



# PRESSURE TRANSMITTER

DATA SHEET I

FKG...5

The FCX-AII pressure transmitter accurately measures gauge pressure and transmits a proportional 4 to 20mA signal.

The transmitter utilizes a unique micromachined capacitance silicon sensor with state-of-the-art microprocessor technology to provide exceptional performance and functionality.



## 1. High accuracy up to ±0.04%

0.065% accuracy as standard, 0.04% accuracy as option. Fuji's micro-capacitance silicon sensor assures this accuracy for all elevated or suppressed calibration ranges without additional adjustment.

#### 2. Minimum environmental influence

The "Advance Floating Cell" design which protects the pressure sensor against changes in temperature, and overpressure substantially reduces total measurement error in actual field applications.

## 3. Fuji/HART® bilingual communications protocol

FCX-AII series transmitter offers bilingual communications to speak both Fuji proprietary protocol and HART®. Any HART® compatible devices can communicate with FCX-AII

### 4. Application flexibility

Various options that render the FCX-AII suitable for almost any process applications include:

- Full range of hazardous area approvals
- Built-in RFI filter and lightning arrester
- 5-digit LCD meter with engineering unit
- Stainless steel electronics housing

# 5. Burnout current flexibility (Under Scale: 3.2 to 4.0mA, Over Scale: 20.0 to 22.5mA)

Burnout signal level is adjustable using Model FXW Hand Held Communicator (HHC) to comply with NAMUR NE43.

#### 6. Dry calibration without reference pressure

Thanks to the best combination of unique construction of mechanical parts (Sensor unit) and high performance electronics circuit (Electronics unit), reliability of dry calibration without reference pressure is at equal level as wet calibration.



## **Functional specifications**

Type: FKG : Smart, 4-20mA cc + Fuji/Hart® digital signal

Service:

Liquid, gas, or vapour

#### Span, range and overrange limit:

Type	Span limit	[kPa] {bar}	Rang [kPa]	Overrange	
.,,,,	Min.	Max.	Lower limit	Upper limit	[MPa] {bar}
FKG□01	1.3	130	-100	130	1
	{0.013}	{1.3}	{-1}	{1.3}	{10}
FKG□02	5	500	-100	500	1.5
	{0.05}	{5}	{-1}	{5}	{15}
FKG□03	30	3000	-100	3000	9
	{0.3}	{30}	{-1}	{30}	{90}
FKG□04	100	10000	-100	10000	15
	{1}	{100}	{-1}	{100}	{150}
FKG□05	500	50000	-100	50000	75
	{5}	{500}	{-1}	{500}	{750}

Remark: To minimize environmental influence, span should be greater than 1/40 of the max. span in most applications.

- Lower range limit (vacuum limit);

Silicone fill sensor: See Fig. 1

Fluorinated fill sensor: 66kPa abs (500mmHg abs) at below 60°C

## Output signal:

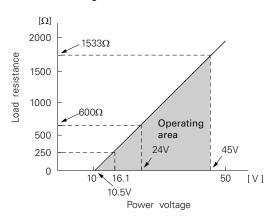
4 to 20mA DC with digital signal super- imposed on the 4 to 20mA signal.

## Power supply:

Transmitter operates on 10.5V to 45V DC at transmitter terminals.

10.5V to 32V DC for the units with optional arrester.

## Load limitations: see figure below



Note: For communication with HHC  $^{\!(1)}$  (Model: FXW), min. of 250  $\Omega$  required.

## **Hazardous locations:**

Authority (Digit 10= )	Intrinsic safety							
ATEX (K)	Ex II 1 G Ex ia IIC T5 (-40°C $\leq$ Ta $\leq$ +50 °C) Ex ia IIC T4 (-40°C $\leq$ Ta $\leq$ +70 °C) IP66/67 Entity Parameters: Ui $\leq$ 28 Vdc, Ii $\leq$ 94.3 mA, Pi $\leq$ 0.66 W Ci = 36 nF/26 nF for models with/without Arrester Li = 0.7 mH/0.6 mH for models with/without Analog Indicator							
Factory Mutual (pending)	Class I II III Div.1 Groups A, B, C, D, E, F, G T4 Entity Type 4X							
(H)	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K - Entity Parameters: Vmax=42.4V, Imax= Ci=35.98nF, Li=0.694		Tamb  -40°C to +85°C  -20°C to +80°C  -20°C to +60°C  -40°C to +60°C  -10°C to +60°C					
CSA (J)	Ex ia Class I, Groups A, B, C and D; Class II, Groups E,F and G; Class III Per drawing TC 522873 Temp. code T5 for Tamb max = +50°C Temp. code T4 for Tamb max = +70°C Entity Parameters: Vmax = 28 Vdc, Imax = 94.3 mA, Pmax = 0.66 W Ci = 36 nF/25 nF for models with/without Arrester Li = 0.7 mH/0.6 mH for models with/without Analog Indicator							
IECEx (T)	Ex ia IIC T5 (-40°C ≤ Ta ≤+50 °C) Ex ia IIC T4 (-40°C ≤ Ta ≤+70 °C) IP66/67 Entity Parameters: Ui ≤ 28 Vdc, Ii ≤ 94.3 mA, Pi ≤ 0.66 W Ci = 36 nF/26 nF for models with/without Arrester Li = 0.7 mH/0.6 mH for models with/without Analog Indicator							

