



The "IMPACT" series of Gefran, are pressure transmitters, without transmission fluid, for using in High temperature environment (350°C).

Medium pressure is transferred directly to the sensitive silicon element via a thick diaphragm.

Strain is transduced by a micro-worked silicon structure (MEMS).

The operating principle is piezoresistive.

"IMPACT" is Gefran's exclusive series of high-temperature pressure sensors that use the piezoresistive principle. The main characteristic of "IMPACT" sensors is that they do not contain any transmission fluid.

The sensitive element, directly positioned behind the contact membrane, is realised in silicon through microprocessing techniques.

The micro structure includes the measurement membrane and piezoresistors.

The minimum deflection required by the sensitive element makes it possible to use very robust mechanics.

The process contact membrane can be up to 15 times thicker than the membrane used in traditional Melt sensors.

#### ADVANTAGES

- Total compatibility with the European RoHS Directive
- High strength
- Long life
- Working temperature: up to 350°C
- Excellent read stability over time
- Fast response time

#### MAIN FEATURES

- Pressure ranges:  
0-100 to 0-1000 bar / 0-1500 to 0-15000 psi
- Accuracy: <math>\pm 0.25\% \text{ FSO (H)}</math>; <math>\pm 0.5\% \text{ FSO (M)}</math>
- Standard threading 1/2-20UNF, M18x1.5
- Other types of diaphragms are available on request
- Autozero function on board / external option
- 15-5 PH stainless steel diaphragm GTP coated

#### AUTOZERO FUNCTION

All signal variations in the absence of pressure can be eliminated by using the Autozero function.

This function is activated by closing a magnetic contact located on the transmitter electronics or by an external contact.

The procedure is allowed only at zero pressure.

The Autozero function should be activated **ONLY** when the sensor is completely installed on the system.

