DIFFERENTIAL PRESSURE TRANSMITTER

DATA SHEET

FKC···6

The FKC model of the FCX-A IV series of pressure transmitters accurately measures a differential pressure, a liquid level or a flow rate and transmits a proportional 4-20 mA output signal. The transmitter uses an unique microcapacitive silicon sensor in combination with a state-of-the-art digital signal processing to provide exceptional performances in terms of accuracy and stability.

FCX-A IV series of pressure transmitters comply with Safety Integrity Level 2 or 3 according to IEC 61508 and IEC 61511 standards.

FEATURES

1. **High accuracy up to ±0.04%**
   Fuji Electric's micro-capacitive silicon sensor provides in standard ±0,065% accuracy for all elevated or suppressed calibration ranges without additional adjustments.
   ±0.04% accuracy is available in option.
2. **Minimum inventory and design**
   Electronic parts, local indicator and electronic housing are interchangeable among all FCX-A IV transmitters.
3. **Minimum environmental influence**
   The Advanced Floating Cell technology provides a high immunity against temperature variations, static pressure and overpressure commonly found in the process industry and substantially reduces the overall measurement error.
4. **HART 7 communication protocols**
   FCX-A IV series of pressure transmitters can communicate using the universal HART communication protocol.
   By the use of the HART Device Description files, HART compatible devices can communicate with any FCX-A IV transmitter.
5. **Application flexibility**
   Various options are available to address most of the process industry applications, including:
   – Full range of hazardous area approvals
   – Built-in RFI filter and lightning arrester
   – 5 digits local display with engineering units
   – Stainless steel electronics housing
   – Wide selection of wetted part materials
6. **Programmable output Linearization Function**
   The output signal can be linearized using up to 14 pairpoints.
7. **Burnout current flexibility**
   The burnout current value can be adjusted in the ranges of [3.4 ; 3.8] and [20.8 ; 22.5] mA and can be compliant with NAMUR NE43 recommendations.
8. **Contactless local adjustment**
   An optional local configurator with 3 magnetic switches allows to configure the transmitter without opening the indicator cover (flameproof approvals for hazardous locations)
   The Magnetic pen is required to enable the 3 magnetic switches (Please refer to ACCESSORIES).

SPECIFICATIONS

Functional specifications

Type:

FKC: Smart, 4-20mA with HART communication protocol

Service:

Liquid, gas, or vapour

Static pressure, span, and range limits:

Model	Static pressure Note MPa {bar}	Span limits kPa {m bar}		Range limits kPa {m bar}
		Min.	Max.	
FKC□11	−0.1 to + 3.2 {−1 to + 32}	0.1 {1}	1 {10}	±1 {±10}
FKC□22	−0.1 to + 10 {−1 to + 100}	0.1 {1}	6 {60}	±6 {±60}
FKC□33	−0.1 to + 16 {−1 to + 160}	0.32 {3.2}	32 {320}	±32 {±320}
FKC□35	−0.1 to + 16 {−1 to + 160}	1.3 {13}	130 {1300}	±130 {±1300}
FKC□36	−0.1 to + 16 {−1 to + 160}	5 {50}	500 {5000}	±500 {±5000}
FKC□38	−0.1 to + 16 {−1 to + 160}	30 {300}	3000 {30000}	±3000 {±30000}
FKC□43	−0.1 to + 42 {−1 to + 420}	0.32 {3.2}	32 {320}	±32 {±320}
FKC□45	−0.1 to + 42 {−1 to + 420}	1.3 {13}	130 {1300}	±130 {±1300}
FKC□46	−0.1 to + 42 {−1 to + 420}	5 {50}	500 {5000}	±500 {±5000}
FKC□48	−0.1 to + 30 {−1 to + 300}	30 {300}	3000 {30000}	±3000 {±30000}
FKC□49*	−0.1 to + 30 {−1 to + 300}	500 {5000}	20000 {200000}	{+20000,−10000} {+200000,−100000}

Note: Span higher than 1/10 of the URL is recommended for optimal accuracy.

