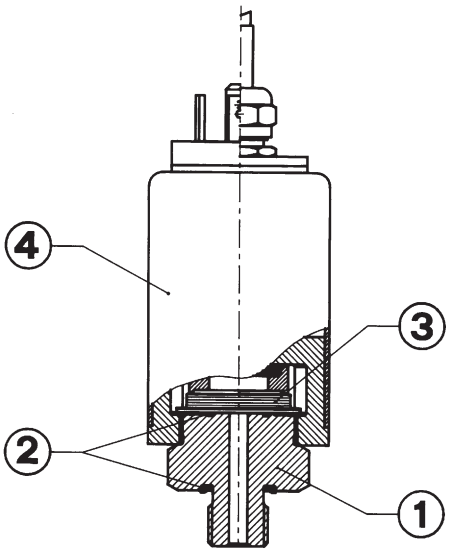
FOR FINE PRESSURE AND FLOW MEASUREMENT



Technical overview

The pressure transmitter of type series 691 with new, unique ceramic technology, features calibrated and amplified sensor signals which are available as standardized voltage or current outputs.

Various application-specific pressure and electrical connections can be provided.



The distinct advantages

- Very low temperature sensitivity
- High resistance to extreme temperatures
- No mechanical aging
- No mechanical creepage
- Individual applications due to modular system

Legend to cross-section drawing

1 Connection fitting
2 Seals
3 Ceramic element
4 Cover

Pressure ranges

Relative pressure
(Measurement of differential pressure to the ambient pressure).
Absolute pressure.

Overload

2x measuring range (fs)

Rupture pressure

3x measuring range (fs)

Accuracy

Total of linearity, hysteresis and repeatability < +/- 0.3 % fs.
Zero point residual voltage < 50 mV.
Zero point residual current < 150 µA at version 0 – 20 mA.

Materials of housing in contact with the medium

Ceramic/Inox 1.4305
(Ceramic PVDF on request)

Sealing material:
optionally Viton, EPDM, NBR, silicone according to order code selection table.

Temperature influences

Medium and ambient temperature -15 °C to +80 °C
Medium and ambient temperature -40 °C
only with CR seal and on request.
TC zero point
< +/- 0.03 % fs/K
TC sensitivity
< +/- 0.015 % fs/K typically

Load cycle

< 50 Hz

Dynamic response

Suitable for static and dynamic measurements.
Response time < 5 ms

Pressure connections

Inside thread G 1/4
Outside thread G 1/8, G 1/4, G 1/2
Connection fitting sealed at front or at back (option).
7/16-20 UNF / 1/4-18 NPT / 1/2-14 NPT
See order code selection table.

Weight

Inside thread:	
G 1/4	200 grams
Outside thread:	
G 1/8 / 7/16-20 UNF	212 grams
G 1/4 / 1/4-18 NPT	245 grams
G 1/2 / 1/2-14 NPT	280 grams

Installation arrangement

Unrestricted.

Signal	Power supply
0 – 10 V	18 – 33 VDC 24 VAC +/-15 % 3-wire cable
0 – 20 mA	18 – 33 VDC 24 VAC +/-15 % 3-wire cable
4 – 20 mA	11 – 33 VDC 2-wire cable
0 – 5 Volt	11 – 33 VDC 24 VAC +/-15 % 3-wire cable

Short circuit proof and protected against polarity reversal. Each connection against other with max. +/- supply voltage.
Frequency output on request.
Switching output, see type 615.
Electromagnetic compatibility: CE conformity to EC directive 89/336 EEC (EMC) by application of harmonized standards EN 50081-1, EN 50081-2 and EN 50082-2. «Germanischer Lloyd» certification on request.

Load

0 – 10 V > 10 kOhm
0 – 20 mA < 300 Ohm
4 – 20 mA $\leq \frac{\text{supply voltage - 11 V}}{\text{0.02 A}}$ [Ohm]

Current consumption

At output signal max.:

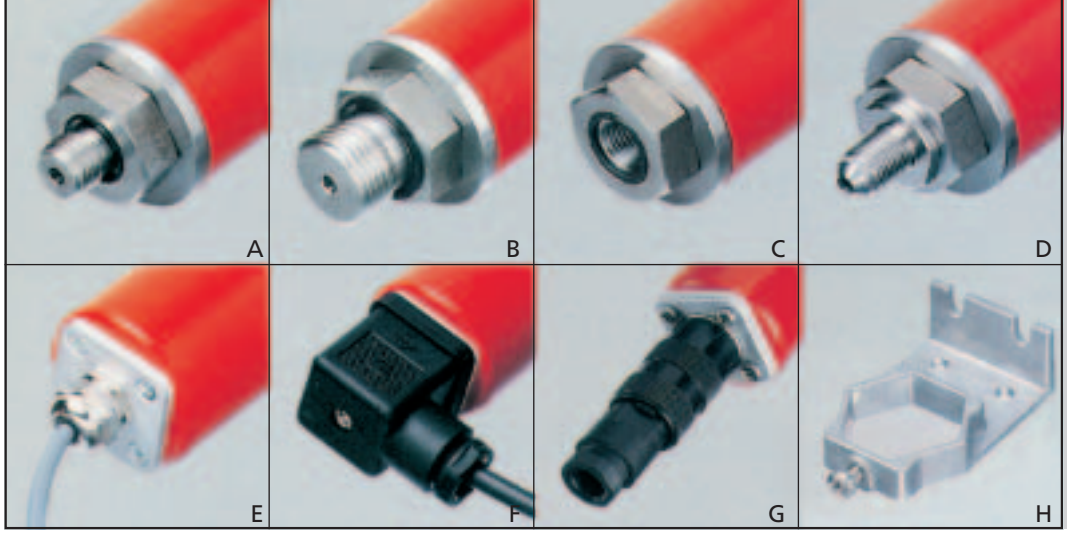
0 – 10 V	< 5 mA
0 – 20 mA	< 25 mA
4 – 20 mA	< 20 mA