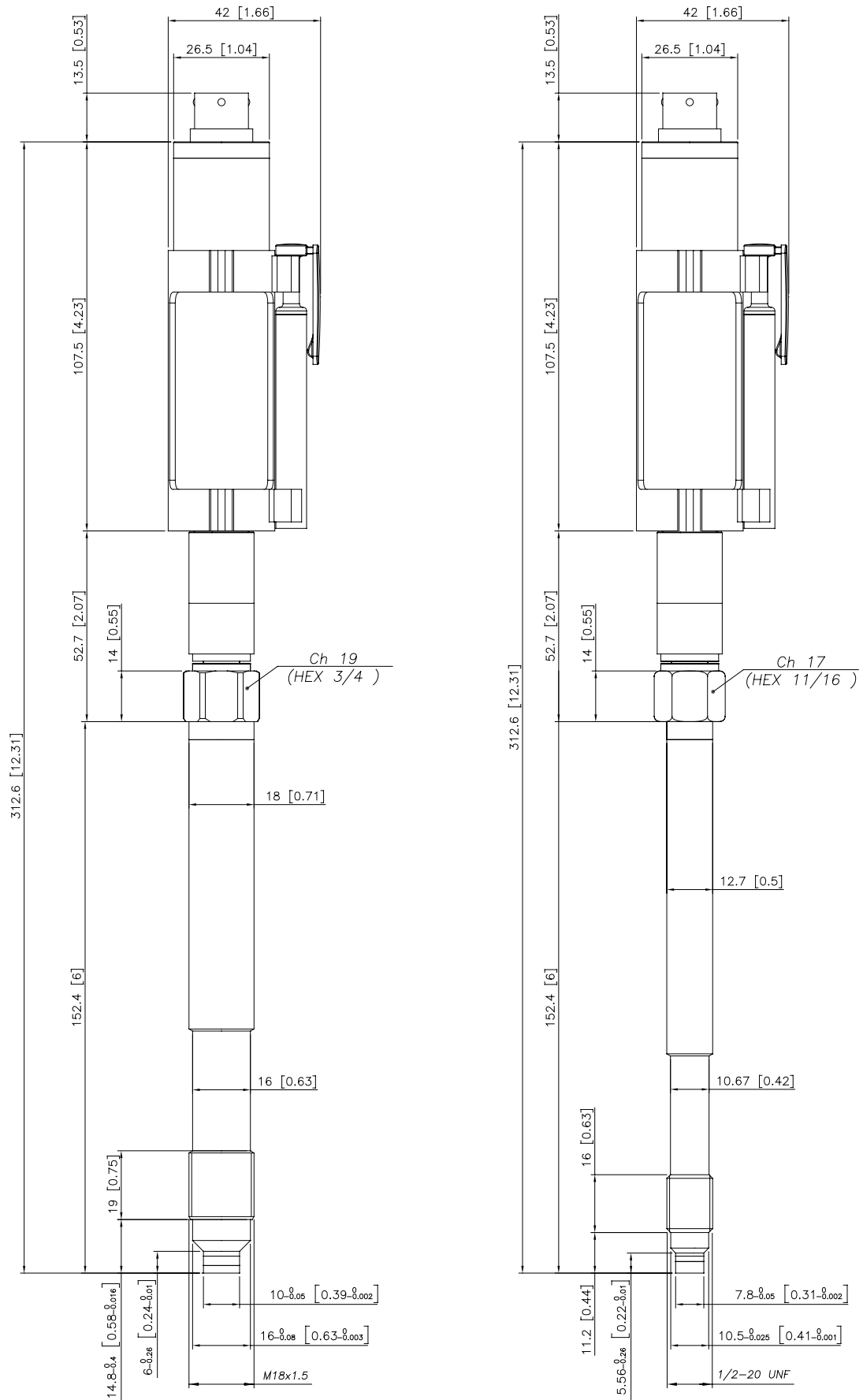
#### TECHNICAL SPECIFICATIONS

Accuracy (1)	H <math>\pm 0.25\% \text{ FSO}</math> M <math>\pm 0.5\% \text{ FSO}</math>
Resolution	16 Bit
Measurement range	0..100 to 0..1000bar 0..1500 to 0..15000ps
Maximum overpressure (without degrading performances)	1.5 x FS (maximum pressure 1200bar/17400psi)
Measurement principle	Piezoresistive
Power supply	13...30Vdc
Maximum current absorption	23 mA (40 mA with optional relay)
Output signal Full Scale FSO	20mA
Zero balance (tolerance $\pm 0.25\% \text{ FSO}$ )	4mA
Zero signals adjustment (tolerance $\pm 0.25\% \text{ FSO}$ )	"Autozero" function
Response time (10...90% FSO)	8ms
Output noise (RMS 10-400Hz)	<math>< 0.025\% \text{ FSO}</math>
Calibration signal	80% FSO
Supply reverse polarity protection	Yes
Compensated temperature range housing	0...+85°C
Operating temperature range housing	-30...+85°C
Storage temperature range housing	-40...+125°C
Maximum diaphragm temperature	350°C / 660°F
Zero signal variation due to process temperature variation in range (20-350°C)	<math>< \pm 1,2\% \text{ FSO}</math>
Span signal variation due to process temperature variation in range (20-350°C)	<math>< \pm 1\% \text{ FSO}</math>
Std contact diaphragm with process	15-5 PH GTP
Thermocouple (model IE2)	STD: type "J" (isolated junction) type "K" (on request)
Protection degree (with 6-pole female connector)	IP65
Electrical connection	Conn. 6-pin VPT07RA10-6PT (PT02A-10-6P) Conn. 8-pin (Binder) M16 DIN/EN45326 (09-0173-00-08)

FSO = Full scale output (1) BFSL method (Best Fit Straight Line): includes combined effects of Non-Linearity, Hysteresis and Repeatability.