Important: For FKC#49, the maximum possible overload pressure on LP side must be ≤ 100 bar. The accuracy is not guaranteed when used at negative DP.

Lower limit of static pressure (vacuum limit):

Silicone fill sensor: See Fig. 1

Fluorinated fill sensor:

66kPa abs (500mHg abs) at temperature -20 to 60°C

Over range limit:

To maximum static pressure limit

Output signal:

4-20 mA (linear or square root) with HART communication protocol

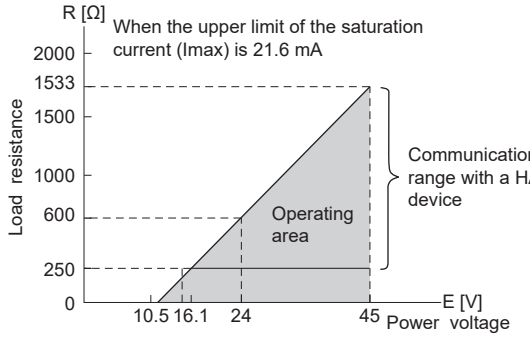
Power supply:

10.5 to 45 V DC at transmitter terminals.

10.5 to 32 V DC with the optional arrester.

Refer to hazardous location table for specific limitations

Load limitations: see figure below



Note 1 : The load resistance varies with the upper limit of the saturation current [I max]

$$R\,[\Omega] = \frac{E\,[V]-10.5}{(I\,max\,[mA]+0.9)\times 10^{-3}}$$

Note 2 : For communication with a HART device, a minimum load of 250 Ω is required.

Hazardous locations:

Marking (Digit 10th)		Protection type		
ATEX		Intrinsic Safety "i"		
		Ex II1 G/D		
		Ex ia IIC T4 Ga (Ta: -40°C to +60°C)		
		Ex ia IIC T5 Ga (Ta: -40°C to +50°C)		
		Ex ia IIIC T_{200} 135°C Da (Ta: -40°C to +60°C)		
	K	Ex ia IIIC T_{200} 100°C Da (Ta: -40°C to +50°C)		
		Ui = 28Vdc, Ii = 110mA, Pi = 0.77W		
		Ci = 14.9nF (without optional Arrester)		
		Ci = 26.0nF (with optional Arrester)		
		Li = 0.181mH		
		IP66/67		
		Flameproof Enclosure "d"		
		Ex II2 G		
		Ex db IIC T6…T4 Gb		
	X	Temperature class	Ambient temperature	Process temperature
		T6	-40°C to +65°C	-40°C to +85°C
		T5	-40°C to +85°C	-40°C to +100°C
		T4	-40°C to +60°C	-40°C to +120°C
		IP66/67		
	M	Combination (K) + (X) pending		
IECEx		Intrinsic Safety "i"		
		Ex ia IIC T4 Ga (Ta: -40°C to +60°C)		
		Ex ia IIC T5 Ga (Ta: -40°C to +50°C)		
		Ex ia IIIC T_{200} 135°C Da (Ta: -40°C to +60°C)		
	T	Ex ia IIIC T_{200} 100°C Da (Ta: -40°C to +50°C)		
		Ui = 28Vdc, Ii = 110mA, Pi = 0.77W		
		Ci = 14.9nF (without optional Arrester)		
		Ci = 26.0nF (with optional Arrester)		
		Li = 0.181mH		
		IP66/67		
		Flameproof Enclosure "d"		
		Ex db IIC T6…T4 Gb		
	R	Temperature class	Ambient temperature	Process temperature
		T6	-40°C to +65°C	-40°C to +85°C
		T5	-40°C to +85°C	-40°C to +100°C
		T4	-40°C to +60°C	-40°C to +120°C
		IP66/67		
	N	Combination (T) + (R) pending		

