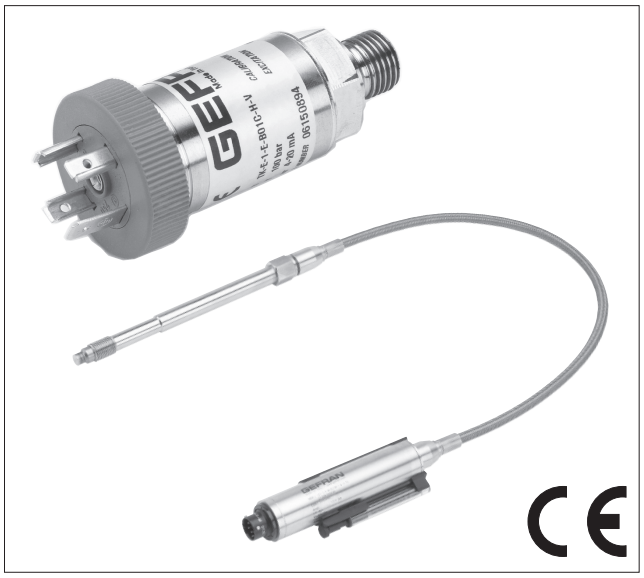
GEFRAN

Manual of Electrical Installation for Pressure Probes



Code 85306 **- Edition** 10/2014

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1. General Precautions

The system must be used only in accordance with the required protection level.
The sensor must be protected against accidental knocks and used in accordance with the instrument's ambient characteristics and performance levels.
The sensors must be powered with non-distributed networks and always at lengths of less than 30 mt.
In case of outdoor installations, follow the instructions in paragraph 5.

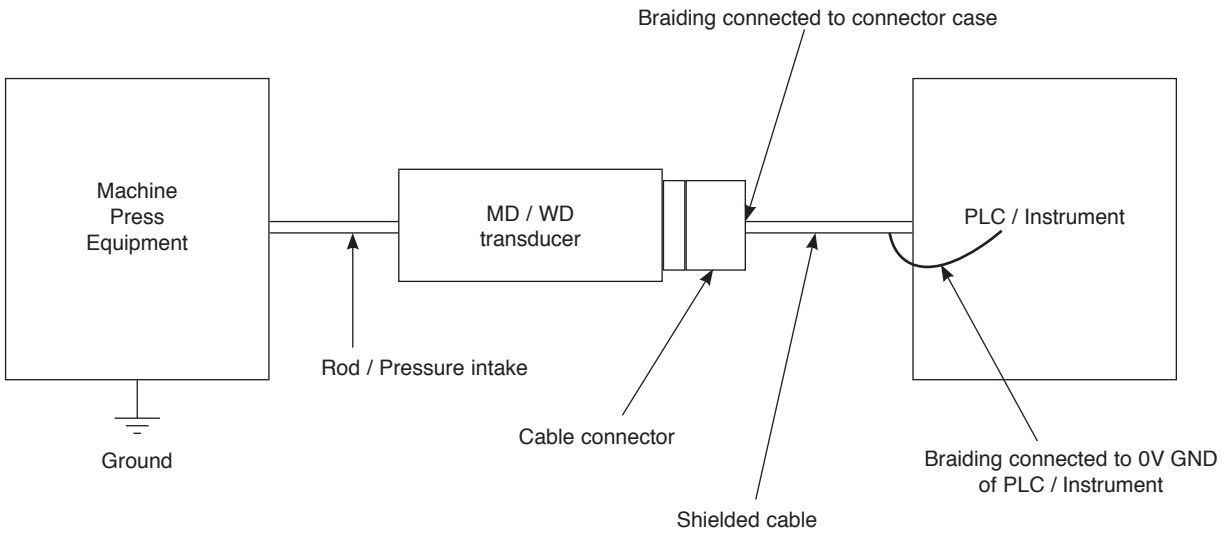
2. Transmitters with digital output

Transducers: Series MD / WD / KD / I / IJ

Outputs: CANopen DP404

Installation notes
- The transducer must be grounded (normally through the machine body or equipment it is installed on).
- Use a shielded cable only. The braiding must be connected to the case of the 5-pin connector. On instrument/PLC side, we advise you connect the braiding without power supply (0V GND).
- To prevent interference, separate the power cables from the signal cables.

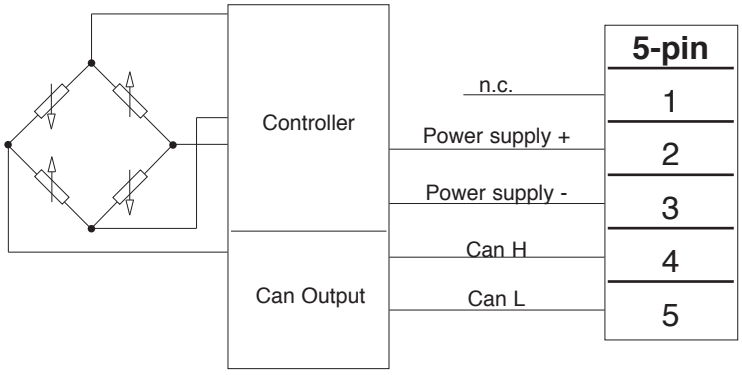
Standard installation (recommended)