# MECHANICAL DIMENSIONS

**IE0**

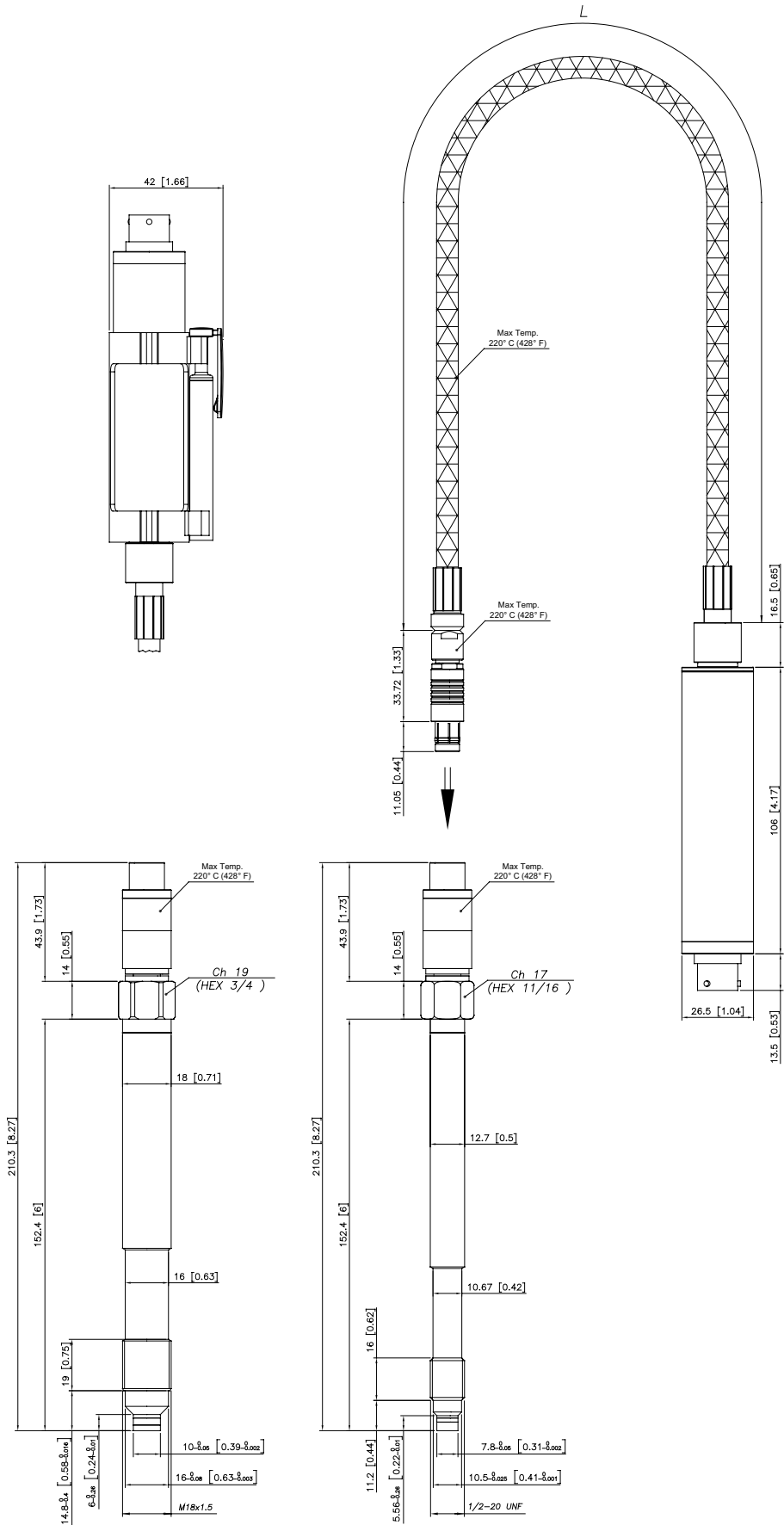


**NOTE :** dimensions refer to rigid stem length option “4” (153 mm – 6”)

**WARNING :** For installation use a maximum tightening torque of 40 Nm (355 in-lb)

# MECHANICAL DIMENSIONS

**IE1M**

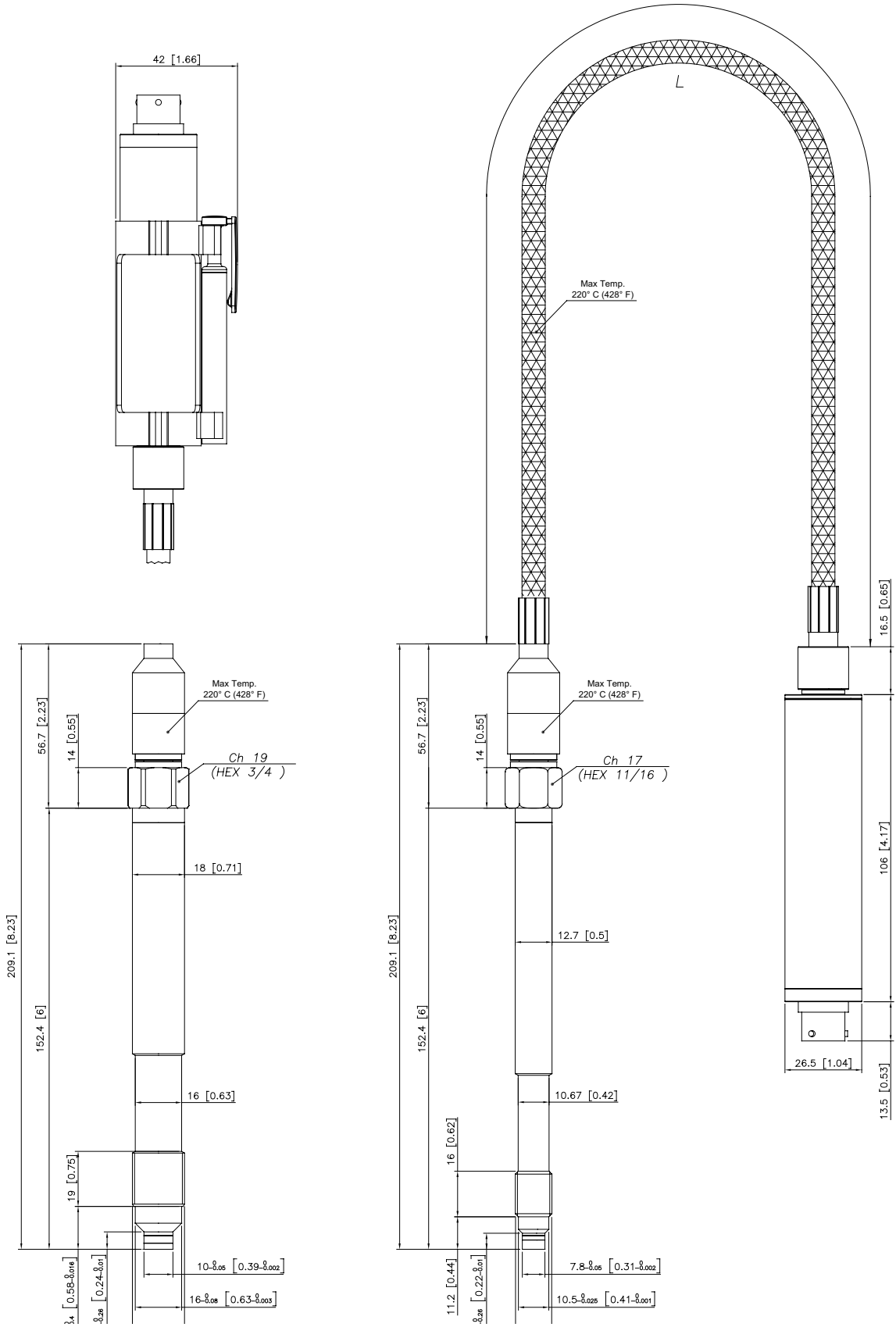