cCSAus pending		Intrinsic Safety/Non-Incendive
		IS Class I Division 1 Groups ABCD Ex ia
		Class II Groups EFG, Class III
		NI Class I Division 2 Groups ABCD
	J	T4 (-40°C ≤ Ta ≤ +60°C)
		T5 (-40°C ≤ Ta ≤ +50°C)
		Ui = 28Vdc, Ii = 110mA, Pi = 0.77W
		Ci = 14.9nF (without optional Arrester)
		Ci = 26.0nF (with optional Arrester)
		Li = 0.181mH
		Flameproof Enclosure
		XP Class I Division 1 Groups CD
		Class II Groups EFG, Class III
	E	T6 (-40°C ≤ Ta ≤ +65°C)
		T5 (-40°C ≤ Ta ≤ +85°C)
		T4 (-40°C ≤ Ta ≤ +60°C)
		Vmax = 45Vdc
	L	Combination (J) + (E)

Configuration:

Configuration of the FCX-A IV series of pressure transmitters can be carried out by either using a HART device or the optional local configurator.

A third party HART device can be used in combination with Fuji Electric FCX-A IV HART Device Description files. (https://fieldcommgroup.org).

Functions		HART Protocol		Local configurator	
		Display	Set	Display	Set
Tag Nb		*v*	*v*	*v*	*v*
Model Nb		*v*	*v*	*v*	*v*
Serial Nb & Software revision		*v*	—	*v*	—
Engineering units		*v*	*v*	*v*	*v*
Upper Range Value		*v*	—	*v*	—
Measuring Range		*v*	*v*	*v*	*v*
Damping		*v*	*v*	*v*	*v*
Output signal type	Linear	*v*	*v*	*v*	*v*
	Square Root	*v*	*v*	*v*	*v*
Burnout current		*v*	*v*	*v*	*v*
Calibration		*v*	*v*	*v*	*v*
Output Adjust		—	*v*	—	*v*
Measuring Value		*v*	—	*v*	—
Self Diagnosis		*v*	—	*v*	—
External Adj Screw Lock		*v*	*v*	*v*	*v*
Transmitter Display		*v*	*v*	*v*	*v*
Linearization		*v*	*v*	*v*	*v*
Rerange		*v*	*v*	*v*	*v*
Saturation Current		*v*	*v*	*v*	*v*
Write Protect		*v*	*v*	*v*	*v*
History – Calibration History – Ambient T° History		 *v* *v*	 *v* —	 *v* *v*	 *v* —

Zero and span adjustment:

Zero and span are remotly adjustable by a HART device or locally by the local configurator or the external adjustment screw.

Damping:

The damping time constant can be adjusted within the range of [0.04 to 32] seconds.

Zero elevation / suppression:

Zero can be adjusted within the range of ±100% of the URL of the sensor.

Normal / reverse action:

Selectable by range setting.

Local indicator:

Optional 5-digits LCD unit or local configurator with 3 magnetic switches and push-bottons.

A magnetic pen is required to enable this local configurator function.

(Please refer to the ACCESSORIES section.)

Saturation currents:

Lower limit: 3.6 to 4.0mA, Default value: 3.8mA

Upper limit: 20.0 to 21.6mA, Default value: 20.8mA

Burnout direction and output current:

In the self-diagnostic functions detect a transmitter failure, the burnout function will drive the output signal to either “Output Hold”, “Output Overscale” or “Output Underscale” modes.

When “Output Hold”:

The output signal is held as the latest value just before the failure happens.

When “Output Overscale”:

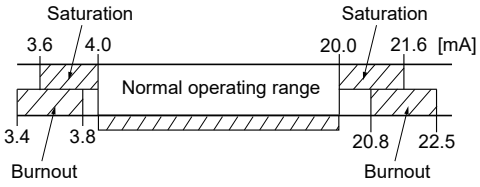
The output signal is set within the range of [20.8 to 22.5] mA, Default value: 21.6mA

When “Output Underscale”:

The output signal is set within the range of [3.4 to 3.8] mA, Default value: 3.6mA

IEC 61511 considerations:

For safety applications, the “Output Hold” MUST NOT be used. Only “Output Overscale” and “Output Underscale” must be used to clearly notify a “failure” state.



Loop-check / fixed output current:

The transmitter can be configured to provide a constant output signal from 3.4 to 22.5 mA.