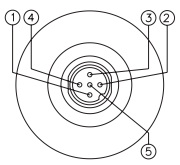


Electrical connections

Seriess **MD** / **WD** / **KD** / **I** / **IJ**

CAN BUS DP404 digital output





M12 DIN EN 50044 5-pin connector

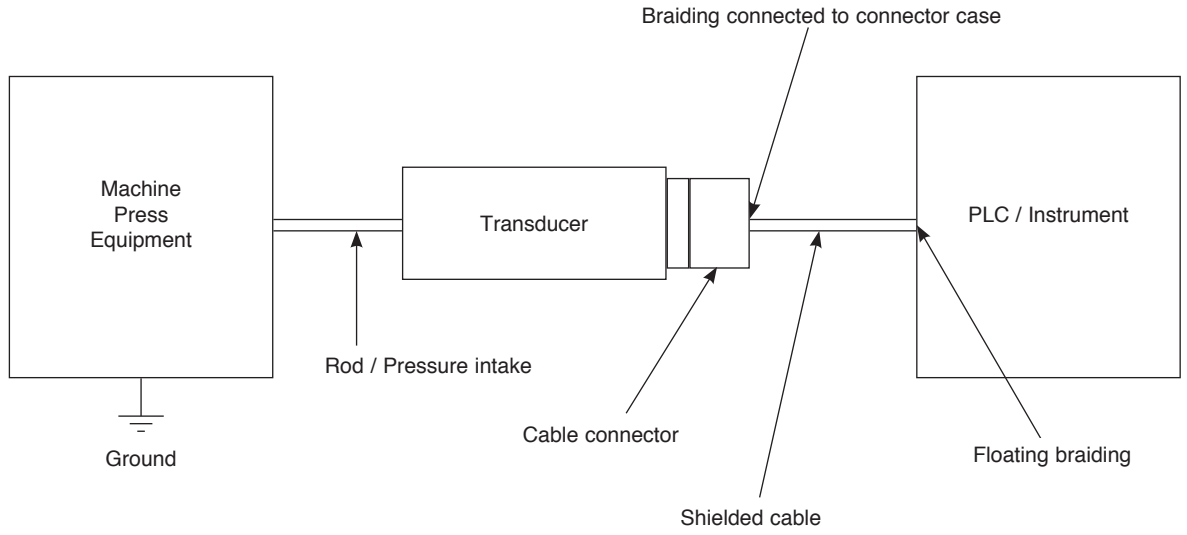
3. Transmitters with amplified analog output

Transducers: Series M / Series K / Series I /TK / TKDA / TPSA / TPSADA / TSA /TPFADA / TPFAS / TPHADA

Outputs: 0...10V, 0...5V, 0,1...10,1V, 1V, 0,1...5V, 1V, 4...20mA, ecc...
mV/V

Installation notes
- The transducer must be grounded (normally through the machine body or equipment it is installed on).
- Use a shielded cable only. The braiding must be connected to the connector case. The braiding on instrument / PLC side must be left floating.
- To prevent interference, separate the power cables from the signal cables

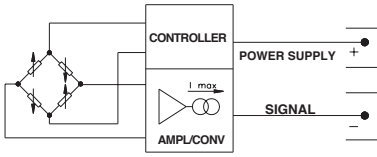
Standard installation (recommended)



Electrical connections

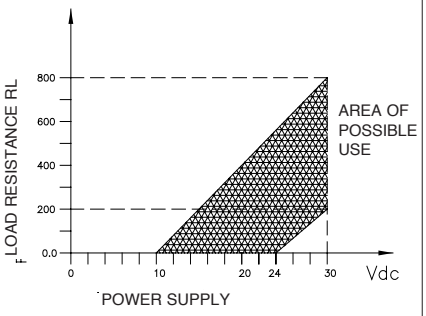
Series **TK** / **TPSA** / **TSA**

Current amplified output (mod. E)

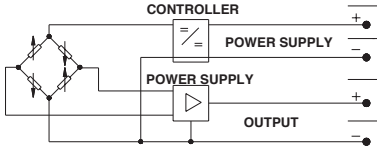


	cod. V	cod. P	cod. F	cod. E/M	cod. Z
+	A	3	Red	1	1
–	B	4	Yellow or Black	2	2
⏚	Case	Case	Shield	⏚	Case

LOAD DIAGRAM (Current output)

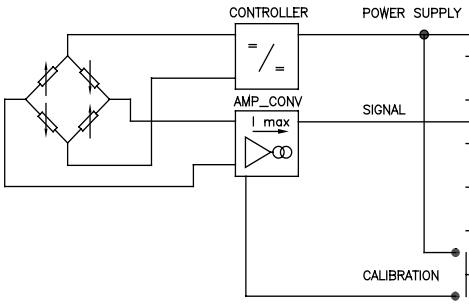


Voltage amplified output (mod. B/C/M/N/P/Q/R)



	cod. V	cod. P	cod. F	cod. E/M	cod. Z
+	C	1	White	3	3
–	D	2	Green	2	2
+	A	3	Red	1	1
–	B	4	Yellow or Black	2	2
⏚	Case	Case	Shield	⏚	Case

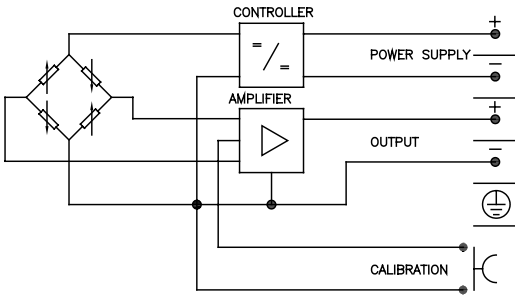
Output amplified in current (mod. E)



	cod. V	cod. P	cod. F	cod. E/M	cod. Z
+	A	3	Red	1	1
−	B	4	Yellow or Black	2	2
⏚	Case	Case	Shield	⏚	Case
	E	6	Blue	Not Available	Not Available
	F	5	Orange	Not Available	Not Available