**NOTE :** dimensions refer to rigid stem length option "4" (153 mm – 6")

**WARNING :** For installation use a maximum tightening torque of 40 Nm (355 in-lb)

# MECHANICAL DIMENSIONS

**IE1S**

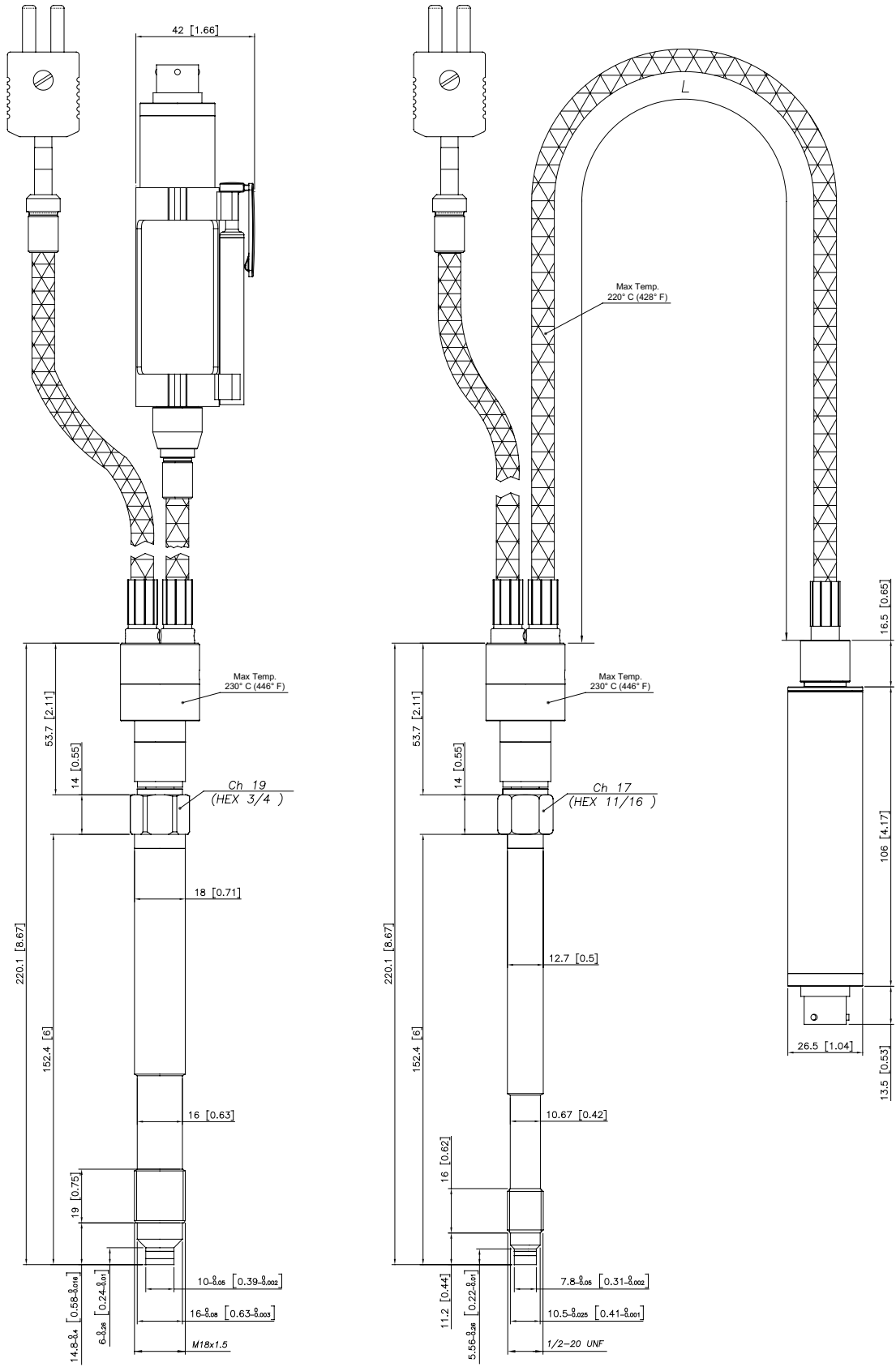


**NOTE :** dimensions refer to rigid stem length option “4” (153 mm – 6”)

**WARNING :** For installation use a maximum tightening torque of 40 Nm (355 in-lb)

# MECHANICAL DIMENSIONS

**IE2**



**NOTE :** dimensions refer to rigid stem length option "4" (153 mm – 6")

**WARNING :** For installation use a maximum tightening torque of 40 Nm (355 in-lb)

## SELF DIAGNOSTICS

Below the conditions detected by the sensor self-diagnostics:

