



The HME series of Gefran are pressure transmitters with HART communication protocol for using in high temperature environment.

The main characteristic of this series is the capability to read temperature 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.

## MAIN FEATURES

- Pressure ranges from: 0-17 to 0-2000 bar / 0-250 to 0-30000 psi
- Accuracy:  $< \pm 0.25\%$  FSO (H);  $< \pm 0.5\%$  FSO (M)
- Fluid-filled system for temperature stability
- Mercury filling volume:  
HME0 (30mm<sup>3</sup>); HME1, HME2, HME3 (40mm<sup>3</sup>)
- 1/2-20UNF, M18x1.5 standard threads; other types available on request
- Autozero function on board / external option
- Standard diaphragm is 15-5 PH stainless steel with GTP coating
- 17-7 PH corrugated diaphragm with GTP coating for ranges below 100 bar-1500 psi

*GTP (advanced protection)  
Coating with high resistance against corrosion, abrasion and high temperature*

## AUTOZERO FUNCTION

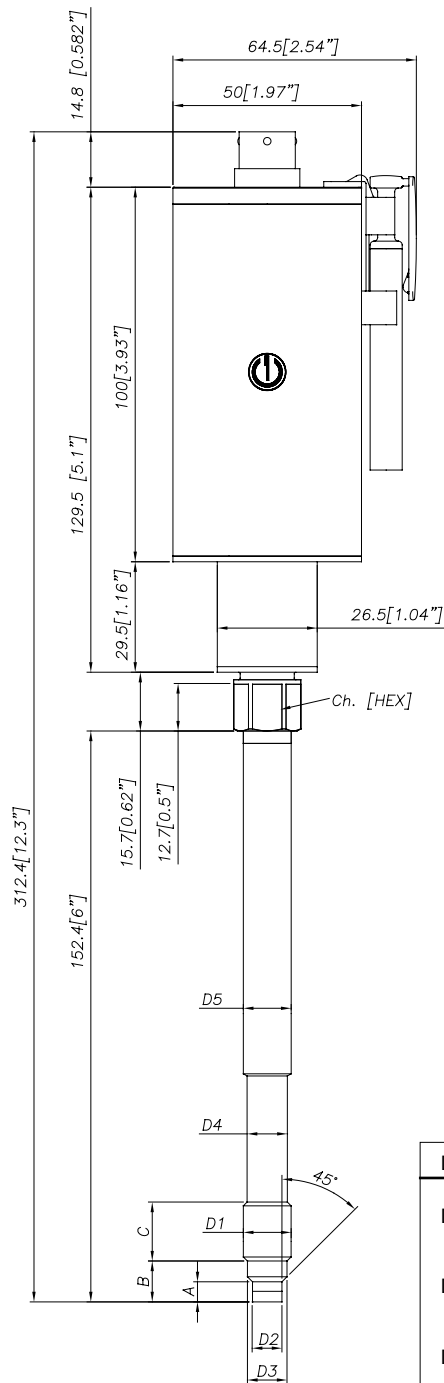
All signal variations in absence of pressure can be eliminated by using the Autozero function. This function is activated by closing a magnetic contact located on the transmitter housing. The procedure is permitted only with pressure at zero. This function can be activated via HART as well.

