



### Main Features

- Ranges: from 1 to 1000 bar
- Nominal Output Signal:  
4...20mA (2 wires)  
0...10Vdc / 0.1...5.1Vdc / 0.1...10.1Vdc / 0...5Vdc /  
1...5Vdc / 1...6Vdc / 1...10Vdc / 0.2...10.2Vdc (3 wires)  
0.5...4.5Vdc (3 wires - ratiometric)
- Compact size
- Wetted parts: Stainless steel
- SIL 2 certified according to IEC/EN 62061:2005

KS transmitters are based on film sensing element deposited on stainless steel diaphragm.

Thanks to the latest state of the art SMD electronics and compact all stainless steel construction, these products are extremely robust and reliable, with SIL2 certification supplied as standard.

KS transmitters are suitable for all industrial applications, specially on hydraulics (presses, pumps, power pack, fluid power, etc.) with severe conditions usually with high level of shock, vibration, and pressure and temperature peaks.



This symbol present on the product label stands for further indications on product manual. For correct and safe installation, follow the instructions and observe the warnings contained in this manual. No hazards shall arise by any reasonably foreseeable misuse in a way not intended, and not described in this manual. The complete manual is available for download from the website [www.gefran.com](http://www.gefran.com).  
UL file number E216851

### TECHNICAL DATA

	VOLTAGE		RATIOMETRIC	CURRENT
Output signal				
Non Linearity (BFSL)			± 0.15% FS (typ) ± 0.25% FS (max)	
Hysteresis			+ 0.1% FS (typ) + 0.15% FS (max)	
Repeatability			± 0.025% FS (typ) ± 0.05% FS (max)	
Zero offset tolerance			± 0.15% FS (typ) ± 0.25% FS (max)	
Span offset tolerance			± 0.15% FS (typ) ± 0.25% FS (max)	
Accuracy at room temperature (1)			< ± 0.5% FS	
Pressure ranges (2)			From 1 bar to 1000 bar (See table)	
Resolution			Infinite	
Overpressure (without degrading performance)			See table	
Pressure containment (burst test)			See table	
Pressure Media			Fluids compatible with Stainless Steel AISI 430F and 17-4 PH	
Housing			Stainless Steel AISI 304	
Power supply (4)	B/M/P	10...30Vdc	5Vdc ± 0,25V	10...30Vdc
	R	11...30Vdc		
	N/C/T/Q	15...30Vdc		
Max current absorption			15mA	35mA
Dielectric strenght			250 Vdc	
Zero output signal	B/M/P/R/N/C/T/Q		0.5Vdc (X)	4 mA (E)
Full scale output signal	B/M/P/R/N/C/T/Q		4.5Vdc (X)	20 mA (E)
Allowed load			≥ 5KΩ	see load diagram
Long term stability			< 0.2% FS/per year	
Operating temperature range (process)			-40...+125°C (-40...+257°F)	
Operating temperature range (ambient) (5)			-40...+105°C (-40...+221°F)	
Compensated temperature range			-20...+85°C (-4...+185°F)	
Storage temperature range			-40...+125°C (-40...+257°F)	
Temperature effects over compensated range (zero)			± 0.01% FS/°C typ. (± 0.02% FS/°C max.)	
Temperature effects over compensated range (span)			± 0.01% FS/°C typ. (± 0.02% FS/°C max.)	
Response time (10...90%FSO)			< 1 msec.	
Warm-up time (3)			< 30 sec.	
Mounting position effects			Negligible	
Humidity			Up to 100%RH non-condensing	
Weight			80-120 gr. nominal	
Mechanical shock			100g/11msec according to IEC 60068-2-27	
Vibrations			20g max at 10...2000 Hz according to IEC 60068-2-6	
Ingress protection			IP65/IP67	
Output short circuit and reverse polarity protection			YES	
EC Conformity			According to Directive 2014/30/EU	

FS = Full scale

1 Incl. Non-Linearity, Hysteresis, Repeatability, Zero-offset and Span-offset (acc. to IEC 61298-2)

2 The operating pressure range is intended from 0.5% to 100% FS

3 Time within which the rated performance is achieved

4 The devices must be supplied with a Class 2 Power Supply (as for NEC) or LPS Power Supply (as for EN 60950). If devices are permanently connected to the machine it's requested an external switch or circuit breaker and external overcurrent protection.

