

MAIN FEATURES

- Pressure ranges from: 0-17 to 0-1000bar/0-250 to 15000 psi
- Extensimetric measurement principle
- Accuracy: $< \pm 0.25\%$ FS (H); $< \pm 0.5\%$ FS (M)
- Ex certifications for potentially explosive atmospheres (see details)
- SIL2 and PL d approvals for Functional Safety
- 1/2-20UNF, M18x1.5 standard threads, mounting flange ϕ 66.3mm (2.61")
- Standard diaphragm is 15-5 PH stainless steel with GTP+ coating
- 17-7 PH corrugated stainless steel diaphragm with GTP+ coating for ranges below 100 bar-1500 psi
- Other diaphragm types available on request

HMJ0 The rigid rod configuration provides fast and easy installation.

HMJ1 The flexible rod configuration is suitable for applications demanding greater thermal isolation and where installation would otherwise be difficult.

HMJ2 This configuration lets you measure process pressure and temperature at the same point with a single installation.

HMJ3 The configuration with exposed tip is ideal for applications in limited space.

HMJ4 Configuration with flange for specific applications.

The transmitters have been designed and manufactured according to:

- ATEX Directive 2014/34/EU
- IECEx Scheme
- Neps Ex Regulation

Type of protection:

Group II, category 2G, 2D (EPL Gb/Db)

Gas type of protection: Ex db IIC T6/T5 Gb

Dust type of protection: Ex tb IIIC T85°C/T100°C Db

Ambient temperature: -20°C /+60°C (T6) and -20°C /+85°C (T5)

Note: HMJ2 version include a thermocouple with added temperature sensor; the temperature sensor shall be treated as simple apparatus, according to EN IEC 60079-11 :2024, which needs to be supplied by associated equipment (Intrinsic safety barrier with marking [Ex ia IIC Ga] and [Ex ia IIIC Da]) with galvanic separation, with following parameters:

Ui = 30V

li = 100mA

Pi = 0,75W

Li = 0

Ci = 0

Marking for these specific models is:

• GAS type of protection: Ex db ia IIC T6, T5 Gb

• DUST type of protection: Ex ia tb IIIC T85°C, T100°C Db

EU-Type Examination Certificate Number: IMQ 25 ATEX 013 X

IECEx CoC number: IECEx IMQ 25.0003X

Neps Ex number: GYJ25.1359X

The HMJ series of Gefran are pressure transmitters with HART communication protocol for using in high temperature environment with explosive atmosphere presence.

The main characteristic of this series is the capability to read pressure of the media up to 400°C.

The constructive principle is based on the hydraulic transmission of the pressure.

The fluid-filled system assures the temperature stability. The physical measure is transformed in a electrical measure by means of strain-gauge technology.

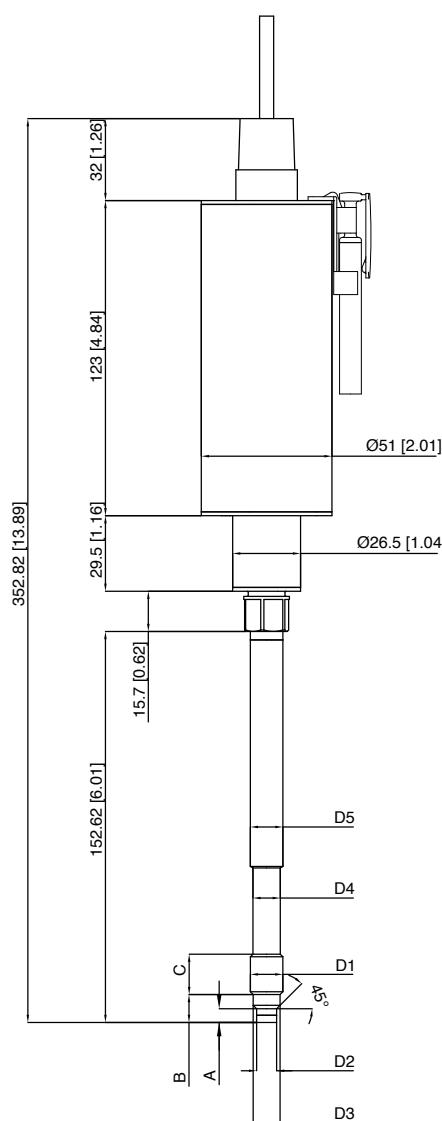
The SIL2 and PL d approvals make the product suitable for use in the Functional Safety applications, particularly in the process plants for the production of polymers, where it is an essential requirement.