Electrical connection / Protection class

Cable 1.5 meters, IP 67 or IP 65.
0Round plug connector DIN 41524, 3-pole, IP 65.
Connector DIN 43650-A, IP 65.

Calibration by customer

Adjustable versions (zero point/ slope approx. +/- 10 %), only with IP 65 versions.



A – Outside thread G 1/4
B – Outside thread G 1/2
C – Inside thread G 1/4
D – Outside thread
E – Cable connection IP 65
F – Female connector DIN 43650-A
G – Round plug connector IP 67
H – Mounting bracket

Order code selection table

691 . | X | X | X | X | X | X | X | X | X |

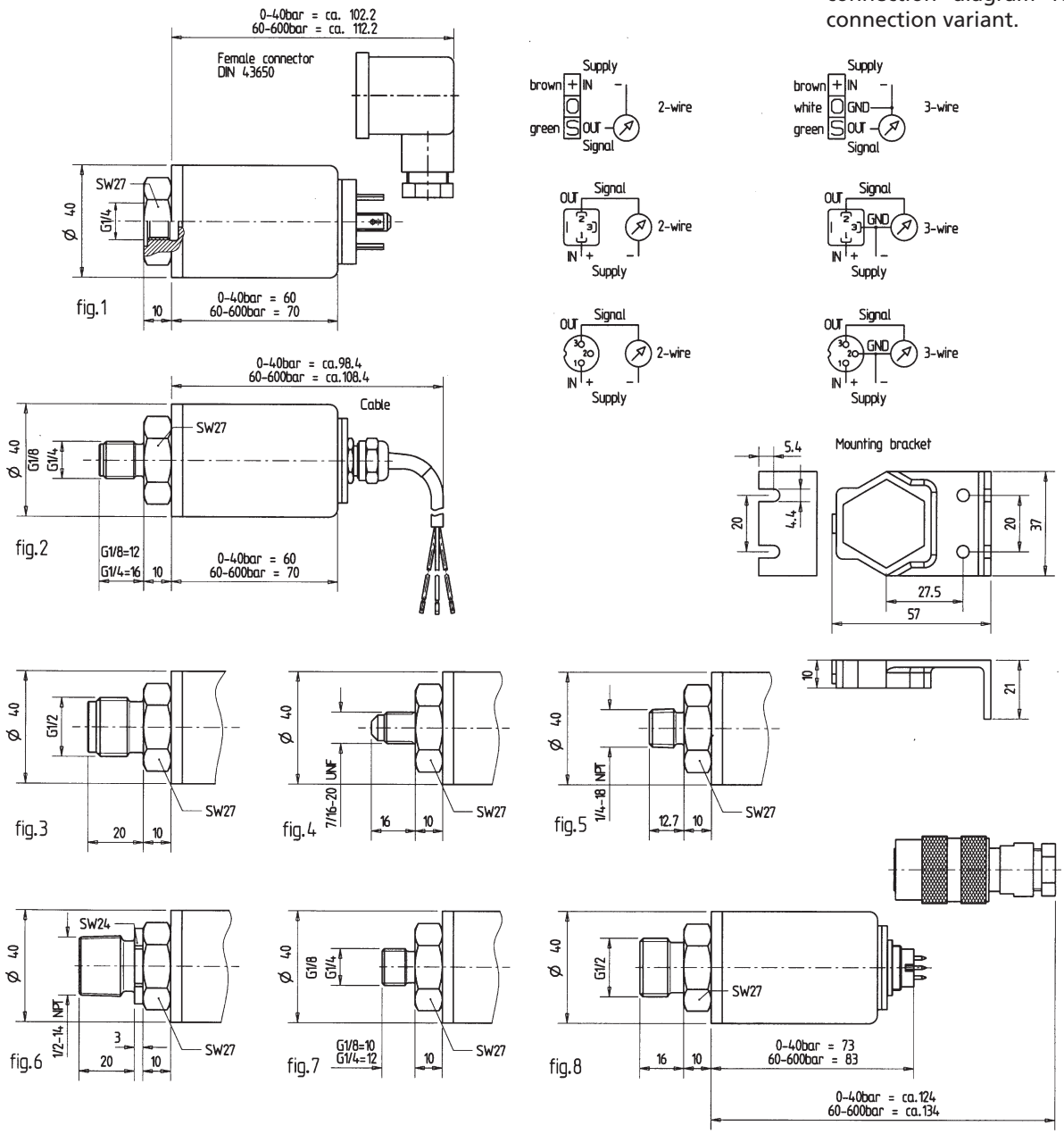
Relative pressure				**9**							
Absolute pressure		*		**5**							
Pressure ranges[1] (bar)	-1...	0		9	0	0					
	-1... +	0.6		9	0	1					
	-1... +	1		9	0	2					
	-1... +	1.5		9	0	3					
	-1... +	3		9	0	4					
	-1... +	5		9	0	5					
	-1... +	9		9	0	6					
	0... +	0.3 (Absolute Tk0 ± 0.05 % fs/K)			2	6					
	0... +	0.6 (Absolute Tk0 ± 0.05 % fs/K)			1	0					
	0... +	1			1	1					
	0... +	1.6			1	2					
	0... +	2.5			1	4					
	0... +	4			1	5					
	0... +	6			1	7					
	0... +	10			3	0					
	0... +	16			3	1					
	0... +	25		9	3	2					
	0... +	40		9	3	3					
	0... +	60		9	4	0					
	0... +	100		9	4	1					
	0... +	160		9	4	2					
	0... +	250		9	4	3					
	0... +	400	only seal Viton	9	5	4	0				
	0... +	600	only seal Viton (overpressure max. 1 000 bar)	9	5	5	0				
*Full scale signal at these pressures.											
Sealing materials[2]	FPM	Fluoro-elastomer (Viton)					0				
	EPDM	Ethylene propylene					1				
	NBR	Nitrile butadiene					2				
	MVQ	Silicone polymer					3				
Calibration	Factory calibrated							0			
	Factory calibrated with adjustable zero point and slope (only IP 65)							1			
Outputs and power supply	0 – 5 V	11 – 33 VDC/24 VAC +/-15 % 3-wire cable							0		
	0 – 10 V	18 – 33 VDC/24 VAC +/-15 % 3-wire cable							1		
	0 – 20 mA	18 – 33 VDC/24 VAC +/-15 % 3-wire cable							5		
	4 – 20 mA	11 – 33 VDC 2-wire cable							7		
Electrical connections[3]	Cable, 1.5 meters, Pg 7		(Protection class IP 65)							0	
	Cable, 1.5 meters, Pg 7		(Protection class IP 67)							2	
	Connector DIN 43650-A		(Protection class IP 65)							1	
