GEFRAN

NaK FILLED MELT PRESSURE TRANSMITTERS

KD Series *DP404 CAN OPEN digital output*

The KD Series are for use in high temperature applications where the process temperatures may reach 538°C (1000°F) such as high temperature engineered polymers. The K Series utilizes standard melt pressure principles and construction, but uses a near incompressible NAK (Sodium Potassium) for pressure transmission.
The K Series strain sensing technology is bonded foil strain gage.

MAIN FEATURES

Electrical

- Digital output signal with DP404 CAN OPEN communication protocol
- Transmission frequency (Baud rate): 10 Kbaud to 1 Mbaud (default 500 Kbaud)
- Software selection of Baud rate and ID nodes
- Operation with 1 or 2 settable alarm limits
- “Autozero” for temperature compensation
- 80% FSO calibration signal

Mechanical

- Pressure ranges:
  0-35 to 0-700 bar / 0-500 to 0-10000 psi
- Accuracy: < ± 0.25% FSO (H); < ±0.5% FSO (M)
- Hydraulic transmission system to guarantee temperature stability (NaK). Liquid conforming to RoHS Directive. NaK is defined as a safe substance (GRAS).
- Quantity of NaK contained per model:
  KD0 series (30mm^3) [0.00183 in^3], KD1,KD2,KD3 series (40mm^3) [0.00244 in^3]
- Standard threading: 1/2-20 UNF, M18x1.5; other versions on request.
- 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
- Stem material: 17-4 PH

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

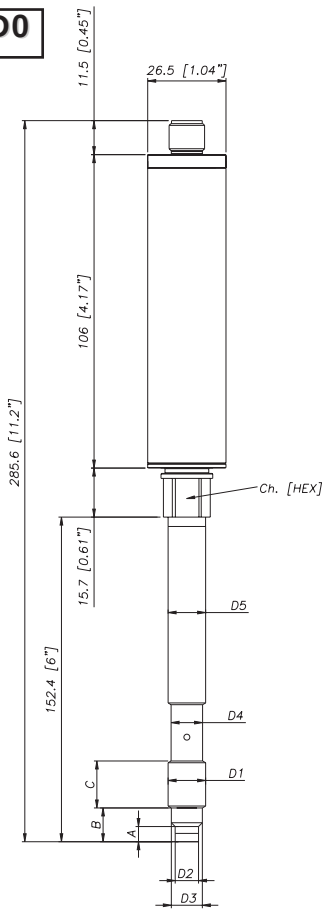
TECHNICAL SPECIFICATIONS

Rated precision, including effects of linearity, repeatability and hysteresis	**H** <±0.25%FSO (100…1000 bar) **M** <±0.5%FSO (35...1000 bar)
Sampling	16 bit (1)
Pressure ranges	0-500 to 0-15000 psi 0-35 to 0-1000 bar
Maximum applicable pressure	2 x FSO
Measurement principle	Strain gauge
Power supply	12...40Vdc
Typical input	20 mA (2)
Insulation resistance (at 50Vdc)	>1000 MOhm
Signal at rated pressure (FSO)	Depends on FSO
Signal at ambient pressure	0
Calibration of ambient pressure	Insertion of an offset
Signal protocol	DP404 CAN OPEN, with baud rate selectable from 10K to 1M baud (default 500 Kbaud)
Response time (10 at 90% FSO)	20 ms
Electronic response time (10 at 90% FSO)	2 ms
Calibration signal	80% FSO
Protection against overvoltage and reverse polarity of power supply	YES
Compensated temperature range of strain gauge housing	0…+85°C (32…+185°F)
Maximum temperature range of strain Gauge Housing	-30…+105°C (-22…+221°F)
Thermal drift in compensated range; Zero Calibration Sensitivity	<0.02 %FSO/°C <0.01 %FSO/°F <0.01 %FSO/°F
Max. diaphragm temperature	538°C (1000°F)
Influence due to variation of fluid temperature (zero)	< 3,5bar/100°C (< 28 psi/100°F)
Thermocouple (model KD2)	STD: Type * J (isolated junction)
Protection degree	IP65
Electrical connections	M12 DIN EN 50044 5-pin connector

(1) Resolution: 0.01 bar from 35...500bar, 0.1 bar from 700...1000bar, 0.1 psi from 5000...350psi, 1 psi from 7500...15000psi,
(2) Conditions: Power supply 24 Vdc
FSO = Full Scale Output (Signal at rated pressure)