TECHNICAL SPECIFICATIONS

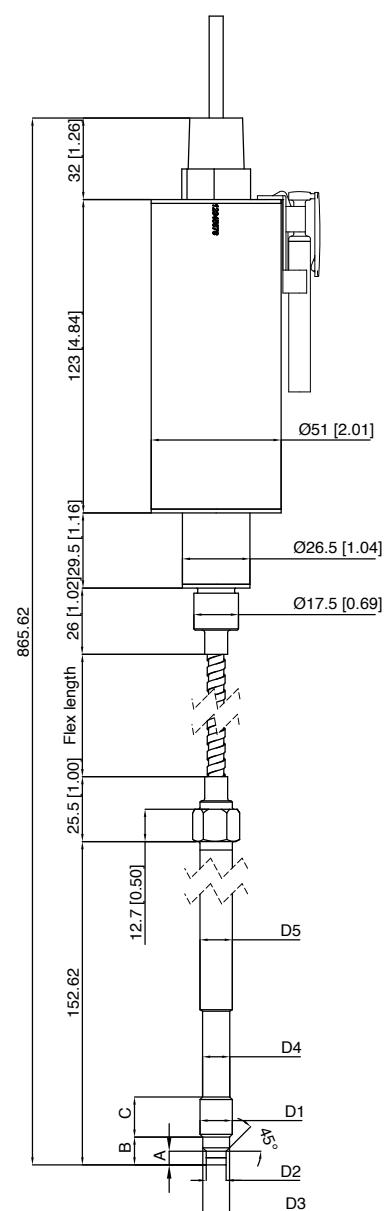
Accuracy (1)	H $< \pm 0.25\%$ FS (100...1000 bar) M $< \pm 0.5\%$ FS (17...1000 bar)
Resolution	16 bit
Measurement range	0..17 to 0..1000bar 0..250 to 0..15000psi
Rangeability	3:1
Maximum overpressure (without degrading performances)	2 x FS 1.5 x FS above 1000bar/15000psi
Measurement principle	Extensimetric thick film
Power supply	13...30Vdc
Maximum current absorption	23mA
Output signal Full Scale (FS)	20mA
Zero balance (tolerance $\pm 0.25\%$ FS)	4mA
Calibration signal	80% FS
Power supply polarity reverse protection	YES
Compensated temperature range housing	0...+85°C
Operating temperature range housing	-30...+85°C
Storage temperature range housing	-40...+125°C
Thermal drift in compensated range: Zero / Calibration / Sensibility	< 0.02% FS/°C
Diaphragm maximum temperature	400°C / 750°F
Zero drift due to change in process temperature (zero)	< 0.02 bar/°C
Diaphragm: Standard material in contact with process medium	<ul style="list-style-type: none"> • 15-5 PH with GTP+ coating • 17-7 PH corrugated diaphragm with GTP+ coating for ranges <100bar (1500psi) <p>Stem: • 17-4 PH</p>
Thermocouple (model HMJ2)	STD: type "J" (isolated junction)
Protection degree (with 6-pole female connector)	IP66
SIL2 certification PL d certification	EN IEC 62061 / IEC 61508 EN ISO 13849
FS = Full scale output (1) BFSL method (Best Fit Straight Line): includes combined effects of Non-Linearity, Hysteresis and Repeatability (according to IEC 62828-2)	

