GEFRAN

KMC

PRESSURE TRANSMITTER WITH DIGITAL OUTPUT
CANopen®, CANopen® Safety and J1939



Main Features

- *Ranges: from 4 to 1000 bar*
- *Supply 8…32V (typical power requirement 0.5W)*
- *Nominal Output Signal:*
  - *Digital CANopen® profile DS404*
  - *Digital J1939*
  - *Digital CANopen® Safety (EN 50325-5) profile DS404*
- *Compact size*
- *Wetted parts: Stainless steel*
- *Electromagnetic immunity up to 100 V/m*

KMC pressure transmitters are based on film sensing element deposited on stainless steel diaphragm.
Thanks to the latest state of the art SMD electronics and compact all stainless steel construction, this products are extremely robust and reliable, specially suitable for mobile hydraulics applications.
In particular the KMC series combines high accuracy with temperature stability, resistance to extreme environmental conditions and digital outputs with mobile hydraulics typical protocols.
The digital signal, in addition to the pressure measurement, also contains the data related to the temperature of the device.

TECHNICAL DATA

Non Linearity (BFSL)
± 0.15% FS (typ); ± 0.25% FS (max)

Hysteresis
+ 0.1% FS (typ); + 0.15% FS (max)

Repeatability
± 0.025% FS (typ); ± 0.05% FS (max)

Zero offset tolerance
± 0.15% FS (typ); ± 0.25% FS (max)

Span offset tolarance
± 0.15% FS (typ); ± 0.25% FS (max)

Accuracy at room temperature (1)
< ± 0.5% FS

Pressure ranges (2)
From 4 bar to 1000 bar (See table)

Overvoltage
36 Vdc continuous
48 Vdc according to ISO7637-2 Pulse 5

Insulation voltage
500 Vdc

Overpressure (without degrading performance)
See table

Pressure containment (burst test)
See table

Pressure Media
Fluids compatible with Stainless Steel AISI 430F and 17-4 PH

Housing
Stainless Steel AISI 304

Long term stability (accuracy)
<0,2%FS per year (within compensated temperature range -20...+85 C° and nominal pressure range)

Operating temperature range (process)
-40...+125°C (-40...+257°F)

Operating temperature range (ambient) (4)
-40...+125°C (-40...+257°F)

Compensated temperature range
-20...+85°C (-4...+185°F)

Storage temperature range
-40...+125°C (-40...+257°F)

Temperature effects over compensated range (zero)
± 0.01% FS/°C typ (± 0.02% FS/°C max.)

Temperature effects over compensated range (span)
± 0.01% FS/°C typ (± 0.02% FS/°C max.)

Measuring frequency
4 KHz

Response time (10...90%FS)
3 ms CANopen, J1939 - 6ms CANopen Safety

Warm-up time (3)
< 30 sec.

Mounting position effects
Negligible

Humidity
Up to 100%RH non-condensing

Weight
50 gr. nominal

Mechanical shock
100g 6ms according to IEC 60068-2-27
50g 11ms according to ISO 19014-3

Vibrations
20g max at 10...2000 Hz according to IEC 60068-2-6
Random ASD 10...2000Hz according to ISO 19014-3

Ingress protection
IP67/IP69K with female homologated connector mounted

Output short circuit and reverse polarity protection
YES

FS = Full scale

1) Incl. Non-Linearity, Hysteresis, Repeatability, Zero-offset and Span-offset tolerance (acc. to IEC 62828-2)

2) The operating pressure range is intended from 0.5 to 100% FS

3) Time within which the rated performance ia achieved

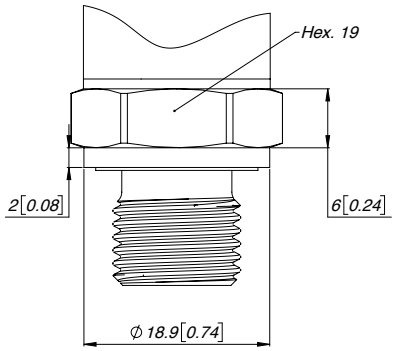
4) See possible restrictions in the paragraphs “Electrical connections” and “Accessories on request”.