- Cut cable / device non connected / broken power supply, output <3.6mA
- Broken primary element / pin detachment, output >21mA
- Pressure above 200% of the span, output <3.6mA
- Pressure below the -30% of the span related to the zero value, output <3.6mA
- Voltage monitor in case of overvoltage/undervoltage/voltage variation in the electronics, output <3.6mA
- Program sequence error, output <3.6mA
- Overtemperature on the electronics, output <3.6mA
- Error on the primary element output or on the first amplification stage, output <3.6mA

## OPTIONAL RELAY OUTPUT FOR EXCESS PRESSURE PROTECTION

Safety relay characteristics:

- Activation threshold to be defined in the order code
- Rated carry current: 1A
- Rated voltage: 24Vdc  $\pm$  20%
- Switch accuracy: 2 x sensor accuracy
- Hysteresis: 2% FSO

SUPPLY	OUTPUT	RELAY STATUS
OFF	-	OPEN
ON	< X%fs	CLOSED
ON	> X%fs	OPEN
ON	output < 3,6mA	OPEN
ON	output > 21mA	OPEN

## NAMUR COMPLIANCE

The sensors are tested according to Namur NE21 recommendations.

The same compatibility is valid for the NE43 Namur recommendation with the following sensor behaviour in case of breakdown:

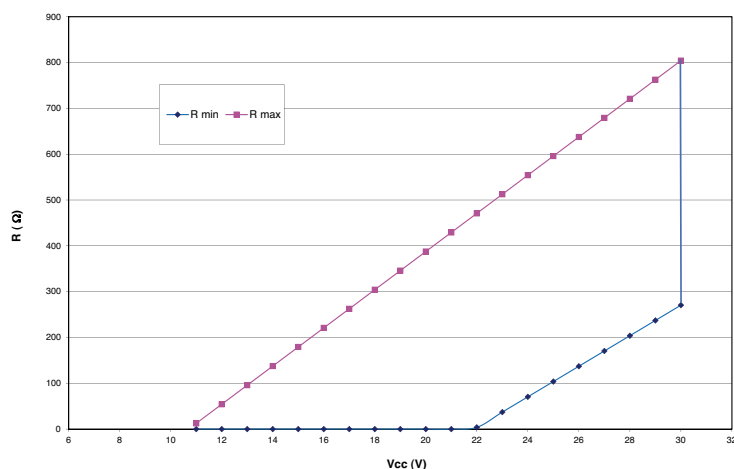
- Cut cable: breakdown information as the signal is <3,6mA
  - Device not connected: breakdown information as the signal is <3,6mA
  - Broken power-supply: breakdown information as the signal is <3,6mA
- or in case of performance problems:
- most common failures on primary sensors: the signal goes to >21mA

Note: in all the remaining situations, the output signal is always included between 3,6 and 21mA.



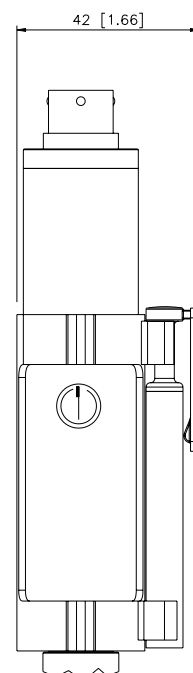
**Recommendation:** the error level set by the customer (e.g. maximum pressure value) has to be inside the nominal range

## LOAD DIAGRAM



The diagram shows the optimum ratio between load and power supply for transmitters with 4...20mA output. For correct function, use a combination of load resistance and voltage that falls within the two lines in the graph above.