Authority		Flameproof						
ATEX	Ex II 2 GD	T 4 : 05 00\						
	Ex d IIC T6 (-40°C ≤ Ex d IIC T5 (-40°C ≤							
(X)	Ex tD A21 IP66/67 T							
	Ex tD A21 IP66/67 T	100°C						
	Electrical ratings Model Without arrest	ter:						
	Ui ≤ 45 Vdc, 4-20 m/		Pi ≤ 1.0125 W					
	Model With arrester:							
Ft	Ui ≤ 32 Vdc, 4-20 m/	A loop powered, I	Pi ≤ 1.0125 W					
Factory Mutual	Class I Div.1 Groups B, C, D	)						
(pending)	T6 Type 4X							
	Class II III Div.1 Groups E, F, G							
(D)	T6 Type 4X							
	Tamb max = +60°C							
CSA	Class I, Groups C ar							
	Class II, Groups E,F Maximum ambient to							
(E)	Maximum working pr	•						
	Electrical ratings							
	Model Without arrest Ui ≤ 45 Vdc, 4-20 m/							
	Model With arrester:							
	Ui ≤ 32 Vdc, 4-20 m/ Note: "Seal not requi							
	·							
IECEx	Ex d IIC T6 (-40°C ≤ Ex d IIC T5 (-40°C ≤	,						
	DIP A21 IP66/67 T 8							
<b>(D)</b>	DIP A21 IP66/67 T 1	00°C						
(R)	Electrical ratings Model Without arrest	ter:						
	Ui ≤ 45 Vdc, 4-20 mA loop powered, Pi ≤ 1.0125 W							
	Model With arrester: Ui ≤ 32 Vdc, 4-20 mA loop powered, Pi ≤ 1.0125 W							
	UI ≤ 32 Vac, 4-20 m/	A loop powered, I	71 ≤ 1.0125 W					
Authority		Type n						
(Digit 10= )		Nonincendive						
ATEX	Ex II 3 G							
	Ex nA II T5 (-40°C ≤	Ta ≤+70 °C)						
	IP66/67 Electrical ratings							
(P)	Model Without arrest							
	Ui ≤ 45 Vdc, 4-20 m/ Model With arrester		Pi ≤ 1.0125 W					
	Ui ≤ 32 Vdc, 4-20 m/		Pi ≤ 1.0125 W					
	Optional Analog indic	cator is not availa	ble for type "n"					
Factory	Class I II III							
Mutual	Div.2 Groups A, B, C	C, D, F, G						
(pending)								
	T4 Entity Type 4X							
	Model code 9th digit	13th digit	Tamb					
(H)	Model code 9th digit A,B,C,D,J	Y,G,N	-40°C to +85°C					
(H)	Model code 9th digit A,B,C,D,J L,P,M,1,2,3	Y,G,N Y,G,N	-40°C to +85°C -20°C to +80°C					
(H)	Model code 9th digit A,B,C,D,J	Y,G,N Y,G,N Y,G,N	-40°C to +85°C -20°C to +80°C -20°C to +60°C					
(H)	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6	Y,G,N Y,G,N	-40°C to +85°C -20°C to +80°C					
(H)	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K	Y,G,N Y,G,N Y,G,N Y,G,N	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C					
CSA	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K - Class I Div.2 Groups A, B, C	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C					
	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K - Class I Div.2 Groups A, B, C Class II	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C					
CSA (pending)	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K - Class I Div.2 Groups A, B, C	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C					
CSA (pending)	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K - Class I Div.2 Groups A, B, C Class II Div.2 Groups E, F, G Class III Div.2	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C					
CSA	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K  Class I Div.2 Groups A, B, C Class II Div.2 Groups E, F, G Class III Div.2 Temp Code T5 Tai	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C					
CSA (pending)	Model code 9th digit A,B,C,D,J L,P,M,1,2,3 Q,S,N,4,5,6 E,F,G,H,K  Class I Div.2 Groups A, B, C Class II Div.2 Groups E, F, G Class III Div.2 Temp Code T5 Tai	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C					
CSA (pending)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class III  Div.2 Groups E, F, G  Class III  Div.2 Temp Code T5 Tal  Temp Code T4 Tal  Entity Parameters:  Vmax = 28 Vdc, Imax	Y,G,N Y,G,N Y,G,N Y,G,N Y,G,N W,A,D mb max = +50°C mb max = +70°C x = 94.3 mA, Pma	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -10°C to +60°C					
