



The K7 Performance Level 'c' series of Gefran are pressure transmitters for using in high temperature environment.

The main characteristic of this series is the capability to read temperature of the media up to 538°C (1000°F).

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

The fluid-filled system assures the temperature stability NaK (Sodium/Potassium).

The physical measure is transformed in a electrical measure by means of the strain-gauge technology.

MAIN FEATURES

- Pressure ranges from:
0-17 to 0-1000 bar / 0-250 to 0-15000 psi
- Accuracy: $\pm 0.25\%$ FSO (H); $\pm 0.5\%$ FSO (M)
- Hydraulic transmission system for pressure signal guarantees stability at working temperature (NaK).
Liquid conforming to RoHS Directive.
NaK is defined as a safe substance (GRAS).
- Quantity of NaK contained per model: K70 series (30mm³) [0.00183 in³], K71, K72, K73 (40mm³) [0.00244 in³]
- 1/2-20UNF, M18x1.5 standard threads; other types available on request
- Autozero function on board / external option
- Inconel 718 diaphragm with GTP+ coating for temperatures up to 538°C (1000°F)
- 15-5 PH diaphragm with GTP+ coating for temperatures up to 400°C (750°F)
- Hastelloy C276 diaphragm for temperatures up to 300°C (570°F)
- 17-7 PH corrugated diaphragm with GTP+ coating for ranges below 100 bar-1500 psi up to 400°C (750°F)
- Material of stem 17-4PH

GTP+ (advanced protection)

Coating with high resistance against corrosion, abrasion and high temperature

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 in the electronic transmitter or by an external contact.

The procedure is allowed only at zero" pressure.

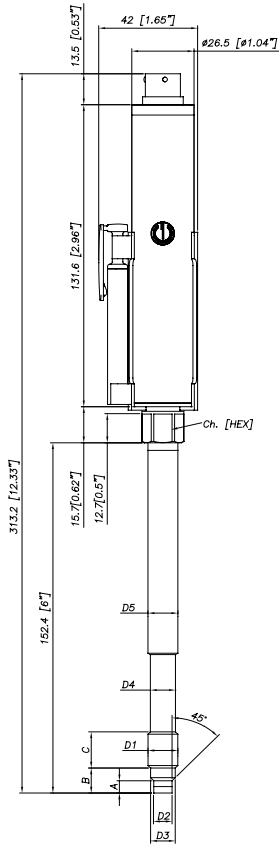
TECHNICAL SPECIFICATIONS

| | |
|--|--|
| Accuracy (1) | H $\pm 0.25\%$ FSO (100...1000 bar) M $\pm 0.5\%$ FSO (35...1000 bar) |
| Resolution | 16 bit |
| Measurement range | 0..17 to 0..1000bar 0..250 to 0..15000psi |
| Maximum overpressure (without degrading performances) | 2 x FS 1.5 x FS above 700bar/10000psi |
| Measurement principle | Extensimetric |
| Power supply | 18...30Vdc |
| Maximum current absorption | 15mA (30mA with optional relay) |
| Output signal Full Scale (FSO) | 10,5Vdc |
| Zero balance (tolerance $\pm 0.25\%$ FSO) | 0,5Vdc |
| Response time (10...90% FSO) | 8ms |
| Output noise (RMS 10-400Hz) | <math>< 0.025\%</math> FSO |
| 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 | <math>< 0.02\%</math> FSO/°C |
| Diaphragm maximum temperature | 538°C / 1000°F |
| Zero drift due to change in process temperature (zero) | <math>< 3.5</math> bar/100°C / <math>< 28</math> psi/100°F |
| Thermocouple (model K72) | STD : type "J" (isolated junction) |
| Protection degree (6-pole female connect) | IP65 |