MECHANICAL DIMENSIONS

HMJ0



HMJ1

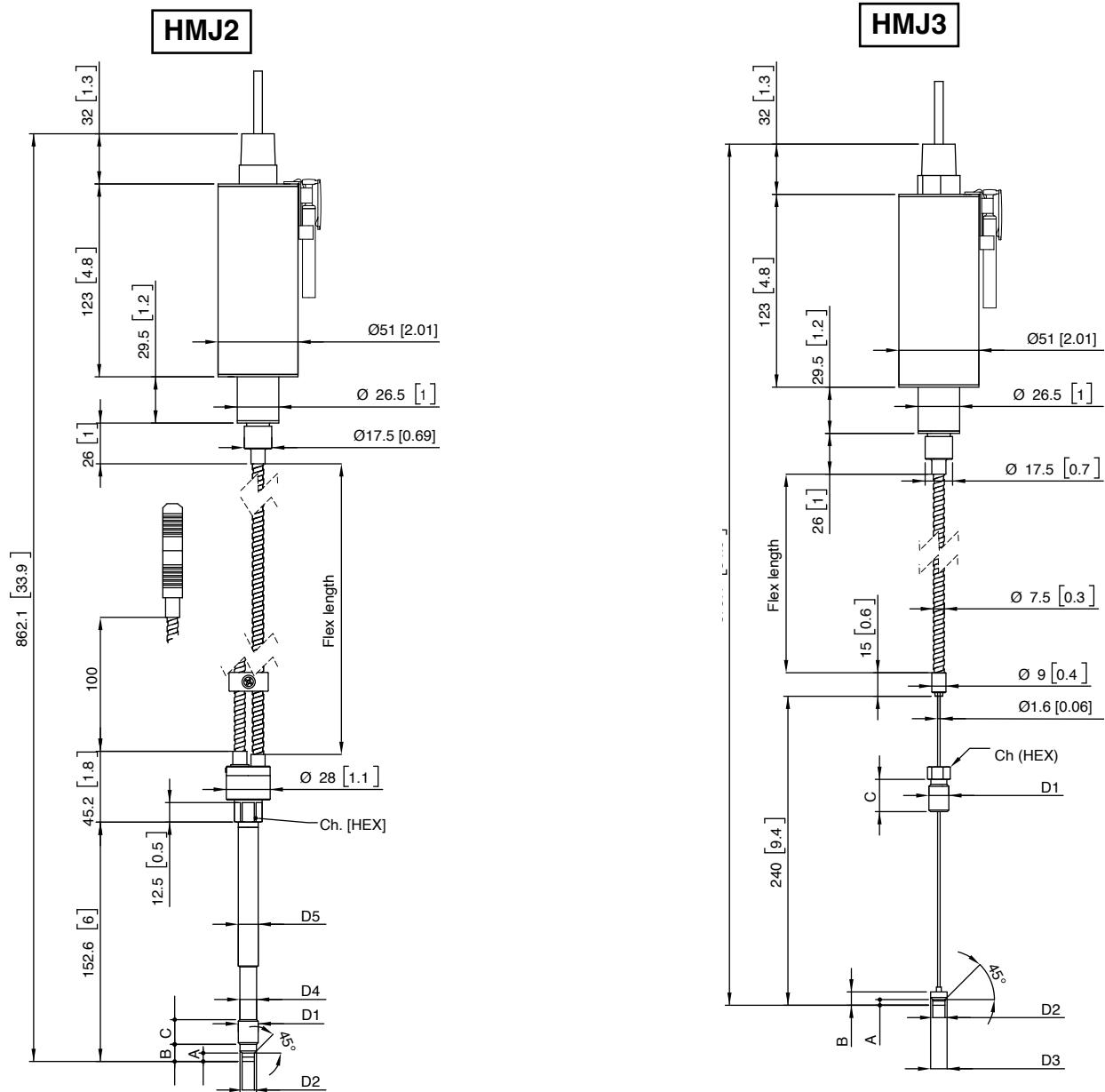


D1	1/2 - 20UNF	D1	M18x1.5
D2	ø7.8 -0.05 [ø0.31" -0.002]	D2	ø10 -0.05 [ø0.394" -0.002]
D3	ø10.5 -0.025 [ø0.41" -0.001]	D3	ø16 -0.08 [ø0.63" -0.003]
D4	ø10.67 [ø0.42"]	D4	ø16 -0.4 [ø0.63" -0.016]
D5	ø12.7 [ø0.5"]	D5	ø18 [ø0.71"]
A	5.56 -0.26 [0.22" -0.01]	A	6 -0.26 [0.24" -0.01]
B	11.2 [0.44"]	B	14.8 -0.4 [0.58" -0.016]
C	15.74 [0.62"]	C	19 [0.75"]
Ch [Hex]	16 [5/8"]	Ch [Hex]	19 [3/4"]