CSA (pending)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class II  Div.2 Groups E, F, G  Class III  Div.2  Temp Code T5 Tar  Temp Code T4 Tar  Temp Code T4 Tar  Tentity Parameters:  Vmax = 28 Vdc, Ima:  Ci = 36 nF/25 nF for	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D mb max = +50°C mb max = +70°C x = 94.3 mA, Pm models with/with	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -10°C to +60°C					
CSA (pending)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class II  Div.2 Groups E, F, G  Class III  Div.2 Temp Code T5  Temp Code T4  Temp Code T4  Temp Code T4  Tentity Parameters:  Vmax = 28 Vdc, Ima:  Ci = 36 nF/25 nF for  Li = 0.7 mH/0.6 mH f	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D , D mb max = +50°C mb max = +70°C x = 94.3 mA, Pm models with/with or models with/w	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -10°C to +60°C					
CSA (pending)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class II  Div.2 Groups E, F, G  Class III  Div.2  Temp Code T5 Tar  Temp Code T4 Tar  Temp Code T4 Tar  Tentity Parameters:  Vmax = 28 Vdc, Ima:  Ci = 36 nF/25 nF for	Y,G,N Y,G,N Y,G,N Y,G,N W,A,D , D mb max = +50°C mb max = +70°C x = 94.3 mA, Pm models with/with or models with/w	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -10°C to +60°C					
CSA (pending)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class III  Div.2  Temp Code T5 Tar  Temp Code T4 Tar  Temp Code T4 Tar  Tentity Parameters:  Vmax = 28 Vdc, Ima:  Ci = 36 nF/25 nF for  Li = 0.7 mH/0.6 mH f  Ex nA II T5 (-40°C ≤ IP66/67  Electrical ratings	Y,G,N Y,G,N Y,G,N Y,G,N Y,G,N W,A,D mb max = +50°C mb max = +70°C x = 94.3 mA, Pm models with/with or models with/w	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -10°C to +60°C					
CSA (pending) (J)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class II  Div.2 Groups E, F, G  Class III  Div.2  Temp Code T5 Tar  Temp Code T4 Tar  Entity Parameters:  Vmax = 28 Vdc, Ima:  Ci = 36 nF/25 nF for  Li = 0.7 mH/0.6 mH f  Ex nA II T5 (-40°C ≤ IP66/67  Electrical ratings  Model Without arrest	Y,G,N Y,G,N Y,G,N Y,G,N Y,G,N W,A,D , D mb max = +50°C mb max = +70°C x = 94.3 mA, Pm: models with/with for models with/w Ta ≤+70 °C)	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -40°C to +60°C -10°C to +60°C					
CSA (pending) (J)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class III  Div.2  Temp Code T5 Tar  Temp Code T4 Tar  Temp Code T4 Tar  Tentity Parameters:  Vmax = 28 Vdc, Ima:  Ci = 36 nF/25 nF for  Li = 0.7 mH/0.6 mH f  Ex nA II T5 (-40°C ≤ IP66/67  Electrical ratings	Y,G,N Y,G,N Y,G,N Y,G,N Y,G,N W,A,D , D mb max = +50°C mb max = +70°C x = 94.3 mA, Pm: models with/with for models with/w Ta ≤+70 °C)	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -40°C to +60°C -10°C to +60°C					
CSA (pending) (J)	Model code  9th digit  A,B,C,D,J  L,P,M,1,2,3  Q,S,N,4,5,6  E,F,G,H,K  -  Class I  Div.2 Groups A, B, C  Class II  Div.2 Groups E, F, G  Class III  Div.2 Temp Code T5 Tal  Temp Code T4 Tal  Entity Parameters:  Vmax = 28 Vdc, Ima:  Ci = 36 nF/25 nF for  Li = 0.7 mH/0.6 mH f  Ex nA II T5 (-40°C ≤ IP66/67  Electrical ratings  Model Without arrest  Ui ≤ 45 Vdc, 4-20 mA	Y,G,N Y,G,N Y,G,N Y,G,N Y,G,N Y,G,N W,A,D  mb max = +50°C mb max = +70°C x = 94.3 mA, Pma models with/with or models with/with aloop powered, F Aloop powered, F	-40°C to +85°C -20°C to +80°C -20°C to +60°C -40°C to +60°C -40°C to +60°C -10°C to +60°C -10°C to +60°C -10°C to +60°C -10°C to +60°C					