The cable sheathing is connected to the transducer body

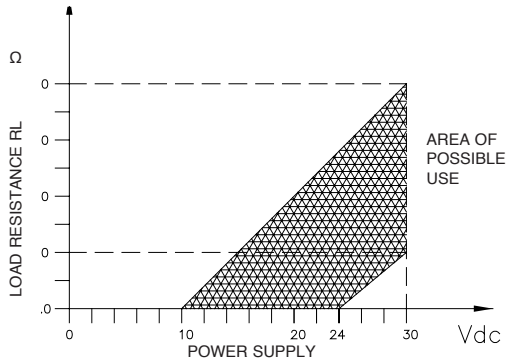
Output amplified in voltage (mod. B/C/M/N/P/Q/R)



	cod. V	cod. P	cod. F	cod. E/M	cod. Z
+	C	1	White	3	3
−	D	2	Green	2	2
+	A	3	Red	1	1
−	B	4	Yellow or Black	2	2
⏚	Case	Case	Shield	⏚	Case
	F	5	Orange	Not Available	Not Available
	E	6	Blue	Not Available	Not Available

The cable sheathing is connected to the transducer body

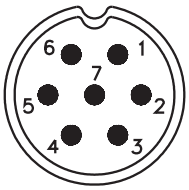
LOAD DIAGRAM (Current output)



Note 1:
On TPFAS series, Autozero and Calibration functions are available as options, see the relevant user manual downloadable on the website www.gefran.com

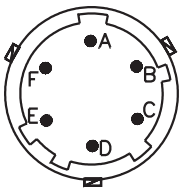
Note 2:
The “Digital Autospan” function is activated by means of the “Calibration” contacts shown in the above diagram.
For operation and complete functions, see the relevant user manual, downloadable on www.gefran.com.

P - 7 pole connector



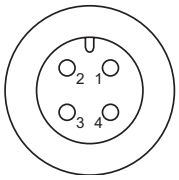
Male connector
7 pole M16x0.75
Protection rating IP67

V - 6 pole connector



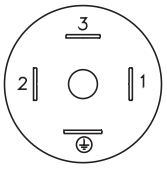
Male connector
6 pole bayonet
Protection rating IP66

Z - 4 pole connector M12 x 1



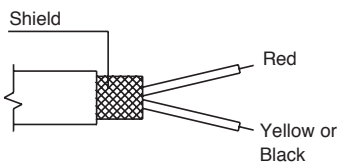
Male connector
4 pole
Protection rating IP67

E – EN 175301-803 Type A
M – EN 175301-803 Type C-ind



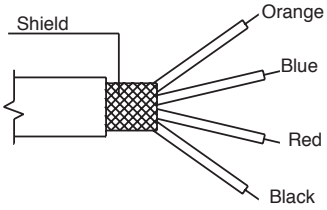
4 Pin DIN Type A
Protection rating IP65
4 Pin MicroDIN Tipo C-industrial
Protection rating IP65

F - 2 pole cable



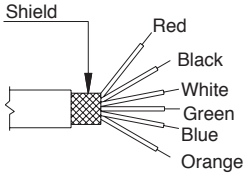
Shielded cable 2x0,25 - 2m. (output E)
Protection rating IP65

F - 4 pole cable



Shielded cable 4x0,25 - 1m. (output E)
Protection rating IP65

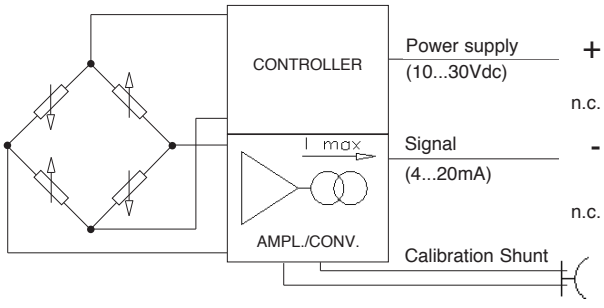
F - 6 pole cable



Shielded cable 6x0,25 - 1m
Protection rating IP65

Series **M / W / K**

CURRENT OUTPUT (4...20mA, 2 wires)



Shield drain wire is tied to connector via cable clamp

MAGNETIC AUTOZERO

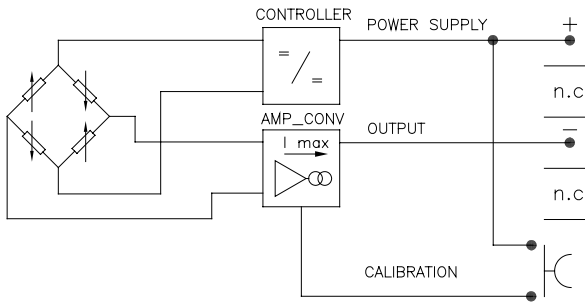
6-pin	8-pin
A	B
C	A
B	D
D	C
E - F	E - F
	G - H

EXTERNAL AUTOZERO

	6-pin	8-pin
Power supply + (10...30Vdc)	A	B
n.c.	C	A
Signal - (4...20mA)	B	D
n.c.	D	C
Autozero	E - F	E - F
n.c.		G - H

Series **I**

CURRENT OUTPUT



Shield drain wire is tied to connector via cable clamp

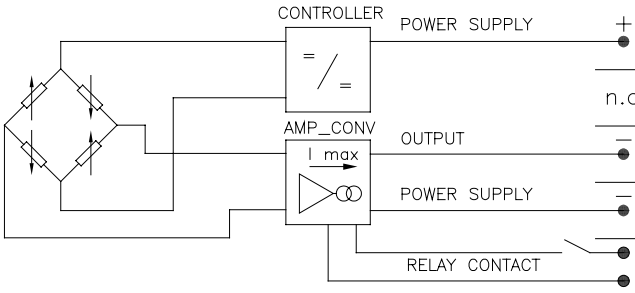
MAGNETIC AUTOZERO

6-pin	8-pin
A	2
C	1
B	4
D	6
E	7
F	3
	5-8

EXTERNAL AUTOZERO

	6-pin	8-pin
POWER SUPPLY +	A	2
n.c.	C	1
OUTPUT -	B	4
n.c.	D	6
AUTOZERO	E	7
	F	3
n.c.		5-8