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

WARNING: For installation use a maximum tightening torque of 56 Nm (500 in-lb)

MECHANICAL DIMENSIONS



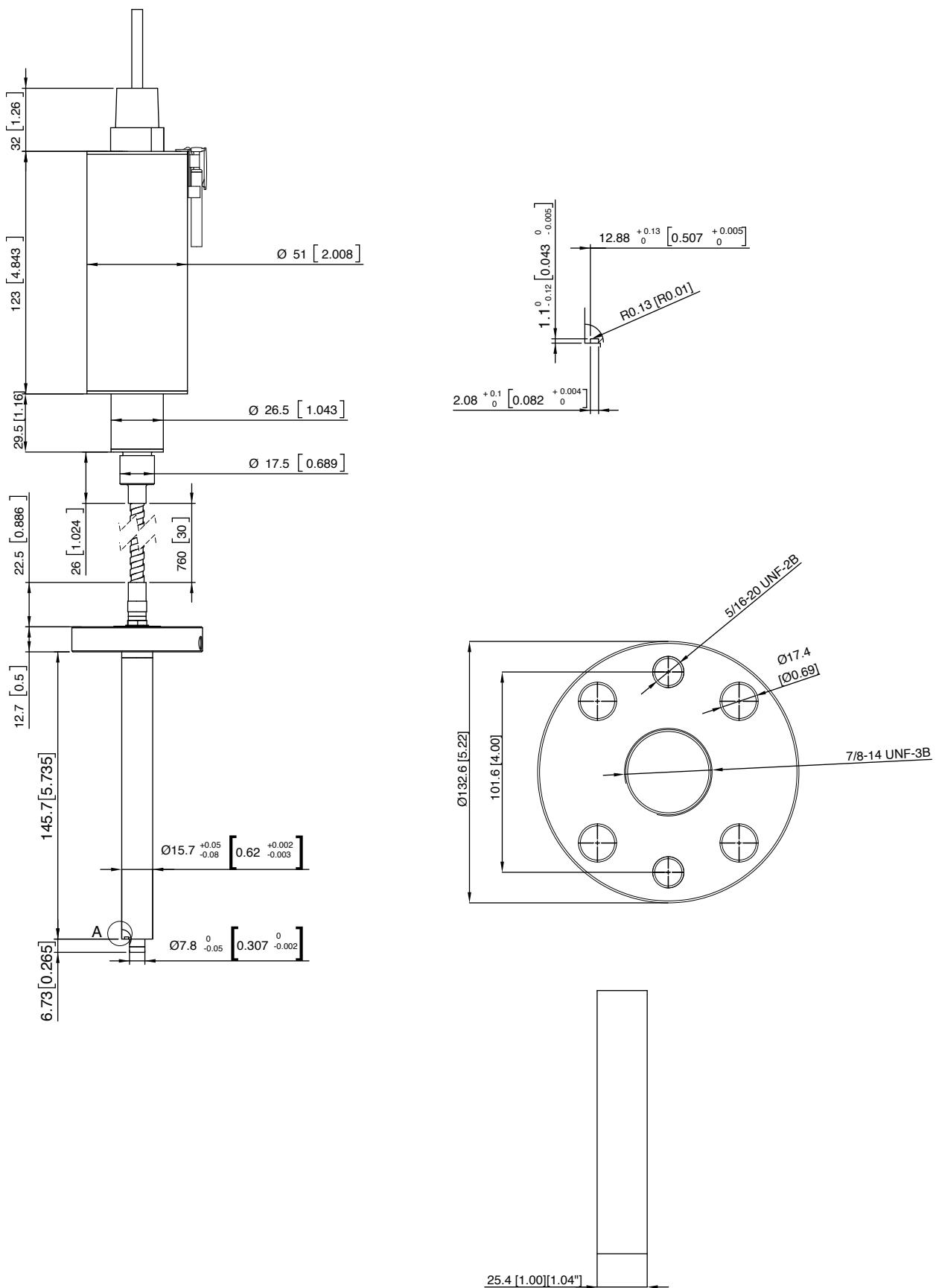
1/2 - 20UNF		M18x1.5	
D2	ø7.8 -0.05 [ø0.31" -0.002]	D2	ø10 -0.05 [ø0.394" -0.002]
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NOTE: dimensions refer to rigid stem length option "4" (153 mm- 6")