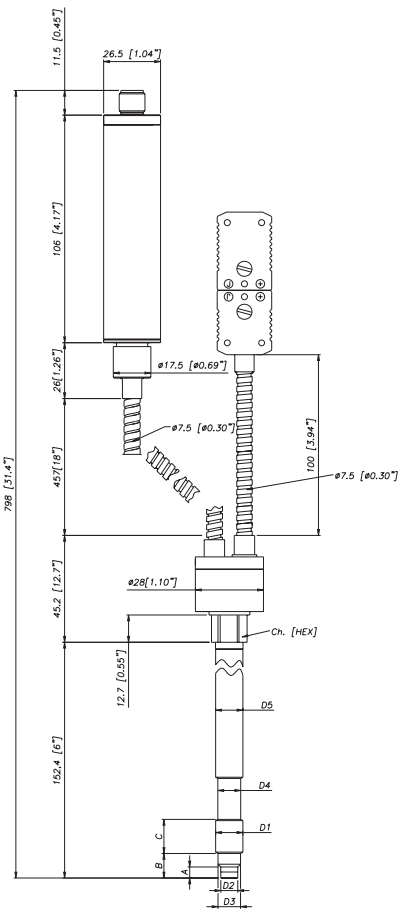
MECHANICAL DIMENSIONS

KD0

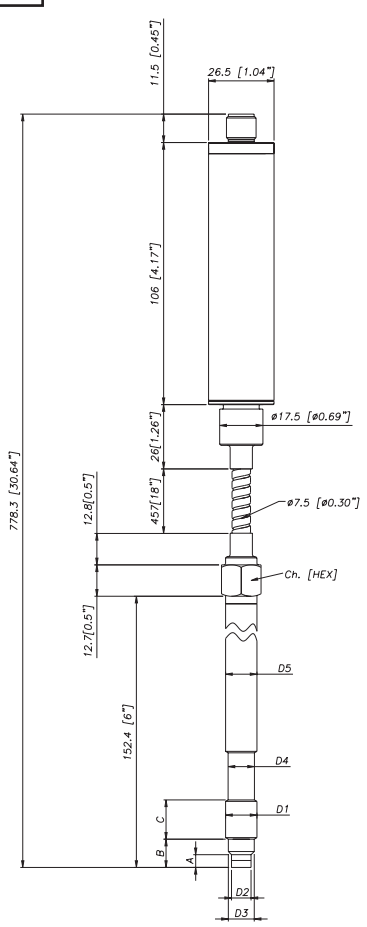


D1	**1/2 - 20UNF**
D2	ø7.8 -0.05 [ø0.31" -0.002]
D3	ø10.5 -0.025 [ø0.41" -0.001]
D4	ø10.67 [ø0.42"]
D5	ø12.7 [ø0.5"]
A	5.56 -0.26 [0.22" -0.01]
B	11.2 [0.44"]
C	15.74 [0.62"]
Ch [Hex]	16 [5/8"]

KD2

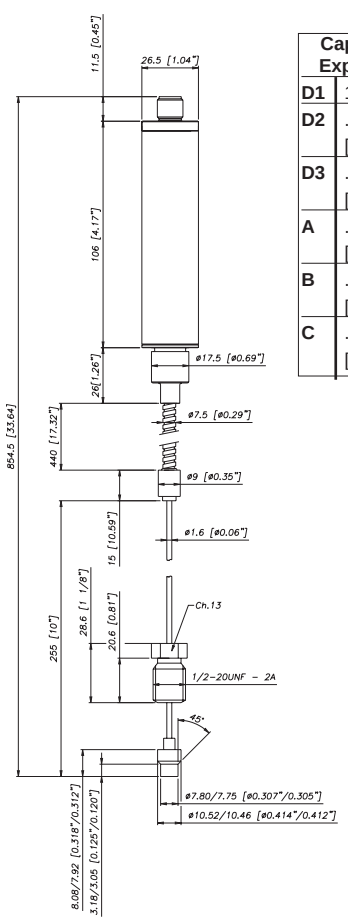


KD1



D1	**M18x1,5**
D2	ø10 -0.05 [ø0.394" -0.002]
D3	ø16 -0.08 [ø0.63" -0.003]
D4	ø16 -0.4 [ø0.63" -0.016]
D5	ø18 [ø0.71"]
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"]