RELAY OUTPUT (6-8 pin connector)



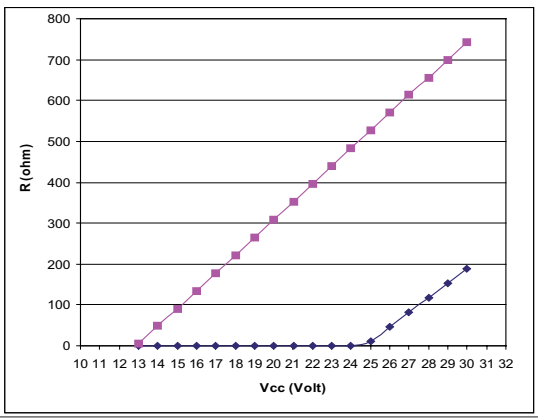
Shield drain wire is tied to connector via cable clamp

MAGNETIC AUTOZERO

6-pin	8-pin
A	2
C	1
B	4
D	6
E-F	7-3
	5-8

EXTERNAL AUTOZERO

	8-pin
POWER SUPPLY +	2
n.c.	1
OUTPUT -	4
POWER SUPPLY -	6
RELAY CONTACT	7-3
	5-8



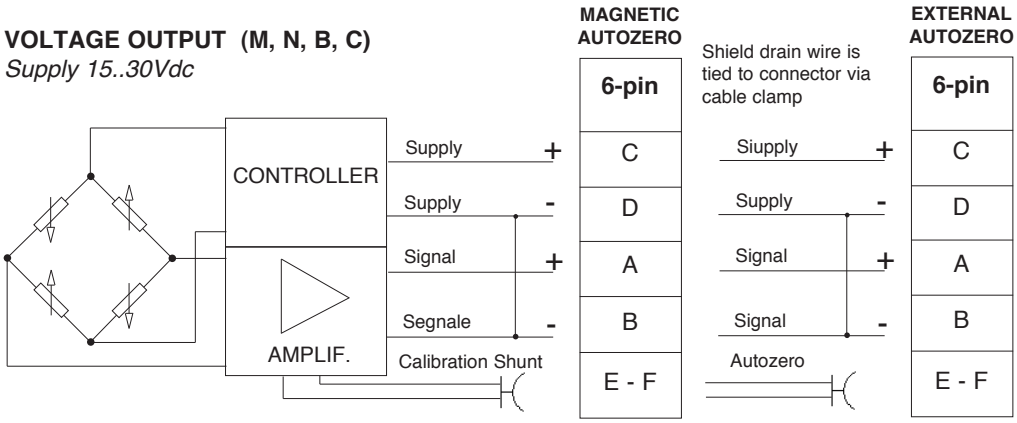
LOAD DIAGRAM

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.

Series **M - W - K**

VOLTAGE OUTPUT (M, N, B, C)

Supply 15..30Vdc

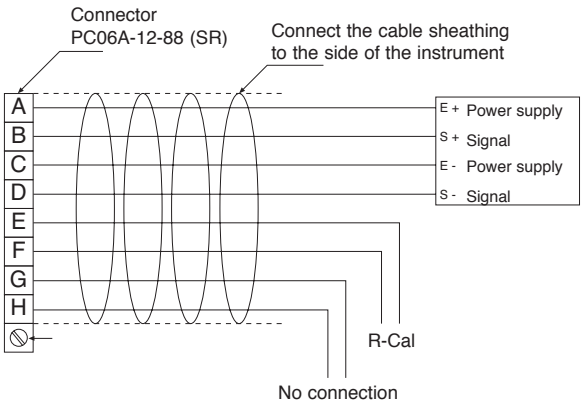


VOLTAGE OUTPUT (H, L)

Power supply -15..+15Vdc (*)

(*) The Pin B of the connector must be connected to the common of the ± 15Vdc supply

8-pin connector



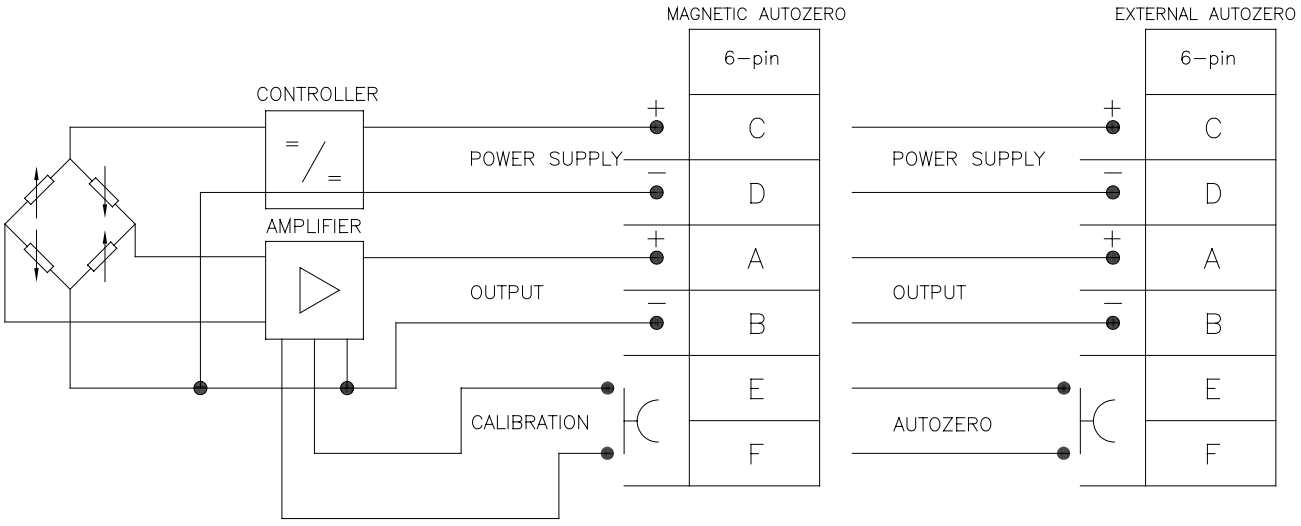
Magnetic Autozero version
A = Excitation + (white)
B = Signal + (red)
C = Excitation - (green)
D = Signal - (black)
E = R-Cal (blue)
F = R-Cal (brown)
G = no connection
H = no connection