Low flow cut-off:

The output signal is proportional to √ differential pressure between low flow cut-off and the measuring range. Between zero and low flow cut-off, the output signal is programmable to zero or linear between 0 and 20% of the flow.

Temperature limit:

Ambient:

-40 to +85°C

-20 to +80°C (with optional LCD unit)

-40 to +60°C (with optional arrester)

Please refer to the hazardous locations table for ambient temperature limitations according to the standard and type of protection.

Process: -40 to +120°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 (Relative Humidity)

Performance specifications for linear output

Reference conditions, silicone filling oil, SS 316L isolating diaphragms, 4 to 20 mA analog output in linear mode.

Accuracy rating:

(including linearity, hysteresis, and repeatability)

Max span: 32 kPa to 3000 kPa models:

For spans > 1/10 of URL:

±0.065% of span or ±0.04% of span (optional)

For spans < 1/10 of URL:

$$\pm \left(0.015 + 0.005 \times \frac{\text{URL}}{\text{Span}}\right) \%\ \text{of span}$$

Max span 20 MPa model:

For spans ≥ 5 MPa: ±0.1% of span

For spans < 5 MPa:

$$\pm \left(0.05 + 0.05 \times \frac{5\text{MPa}}{\text{Span}}\right) \%\ \text{of span}$$

Max span 1 kPa and 6 kPa models:

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

For spans below 1/10 of URL:

$$\pm \left(0.05 + 0.005 \times \frac{\text{URL}}{\text{Span}}\right) \%\ \text{of span}$$

Stability:

±0.1% of the URL for 10 years for 6th digit code 3, 5, 6, 8 and 9.

Temperature effect:

Effects per 28°C changewithin the range of -40°C and +85°C

Range code (6th digit in the model code)	Zero shift (% of span)	Total effect (% of span)
“1”/1 kPa {10 mbar} “2”/6 kPa {60 mbar}	$\pm\left(0.125+0.1\frac{\text{URL}}{\text{Span}}\right)\%$	$\pm\left(0.15+0.1\frac{\text{URL}}{\text{Span}}\right)\%$
“3”/32kPa {320mbar} “5”/130kPa {1300mbar} “6”/500kPa {5000mbar} “8”/3000 kPa {30000mbar} “9”/20000kPa {200000mbar}	$\pm\left(0.075+0.0125\frac{\text{URL}}{\text{Span}}\right)\%$	$\pm\left(0.095+0.0125\frac{\text{URL}}{\text{Span}}\right)\%$

Double the effects for material code (7th digit in model code) “H”, “M”, “T”

Static pressure effect:

Static pressure code (5th digit in the model code)	Zero shift (% of URL)
“1” / 1 kPa {10 mbar} sensor “2” / 6 kPa {60 mbar} sensor	±0.2% / 3.2 MPa {32 bar} ±0.2% / 10 MPa {100 bar}
“3” “4”	±0.035% / 6.9 MPa {69 bar} ±0.2% / 6.9 MPa {69 bar} FKC□49

Double the effects for material code (7th digit in model code) “H”, “M”, “T”

Overrange effect:

Static pressure code (5th digit in the model code)	Zero shift (% of URL)
“1” / 1kPa {10m bar} sensor “2” / 6kPa {60m bar} sensor	±0.2% / 3.2MPa {32bar} ±0.2% / 10MPa {100bar}
“3” “3” “4” “4”	±0.1% / 16 MPa {160 bar} FKC□35,36,38 ±0.15% / 16 MPa {160 bar} FKC□33 ±0.25% / 42 MPa {420 bar} FKC□43,45,46,48 ±0.2% / 10 MPa {100 bar} FKC□49

Double the effects for material code (7th digit in model code) “H”, “M”, “T”

Performance specifications for square root output

Accuracy rating:

Output	Span	
	over 0.1 × URL	below 0.1 × URL
50 to 100%	±0.065%	±(0.015+0.005 × URL/Span)%
20 to 50%	±0.163%	±2.5 × (0.015+0.005 × URL/Span)%
10 to 20%	±0.325%	±5 × (0.015+0.005 × URL/Span)%