## TECHNICAL SPECIFICATIONS

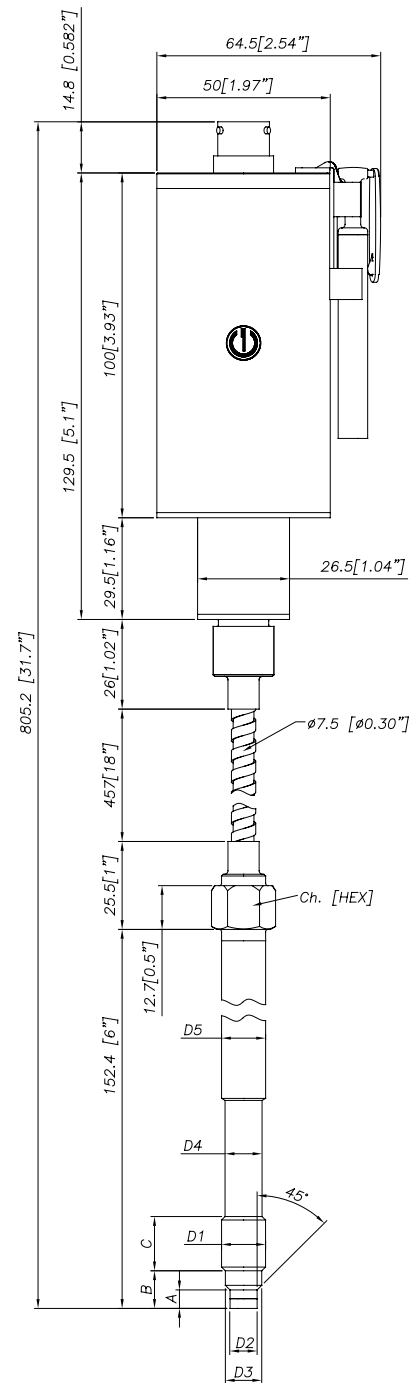
Accuracy (1)	H $< \pm 0.25\%$ FSO (100...2000 bar) M $< \pm 0.5\%$ FSO (17...2000 bar)
Resolution	16 bit
Measurement range	0..17 to 0..2000bar 0..250 to 0..30000psi
Rangeability	3:1
Maximum overpressure (without degrading performances)	2 x FS 1.5 x FS above 1000bar/15000psi
Measurement principle	Extensimetric
Power supply	13...30Vdc
Maximum current absorption	23mA (40mA with relay optional)
Output signal Full Scale (FSO)	20mA
Zero balance (tolerance $\pm 0.25\%$ FSO)	4mA
Calibration signal	80% FSO
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	$< 0.02\%$ FSO/°C
Diaphragm maximum temperature	400°C / 750°F
Zero drift due to change in process temperature (zero)	$< 0.02$ bar/°C
Standard material in contact with process medium	Diaphragm: • 15-5 PH with GTP coating • 17-7 PH corrugated diaphragm with GTP coating for ranges $< 100$ bar (1500psi) Stem: • 17-4 PH
Thermocouple (model HME2)	STD: type "J" (isolated junction)
Protection degree (with 6-pole female connector)	IP65
FSO = Full scale output (1) BFSL method (Best Fit Straight Line): includes combined effects of Non-Linearity, Hysteresis and Repeatability	

# MECHANICAL DIMENSIONS

## HME0



## HME1



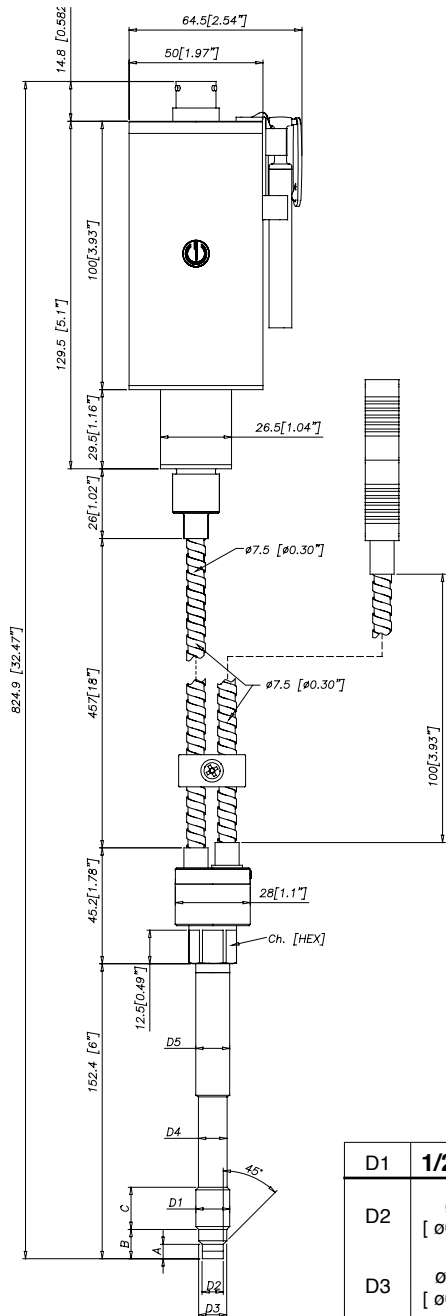
D1	1/2 - 20UNF	D1	M18x1.5
D2	ø7.8 -0.05 [ø0.31" -0.002]	D2	ø10 -0.05 [ø0.394" -0.002]
D3	ø10.5 -0.025 [ø0.41" -0.001]	D3	ø16 -0.08 [ø0.63" -0.003]
D4	ø10.67 [ø0.42"]	D4	ø16 -0.4 [ø0.63" -0.016]
D5	ø12.7 [ø0.5"]	D5	ø18 [ø0.71"]
A	5.56 -0.26 [0.22" -0.01]	A	6 -0.26 [0.24" -0.01]
B	11.2 [0.44"]	B	14.8 -0.4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