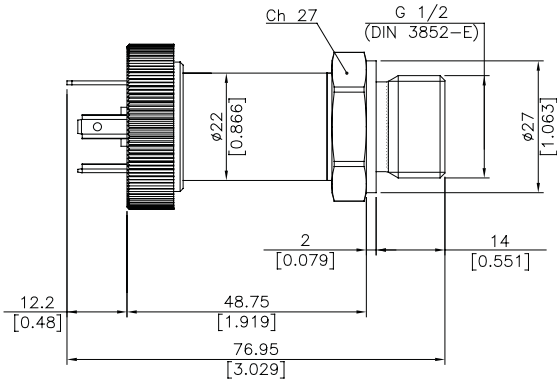
5 See possible restrictions in the paragraphs "Electrical connections" and "Accessories on request".

## PRESSURE RANGES

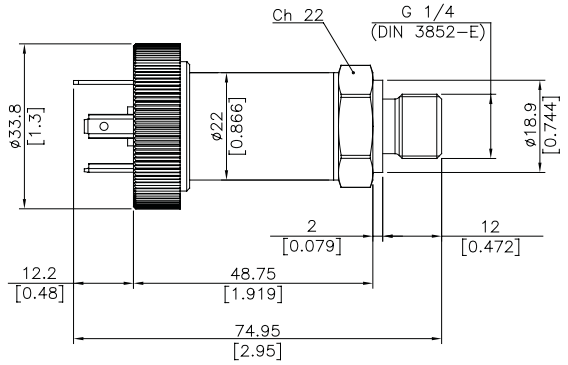
RANGE (Bar)	1	1.6	2	2.5	4	6	10	16	20	25	40	60	100	160	200	250	400	600	1000
Overpressure (Bar)	6	6	6	10	8	12	20	32	40	50	80	120	200	320	400	500	800	1200	1200
Burst pressure (Bar)	9	9	9	15	16	24	40	64	80	100	160	240	400	640	800	1000	1500	1500	1500

