



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: $< \pm 0.25\%$ FSO (H); $< \pm 0.5\%$ FSO (M)
- 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

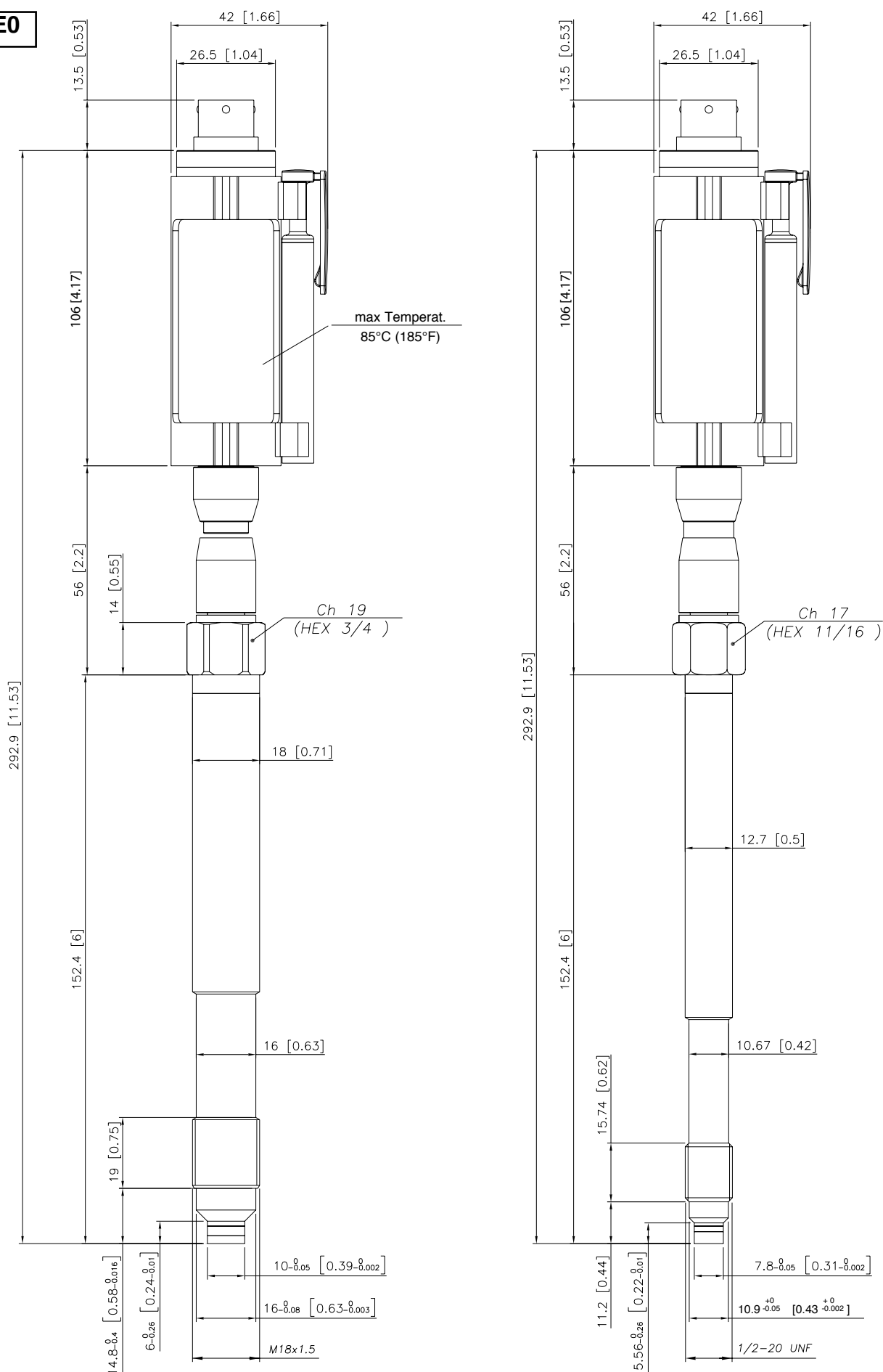
Accuracy (1)	H $< \pm 0.25\%$ FSO M $< \pm 0.5\%$ FSO
Resolution	16 Bit
Measurement range	0..100 to 0..1000bar 0..1500 to 0..15000psi
Maximum overpressure (without degrading performances)	2 x FS 1.5 x FS above 700bar/10000psi
Measurement principle	Piezoresistive
Power supply	13...30Vdc
Maximum current absorption	23 mA (40 mA avec relay optionnel)
Output signal Full Scale FSO	20mA
Zero balance (tolerance $\pm 0.25\%$ FSO)	4mA
Zero signals adjustment (tolerance $\pm 0.25\%$ FSO)	"Autozero" function
Response time (10...90% FSO)	8ms
Output noise (RMS 10-400Hz)	$< 0.025\%$ FSO
Calibration signal	80% FSO
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)	$< \pm 1,2\%$ FSO
Full-scale signal variation due to process temperature variation in range (20-350°C)	$< \pm 1\%$ FSO
Std contact diaphragm with process Thermocouple (model IE2)	15-5 PH GTP 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