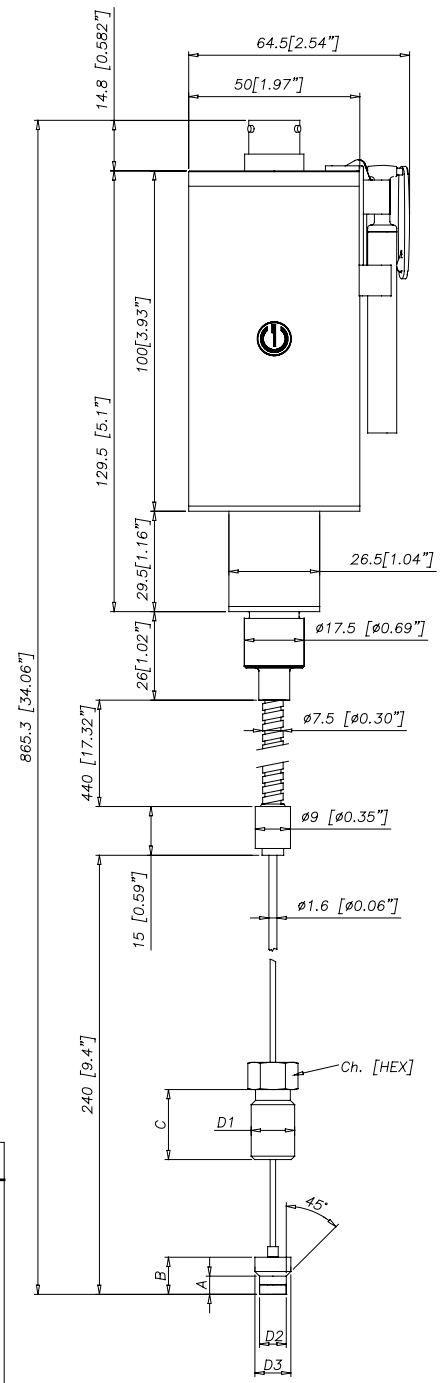
**WARNING:** For installation use a maximum tightening torque of 56 Nm (500 in-lb)

# MECHANICAL DIMENSIONS

## HME2



## HME3



D1	1/2 - 20UNF	D1	M18x1.5
D2	$\phi 7.8 -0.05$ [ $\phi 0.31 -0.002$ ]	D2	$\phi 10 -0.05$ [ $\phi 0.394 -0.002$ ]
D3	$\phi 10.5 -0.025$ [ $\phi 0.41 -0.001$ ]	D3	$\phi 16 -0.08$ [ $\phi 0.63 -0.003$ ]
D4	$\phi 10.67$ [ $\phi 0.42$ ]	D4	$\phi 16 -0.4$ [ $\phi 0.63 -0.016$ ]
D5	$\phi 12.7$ [ $\phi 0.5$ ]	D5	$\phi 18$ [ $\phi 0.71$ ]
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)

## SELF DIAGNOSTICS (ONLY FOR PL'C' 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 a condition the Alarm Type can be programmed via HART at  $\geq 21\text{mA}$ .