#### Zero/span adjustment:

Zero and span are adjustable from the HHC<sup>(1)</sup>. Zero and span are also adjustable externally from the adjustment screw (span adjustment is not available with 9th digit code "L, P, Q, S").

#### Damping:

Adjustable from HHC or local adjustment unit with LCD

The time constant is adjustable between 0 to 32 seconds.

#### Zero elevation/suppression:

Zero can be elevated or suppressed within the specified range limit of each sensor model.

#### Normal/reverse action:

Selectable from HHC(1).

#### Indication:

Analog indicator or 5-digit LCD meter, as specified.

#### Burnout direction: Selectable from HHC(1)

If self-diagnostic detect transmitter failure, the analog signal will be driven to either "Output Hold", "Output Overscale" or "Output Underscale" modes.

"Output Hold":

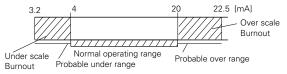
Output signal is hold as the value just before failure happens.

"Output Overscale":

Adjustable within the range 20.0mA to 22.5mA from HHC(1)

"Output Underscale":

Adjustable within the range 3.2mA to 4.0mA from HHC (1)



Output limits conforming to NAMUR NE43 by order.

## Loop-check output:

Transmitter can be configured to provide constant signal 3.2mA through 22.5mA by HHC (1).

## Temperature limit:

Ambient: - 40 to +85°C

(- 20 to +80°C for LCD indicator) (- 40 to +60°C for arrester option)

(- 10 to +60°C for fluorinated oil fill transmitter)

For explosion proof units (flame proof or intrinsic safety), ambient temperature must be within the limits specified by each standard.

Process:

- 40 to +100°C for silicone fill sensor

- 20 to +80°C for fluorinated oil fill sensor

Storage: - 40 to +90°C

## **Humidity limit:**

0 to 100% RH

#### Communication:

With HHC<sup>(1)</sup> (model FXW, consult DS N°EDS8-47), following items can be remotely displayed or configured.

Note:

HHC's version must be higher than 7.0 (or FXW \_\_\_\_\_ 1–□4), for FCX -AIIfor supporting these items: "Saturate current", "Write protect", and "History".

Items		rotocol FXW	Hart Protocol		
	Display	Set	Display	Set	
Tag No.	v	v	v	V	
Model No.	v	v	_	_	
Serial No. & Software Version	V	_	V	_	
Engineering unit	V	V	V	V	
Range limit	v	_	v	_	
Measuring range	V	v	V	V	
Damping	v	V	V	V	

Output mode	V	_	v	_
Burnout direction	V	V	V	v
Calibration	V	v	v	v
Output adjust	_	v	_	v
Data	V	_	V	_
Self diagnoses	V	_	V	_
Printer (In case of FXW with printer option)	V	_	_	_
External switch lock	V	V	V	V
Transmitter display	V	v	v	v
Linearize*	V	v	_	_
Rerange	V	v	v	v
Saturate current	V	V	V	v
Write protect	V	V	V	V
History  - Calibration history  - Ambient temperature history	v v	<u>v</u>	v v	<u>v</u>

(Note) (1) HHC: Hand Held Communicator

## \*Local configurator with LCD display (option):

Local configurator with 3 push button and LCD display can support all items (Fuji Protocol list) except "Linearize" function

#### Programmable output linearization function:

Output signal can be characterized with "14 points linear approximation function" from HHC(1).

## **Performance specifications**

Reference conditions, silicone oil fill, 316SS isolating diaphragms, 4 to 20mA analog output.

#### Accuracy rating:

(including linearity, hysteresis, and repeatability)

### Max span below 10000kPa model:

For spans greater than 1/10 of URL:

±0.065% of span or ±0.04% of span (21th digit: H)

For spans below 1/10 of URL:

$$\pm \left(0.015 + 0.05 \frac{0.1 \times URL}{Span}\right)$$
 % of span

## For model with max. span 50000kPa:

For spans greater than 1/10 of URL: ±0.1% of span

For spans below 1/10 of URL:  

$$\pm \left(0.05+0.05 \frac{0.1 \times URL}{Span}\right)\%$$
 of span

### Stability:

±0.1% of upper range limit (URL) for 10 years.