External Autozero version
A = Excitation + (white)
B = Signal + (red)
C = Excitation - (green)
D = Signal - (black)
E = Autozero (blue)
F = Autozero (brown)
G = no connection
H = no connection

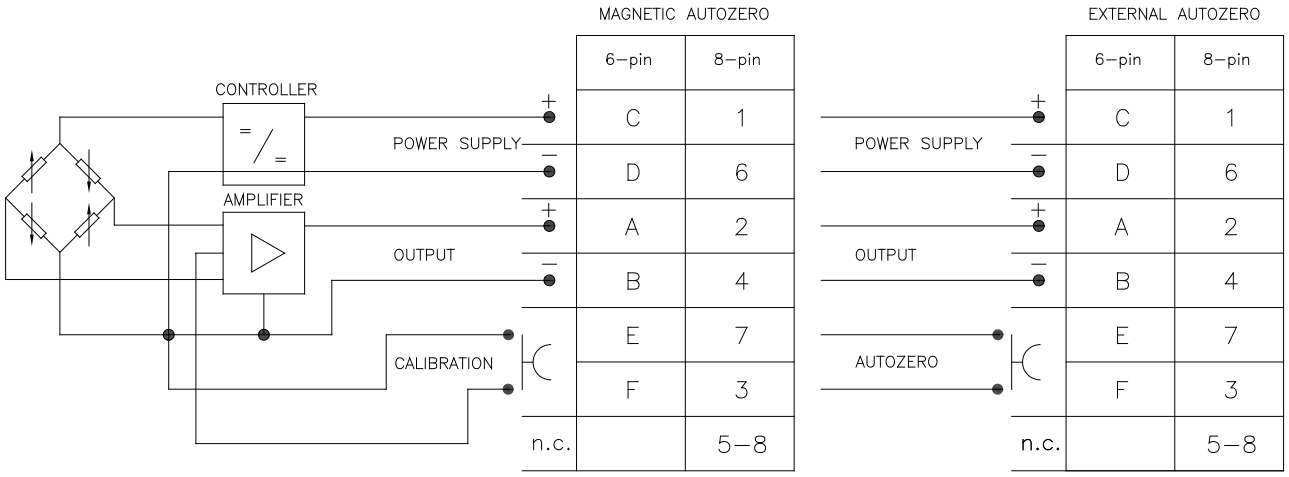
Series **I**

VOLTAGE OUTPUT (M, N, B, C)

Supply 15..30Vdc

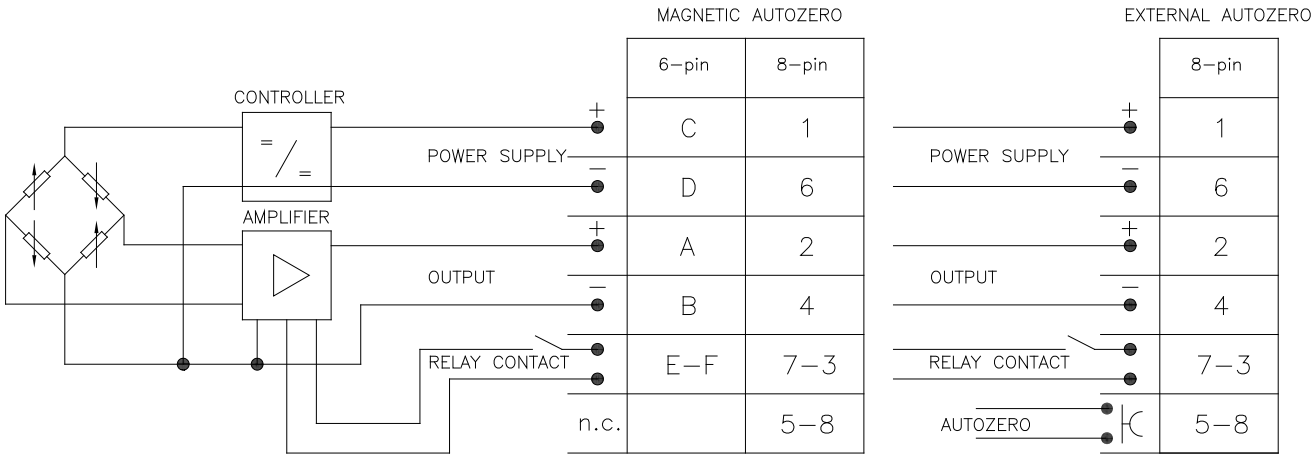


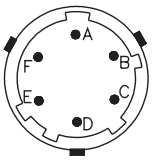
VOLTAGE OUTPUT



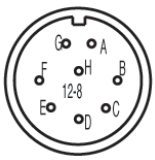
Shield drain wire is tied to connector via cable clamp

RELAY OUTPUT (6-8 pin connector)

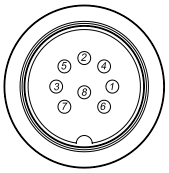




6-pin connector
VPT07RA10-6PT2
(PT02A-10-6P)