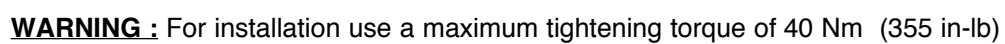
IE0



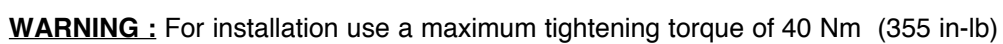
NOTE : dimensions refer to rigid stem length option “4” (153 mm – 6”)

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

IE1S

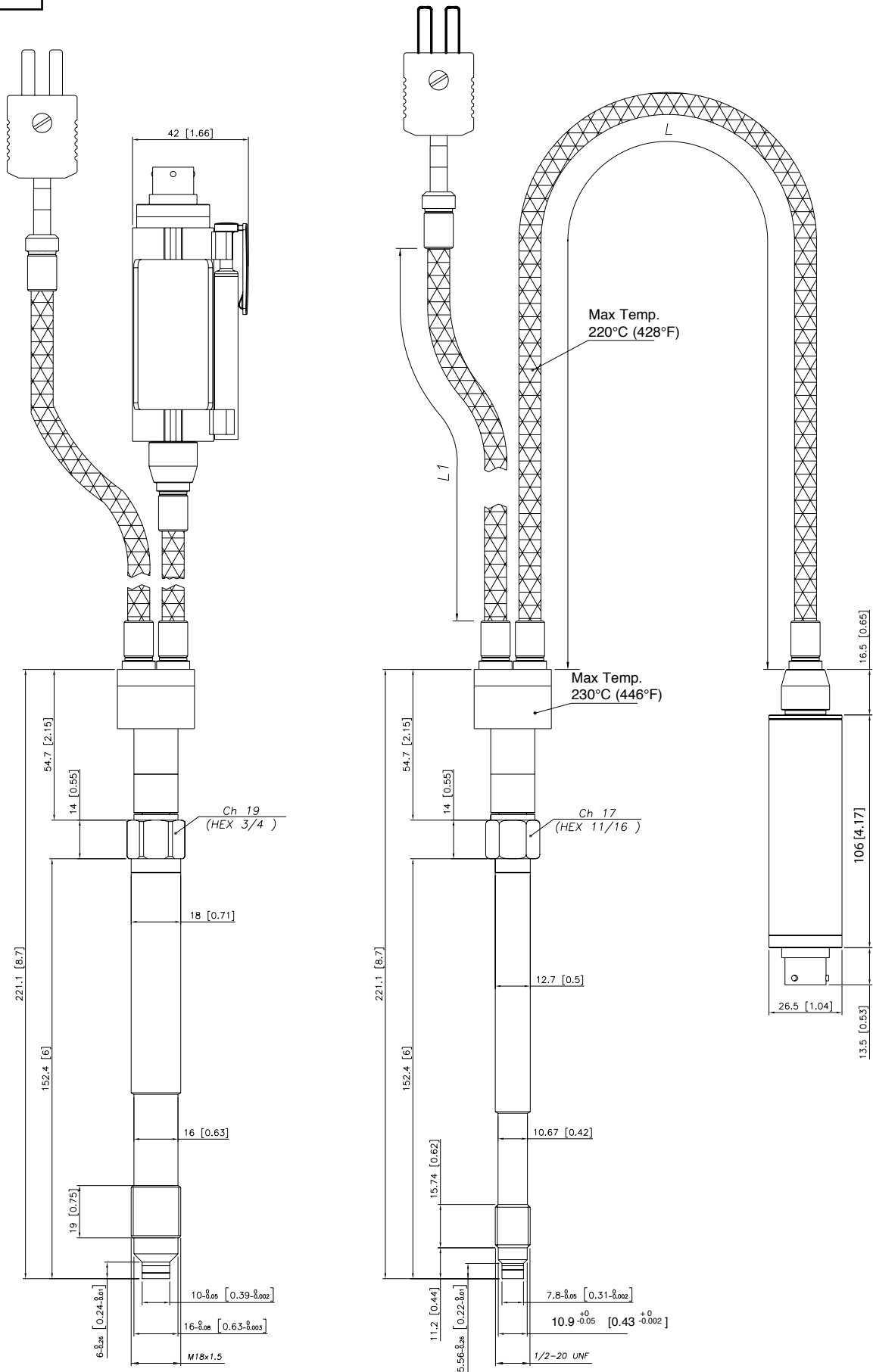


IE1M



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 $<3.6\text{mA}$
- Broken primary element / pin detachment, output $>21\text{mA}$
- Pressure above 200% of the span, output $<3.6\text{mA}$
- Pressure below the -30% of the span related to the zero value, output $<3.6\text{mA}$
- Voltage monitor in case of overvoltage/undervoltage/voltage variation in the electronics, output $<3.6\text{mA}$
- Program sequence error, output $<3.6\text{mA}$