#### Temperature effect:

Effects per 28°C change between the limits of - 40°C and

Zero shift:  $\pm (0.075+0.0125 \frac{\text{URL}}{\text{span}})\%$ Total effect:  $\pm (0.095+0.0125 \frac{\text{URL}}{\text{span}})\%$ 

Double the effects for material code (7th digit in codes symbols) "H", "M", "T", "B", "L" and "U"

#### Overrange effect:

Zero shift: 0.2% of URL for any overrange to maximum limit

#### Supply voltage effect:

Less than 0.005% of calibrated span per 1V

Update rate: 60 msec

Response time: (at 63,2% of output signal) Time constant: 0.08s (at 23°C)

Dead time: approximately 0.12s Response time = time constant + dead time

#### Mounting position effect:

Zero shift, less than 0.1kPa {1m bar} for a 10° tilt in any plane.

No effect on span. This error can be corrected by adjusting Zero.

#### Vibration effect:

< ±0,25% Of spans for spans greater than 1/10 of URL. Frequency 10 to 150Hz, acceleration 39,2m/sec<sup>2</sup>

#### Material fatigue:

Please consult Fuji Electric.

#### Dielectric strength:

500V AC, 50/60Hz 1 min., between circuit and earth.

#### Insulation resistance:

More than  $100M\Omega$  at 500V DC.

#### Internal resistance for external field indicator:

 $12\Omega$  max (connected to test terminal CK+ and CK-)

## Physical specifications

#### **Electrical connections:**

1/2-14 NPT, Pg13.5, or M20 × 1.5

#### **Process connections:**

1/4-18 NPT or Rc $^{1}/4$  on 54mm centers, as specified.

Meet DIN 19213

#### Process-wetted parts material:

Material code (7th digit in code symbols)	Process cover	Diaphragm	Wetted sensor body	Vent/drain
V	316 SS (*1)	316L SS	316 SS	316 SS
W	316 SS (*1)	Hastelloy-C	316 SS	316 SS
J	316 SS(*1)	316L SS +Au coating	316 SS	316 SS
Н	316 SS(*1)	Hastelloy-C	Hastelloy-C lining	316 SS
M	316 SS(*1)	Monel	Monel lining	316 SS
Т	316 SS(*1)	Tantalum	Tantalum lining	316 SS
В	Hastelloy-C	Hastelloy-C	Hastelloy-C lining	Hastelloy-C
L U	Monel lining Tantalum lining	Monel Tantalum	Monel lining Tantalum lining	Monel Hastelloy-C

Note: \*(1) ASTM CF8M

Remark: Sensor gasket :Viton o-ring or PTFE square section gasket-Availability of above material design depends on ranges and static pressure. Refer to "Code symbols".

## Non-wetted parts material:

Electronics housing:

Low copper die-cast aluminum alloy finished with polyester coating (standard), or 316 SS, as specified.

Bolts and nuts:

Cr-Mo alloy (standard), or 316 SS (630 or 660 SS for 50MPa unit).

Fill fluid:

Silicone oil (standard) or fluorinated oil

Mounting bracket: 304 SS

# **Environmental protection:** IEC IP67 and NEMA 6/6P **Mounting:**

Without mounting bracket : direct mounting on manifold (optional)

With optional mounting bracket : for 50mm (2") pipe or direct wall mounting.

## Mass {weight}:

Transmitter approximately 2.9 to 3.4kg without options.

Add: 0.5kg for mounting bracket

4.5kg for stainless steel housing (option)

## **Optional features**

#### Indicator:

A plug-in analog indicator (2.5% accuracy)

An optional 5-digit LCD meter with enginee-ring unit is also available.

#### Local configurator with LCD display:

An optional 5 digits LCD meter with 3 push buttons can support items as using communication with HHC <sup>(1)</sup>.

#### Arrester:

A built-in arrester protects the electronics from lightning surges.

Lightning surge immunity:  $4kV (1.2 \times 50\mu s)$ 

#### Oxygen service:

Special cleaning procedures are followed throughout the process to maintain all process wetted parts oil free.

The fill fluid is fluorinated oil.

Chlorine service: The fill fluid is fluorinated oil.

#### Degreasing:

Process-wetted parts are cleaned, but the fill fluid is standard silicone oil. Not for use on oxygen or chlorine measurement.

#### **NACE** specification:

Metallic materials for all pressure bound ary parts comply with NACE MR-01-75. 630/304 or 660/660 stain-less steel bolts and nuts comply with NACE.

#### Optional tag plate:

An extra stainless steel tag with customer tag data is wired to the transmitter.

#### Vacuum service:

Special silicone oil and filling procedure are applied.