WARNING: For installation use a maximum tightening torque of 56 Nm (500 in-lb)

MECHANICAL DIMENSIONS

HMJ4



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

SELF DIAGNOSTICS (ONLY FOR SIL2 / PL d VERSIONS)

Below the conditions detected by the sensor self-diagnostics:

- Cut cable / device non connected / broken power supply, output $\leq 3.6\text{mA}$
- Pin detachment output $\leq 3.6\text{mA}$
- Broken primary element $\geq 21\text{mA}$
- Pressure above 200% of the span, output $\geq 21\text{mA}$
- Voltage monitor in case of overvoltage / undervoltage / voltage variation in the electronics, output $\leq 3.6\text{mA}$ (*)
- Program sequence error, output $\leq 3.6\text{mA}$ (*)
- Overtemperature on the electronics, output $\leq 3.6\text{mA}$ (*)
- Error on the primary element output or on the first amplification stage, output $\geq 21\text{mA}$

(*) In such conditions the Alarm Type can be programmed via HART at $\geq 21\text{ mA}$.

NAMUR COMPLIANCE (ONLY FOR SIL2 / PL d VERSIONS)

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 $\leq 3.6\text{mA}$
- Device not connected: breakdown information as the signal is $\leq 3.6\text{mA}$
- Broken power-supply: breakdown information as the signal is $\leq 3.6\text{mA}$

or in case of performance problems:

- Broken primary element $\geq 21\text{mA}$
- Pressure above 200% of the span, output $\geq 21\text{ mA}$
- Others $\leq 3.6\text{mA}$ (*)

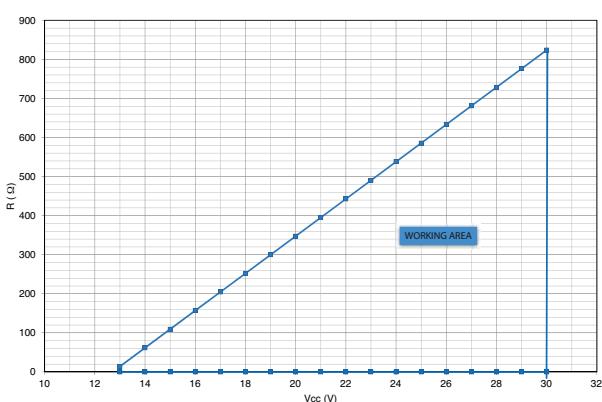
(*) In such a condition the Alarm Type can be programmed via HART at $\geq 21\text{ mA}$.

Note: in all the remaining situations, the output signal is always included between 3.8 and 20.5mA.