PRESSURE RANGES

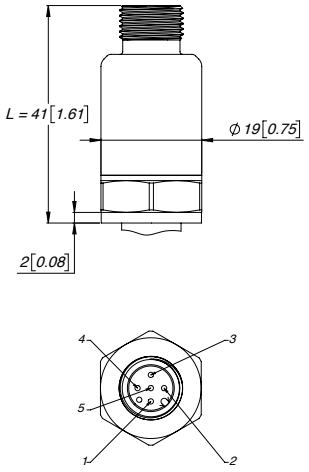
RANGE (Bar)	4	6	10	16	20	25	40	60	100	160	200	250	400	600	1000
Overpressure (Bar)	8	12	20	32	40	50	80	120	200	320	400	500	800	1200	1200
Burst pressure (Bar)	16	24	40	64	80	100	160	240	400	640	800	1000	1500	1500	1500

MECHANICAL DIMENSIONS

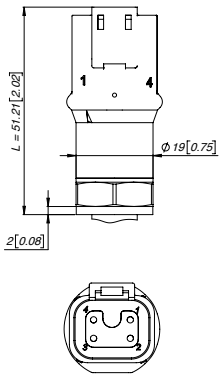
FIXED QUOTES FOR EVERY PRESSURE PORT



M12 x 1 5 pin connector
code: A



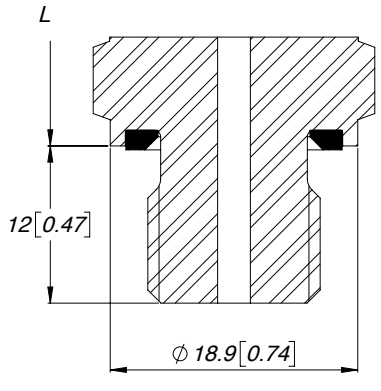
4 pin Deutsch connector
DT04-4P
code: G



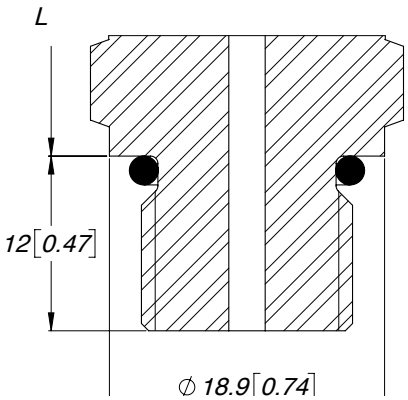
*for KMC DT04-4P connector SIL2/PLd certification pending