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

MECHANICAL DIMENSIONS

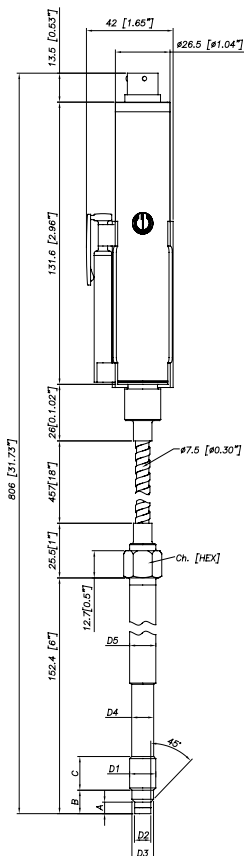
K70



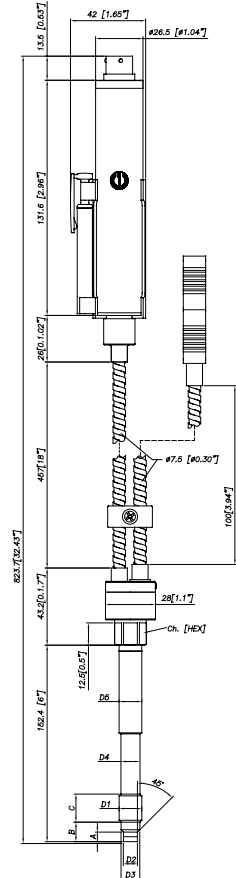
| | |
|-------------|--|
| D1 | 1/2 - 20UNF |
| D2 | $\varnothing 7.8 - 0.05$ [$\varnothing 0.31$ " - 0.002] |
| D3 | $\varnothing 10.5 - 0.025$ [$\varnothing 0.41$ " - 0.001] |
| D4 | $\varnothing 10.67$ [$\varnothing 0.42$ "] |
| D5 | $\varnothing 12.7$ [$\varnothing 0.5$ "] |
| A | 5.56 - 0.26 [0.22" - 0.01] |
| B | 11.2 [0.44"] |
| C | 15.74 [0.62"] |
| Ch [Hex] | 16 [5/8"] |

| | |
|-------------|--|
| D1 | M18x1.5 |
| D2 | $\varnothing 10 - 0.05$ [$\varnothing 0.394$ " - 0.002] |
| D3 | $\varnothing 16 - 0.08$ [$\varnothing 0.63$ " - 0.003] |
| D4 | $\varnothing 16 - 0.4$ [$\varnothing 0.63$ " - 0.016] |
| D5 | $\varnothing 18$ [$\varnothing 0.71$ "] |
| A | 6 - 0.26 [0.24" - 0.01] |
| B | 14.8 - 0.4 [0.58" - 0.016] |
| C | 19 [0.75"] |
| Ch [Hex] | 19 [3/4"] |

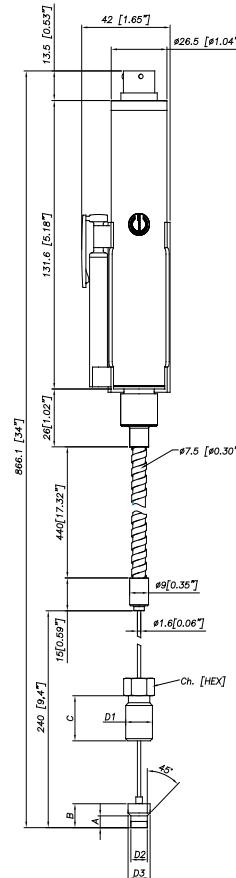
K71



K72



K73



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

Below the conditions detected by the sensor self-diagnostics:

- Cut cable / device non connected / broken power supply, output <0.25V
- Pin detachment, output >11.125V
- Pressure above 200% of the span, output <11.125V
- Voltage monitor in case of overvoltage/undervoltage/voltage variation in the electronics, output <0,25V
- Program sequence error, output <0.25V
- Overtemperature on the electronics, output <0.25V
- Error on the primary element output or on the first amplification stage, output <0.25V

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 < 0.25V | OPEN |
| ON | output > 11.125V | 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 <0.25V
- Device not connected: breakdown information as the signal is <0.25V
- Broken power-supply: breakdown information as the signal is <0.25V

or in case of performance problems:

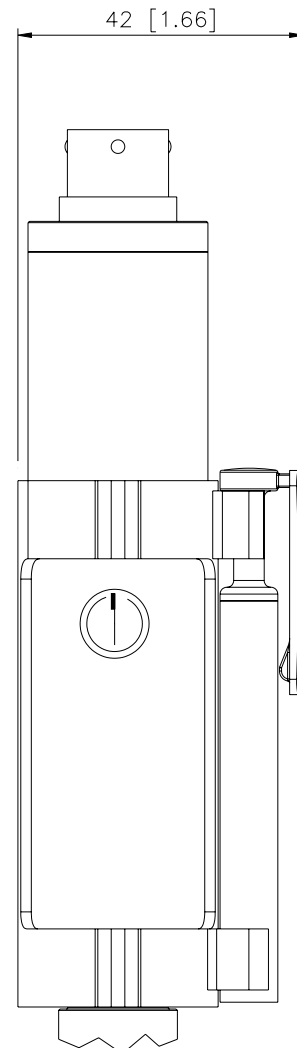
- most common failures on primary sensors: the signal goes to >11.125V

Note: in all the remaining situations, the output signal is always included between 0.25V and 11.125V.