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

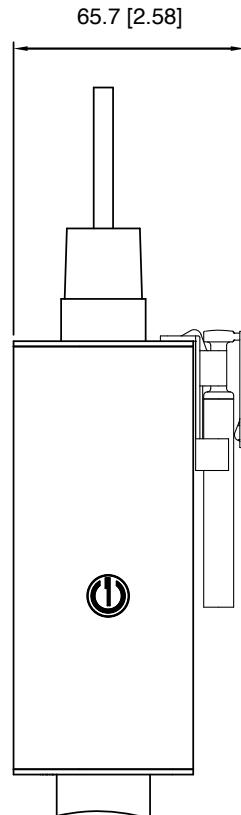
LOAD DIAGRAM



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



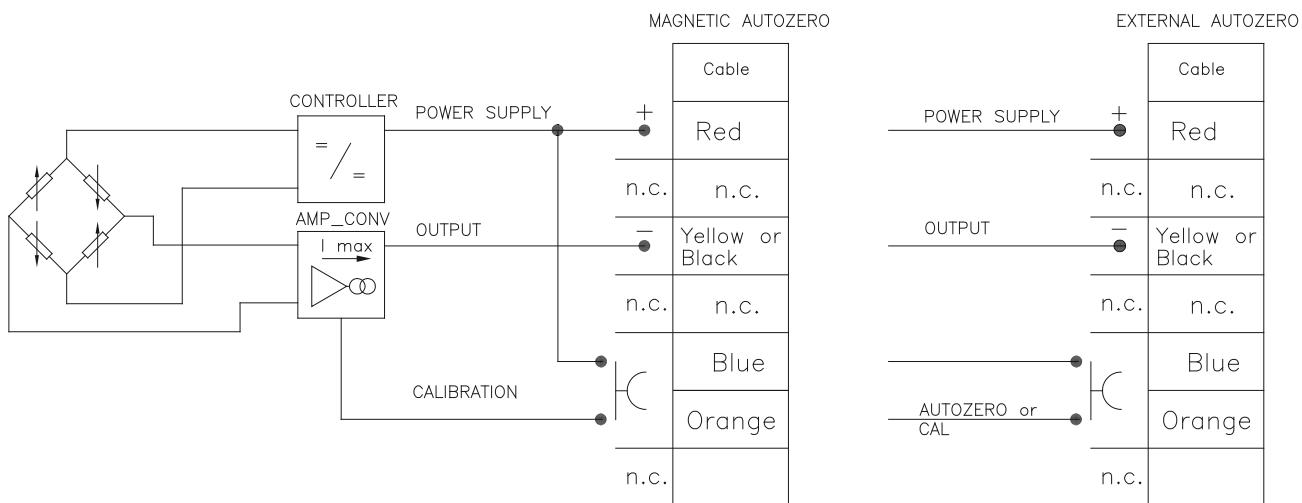
The Autozero function is activated through a magnetic contact (external magnet supplied with the sensor).

The Autozero function can be activated through HART command as well.

See the manual for a complete Autozero function explanation.

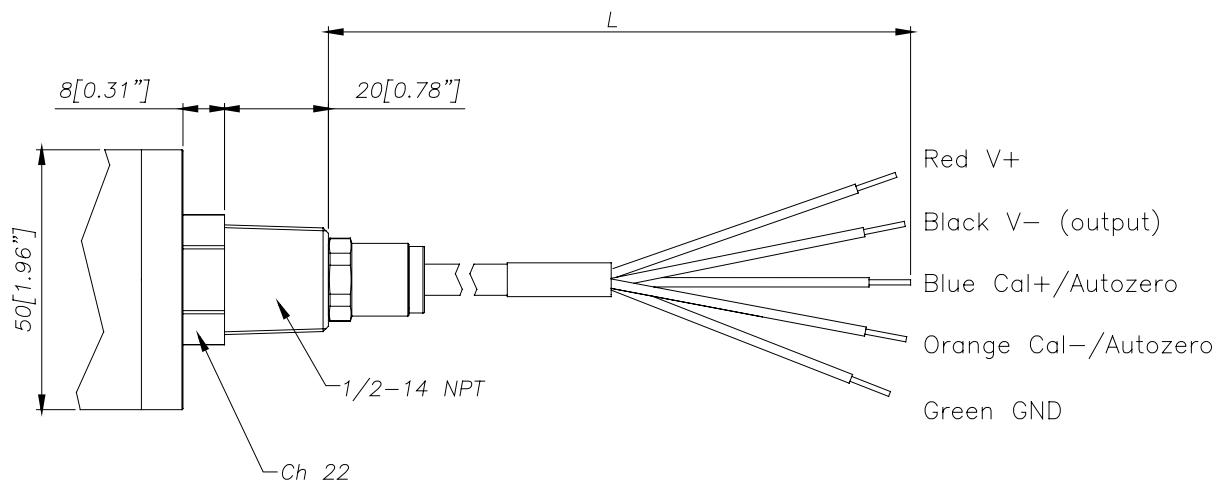
ELECTRICAL CONNECTIONS

CURRENT OUTPUT



The cable shield is tied to both sides, i.e. to the sensor connector and to the controller

Cable outlet (1/2 14-NPT)
Current output
L = 1 m



ACCESSORIES

Accessories

Mounting bracket	SF18
Dummy plug for 1/2-20UNF	SC12
Dummy plug for M18x1.5	SC18
Drill kit for 1/2-20UNF	KF12
Drill kit for M18x1.5	KF18
Cleaning kit for 1/2-20UNF	CT12
Cleaning kit for M18x1.5	CT18
Fixing pen clip	PKIT1032
Autozero pen	PKIT378