KD3



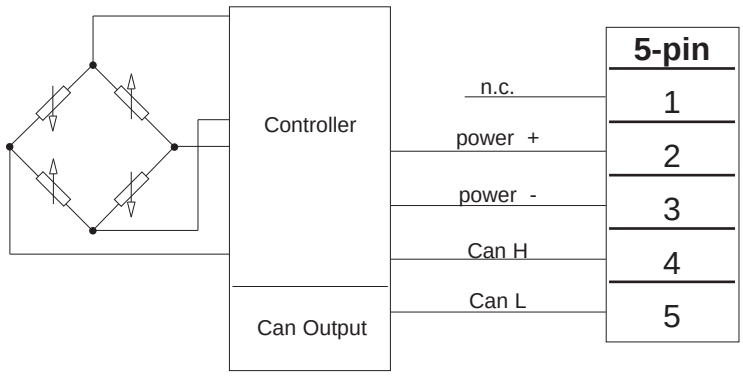
Capillare esposto Exposed capillary	
D1	1/2-20UNF
D2	.307/.305" [7.80/7.75mm]
D3	.414/.412" [10.52/10.46mm]
A	.125/.120" [3.18/3.05mm]
B	.318/.312" [8.08/7.92mm]
C	.81" [20.6mm]

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

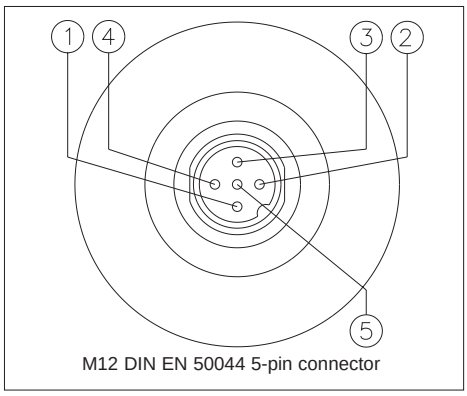
WARNING : For installation use a maximum tightening torque of 56 Nm(500 in-lb)

ELECTRICAL CONNECTIONS

CAN BUS DP404 DIGITAL OUTPUT



Shielding is connected to transducer body. It is advisable to ground it on the instrument side as well



M12 DIN EN 50044 5-pin connector

ACCESSORIES

Connectors

5 pin female connector (IP65 protection)	**CON031**

Extension cables

5-pin connector with 1 meter (3.3 ft) cable	**PCAV310**
5-pin connector with 2 meters (7ft) cable	**PCAV311**
5-pin connector with 5 meters (17 ft) cable	**PCAV314**
Other lengths	**on request**

Cable color code

Conn.	Wire
1	n.c.
2	Red
3	Black
4	White
5	Blue

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**

ORDER CODE

K - - - - □ □ - - □ - 000

000= Standard version
Special or customized versions available on request

OUTPUT SIGNAL	
CAN BUS	D

VERSION	
Rigid stem	0
Rigid + flexible stem	1
With thermocouple	2
Exposed capillary	3

CONNECTOR	
Standard	
5-pin M12	5

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

RANGE			
bar		psi	
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**

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

* max temperature

FLEXIBLE STEM LENGTH (mm / inches)		
Standard (KD0)		
0	none	
Standard (KD1, KD2)		
D	457mm	18”
E	610mm	24”
F	760mm	30”
Standard (KD3)		
L	711mm	28”
Available on request		
A	76mm	3”
B	152mm	6”
C	300mm	12”

RIGID STEM LENGTH * (mm / inches)		
Standard (KD0, KD1, KD2)		
4	153mm	6”
5	318mm	12.5”
Standard (KD3)		
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”

THREAD	
Standard	
1	1/2 - 20 UNF
4	M18 x 1.5 (not available with Inconel contact diaphragm)

Example

KD0-5-M-B07C-1-4-0-I-000
Melt pressure transducer with Can output, 5-pin connector, 1/2-20 UNF threading, pressure range 700 bar, 0.5%accuracy class, 153 mm (6”) rigid stem, Inconel 718 diaphragm.

KD1-5-M-P03M-1-4-D-I-000
Melt pressure transducer with Can output, 5-pin connector, 1/2-20 UNF threading, pressure range 3000 psi, 0.5%accuracy class, 153 mm (6”) rigid stem, 457 mm (18") flexible stem, Inconel 718 diaphragm.

Sensors are manufactured in compliance with:
- EMC 2004/108/CE compatibility directive
- RoHS 2002/95/CE directive

Electrical installation requirements and Conformity certificate are available on our web site: www.gefran.com

HO03

The Melt pressure transmitter/transducer are available with GOST-R certification.
The request of this version must be specified on the order.

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