## INSTALLATION DRAWINGS

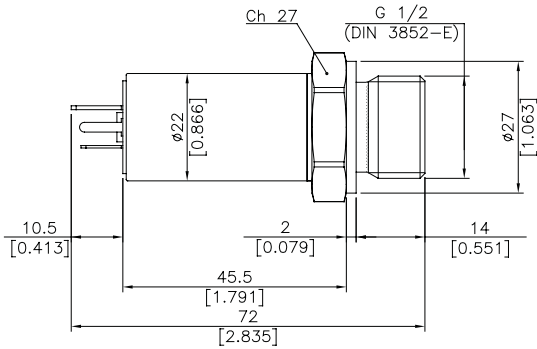
**Connector EN 175301-803 Form A**



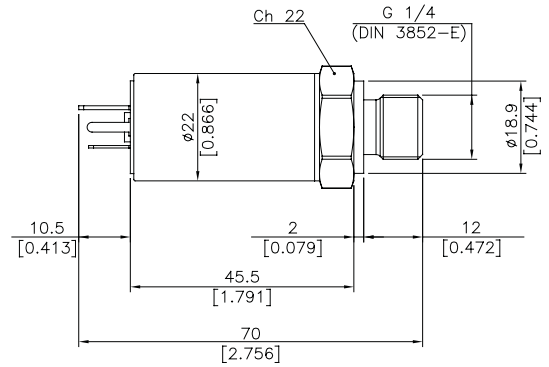
**Connector EN 175301-803 Form A**



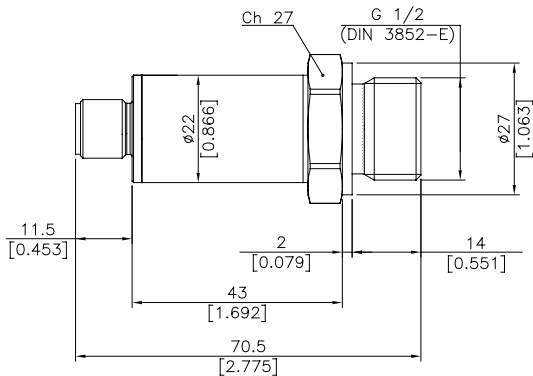
**Connector EN 175301-803 Form C**



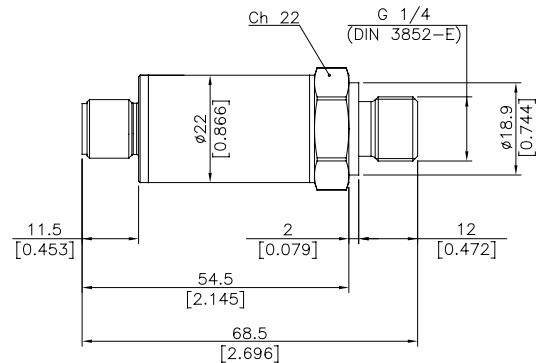
**Connector EN 175301-803 Form C**



**Connector M12x1**

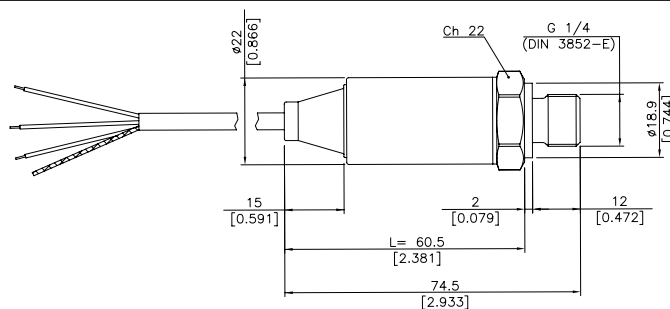


**Connector M12x1**



**Cable output**

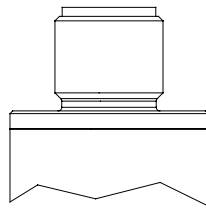
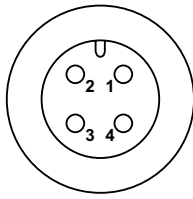
**3 Pole cable**



Dimensions in mm. [inches]

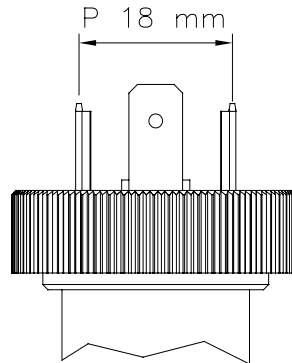
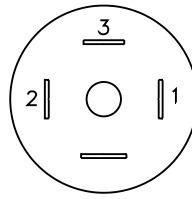
## ELECTRICAL CONNECTION - Connectors

### Z – 4 pin male connector M12 x 1



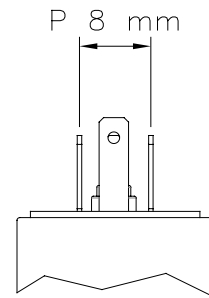
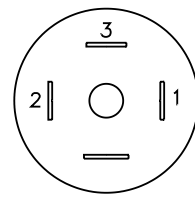
4 pin male connector  
Protection IP67

### E - EN 175301-803



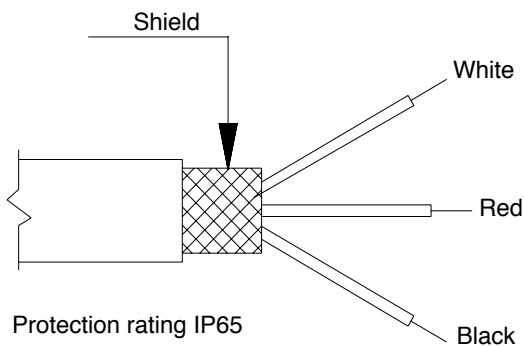
4 pin DIN  
Form A  
Protection IP65

### C – EN 175301-803



4 pin MicroDIN  
Form C  
Protection IP65

### F – 3 pole cable Shielded cable 3x26 AWG - Length 1 m



### ELECTRICAL CONNECTION – RATINGS

ELECTRICAL CONNECTION	IP RATING	cULus CERTIFIED	TEMPERATURE RATINGS **
F – 2/3 pole cable *	IP65		-10+105°C
Z - 4 pole male connector M12 x 1	IP67	X	-40+105 °C
E - 4 pole solenoid connector EN 175301-803-A	IP65	X	-40+105 °C
C - 4 pole microsolenoid connector EN 175301-803-C	IP65	X	-40+105 °C

\*UL certified version not available.