Thermocouples for model HMJ2

Type "J" (for rigid rod 153mm - 6")

TTER 601

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

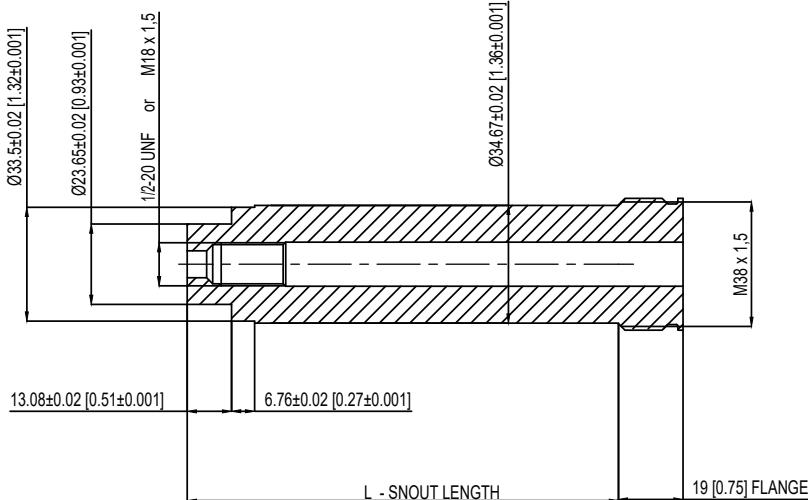
PROCESS FLANGE ADAPTER

The process flange adapter is a sensor accessory that allows for the installation of 1/2-20 UNF or M18x1.5 melt pressure sensor in a button seal style process mounting port. The adapter is made with an adapter body with different snout lengths plus an adapter flange available in different sizes (see tables and drawing below). Each combination of snout and flange is available according to the ordering information with a specific ordering code.

SPECIFICATIONS

- Pressure range: according to the selected sensor (up to 1000 bar/15000 psi max)
- Temperature range: according to the selected sensor
- Material of construction: 17-4PH Stainless steel

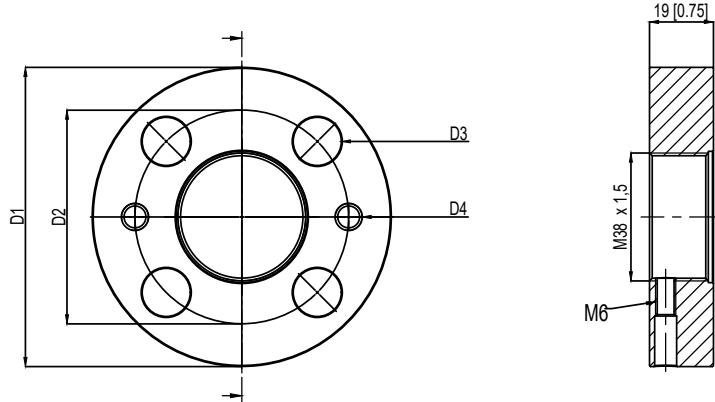
ADAPTER BODY



1/2-20 UNF	L - SNOUT LENGTH
STE1020	127 [5]
STE1021	51,6 [2,031]

M18 X 1,5	L - SNOUT LENGTH
STE1022	127 [5]
STE1023	51,6 [2,031]

ADAPTER FLANGE



	FLA960	FLA961
D_1	82,6 [3,25]	88,9 [3,50]
D_2	54 [2,14]	63,5 [2,50]
D_3	13,2 [0,52]	14,3 [0,56]
D_4	5/16-18 UNC	5/16-18 UNC