8-pin connector
PC02E-12-8P
Bendix



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

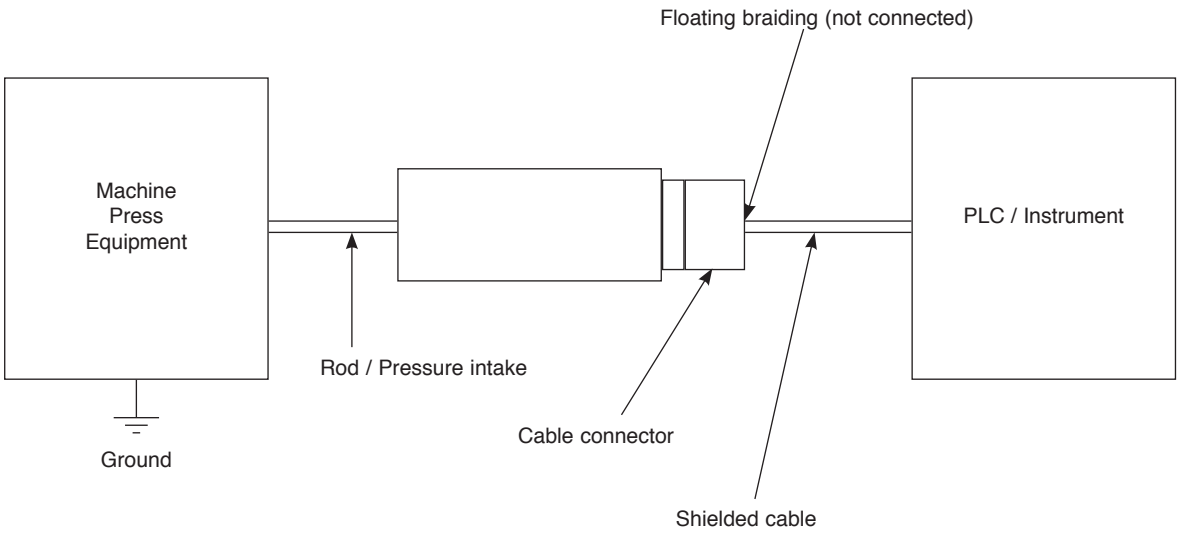
4. Transducers with non-amplified analog output

Transducers: Series M / Series W / Series K / Series I / TPS / TPF / TPH

Output: mV/V

Installation notes
- The transducer must be grounded (normally through the machine body or equipment it is installed on).
- Use a shielded cable only. The braiding on connector side must be left floating. The braiding on instrument / PLC side must be connected to the power supply GND.
- To prevent interference, separate the power cables from the signal cables

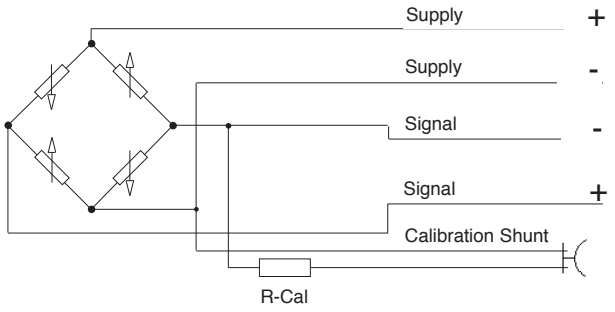
Standard installation (recommended)



Electrical connections

Series **M** / **W** / **K**

mV/V OUTPUT

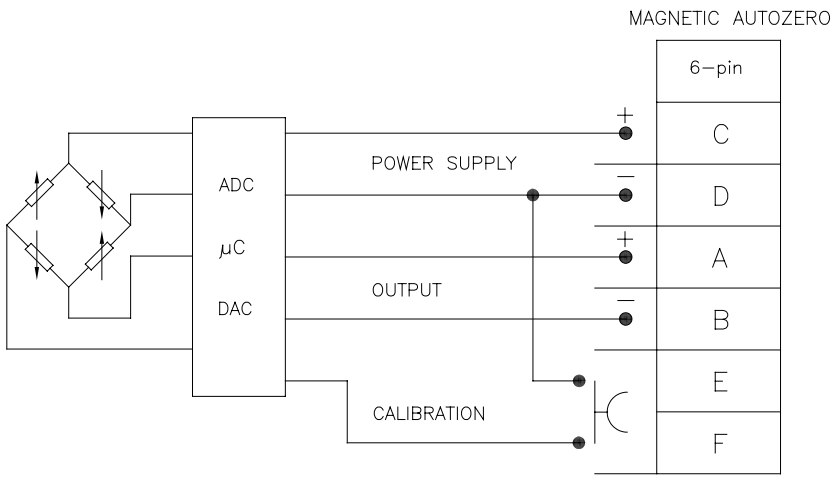


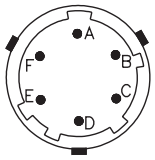
6-pin	8-pin
C	A
D	C
B	D
A	B
E - F	E - F
	G - H

Shield drain wire is tied to connector via cable clamp

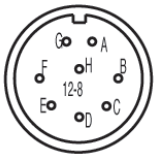
Series **I**

mV/V OUTPUT



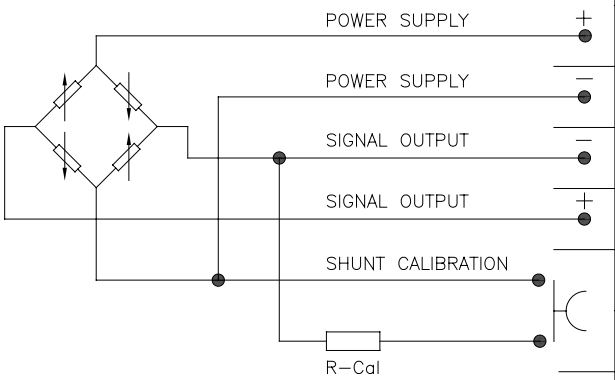


6-pin connector
VPT07RA10-6PT2
(PT02A-10-6P)