Max span 1 kPa and 6kPa models:

Output	Accuracy
50 to 100%	±0.1%
20 to 50%	±0.25%
10 to 20%	±0.5%

Temperature effect:

Effects per 28°C change within the range of -40°C and +85°C

Range code	Shift at 20% output point
"1" and "2"	$\pm\left(0.375+0.25\ \frac{\text{URL}}{\text{Span}}\right)$%/28°C
"3" through "9"	$\pm\left(0.24+0.03125\ \frac{\text{URL}}{\text{Span}}\right)$%/28°C

Common performance specifications for both output modes

Supply voltage effect:

Less than 0.005% of calibrated span per 1 V

Update rate:

40 msec

Electromagnetic compatibility:

FCX-A IV transmitters are in accordance with the following harmonized standards:

EN 61326-1
EN 61326-2-3
EN 61326-3-1

RFI effect:

< 0,2% of the URL for the frequencies from 20 up to 1000 MHz with an electrical strength of 10 V/m and housing covers in place. (Classification: 2-abc: 0.2% of span according SAMA PMC 33.1).

Response time: (63.3% of output signal without damping)

Range code (6th digit in code symbols)	Time constant (at 23°C)	Dead time
"1"	0.33 s	about 0.06 sec
"2"	0.3 s	
"3"	0.12 s	
"5" through "8"	0.08 s	

Response time = time constant + dead time

Mounting position effect:

Zero shift:

Less than 0.12kPa (1.2mbar) for a 10° tilt in any position.
This error can be corrected by adjusting zero.
(Double the effect for fluorinated fill sensors.)
No effect on span.

Vibration effect:

< ±0.25% of URL

Frequency 10 to 150 Hz, acceleration 29.4 m/sec^2.

Dielectric strength:

500 V AC, 50/60Hz 1 min., between circuit and earth (except with the optional arrester)

Insulation resistance:

More than 100 MΩ at 500 V DC.

Internal resistance for external field indicator:

12 Ω max. (connected to test terminal CK+ and CK-)

Pressure equipment directive (PED) 2014/68/EU:

According to Article 4.3

PHYSICAL SPECIFICATIONS

Electrical conduit connections:

1/2"-14 NPT, Pg13.5 or M20 × 1.5

Process connections:

Standard: 1/4"-18 NPT meets DIN 19213.
Option: 1/2"-14 NPT with oval flanges

Process-wetted parts material:

Material code (7th digit)		Process cover	Diaphragm	Wetted sensor body	Vent/ drain
V	Ranges 1 & 2	SS 316L	SS 316L	SS 318LN	SS 316L
	Ranges 3 to 8	SS 316L	SS 316L	SS 316L	SS 316L
W		SS 316L	Hastelloy-C	SS 316L	SS 316L
H		SS 316L	Hastelloy-C	Hastelloy-C	SS 316L
J		SS 316L	SS 316L + Gold coating	SS 316L	SS 316L
M		SS 316L	Monel	Monel lining	SS 316L
T		SS 316L	Tantalum	Tantalum lining	SS 316L

Remark: Gasket : Viton o-ring or PTFE square section gasket.
Availability of above material design depends on ranges and static pressure according material codes V, H, M and T.
Refer to the "Model code symbols".

Non-wetted parts material:

Electronics housing:

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

Bolts an nuts:

Carbon steel (up to 42 MPa MWP), SS 316L (up to 16 MPa MWP) or SS 660 (up to 42 MPa MWP)

Filling fluid:

Silicone oil (standard) or fluorinated oil (option)

Mounting bracket: SS 316L

Environmental protection:

IEC IP66 & IP67 and Type 4X

Mounting:

DN50(2") pipe or wall mounting using the mounting bracket.

Direct to process cover connections without the mounting bracket.

Mass{weight}:

Transmitter approx.: 3.5 kg without options.

Add: 0.2 kg for indicator
0.5 kg for mounting bracket
2.0 kg for stainless steel housing (option)

OPTIONAL FEATURES

Local indicator:

An optional 5 digit indicator with engineering units is available.