	Round plug connector DIN 41524, 3-pole		(Protection class IP 65)							3	
Pressure connections[4]	Inside thread	G 1/4	fig. 1								0
	Outside thread	G 1/8 (up to 250 bar)	sealed at front fig. 2								1
	Outside thread	G 1/4	sealed at front fig. 2								2
	Outside thread	G 1/2	sealed at front fig. 3								3
	Outside thread	7/16-20 UNF	fig. 4								4
	Outside thread	1/4-18 NPT	fig. 5								5
	Outside thread	1/2-14 NPT	fig. 6								6
	Outside thread	G 1/8 (up to 250 bar)	sealed at back fig. 7 (NBR)								7
	Outside thread	G 1/4	sealed at back fig. 7 (NBR)								8
	Outside thread	G 1/2	sealed at back fig. 8 (NBR)								9
Housing material / Construction (Standard Inox)	Inox with 0.8 mm pressure tip orifice (standard from 100 bar)										3
	Inox, free of oil and grease (only seal Viton, not compound-filled)										5

Accessories											
	Female connector DIN 43650-A with seal (IP 65 when installed and latched)						1	0	3	5	1	0
	Round plug connector (coupling socket) DIN 41524						1	0	3	5	2	4
	Mounting bracket						1	0	4	9	5	4
	Test certificate						1	0	4	5	5	1

[1] Other pressure ranges on request.
[2] According to ISO standard R 1629, other sealing materials on request.
[3] Without female connector.
[4] Other pressure connections on request.

Dimensions in mm / Electrical connections

The delivery includes a detailed connection diagram for each connection variant.



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

Type of interference/Interference susceptibility	Test standard	Effects
Electrostatic discharge ESD	IEC 1000-4-2 8 kV air discharge / 4 kV contact discharge	No failure (criterion B)
High-frequency electromagnetic radiation (HF)	ENV 50140 10 V/m / 80...1000 MHz	No effect (criterion A)
Conducted HF interference	ENV 50141 10 V/m / 0.15 ... 80 MHz	No effect (criterion A)
Fast transients (burst)	IEC 801-4 2 kV	No failure (criterion B)
Magnetic fields 50 Hz 30 A/m	EN 61000-4-8	No effect (criterion A)
Type of interference/Emitted interference	**Test standard**	**Effects**
Conducted interference	EN 55022 0.15...30 MHz	No effect
Radiation from housing	30...1000 MHz, 10 meters	No effect

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