See Fig.1 below

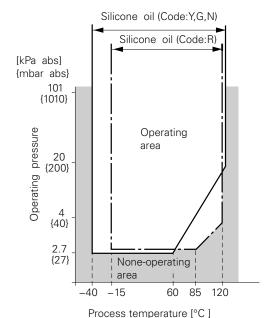


Fig.1 Relation between process temperature and operating pressure

## **ACCESSORIES**

## Oval flanges:

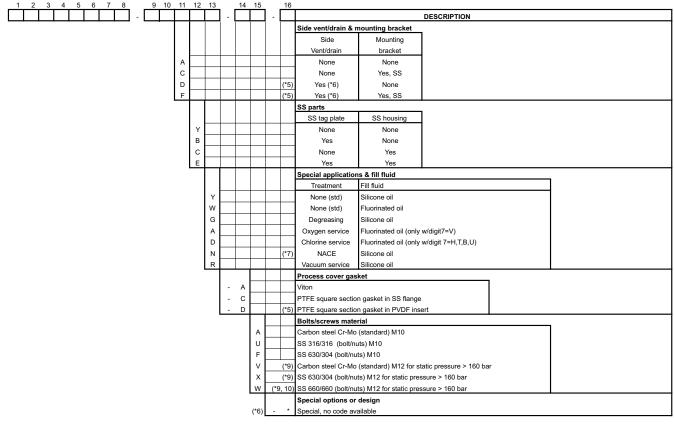
Converts process connection to 1/2-14 NPT in 316 stainless steel.

## Hand-held communicator:

(FXW Model, refer to Data Sheet N° EDS8-47)