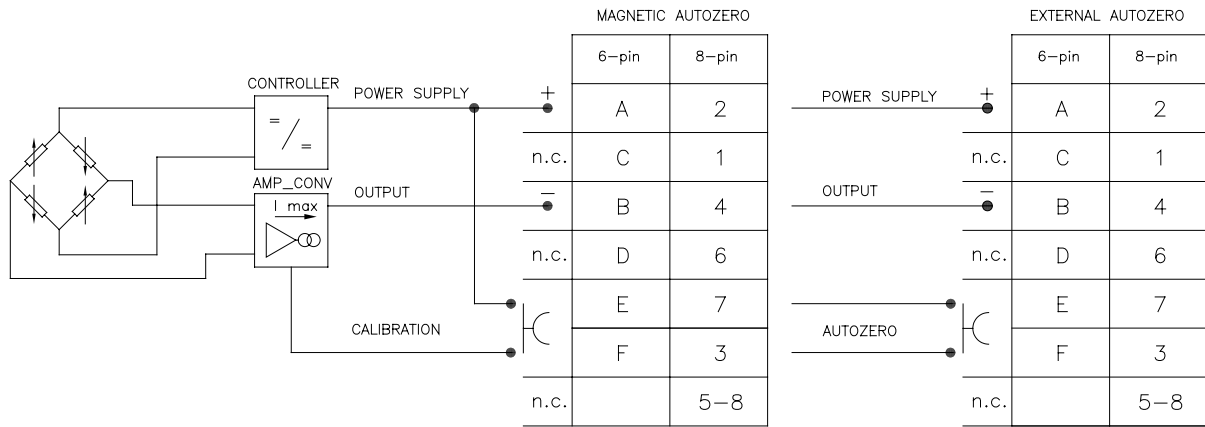
## AUTOZERO FUNCTION



The Autozero function is activated through a magnetic contact (external magnet supplied with the sensor). For the external Autozero version short-circuit the correct pin. See the manual for a complete Autozero function explanation.

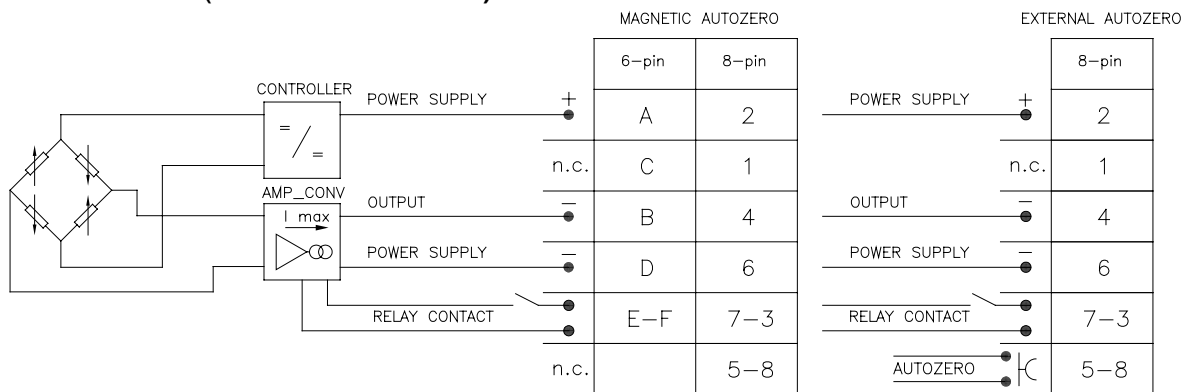
# ELECTRICAL CONNECTIONS

## CURRENT OUTPUT



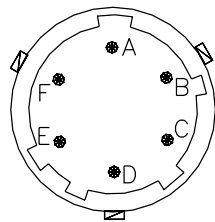
The cable shield is tied to connector via cable clamp