MECHANICAL DIMENSIONS

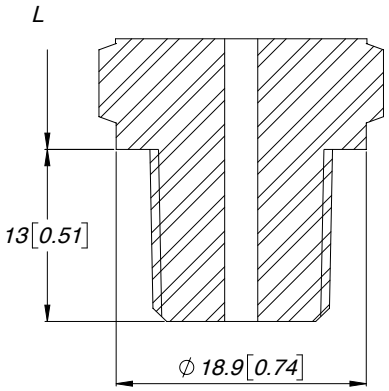
G1/4 ISO 1179-2
sealing: FKM
code: E1



9/16 UNF SAE J1926-2
sealing: NBR
code: W3

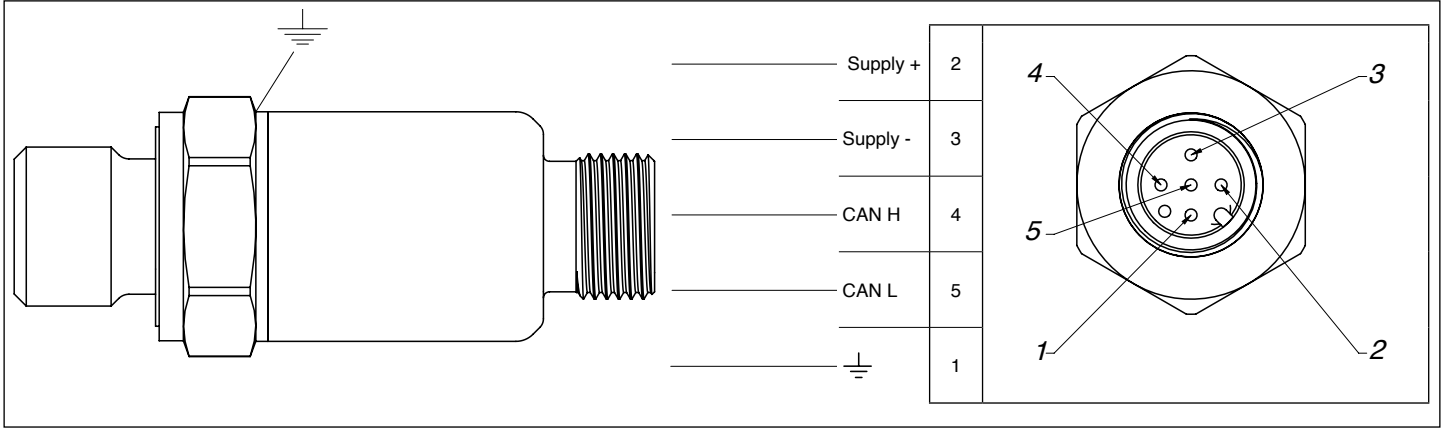


R1/4 ISO 7/1
sealing: /
code: H4



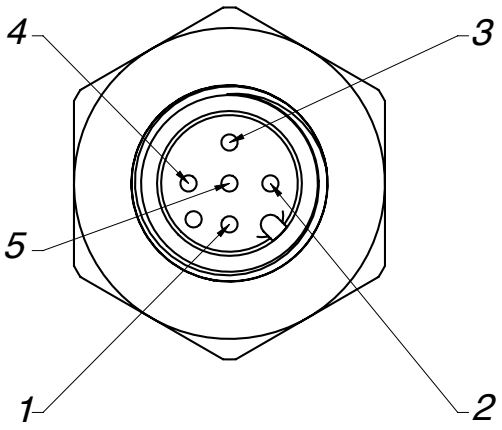
Dimensions in mm. [inches]
Recommended tightening torque: 30 Nm
Maximum tightening torque: 40 Nm

ELECTRICAL CONNECTION - Connection diagrams



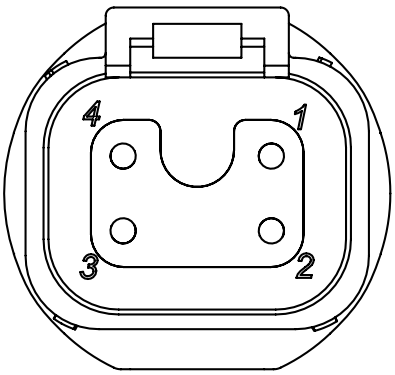
ELECTRICAL CONNECTION - Connectors

M12 x 1 5 pin Connector
code A



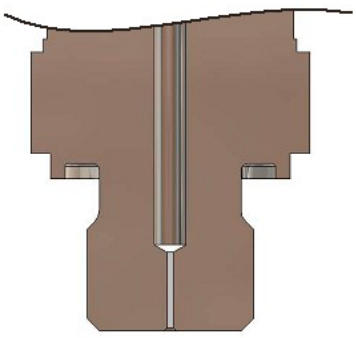
Every connector has a protection rating IP69K/IP67 with female connector properly installed.
M12 with female homologated connector mounted, tightening torque 0.6Nm + low strenght threadlocker

4 pin Deutsch connector
DT04-4P
code: G



PIN	CAN
1	CAN_L
2	Supply +
3	Supply -
4	CAN_H

PRESSURE PEAKS PROTECTION



Many industrial applications, especially in hydraulics, could present dangerous phenomena like cavitation, liquid hammer or pressure peaks, due for example to pumps start and stop or fast closing of a valve.
These phenomena can be harmful to the transducer.

The KMC series, upon request, is available with an integrated pressure snubber which, thanks to a 0.5 mm diameter through hole, eliminates these harmful peaks, to protect the transducer (see ordering information)

FUNCTIONAL SAFETY (for SIL/PL certified models only)

Safety is a critical requirement especially for machine builders.
The European Directive 2006/42/EC defines all the essential requirements in this regard.

In the context of functional safety, the European directive is received by harmonised standards:
- **EN IEC 62061** "Safety of machinery - Functional safety of safety-related control systems"
- **EN ISO 13849-1** "Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design"

KMC pressure transmitters are certified SIL 2 and PL d in accordance with that rule, for use in applications "High Demand Mode" and then may be used in SRECS systems of machinery, where the safety variable to control will be the pressure of a fluid.