- Overtemperature on the electronics, output $<3.6\text{mA}$
- Error on the primary element output or on the first amplification stage, output $<3.6\text{mA}$

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: $24\text{Vdc} \pm 20\%$
- 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 $< 3,6\text{mA}$	OPEN
ON	output $> 21\text{mA}$	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 $<3,6\text{mA}$
- Device not connected: breakdown information as the signal is $<3,6\text{mA}$
- Broken power-supply: breakdown information as the signal is $<3,6\text{mA}$

or in case of performance problems:

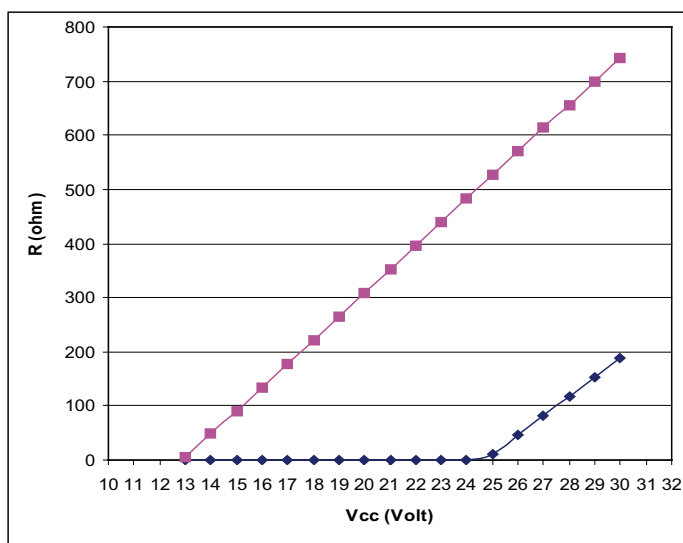
- most common failures on primary sensors: the signal goes to $>21\text{mA}$