A local configurator can be carried out using the 3 magnetic switches and push-bottons.

A separately ordered magnet pen is required for adjustment using the magnetic switches.

See the accessories section.

Arrester

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

Lightning surge immunity: ±4 kV (1.2 × 50 µs)

Oxygen service:

Special cleaning procedures are applied during the manufacturing process to maintain oil free all process wetted part. The filling fluid is fluorinated oil.

Chlorine service:

Same procedures and filling fluid as for oxygen service.

Degreasing:

Process-wetted parts are cleaned and the filling fluid is standard silicone oil. Not for use with oxygen or chlorine presence.

NACE specification:

Metallic materials for all pressure boundary parts comply with NACE MR 0175/ISO 15156.

SS 660 bolts and nuts comply with NACE MR 0175/ ISO 15156.

Optional tag plate:

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

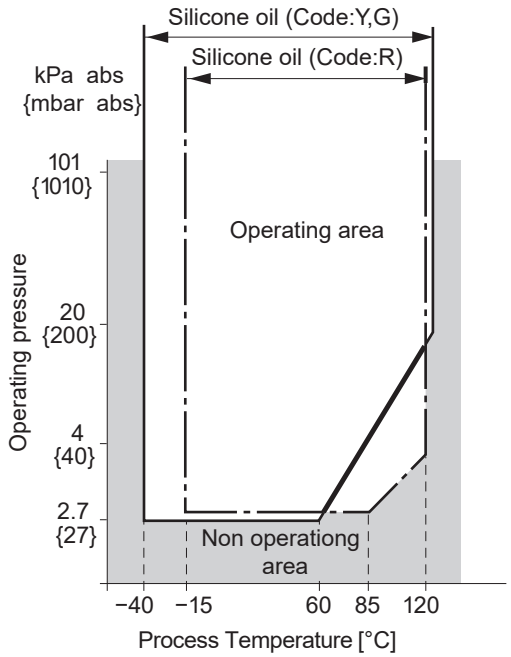
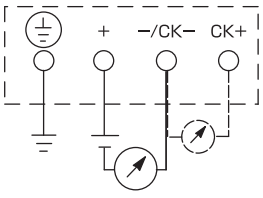


Fig. 1 Relation between process temperature and operating pressure

CONNECTION DIAGRAM



ACCESSORIES

Oval flange:

Converts the process connection to 1/2”-14 NPT.

Manifolds:

Stainless Steel 316L, 16 MPa or 42 MPa pressure rating

Magnet pen:

To be used with the 3 push-buttons optional indicators.
Order number = ZZP*TQ507742C1

MODEL CODE SYMBOLS

1	2	3	4	5	6	7	8	–	9	10	11	12	13	–	14	15	–	16	DESCRIPTION
F	K	C					6	–						–			–		**Type**
																			Differential pressure transmiter - Smart, 4-20 mA with HART communication protocol
																			Connections

	Process Connection	Oval flange threading	Conduit connection	Amplifier case type	Direction of process connection
T	1/4-18 NPT	7/16-20 UNF	1/2-14 NPT	"L" Shape	Standard
R			M20×1.5		
X			Pg13.5		
P (*1)	1/4-18 NPT	M10	1/2-14 NPT		Bottom (Isoplanar)
M (*1)			M20×1.5		
N (*1)			Pg13.5		
6	1/4-18 NPT	7/16-20 UNF	1/2-14 NPT	"T" Shape	Standard
3			M20×1.5		
9			Pg13.5		
D (*1)	1/4-18 NPT	M10	1/2-14 NPT		Bottom (Isoplanar)
B (*1)			M20×1.5		
C (*1)			Pg13.5		