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

AUTOZERO FUNCTION

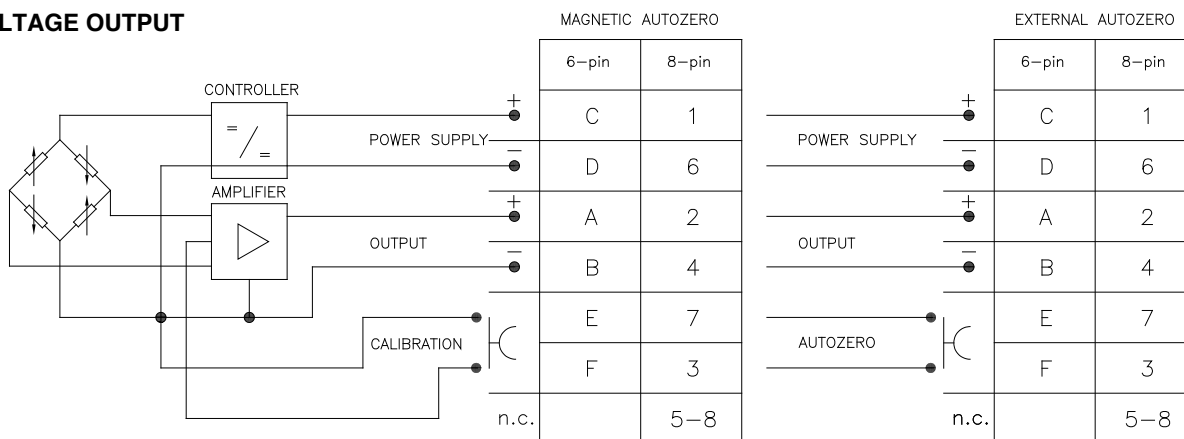


The Autozero function is activated through a magnetic contact (external magnet supplied with the sensor).

See the manual for a complete Autozero function explanation.

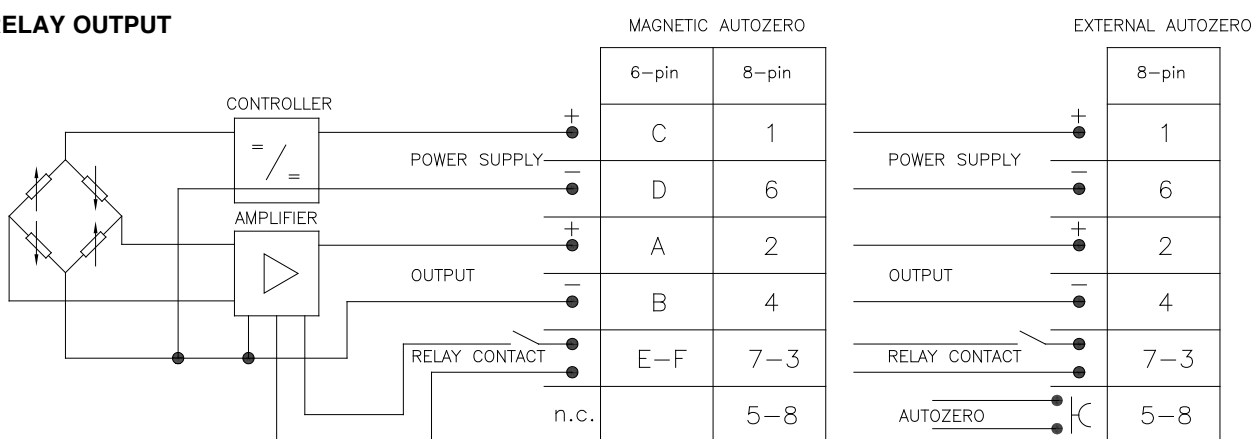
ELECTRICAL CONNECTIONS

VOLTAGE OUTPUT



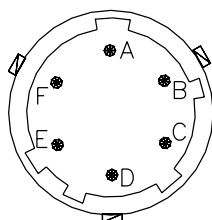
The cable shield is tied to connector via cable clamp