## RELAY OUTPUT (6-8 PIN CONNECTOR)

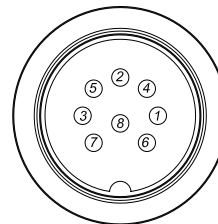


The cable shield is tied to connector via cable clamp

### 6 pin connector VPT07RA10-6PT2 (PT02A-10-6P)



### 8 pin connector (Binder) M16 DIN/EN45326 (09-0173-00-08)



## ACCESSORIES

### Connectors

- 6-pin female connector (IP65 protection degree)
- 8-pin female connector

### Extension cables

- 6-pin connector with 8m (25ft) cable
- 6-pin connector with 15m (50ft) cable
- 6-pin connector with 25m (75ft) cable
- 6-pin connector with 30m (100ft) cable

### Accessories

- Mounting bracket
- Dummy plug for 1/2-20UNF
- Dummy plug for M18x1.5
- Drill kit for 1/2-20UNF
- Drill kit for M18x1.5
- Cleaning kit for 1/2-20UNF
- Cleaning kit for M18x1.5
- Fixing pen clip
- Autozero pen

CON300  
CON026

C08WLS  
C15WLS  
C25WLS  
C30WLS

SF18  
SC12  
SC18  
KF12  
KF18  
CT12  
CT18  
PKIT379  
PKIT378

### Cable color code

Conn.	Wire
A-2	Red
B-4	Black
C-1	White
D-6	Green
E-7	Blue
F-3	Orange
5	Grey
8	Pink

# ORDER CODE

I - - - - - 0000 X 000 X 00

OUTPUT SIGNAL	
4...20mA	E

VERSION	
Rigid rod	0
Rigid + flexible stem	1
With thermocouple	2

MECHANICS	
Single fixed	A
Modular fixed	B *
Single Floating	S
Modular Floating	M *

\* Not available for IE0 and IE2 version

CONNECTOR	
6 pin	6
8 pin	8

ACCURACY CLASS	
0.25% FSO	H
0.5% FSO	M

MEASUREMENT RANGE			
bar		psi	
20*	B02D	300	P03C
35	B35U	500	P05C
50	B05D	750	P75D
70	B07D	1000	P01M
100	B01C	1500	P15C
200	B02C	3000	P03M
350	B35D	5000	P05M
500	B05C	7500	P75C
700	B07C	10000	P10M
1000	B01M	15000	P15M

\* 10 bar (B01D) or 150psi (P15D) for M18x1,5 version

Output Relay Version (activation threshold):  
 X=no relay    B=80%fs  
 A=70%fs    C=90%fs

000= Special executions

E	External Autozero *
-	Magnetic Autozero

(\*) as an alternative to the CAL function

P	Performance Level='c'
0	Standard 4...20mA

Specify 0 in case of standard 4...20mA output

FLEXIBLE STEM LENGTH (L) (mm / inches)		
<b>Standard (IE0)</b>		
0	none	
<b>Standard (IE1,IE2)</b>		
D	457mm	18"
E	610mm	24"
F	760mm	30"

RIGID STEM LENGTH (mm / inches)		
<b>Standard</b>		
4	153mm	6"
5	318mm	12.5"
<b>Available on request</b>		
3	76mm	3"
6	350mm	14"
7	400mm	16"
8	456mm	18"

THREADING	
<b>Standard</b>	
1	1/2 - 20 UNF
4	M18 x 1.5

Example

**IE1S-6-M-B07C-1-4-D-P**

Melt pressure transducer without filling, 4...20mA output, 6-pin connector, 1/2-20 UNF threading, 700 bar pressure range, 0.5% precision level, 153 mm (6") rigid stem, 457 mm (18") flexible stem. Performance Level='c'.

Sensors are manufactured in compliance with:

- EMC 2004/108/CE compatibility directive
- RoHS 2002/95/CE directive
- 2006/42/CE machinery directive

Electrical installation requirements and Conformity certificate are available on our web site: [www.gefran.com](http://www.gefran.com)

GEFRAN reserves the right to make any kind of design or functional modification at any moment without prior notice

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