(*2)(*3) **Range and materials**

	Static pressure limits	Measuring ranges	Process cover LP side HP side	Diaphragm	Wetted cell body
1 1 V	-1 to 32 bar -0.1 to 3.2 MPA -14,5 to 464 psig	10/100 mm WC 0.1 to 1 kPa 0...1 to 10 mbar 0...10 to 100 mm WC	SS 316L	SS 316L	SS 318LN
1 1 W				Hastelloy C	
1 1 J				Gold coating	
1 1 H				Hastelloy C	Hastelloy C
2 2 V	-1 to 100 bar -0.1 to 10 MPA -14.5 to 1450 psig	10/600 mmWC 0.1 to 6 kPa 0...1 to 60 mbar 0...10 to 600 mm WC	SS 316L	SS 316L	SS 318LN
2 2 W				Hastelloy C	
2 2 J				Gold coating	
2 2 H				Hastelloy C	Hastelloy C
3 3 V	-1 to 160 bar -0.1 to 16 MPA -14.5 to 2320 psig (*3)	30/3200 mm WC 0.32 to 32 kPa 0…3.2 320 mbar 0...32 to 3200 mm WC	SS 316L	SS 316L	SS 316L
3 3 W				Hastelloy C	
3 3 H					Hastelloy C
3 3 M				Monel	Monel lining
3 3 J				Gold coating	SS 316L
3 3 C (*4)				Gold/ceramics	Gold/ceramics
3 3 T				Tantalum	Tantalum lining
3 5 V		0.13/13 m WC 1.3 to 130 kPa 0…13 to 1300 mbar 0...0.13 to 13 m WC	SS 316L	SS 316L	SS 316L
3 5 W				Hastelloy C	
3 5 H					Hastelloy C
3 5 M				Monel	Monel lining
3 5 J				Gold coating	SS 316L
3 5 C (*4)				Gold/ceramics	Gold/ceramics
3 5 T				Tantalum	Tantalum lining
3 6 V		0.5/50 m WC 5 to 500 kPa 0…50 to 5000 mbar 0...0.5 to 50 m WC	SS 316L	SS 316L	SS 316L
3 6 W				Hastelloy C	
3 6 H					Hastelloy C
3 6 J				Gold coating	SS 316L
3 6 M				Monel	Monel lining
3 6 T				Tantalum	Tantalum lining
3 8 V		3/300 m WC 30 to 3000 kPa 0…0.3 to 30 bar 0...3 to 300 m WC	SS 316L	SS 316L	SS 316L
3 8 W				Hastelloy C	
3 8 H					Hastelloy C
3 8 J				Gold coating	SS 316L
4 3 V	-1 to 420 bar -0.1 to 42 MPA -14.5 to 6091 psig (*3)	32/3200 mm WC 0.32 to 32 kPa 0…3.2 to 320 mbar 0…32 to 3200 mm WC	SS 316L	SS 316L	SS 316L
4 3 W				Hastelloy C	
4 3 H					Hastelloy C
4 3 M				Monel	Monel lining
4 3 J				Gold coating	SS 316L
4 5 V		0.13/13 m WC 1.3 to 130 kPa 0…13 to 1300 mbar 0...0.13 to 13 m WC	SS 316L	SS 316L	SS 316L
4 5 W				Hastelloy C	
4 5 H					Hastelloy C
4 5 M				Monel	Monel lining
4 5 J				Gold coating	SS 316L
4 6 V		0.5/50 m WC 5 to 500 kPa 0…50 to 5000 mbar 0...0.5 to 50 m WC	SS 316L	SS 316L	SS 316L
4 6 W				Hastelloy C	
4 6 H					Hastelloy C
4 6 M				Monel	Monel lining
4 6 J				Gold coating	SS 316L
4 8 V	-1 to 300 bar -0.1 to 30 MPA -14.5 to 4351 psig	3/300 m WC 30 to 3000 kPa 0…0.3 to 30 bar 0…3 to 300 m WC	SS 316L	SS 316L	SS 316L
4 8 W				Hastelloy C	
4 8 H					Hastelloy C
4 8 J				Gold coating	SS 316L
4 9 V		50/2000 m WC 500 to 20000 kPa	SS 316L	SS 316L	SS 316L
4 9 J				Gold coating	