NOTES:

1) Full specifications, installation and user manual of KMC certified SIL2/PL d can be downloaded directly from the website www.gefran.com

EMC compliance according to: Standard / Directive /Regulation	**Title**
2014/30/EU	EMC Directive (Electromagnetic compatibility)
ISO 13766-1:2018	Earth-moving and building construction machinery — Electromagnetic compatibility (EMC) of machines with internal electrical power supply — Part 1: General EMC requirements under typical electromagnetic environmental conditions
ISO 13766-2:2018 (*)	Earth-moving and building construction machinery — Electromagnetic compatibility (EMC) of machines with internal electrical power supply — Part 2:Additional EMC requirements for functional safety
2015/208/UE	COMMISSION DELEGATED REGULATION (EU) 2015/208 of 8 December 2014 supplementing Regulation (EU) No 167/2013 of the European Parliament and of the Council with regard to vehicle functional safety requirements for the approval of agricultural and forestry vehicles
ECE ONU R10 (Rev 6)	Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility

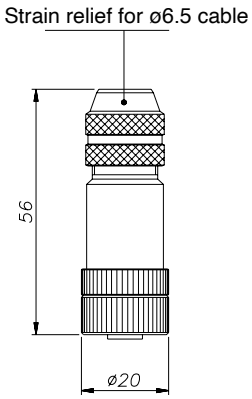
(*) Only applicable to SIL2/PL d certified models
See further details on Declaration of conformity and User Manual

ACCESSORIES ON REQUEST

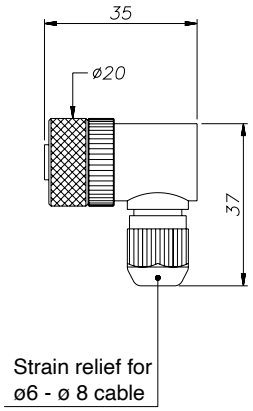
Connector Plugs
Connection A

5 pin connector M12x1 - straight
Prot. IP67 **CON 031**

5 pin connector M12x1 - 90°
Prot. IP67 **CON 041**



CON 031



CON041

EXTENSION CABLES

Extension cable with female connector, 5 pin M12x1, protection IP67

Length		**CODE**	
		Straight Connecor	90° Connector
2	mt	CAV011	CAV021
5	mt	CAV012	CAV022
10	mt	CAV013	CAV023
15	mt	CAV015	CAV024

Cable color code	
Pin	**Wire**
1	Brown
2	White
3	Blue
4	Black
5	Grey

ORDERING INFORMATION

KMC	-	-	-	-	-	0	0 0	-	-	-	-	-	0 0 0	-	-

OUTPUT SIGNAL	
CANopen	C
J1939	J*
CANopen Safety	S

* For J available only Baudrate 3 (250 kbit/s)

PROCESS CONNECTIONS	
G 1/4 ISO 1179-2	E1
9/16 UNF SAE J1926-2	W3
R 1/4 ISO 7/1	H4

ELECTRICAL CONNECTIONS	
M12x1 (5-pin)	A
DT04-4P	G

MEASUREMENT RANGE			
bar		bar	
B04U	4	B01C	100
B06U	6	B16D	160
B01D	10	B02C	200
B16U	16	B25D	250
B02D	20	B04C	400
B25U	25	B06C	600
B04D	40	B01M	1000
B06D	60		

Available on request other measurement range and measurements unit

SNUBBER	
without snubber	0
with snubber	S

CERTIFICATIONS	
NO SIL2 / PLd	0
SIL2 / PLd*	1

* available only with option S (KMC-S); for KMC DT04-4P connector SIL2/PLd certification pending

Mechanical and/or electrical characteristics differing from standard may be arranged on request.

PACKAGING	
Batch of 50pcs in single box	B50

ADDRESS	
Node ID **(001 standard)** - CANopen®, CANopen Safety and J1939	**001 … 127**
Node ID **(J1939 only)**	**248 … 253**

DATA MAPPING	
Integer PDO/SRDO data (32 bit) standard	I
Float PDO/SRDO data (IEEE754 floating point)	F
J1939	X

BAUDRATE	
1 Mbit/s	0
800 kbit/s	1
500 kbit/s	2
250 kbit/s (standard)	**3***
125 kbit/s	4
100 kbit/s	5**
50 kbit/s	6
20 kbit/s	7

* Only opt.3 available for J1939
** not available for CANopen Safety option

Calibration standards
Instruments manufactured by Gefran are calibrated against precision pressure calibration equipment which is traceable to International Standards.

Example
KMC-CE1A-B04C-S-0-00-00-3I001000-B50-000
KMC pressure transmitter with CANopen output signal, G1/4 male with snubber (ISO 1179-2) pressure connection, M12 electrical connector, 0...400 bar pressure range, baudrate 250 kbit/s, Integer PDO data (32 bit), Node ID 001, box 50 pcs.

Sensors are manufactured in compliance with:
- EMC 2014/30/EU Compatibility Directive
- RoHS 2011/65/EU Directive
- 2006/42/EC Machinery Directive

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

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