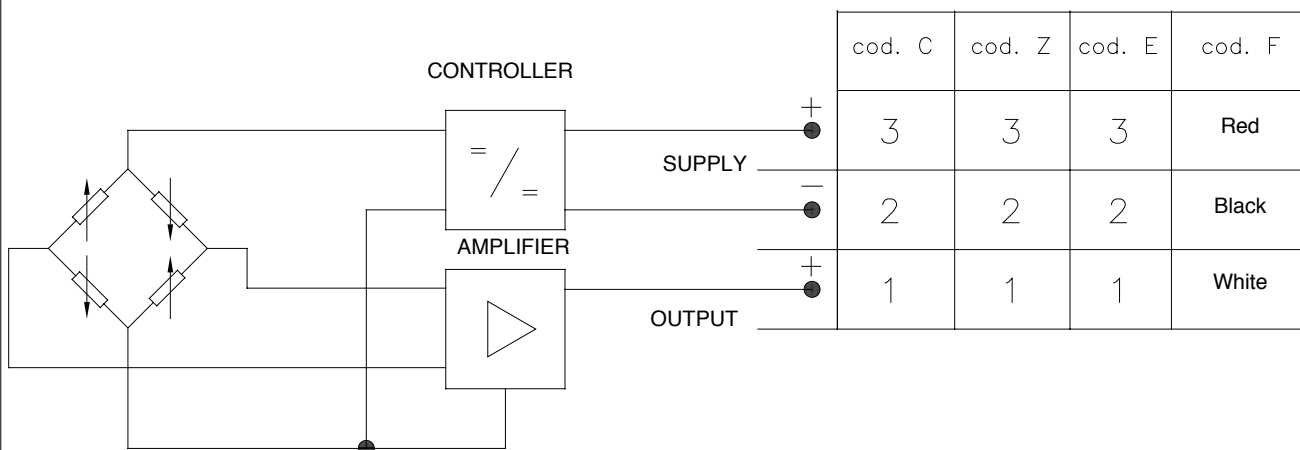
\*\* The operating temperature ranges, except where expressly indicated, are also applicable in the UL scope.

#### Notes:

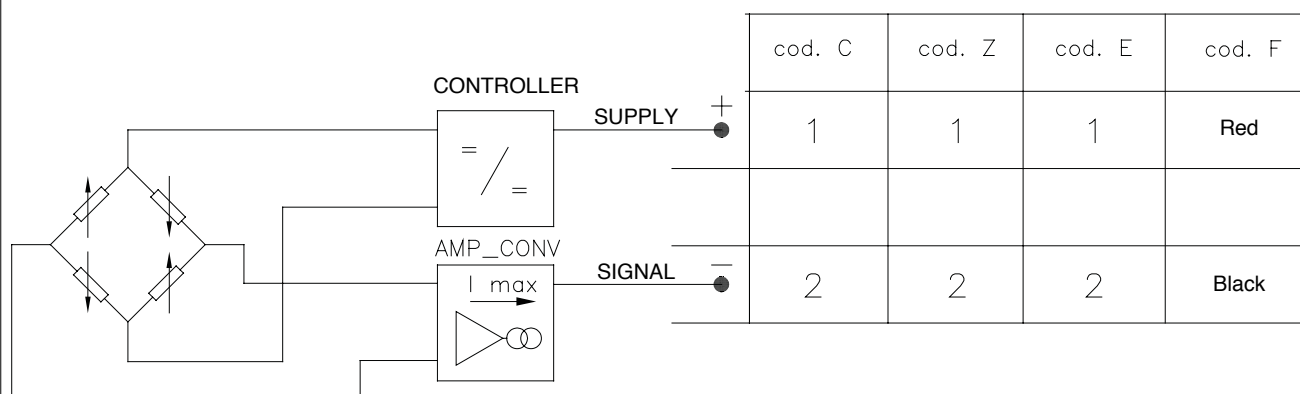
1. The IP rating specified in this document normally applies with the suitable female connector plugged-in and properly wired.
2. The pressure transducers with measuring range of 60 bar and below require vented cable and/or mating connector, to allow the compensation of the atmospheric pressure reference.

## ELECTRICAL CONNECTION - Connection diagrams

### VOLTAGE AMPLIFIED OUTPUT

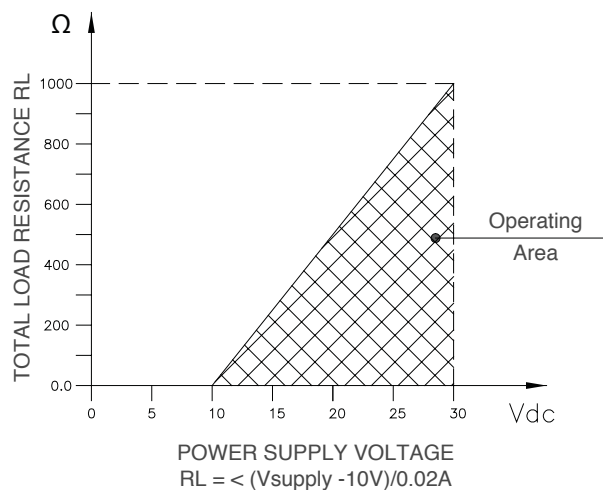


### CURRENT AMPLIFIED OUTPUT - mod. E



## LOAD DIAGRAM

### Current output



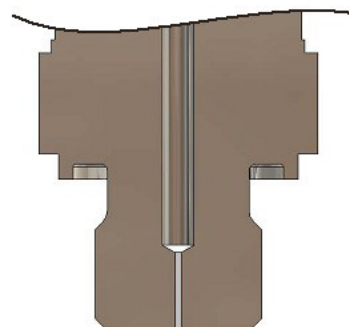
## PRESSURE PEAKS PROTECTION

Many industrial applications, especially in hydraulics, could present dangerous phenomena like cavitation, liquid hammer or pressure peaks, due for example to pumps start and stop or fast closing of a valve.