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

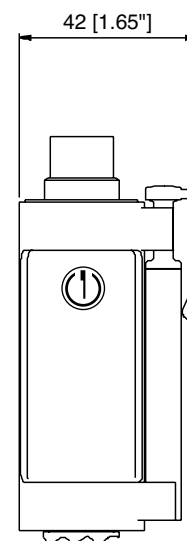
LOAD DIAGRAM



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

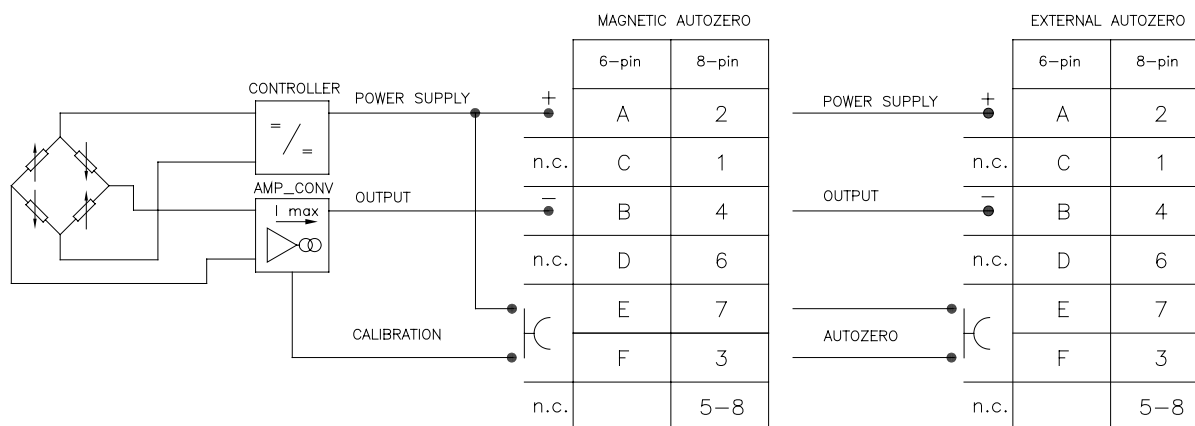


The Autozero function is activated through a magnetic contact (external magnet supplied with the sensor).

See the manual for a complete Autozero function explanation.

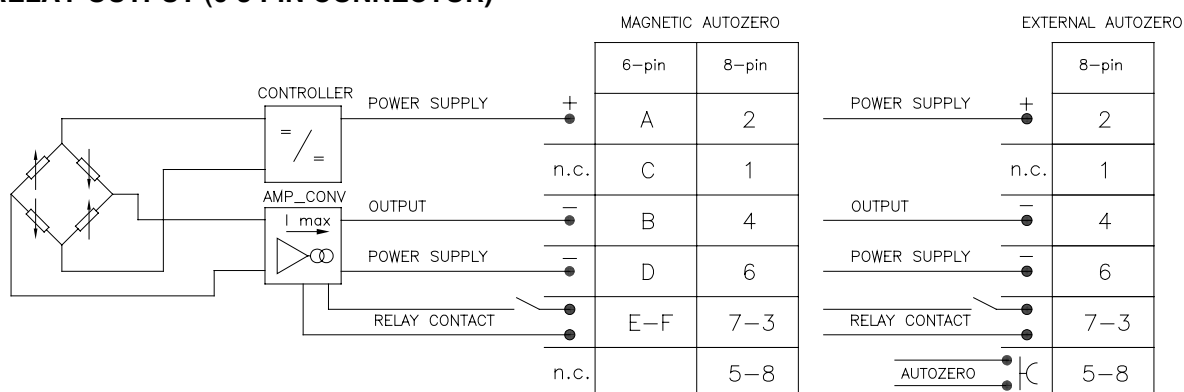
ELECTRICAL CONNECTIONS

CURRENT OUTPUT



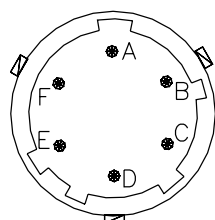
The cable shield is tied to connector via cable clamp

RELAY OUTPUT (6-8 PIN CONNECTOR)