## 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 $\leq 3.6\text{mA}$	OPEN
ON	Output $\geq 21\text{mA}$	OPEN

## NAMUR COMPLIANCE (ONLY FOR PL'C' 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  $\leq 3.6\text{mA}$  (\*)

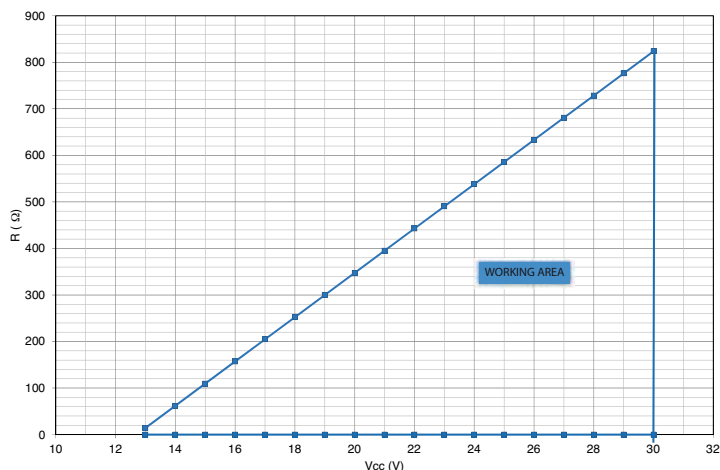
(\*) In such a condition the Alarm Type can be programmed via HART at  $\geq 21\text{mA}$ .

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.