# **CODE SYMBOLS**

1 2 3 4	5 6	7	8		9	10	11	12	13		14	15		16					
F K G		4	5	- [	_				Ш	-			-				DESCRIPTION		
<u> </u>			_	$\dashv$	_										Type	Euii/Hort® digital sign	al		
			+	$\dashv$	_										Connections	Fuji/Hart® digital sign	а		
															Process connection	Oval flange connect	. Electrical connection		
R															1/4-18 NPT	7/16-20 UNF	M 20 x 1,5		
Т															1/4-18 NPT	7/16-20 UNF	1/2-14 NPT		
V		_	_	_	_									(*1)	1/4-18 NPT	M10 or M12 (*1)	Pg 13,5		
w x			-	+	_									(*1)	1/4-18 NPT 1/4-18 NPT	M10 or M12 (*1) 7/16-20 UNF	M 20 x 1,5 Pg 13,5		
					$\neg$										Range & wetted par		1 g 10,0		
														(*2)	Spans (*2)	Process cover	Measuring diaphragm	Wetted cell body	
		٧	$\Box$													316L SS	316L SS	316 SS	
		W	_													316L SS	Hast. C	316 SS	
		H M	+	$\dashv$	-										13	316L SS 316L SS	Hast. C Monel	Hast. C lining Monel lining	
	0 1	Ţ.	_	1										(*3)		316L SS	Gold coat	316 SS	
	0 1	т												,	to	316L SS	Tantalum	Tantalum lining	
		н												(*5)		PVDF insert	Hast. C	Hast. C lining	
		М	_	-	_									(*5)	1300 mbar	PVDF insert	Monel	Monel lining	
		В	$\dashv$	$\dashv$	$\dashv$									(*5) (*4)		PVDF insert Hast. C lining	Tantalum Hast. C	Tantalum lining Hast. C lining	
		Ĺ												(*4)		Monel lining	Monel	Monel lining	
	0 1	U												(*4)		Tantalum lining	Tantalum	Tantalum lining	
		٧	_	4	_											316L SS	316L SS	316 SS	
		w l	+	$\dashv$	$\dashv$				Н						0.05	316L SS 316L SS	Hast. C	316 SS	
		H M	+	$\dashv$	$\dashv$				H						0,05	316L SS 316L SS	Hast. C Monel	Hast. C lining Monel lining	
		Ĵ	士	╛										(*3)		316L SS	Gold coat	316 SS	
	0 2	т	$\Box$	$\exists$											to	316L SS	Tantalum	Tantalum lining	
		Н	+	4	$\dashv$				$\square$					(*5)		PVDF insert	Hast. C	Hast. C lining	
		M T	+	$\dashv$	$\dashv$				$\vdash$					(*5) (*5)		PVDF insert PVDF insert	Monel Tantalum	Monel lining Tantalum lining	
		В	+		$\dashv$									(*4)	5 bar	Hast. C lining	Hast. C	Hast. C lining	
	0 2	L												(*4)		Monel lining	Monel	Monel lining	
		U		4										(*4)		Tantalum lining	Tantalum	Tantalum lining	
		l	+	-	$\dashv$											316L SS	316L SS	316 SS	
		W H		$\dashv$	_										0,3	316L SS 316L SS	Hast. C Hast. C	316 SS Hast. C lining	
		м													0,0	316L SS	Monel	Monel lining	
	0 3	J												(*3)		316L SS	Gold coat	316 SS	
		Т	_	4	_										to	316L SS	Tantalum	Tantalum lining	
		<u> </u>	-	-										(*5)		PVDF insert PVDF insert	Hast. C	Hast. C lining	
		M T	$\dashv$	+										(*5) (*5)		PVDF insert PVDF insert	Monel Tantalum	Monel lining Tantalum lining	
		В		1										(*4)	30 bar	Hast. C lining	Hast. C	Hast. C lining	
	0 3	L												(*4)	30 bai	Monel lining	Monel	Monel lining	
		U	_											(*4)		Tantalum lining	Tantalum	Tantalum lining	
		w l	-	$\dashv$	_											316L SS 316L SS	316L SS Hast. C	316 SS	
		"H	+	$\dashv$	$\dashv$										1	316L SS 316L SS	Hast. C	316 SS Hast. C lining	
		м														316L SS	Monel	Monel lining	
	0 4	J												(*3)	to	316L SS	Gold coat	316 SS	
		Ţ	$\rightarrow$	_	$\dashv$											316L SS	Tantalum	Tantalum lining	
		B L	_	+	_									(*4)	100 bar	Hast. C lining	Hast. C	Hast. C lining	
		ָ <sup>֡</sup>	+	1										(*4) (*4)	100 bar	Monel lining Tantalum lining	Monel Tantalum	Monel lining Tantalum lining	
		٧												(*9)	5	316L SS	316L SS	316 SS	
		w													to	316L SS	Hast. C	316 SS	
		#	+	4					$\vdash \vdash$				14-	(*9)	500 bar	316L SS	Hast. C	Hast. C lining	
	0 5	J		1			H		H				(*3	*9)	Indicator & Arrest	316L SS er (next)	Gold coat	316 SS	
						L			L						Indicator	,		Arrester	Initial setting
				-	Α										None			None	
				-	В				$\square$						Analog, 0-100% line			None	
			-	-	D I	-			$\vdash$						Analog, Custom sca			None None	4-20mA DC
				-	J E				$\vdash$						Analog, double sca None	ic		Yes	4-2011A DC +
				-	F				П						Analog, 0-100% line	ear scale		Yes	Hart® /Fuji
				-	н										Analog, Custom sca			Yes	digital signal
				-	Κ										Analog, double sca	le		Yes	"SMART"
				-	1										digital, 0-100%			None	
			-	-	2 4										digital, Custom scal digital, 0-100%	le		None Yes	
					5										digital, Custom scal	le		Yes	
		L			Ü									Approvals for hazardous locations (consult FUJI for availability)					
						Α									None (Standard)				
						Х	oxdot		Ш					L		enclosures (digit 4 =	: "R, T" & "W" only)		
						K D	$\vdash$		$\square$					/+0:	ATEX - Intrinsic Sat	-			
						D E	$\vdash$		$\vdash$					(*8) FM - Explosion-Proof (digit 4 = "T" only)  CSA - Explosion-Proof (digit 4 = "T" only)					
						Н	Н		H					FM - Intrinsic Safety and Non Incendive					
						J	Н		Н					CSA - Intrinsic Safety					
						Р								ATEX - Type "n" (digit 9 = A, E, 1, 2, 3, 4, 5 & 6 only)					
						Q			Ш					IECEx - Type "n" (digit 9 = A, E, 1, 2, 3, 4, 5 & 6 only)					
						R	$\vdash$							<u> </u>	IECEx - Flameproof enclosures (digit 4 = "R, T" & "W" only)				
						T L	$\vdash$		$\vdash$					$\vdash$	IECEx - Intrinsic Sa CSA - Explosion-Pr		combined approval (d	igit 4 = "T" onlv)	
						M	$\vdash$		$\vdash$					$\vdash$			ic Safety combined app		" & "W" only)
						N											sic Safety combined ap		
						٧											combined approval (dig		



