

**KX** INTRINSICALLY SAFE PRESSURE TRANSMITTER FOR APPLICATION IN HAZARDOUS AREAS



#### Main Features

- Ranges from -1...+1 bar to 0...1000 bar
- Accuracy: ± 0.15% FS typical
- · ATEX certification for hazardous areas use
- Ambient/process temperature T4 (-40°...+80°C)
- · SIL2 approval according to IEC/EN 62061

KX pressure transmitters are based on Gefran proven thick film on stainless steel technology, with totally welded metal structure without internal seals, in order to be suitable with any kind of fluid.

Also the housing is stainless steel made, with IP65 to IP67 degree of environment protection.

This transmitter is suitable for all those applications which require robustness, safety as well as high accuracy.

The KX series can be used in applications characterized by the presence of explosive atmosphere.

For this reason the probes are designed and manufactured according to the ATEX 94/9/CE Directive.

#### Main intrinsic safety characteristics

Transmitter designed and produced in compliance with Directive 94/9/CE ATEX and according to European standards for the Second group (II-surfaces), category 1, explosive atmosphere with presence of gases, fumes or mists (G) protection mode Ex ia T6, T5, T4 EC-Type Examination Certificate number: IMQ 13 ATEX 026 Type of protection : II 1G Ex ia IIC T6/T5/T4 Ga

#### **TECHNICAL DATA**

Output signal	Current 4-20 mA (2 wire system)
Accuracy (1)	± 0.15% FS typical; ± 0.2% FS max
Non Linearity	<± 0.1% FS BFSL
Hysteresis	<± 0.1% FS
Repeatability	<± 0.05% FS
Pressure ranges	from ±1 bar to 1000 bar (see table)
Resolution	Infinite
Overpressure (without degrading performance)	See table
Pressure containment (Burst test)	See table
Pressure media	Fluid compatible with 17-4PH and AISI 430F Stainless Steel
Housing	Stainless Steel INOX AISI 304
Power supply	1030Vdc
Dielectric strength	In conformity to 500 Vac @ 60 sec. test
Zero output signal	4mA (nominal)
Full scale output signal	20mA (nominal)
Max allowed load	See load diagram
Long term stability	< 0.1% FS/year
Operating temperature range (process)	-40+125°C (-40+257°F) limited to temp. T4/T5/T6 (see table pag. 3)
Operating temperature range (ambient)	-40+105°C (-40+221°F) limited to temp. T4/T5/T6 (see table pag. 3)
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
Temperature effects over compensated range (span)	± 0.01% FS/°C
Response time (1090%FSO)	< 1 msec.
Zero offset tolerance	± 0.15% FS typ; ± 0.25% FS max
Span offset tolerance	± 0.15% FS typ; ± 0.25% FS max
Mounting position effects	Negligible
Humidity	Up to 100%RH non-condensing
Weight	110 gr. nominal
Mechanical shock	100 g / 11 msec. according to IEC 60068-2-27
Vibrations	20 g max at 10-2000Hz according to IEC60068-2-6
Ingress protection	IP65/IP66/IP67
Output short circuit and reverse polarity protection	YES
CE Conformity	According to EC Directive 2004/108/CE
1 Includes combined effects of Non Linearity BFSL (Best Fit Straight Line), Hysteresis and Re	

# **INSTALLATION DRAWINGS**



# PRESSURE CONNECTION







### **ELECTRICAL CONNECTION**



# **INTRINSIC SAFETY CHARACTERISTCS**

	II 1G Ex ia IIC T6	II 1G Ex ia IIC T5	II 1G Ex ia IIC T4		
Maximum voltage Ui	30Vdc	30Vdc	30Vdc		
Maximum current li	100mA	100mA	100mA		
Maximum power Pi	0.75W	0.75W	0.75W		
Maximum inductance (*) Li	0.25 mH	0.25 mH	0.25 mH		
Maximum capacity (*) Ci	15nF	15nF	15nF		
Fluid temperature	-40+60°C	-40+70°C	-40+80°C		
Ambient temperature	-40+60°C	-40+70°C	-40+80°C		

### **ELECTRICAL CONNECTION - Connectors**



# **ELECTRICAL CONNECTION - Connection diagrams**



## PRESSURE RANGES

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RANGES (Bar)	2	2.5	4	6	10	16	20	25	40	60	100	160	200	250	400	600	1000
Overpressure (Bar)	4	5	8	12	20	32	40	50	80	120	200	320	400	500	800	1200	1200
Burst pressure (Bar)	8	10	16	24	40	64	80	100	160	240	400	640	800	1000	1500	1500	1500
COMPOUND RANGES (Bar)	-1.	.+1	-1	<b>⊦1.6</b>	-1.	.+2	-1	+2.5	-1.	.+4	-1.	.+6	-1	+10			
Overpressure (Bar)		4	Ę	5		6	-	7	1	0	1	4	2	22			
Burst pressure (Bar)	1	3	1	0	1	2	1	4	2	0	2	8	4	4			

#### PRESSURE PEAKS PROTECTION

#### LOAD DIAGRAM

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 KX series, upon request, is available with an integrated pressure snubber which, thanks to a 0.5mm diameter through hole, eliminates these harmful peaks, to protect the transducer.

Contact Gefran to request the version with pressure snubber





# SIL CERTIFICATION (Safety Integrity Level) - FUNCTIONAL SAFETY

Safety is a critical requirement especially for machine builders. The new 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 the technical standard **IEC / EN 62061** "Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems" (SRECS)

KX pressure transmitters are certified SIL CL 2 by the Certification Body TÜV Rheinland with Test Report

No. FS 28713306, 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.

NOTE: 1) The SIL certification is supplied standard

2) Full specifications and installation and user manual of KX certified SIL 2 can be downloaded directly from the website www.gefran.com

#### ACCESSORIES ON REQUEST

Connector Plugs			
Connection E		Connection P	
Connector EN 17301-803 Type A Prot. IP65	CON 006	7 pole female cable connector, Prot. IP40	CON 320
Connection M		Connection Z	
Connector EN 17301-803 Type C Prot. IP65	CON 008	Connector 4 pin M12x1 Prot. IP67	CON 293
Connection P		Connection V	
7 pole female cable connector, Prot. IP67	CON 321	6 pole female cable connector, Prot. IP66	CON 300

#### **ORDERING INFORMATION**



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



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