RELAY OUTPUT

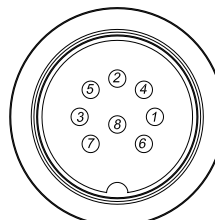


The cable shield is tied to connector via cable clamp

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 (IP65 protection degree)

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

- CON300**
- CON027**
- C08WLS**
- C15WLS**
- C25WLS**
- C30WLS**
- C08WLS8**
- C15WLS8**
- C25WLS8**
- C30WLS8**

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
- Thermocouple for K72 model**
- Type "J" (153mm - 6" rigid rod)

- SF18**
- SC12**
- SC18**
- KF12**
- KF18**
- CT12**
- CT18**
- PKIT 379**
- PKIT 378**

| 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 |

TTER 601

ORDER CODE

K - [] - [] - [] - [] - [] - [] - [] - [] - [] - [] - [] - []

| OUTPUT SIGNAL | |
|---------------|----------|
| 0,5...10,5V | 7 |

| VERSION | |
|----------------------|----------|
| Rigid rod | 0 |
| Rigid + flexible rod | 1 |
| With thermocouple | 2 |
| Exposed capillary | 3 |

| CONNECTOR | |
|-----------|----------|
| 6 pin | 6 |
| 8 pin | 8 |

| ACCURACY CLASS | |
|---------------------------------------|----------|
| 0.25% FSO (ranges ≥ 100 bar/1500 psi) | H |
| 0.5% FSO | M |

| MEASUREMENT RANGE | | | |
|--|-------------|---------|-------------|
| bar (*) | | psi (*) | |
| 17 | B17U | 250 | P25D |
| 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 |
| (*) Hastelloy diaphragm not available for pressure range ≤ 70 bar (1000 psi) | | | |

| THREADING | |
|--------------|----------|
| Standard | |
| 1/2 - 20 UNF | 1 |
| M18 x 1.5 | 4 |

0000 X 000 X 00

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

000= Esecuzioni speciali

| | |
|---|-----------------------|
| E | External Autozero (*) |
| - | Magnetic Autozero |
| (*) as an alternative to the CAL function | |

| | |
|----------|-----------------------|
| P | Performance Level='c' |
|----------|-----------------------|

| CONTACT DIAPHRAGM | |
|---------------------|-------------------------|
| I | INCONEL 718 (538°C*) |
| S | 15-5 PH (400°C*) |
| H | HASTELLOY C276 (300°C*) |
| (*) max temperature | |

| FLEXIBLE ROD LENGTH (*) (mm/inches) | | |
|--|-------|-----|
| Standard (K70) | | |
| 0 | none | |
| Standard (K71, K72) | | |
| D | 457mm | 18" |
| E | 610mm | 24" |
| F | 760mm | 30" |
| Standard (K73) | | |
| L | 711mm | 28" |
| Available on request | | |
| A | 76mm | 3" |
| B | 152mm | 6" |
| C | 300mm | 12" |

| RIGID ROD LENGTH (*) (mm/inches) | | |
|--|-------|-------|
| Standard (K70, K71, K72) | | |
| 4 | 153mm | 6" |
| 5 | 318mm | 12.5" |
| Standard (K73) | | |
| 0 | none | |
| Available on request | | |
| 1 | 38mm | 1,5" |
| 2 | 50mm | 2" |
| 3 | 76mm | 3" |
| 6 | 350mm | 14" |
| 7 | 400mm | 16" |
| 8 | 456mm | 18" |
| (*) max. combined rigid / flexible stem length is 1000mm - 39" | | |

Example

K71-6-M-B07C-1-4-D-I-P

Melt pressure transducer 0,5...10,5Vdc output, 6-pin connector, 1/2-20 UNF threading, 700 bar pressure range, 0.5% accuracy, 153 mm (6") rigid rod, 457 mm (18") flexible rod; membrane Inconel 718; Performance Level='c'.

Sensors are manufactured in compliance with:

- EMC directive
- RoHS directive
- machinery directive

Electrical installation requirements and Conformity certificate are available on our web site: 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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