#### Notes\*:

- 1- M12 oval flange screw required for 500 bar units
- 2- Turn down of 100: 1 is possible, but it should be used at a span greater than 1/40 of the maximum span for better performance.
- 3- Gold coating on wetted measuring cell parts for Hydrogen service Hydroseal version gold/ceramic coating is available upon request.
- 4- Process cover with linings has no vent-drain
- 5- Process cover with PVDF insert with 1/2-18 NPT side process connection/no vent drain, other upon request square section PTFE gasket
- 6- When no code can be found in the current code symbols, place \* in concerned code digit(s) & add \* in 16 th digit
- 7- Our stainless steel bolts/nuts in SS630 and SS660 are in conformity with the NACE requirements and must be used for NACE service
- 8- Code "D & V" FM approval only possible with electrical connection 1/2" NPT.
- 9- M12 bolting must be used for 500 bar transmitter
- 10- SS660 bolts/nuts have to be used for oil & gas applications

The product conforms to the requirements of the Electromagnetic compatibility Directive 89/336/EEC as detailed within the technical construction file number TN513035. The applicable standards used to demonstrate compliance are:

#### EMI (Emission) EN61326: 1997

Class A (std for Industrial Location)

Frequency range	Limits	Reference
MHz		Standard
3 to 230	40dB (μV/m) quasi peak	CISPR16-1
	measured at 10m distance	and
		CISPR16-2
230 to 1000	47dB (μV/m) quasi peak,	
	measured at 10m distance	

#### Note) Definition of performance criteria

- A : During testing, normal performance within the specification limits
- B: During testing, temporary degradation, or loss of function or performance which is self-recovering.

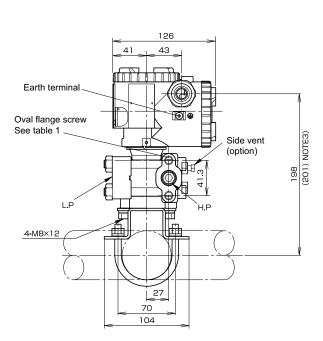
## EMS (Immunity) EN61326: 1997

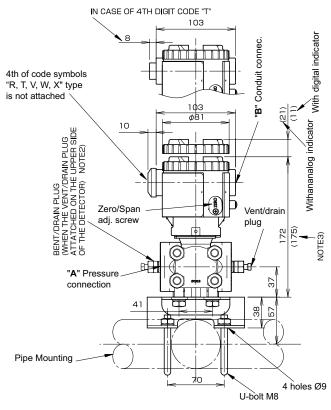
Annex A (standard for Industrial Location)

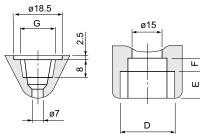
Phenomenon	Test value	Basic	Performance
		Standard	criteria
Electrostatic	4kV (Contact)	IEC61000-4-2	В
discharge	8kV (Air)		
Electromagnetic	80 to 1000MHz		
field	10V/m	IEC61000-4-3	Α
	80%AM (1kHz)		
Rated power			
frequency	30A/m	IEC61000-4-8	Α
magnetic field	50Hz		
Burst	2kV	IEC61000-4-4	В
	5kHz		
Surge	1.2µs/50µs		
	1kV (Line to line)	IEC61000-4-5	В
	2kV (line to ground)		
Conducted RF	0.15 to 80MHz		
	3V , 80%AM (1kHz)	IEC61000-4-6	Α

# OUTLINE DIAGRAM (Unit:mm)

## <7th digit code: V, H, M, T>







Details of "A" Details of "B"

4th digit of the	Condu	it cor	ın.	Press. conn.	Oval frange screw	
code symbols	D	Е	F	G	Oval frange screw	
R	M20x1.5	16	5	1/4-14NPT	7/16-20UNF	
Т	1/2-14NPT	16	5	1/4-14NPT	7/16-20UNF	
V	Pg13.5	8	4.5	1/4-14NPT	M10 or M12	
W	M20x1.5	16	5	1/4-14NPT	M10 or M12	
Х	Pg13.5	8	4.5	1/4-14NPT	7/16-20UNF	

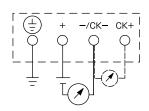
TABLE 1

NOTE1) IN CASE OF 10TH CODE "C", \$\phi\$11 CABLE IS SUITBLE.

NOTE2) THE PRESSURE CONNECTOR IS LOCATED ON THE DOWN SIDE SURFACE OF
THE DETECTOR, WHEN THE VENT/DRAINPLUG IS ATTATCHED ON THE UPPER SIDE OF THE DETECTOR
(WHEN THE 21TH DIGIT OF THE CODE SYMBOLS: C).

NOTE3) WHEN THE 7TH DIGIT OF THE CODE SYMBOLS "C,H,M,T"

## **CONNECTION DIAGRAM**



## **OUTLINE DIAGRAM (Unit:mm)**

## <7th digit code: B, L, U>