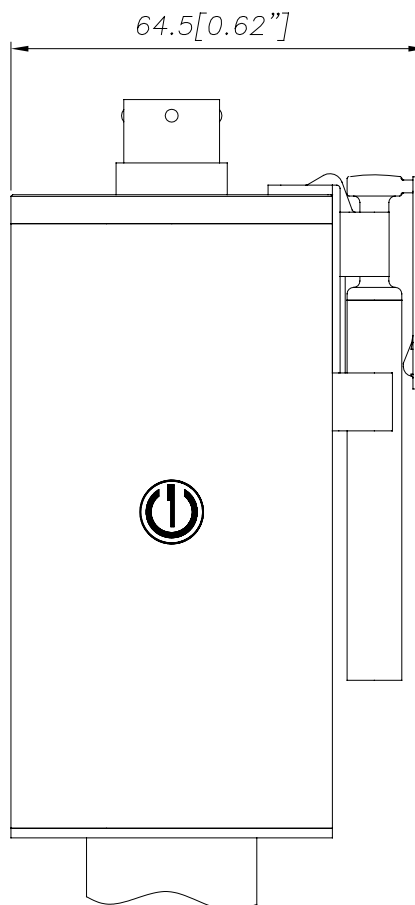
## LOAD DIAGRAM



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



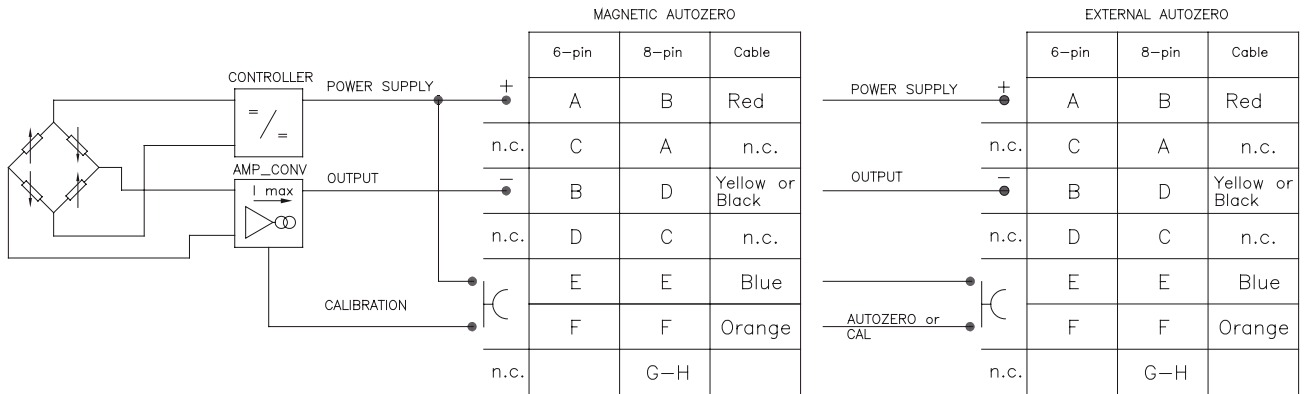
The Autozero function is activated through a magnetic contact (external magnet supplied with the sensor).

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

See the manual for a complete Autozero function explanation.

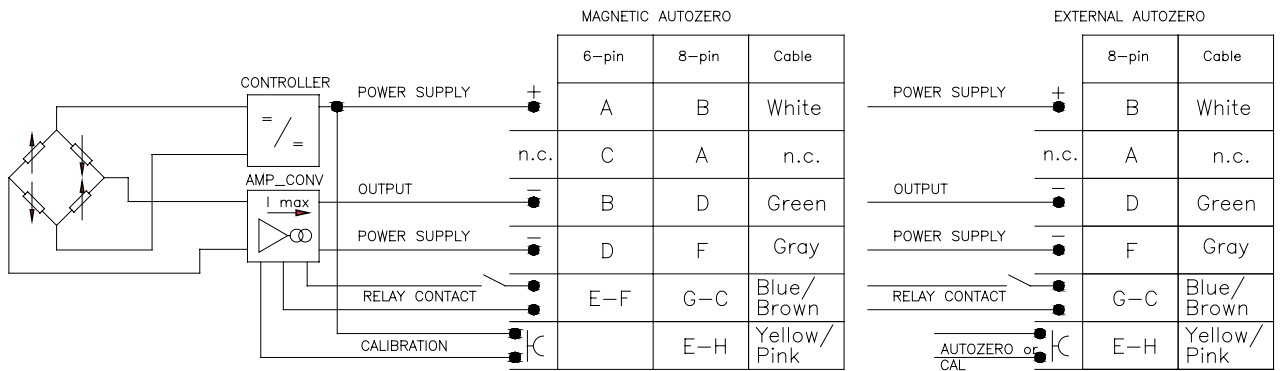
# ELECTRICAL CONNECTIONS

## CURRENT OUTPUT



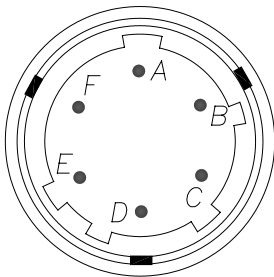
The cable shield is tied to both sides, i.e. to the sensor connector and to the controller

## RELAY OUTPUT

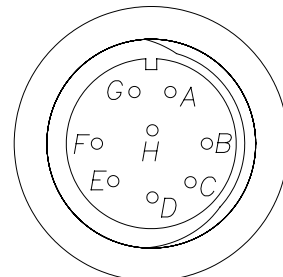


The cable shield is tied to both sides, i.e. to the sensor connector and to the controller