These phenomena can be harmful to the transducer.

The KS series, upon request, is available with an integrated pressure snubber which, thanks to a 0.5 mm diameter through hole, eliminates these harmful peaks, to protect the transducer.

Contact Gefran to request the version with pressure snubber.



## SIL CERTIFICATION (Safety Integrity Level) – FUNCTIONAL SAFETY

Safety is a critical requirement especially for machine builders. The new European Directive 2006/42/EC defines all the essential requirements in this regard.

In the context of functional safety, the European directive is received by the technical standard **IEC / EN 62061** "Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems"(SRECS)

KS pressure transmitters are certified SIL CL 2 by the Certification Body TÜV Rheinland with Test Report No.FS 28712235, in accordance with that rule, for use in applications "High Demand Mode" and then may be used in SRECS systems of machinery, where the safety variable to control will be the pressure of a fluid.

- NOTES:**
- 1) The SIL certification is supplied standard, and is available for pressure ranges from 0 ... 4 bar and above
  - 2) For models with voltage amplified output, SIL certification is only available for versions with output at atmospheric pressure greater than zero volts (ie: 0.1 ... 10.1 V)
  - 3) Full specifications and installation and user manual of KS certified SIL 2 can be downloaded directly from the website [www.gefran.com](http://www.gefran.com)

## ACCESSORIES ON REQUEST

### MATING CONNECTORS

DESCRIPTION	IP RATING	CODE	cULus CERTIFIED	TEMPERATURE RATINGS **
Connection E EN 175301-803 4 pin DIN Form A (P 18) - H=32	IP65	CON064	X	-40+125 °C -40+65°C (cULus)
		CON113	X	-40+90°C
Connection E 3 pole connector + ground EN 175301-803-A H28	IP65	CON045	X	-40+125 °C -40+65°C (cULus)
		CON114	X	-40+90°C
Connection C EN 175301-803 4 pin MicroDIN Form C (P 8)	IP65	CON047		-40+125 °C
		CON116	X	-40+90°C
Connection Z 4 pole female cable connector M12x1	IP67	CON293		-25+85°C
		CON087	X	-25+90°C
Connection Z 4 pole female cable connector, 90° M12x1	IP67	CON050		-25+85°C
		CON088	X	-25+90°C

### EXTENSION CABLES\*

DESCRIPTION	IP RATING	CODE	cULus CERTIFIED	TEMPERATURE RATINGS **	CABLE COLOR CODE	
					Pin	Wire
Connection Z female connector M12x1 + 2/3/5/10m of cable	IP67	CAV220	X	-30+80°C	1	Brown
		CAV221			2	White
		CAV222			3	Blue
		CAV223			4	Black

\* Other lengths on request

\*\* The nominal temperature ranges, except where expressly indicated, are also applicable in the UL scope.

For cULus applications extension cables, a 3 pole 26AWG Style 2464 cable is advised

### SEALING CODE ACCORDING TO PROCESS CONNECTION

PROCESS CONNECTION	STEEL + NBR	NBR	FKM
G 1/4 gas male DIN E			GUA036
G 1/2 gas male DIN E		GUA380	
M12x1,5			GUA166
G 1/4 gas male DIN A	RON300		
M14x1,5			GUA036
M10x1			GUA385
G3/8			GUA190
G1/8			GUA385
7/16-20 UNF		GUA175	

# ACCESSORIES DRAWINGS

DESCRIPTION	CODE	DRAWING
<b>Connection E</b> EN 175301-803 4 pin DIN Form A (P 18) H=32	CON064	
	CON113	
<b>Connection E</b> 3 pole connector + ground EN 175301-803-A H=28	CON045	
	CON114	
<b>Connection C</b> EN 175301-803 4 pin MicroDIN Form C (P 8)	CON047	

DESCRIPTION	CODE	DRAWING
<b>Connection C</b> EN 175301-803 4 pin MicroDIN Form C (P 8)	CON116	
<b>Connection Z</b> 4 pole female cable connector M12x1	CON293	
	CON087	
<b>Connection Z</b> 4 pole female cable connector, 90° M12x1	CON050	
	CON088	
<b>Connection Z</b> female connector M12x1 + 2/3/5/10m of cable	CAV220	
	CAV221	
	CAV222	
	CAV223	