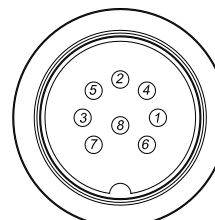


The cable shield is tied to connector via cable clamp

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				Output Relay Version (activation threshold): X=no relay B=80%fs A=70%fs C=90%fs																																																																		
VERSION Rigid rod 0 Rigid + flexible stem 1 With thermocouple 2				000= Special executions																																																																		
MECHANICS Single fixed A Modular fixed B * Single Floating S Modular Floating M *				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">E</td> <td>External Autozero *</td> </tr> <tr> <td style="text-align: center;">-</td> <td>Magnetic Autozero</td> </tr> </table> (*) as an alternative to the CAL function					E	External Autozero *	-	Magnetic Autozero																																																										
E	External Autozero *																																																																					
-	Magnetic Autozero																																																																					
CONNECTOR 6 pin 6 8 pin 8				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">P</td> <td>Performance Level='c'</td> </tr> <tr> <td style="text-align: center;">0</td> <td>Standard 4...20mA</td> </tr> </table> Specify 0 in case of standard 4...20mA output					P	Performance Level='c'	0	Standard 4...20mA																																																										
P	Performance Level='c'																																																																					
0	Standard 4...20mA																																																																					
ACCURACY CLASS 0.25% FSO H 0.5% FSO M				FLEXIBLE ROD LENGTH (mm / inches)																																																																		
MEASUREMENT RANGE <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">bar</th> <th colspan="2">psi</th> </tr> </thead> <tbody> <tr><td>20*</td><td>B02D</td><td>300</td><td>P03C</td></tr> <tr><td>35</td><td>B35U</td><td>500</td><td>P05C</td></tr> <tr><td>50</td><td>B05D</td><td>750</td><td>P75D</td></tr> <tr><td>70</td><td>B07D</td><td>1000</td><td>P01M</td></tr> <tr><td>100</td><td>B01C</td><td>1500</td><td>P15C</td></tr> <tr><td>200</td><td>B02C</td><td>3000</td><td>P03M</td></tr> <tr><td>350</td><td>B35D</td><td>5000</td><td>P05M</td></tr> <tr><td>500</td><td>B05C</td><td>7500</td><td>P75C</td></tr> <tr><td>700</td><td>B07C</td><td>10000</td><td>P10M</td></tr> <tr><td>1000</td><td>B01M</td><td>15000</td><td>P15M</td></tr> </tbody> </table>				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	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="3">Standard (IE0)</td> </tr> <tr> <td style="text-align: center; width: 50px;">0</td> <td colspan="2">none</td> </tr> <tr> <td colspan="3">Standard (IE1,IE2)</td> </tr> <tr> <td style="text-align: center;">D</td> <td>457mm</td> <td>18"</td> </tr> <tr> <td style="text-align: center;">E</td> <td>610mm</td> <td>24"</td> </tr> <tr> <td style="text-align: center;">F</td> <td>760mm</td> <td>30"</td> </tr> </table>					Standard (IE0)			0	none		Standard (IE1,IE2)			D	457mm	18"	E	610mm	24"	F	760mm	30"
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																																																																			
Standard (IE0)																																																																						
0	none																																																																					
Standard (IE1,IE2)																																																																						
D	457mm	18"																																																																				
E	610mm	24"																																																																				
F	760mm	30"																																																																				
* 10 bar (B01D) or 150psi (P15D) for M18x1,5 version				RIGID ROD LENGTH (mm / inches)																																																																		
Examples				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="3">Standard</td> </tr> <tr> <td style="text-align: center; width: 50px;">4</td> <td>153mm</td> <td>6"</td> </tr> <tr> <td style="text-align: center;">5</td> <td>318mm</td> <td>12.5"</td> </tr> <tr> <td colspan="3">Available on request</td> </tr> <tr> <td style="text-align: center;">3</td> <td>76mm</td> <td>3"</td> </tr> <tr> <td style="text-align: center;">6</td> <td>350mm</td> <td>14"</td> </tr> <tr> <td style="text-align: center;">7</td> <td>400mm</td> <td>16"</td> </tr> <tr> <td style="text-align: center;">8</td> <td>456mm</td> <td>18"</td> </tr> </table>					Standard			4	153mm	6"	5	318mm	12.5"	Available on request			3	76mm	3"	6	350mm	14"	7	400mm	16"	8	456mm	18"																																						
Standard																																																																						
4	153mm	6"																																																																				
5	318mm	12.5"																																																																				
Available on request																																																																						
3	76mm	3"																																																																				
6	350mm	14"																																																																				
7	400mm	16"																																																																				
8	456mm	18"																																																																				
THREADING Standard <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50px;">1</td> <td>1/2 - 20 UNF</td> </tr> <tr> <td style="text-align: center;">4</td> <td>M18 x 1.5</td> </tr> </table>				1	1/2 - 20 UNF	4	M18 x 1.5	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'.																																																														
1	1/2 - 20 UNF																																																																					
4	M18 x 1.5																																																																					
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																																																																						

GEFRAN

GEFRAN spa
via Sebina, 74
25050 PROVAGLIO D'ISEO (BS) - ITALIA
tel. 0309888.1 - fax. 0309839063
Internet: <http://www.gefran.com>

DTS IE 06-2011 ENG