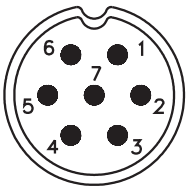
8-pin connector
PC02E-12-8P
Bendix

mV/V output



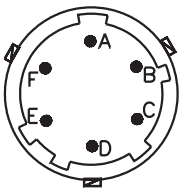
cod. V	cod. P	cod. F	cod. E/M	cod. Z
C	1	White	3	1
D	2	Green	⏚	2
B	4	Yellow or Black	2	4
A	3	Red	1	3
E	6	Blue	Not Available	Not Available
F	5	Orange o Violet	Not Available	Not Available
	7			

P - 7 pole connector



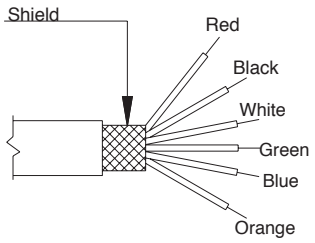
Male connector
09-0127-09-07
Protection IP67

V - 6 pole connector



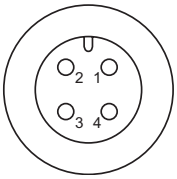
Male connector
VPT02A10-6PT2
Protection IP66

F - 6 pole cable



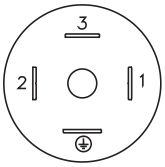
Shielded cable 6x0,25 - 1m
Protection IP65

Z - 4 pole male connector M12 x 1



4 pin Male connector
serie 713
Protection IP67

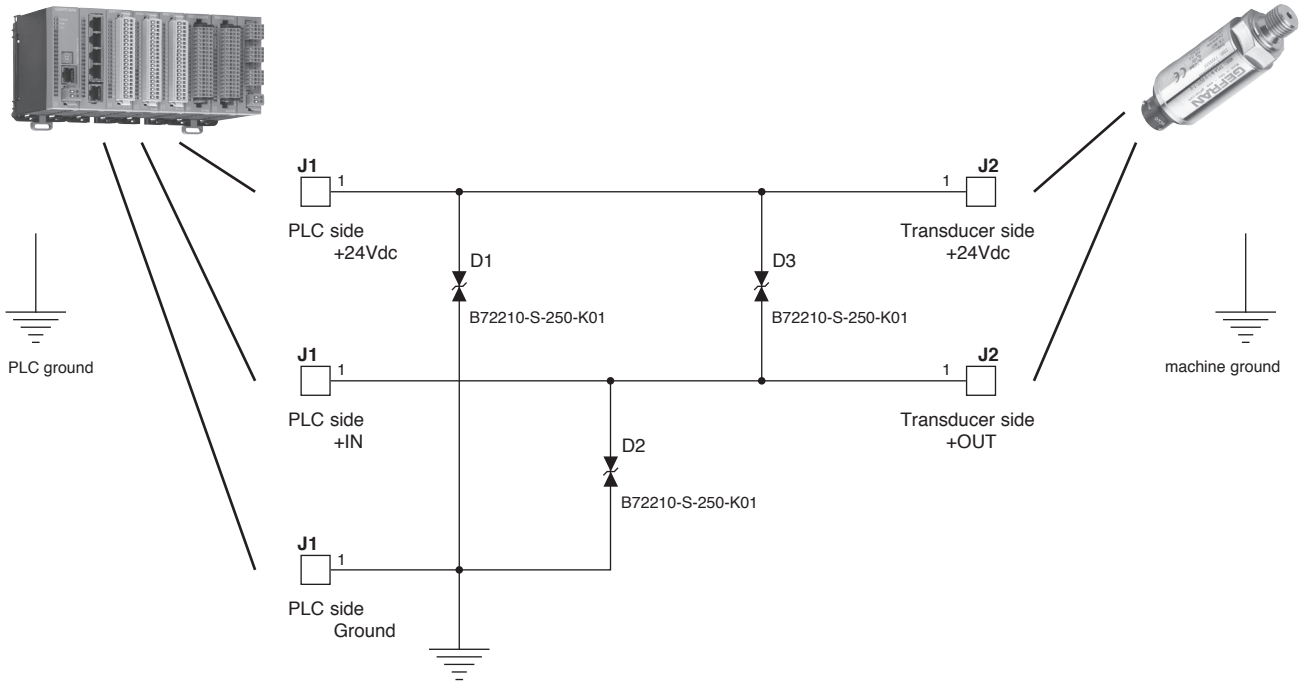
E – EN 175301-803 Type A
M – EN 175301-803 Type C-ind