ORDER CODE

KIT - **5** - **0** - **1**

Snout length	
5 inch [127 mm]	5
2,031 inch [51,6 mm]	2

Flange type (see technical drawing)	
FLA960	0
FLA961	1

Thread dimensions	
1/2-20 UNF	1
M18 x 1,5	4

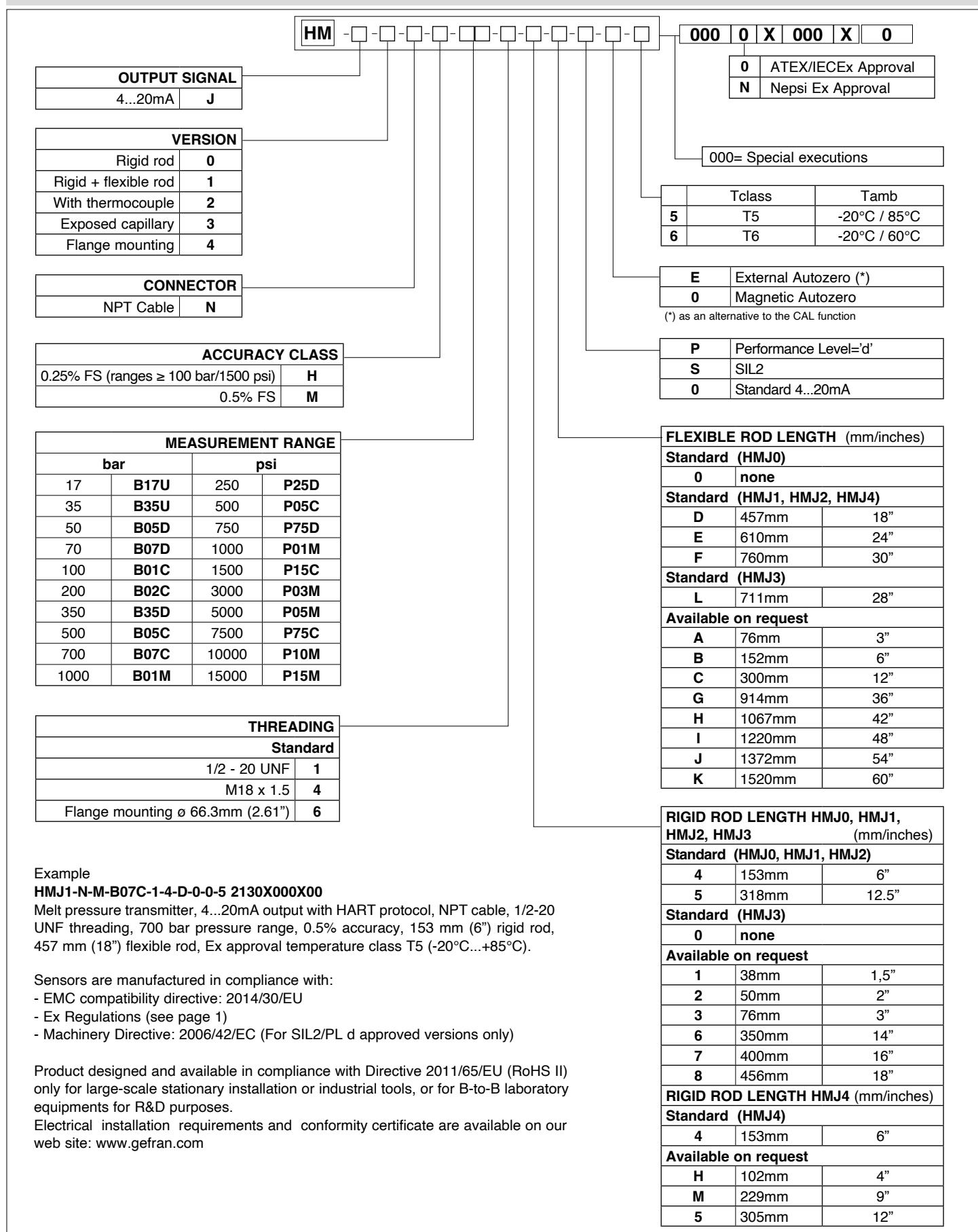
ADAPTER GASKETS			
Material	Dimensions	Max Pressure	Ord. Code
Aluminium	30.2 mm [1.19"] OD 24.1 mm [.950"] ID	200 bar/3000 psi	RON360
AISI 303 SS	30.2 mm [1.19"] OD 24.1 mm [.950"] ID	700 bar/10000 psi	RON361

Example:

KIT501

Process adapter with 5" snout length, 82.6 mm size flange, suitable for 1/2-20 UNF melt sensor

ORDER CODE



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

GEFRAN spa

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