**6 pin Connector VPT07RA10-6PT2 (PT02A-10-6P)**

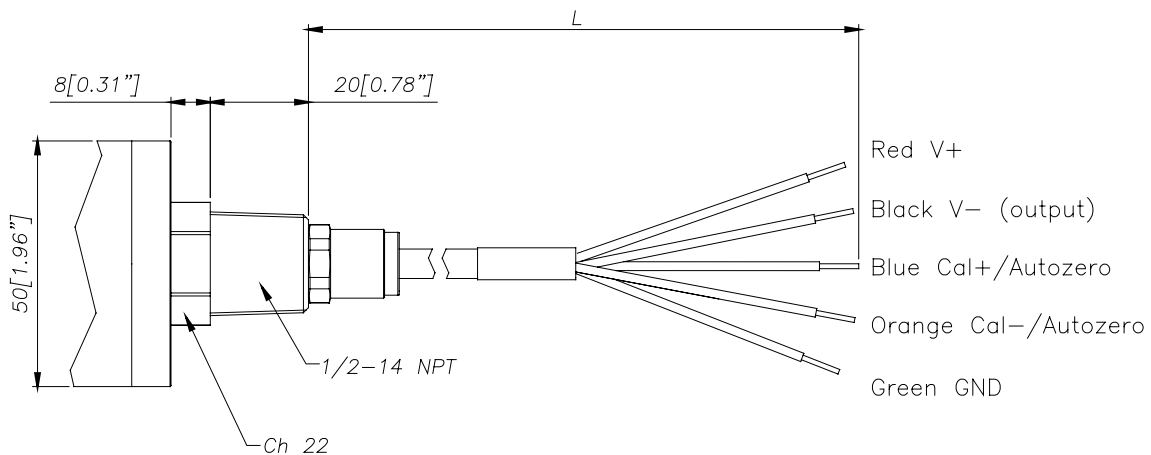


**8 pin Connector (PC02E-12-8P) Bendix**

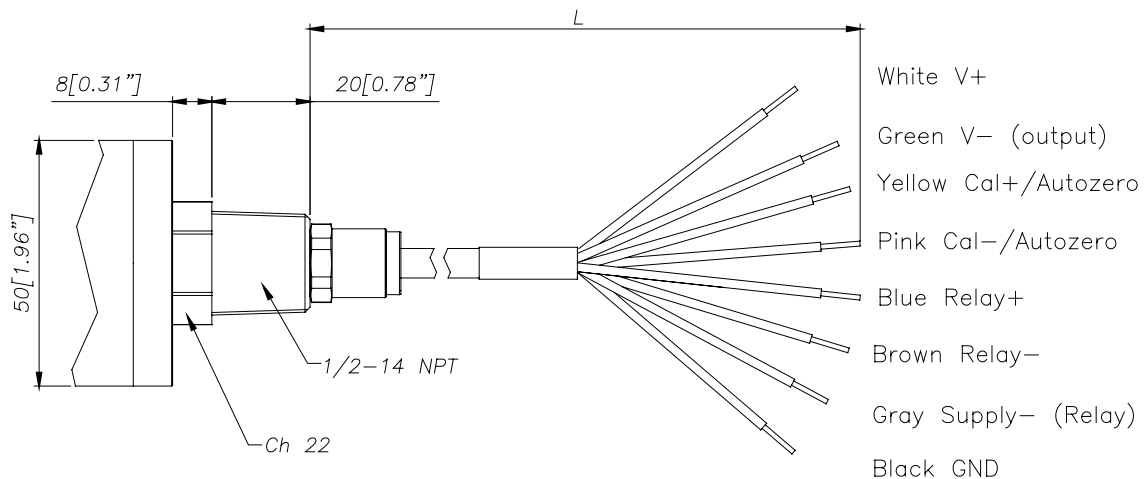


## CABLE OUTPUT (1/2 14-NPT) L = 1 m

### Current output



### Relay output Magnetic Autozero/External Autozero



## ACCESSORIES

### Connectors

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

CON300  
CON307

### 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

C08WLS  
C15WLS  
C25WLS  
C30WLS

### 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

SF18  
SC12  
SC18  
KF12  
KF18  
CT12  
CT18  
PKIT1032  
PKIT378

### Thermocouple for HME2 model

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

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