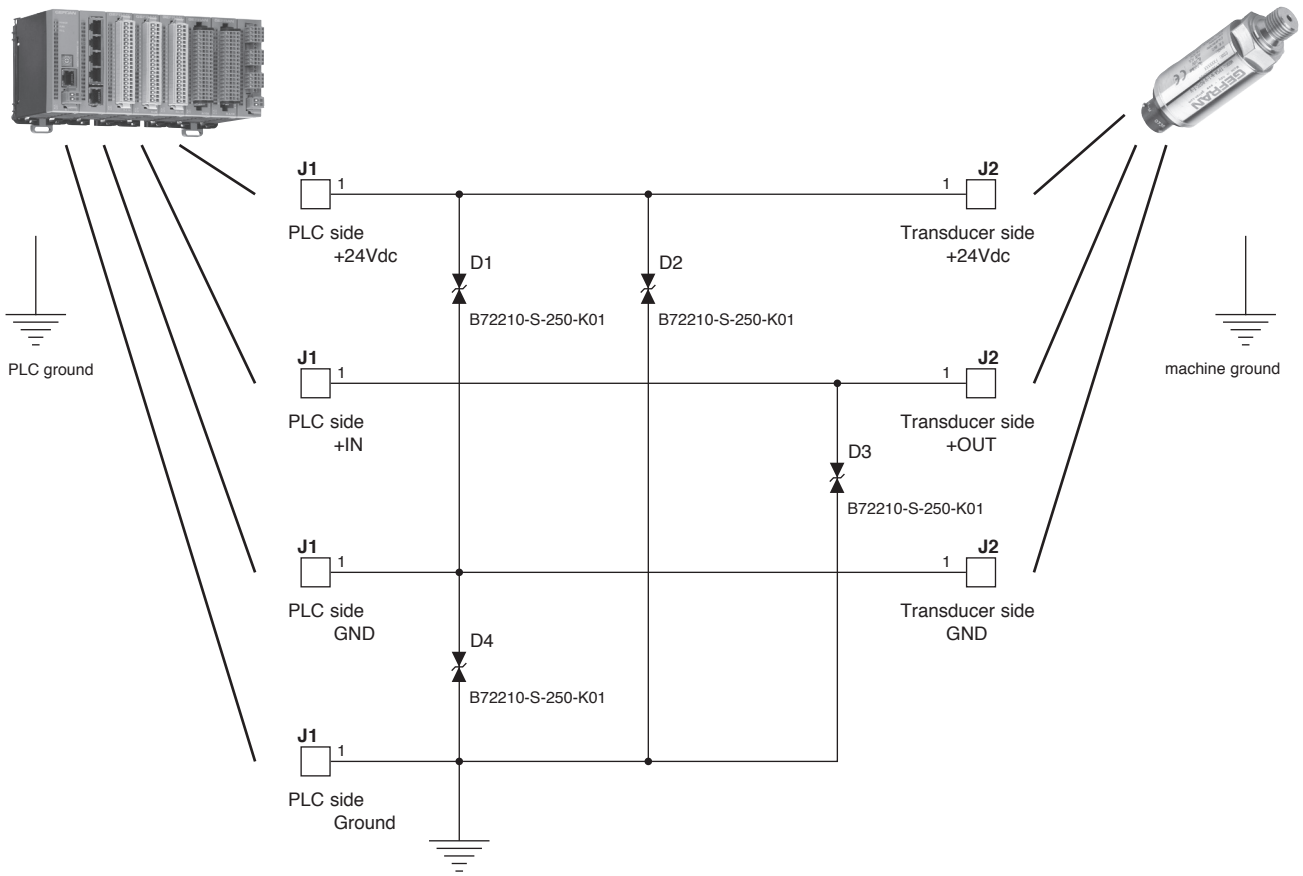
4 Pin DIN Type A
Protection IP65
4 Pin MicroDIN Tipo C-industrial
Protection IP65

5. Protection for outdoor installations of analog sensors

Pressure / Analog Melt current output
CAL signals if any do not require protection



Pressure / Analog Melt voltage output
CAL signals if any do not require protection



6. Standard reference

Gefran products, described in this manual, are compliant to the European Directive 2004/108/CE.
They are tested according to the standard EN 61326-1 “Electrical equipment for measurement, control and laboratory use - EMC requirements”, Part 1 “general requirements and EN 61326-2-3 “Electrical equipment for measurement, control and laboratory use - EMC requirements”, Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning.

Electromagnetic Compatibility (EMC) requirements are classified in two types: Emission requirements, Immunity requirements

Emission requirements
For class B equipment the limits, the measuring methods and the provisions given in CISPR11, EN 61000-3-2 and EN 61000-3-3 apply. Equipment classification and choice of respective limits shall be determined after taking into account the intended environment and emission requirement in the areas of use

Immunity requirements
The immunity test requirements are given in table 1.
The tests shall be conducted in accordance with the basic standards. The tests shall be carried out one at time.

Table 1 - Immunity test requirements for equipment intended for use in industrial locations

Port	Phenomenon	Basic standard	Test value	Performance criteria requested	Performance criteria applied by Gefran
Enclosure	Electrostatic discharge (ESD)	EN 61000-4-2	4 kV / 8 kV contact/air	B	A
	EM field	EN 61000-4-3	10 V/m (80 MHz to 1 GHz) 3 V/m (1,4 GHz to 2 GHz) 1 V/m (2,0 GHz to 2,7 GHz)	A	A
	Rated power frequency magnetic field	EN 61000-4-8	30 A/m	A	A (@ 400 A/m)
Power supply DC [g]	Burst	EN 61000-4-4	2 kV (5/50 ns, 5 kHz)	B	A
	Surge	EN 61000-4-5	1 kV [a] / 2 kV [b]	B	B
	Conducted RF	EN 61000-4-6	3 V (150 kHz to 80 MHz)	A	A (@ 10V)
I/O signal/control (including functional earth lines)	Burst	EN 61000-4-4	1 kV (5/50 ns, 5 kHz) [d]	B	A
	Surge	EN 61000-4-5	1 kV [b], [c]	B	B
	Conducted RF	EN 61000-4-6	3 V (10 kHz to 80 MHz)	A	A (@ 10V)

[a] Line to line
[b] Line to ground
[c] Only in the case of long-distance lines
[d] Only in the case of lines > 3 m
[g] DC connections between parts of equipment/system which are not connected to a d.c. distribution network are treated as I/O signal/control ports

Performance criterion A
During testing, normal performance within the specification limits.

Example
If electronic equipment is required to work with high reliability, the EUT shall operate without any apparent degradation from the manufacturer’s specification.

Performance criterion B
During testing, temporary degradation, or loss of function or performance which is selfrecovering.

Example
During testing, an analogue function value may deviate. After the test, the deviation vanishes.

Performance criterion C
During testing, temporary degradation, or loss of function or performance which requires operator intervention or system reset occurs.

Example
In the case of an interruption in the mains longer than the specified buffer time, the power supply unit of the equipment is switched off. The switch-on may be automatic or carried out by the operator.

Copy of the conformity declaration is available for download on the Gefran web site www.gefran.com