1	2	3	4	5	6	7	8		9	10	11	12	13		14	15		16	DESCRIPTION					
F	K	C					6	–						–			–							
				8	1	H													0 to 15 bar 0 to 1.5 MPa 0 to 217 psig	10/100 mm WC 0.1 to 1 kPa 0…1 to 10 mbar 0…10 to 100 mm WC	PVDF insert		Hastelloy C	Hastelloy C
				8	2	H														10/600 mm WC 0.1 to 6 kPa 0…1 to 60 mbar 0…10 to 600 mm WC				
				8	3	H														32/3200 mm WC 0.32 to 32 kPa 0…3.2 to 320 mbar			Monel	Monel lining
				8	3	M																		
				8	3	T																	Tantalum	Tantalum lining
				8	5	H														0.13/13 m WC 1.3 to 130 kPa 0…13 to 1300 mbar			Hastelloy C	Hastelloy C
				8	5	M																	Monel	Monel lining
				8	5	T																	Tantalum	Tantalum lining
				8	6	H														0.5/50 m WC 5 to 500 kPa 0…50 to 5000 mbar			Hastelloy C	Hastelloy C
				8	6	M																	Monel	Monel lining
				8	6	T																	Tantalum	Tantalum lining
				9	1	H													0 to 15 bar 0 to 1.5 MPa 0 to 217 psig	10/100 mm WC 0.1 to 1 kPa 0…1 to 10 mbar 0…10 to 100 mm WC	PVDF insert	SS 316L	Hastelloy C	Hastelloy C
				9	2	H														10/600 mm WC 0.1 to 6 kPa 0…1 to 60 mbar 0…10 to 600 mm WC				
				9	3	H														32/3200 mm WC 0.32 to 32 kPa 0…3.2 to 320 mbar			Monel	Monel lining
				9	3	M																		
				9	3	T																	Tantalum	Tantalum lining
				9	5	H														0.13/13 m WC 1.3 to 130 kPa 0…13 to 1300 mbar			Hastelloy C	Hastelloy C
				9	5	M																	Monel	Monel lining
				9	5	T																	Tantalum	Tantalum lining
				9	6	H														0.5/50 m WC 5 to 500 kPa 0…50 to 5000 mbar			Hastelloy C	Hastelloy C
				9	6	M																	Monel	Monel lining
				9	6	T																	Tantalum	Tantalum lining
							6												**Improvement Symbol**					
									A										**Indicator**	**Arrester**				
									E										None	None				
									L										None	Yes				
									P										Digital, 0-100% linear scale	None				
									M										Digital, custom scale					
									Q										Digital, 0-100% √ scale					
									S										Digital, 0-100% linear scale	Yes				
									N										Digital, custom scale					
									1										Digital, 0-100% √ scale					
									2										Digital, 0-100% linear scale (Local configurator)	None				
									3										Digital, custom scale (Local configurator)					
									4										Digital, 0-100% √ scale (Local configurator)					
									5										Digital, 0-100% linear scale (Local configurator)	Yes				
									6										Digital, custom scale (Local configurator)					
																			Digital, 0-100% √ scale (Local configurator)					
											A								**Hazardous location approvals**					
											X							(*5)	None					
											K								ATEX - Flameproof					
											M							(*5)	ATEX - Intrinsic Safety					
											E							(*5)	ATEX - Combination Flameproof and Intrinsic Safety	pending				
											J								cCSAus - Explosion proof	pending				
											L							(*5)	cCSAus - Intrinsic Safety and Non Incendive	pending				
											R							(*5)	cCSAus - Combination Explosion proof, Intrinsic Safety and Non Incendive	pending				
											T							(*5)	IECEx - Flameproof					
											N								IECEx - Intrinsic Safety					
											W							(*5)	IECEx - Combination Flameproof and Intrinsic Safety	pending				
																		(*5)	IECEx - ATEX - cCSAus - Explosion/Flameproof, Intrinsic Safety and Non Incendive	pending				
												A						(*1,*6)	**Side vent/drain**	**Mounting bracket**				
												K							None (standard)	None				
												D							Yes	None				
												L								SS 316L				
																			Stainless steel parts					
													Y						**TAG plate**	**Housing**				
													B						None	None				
													C						Yes					
													E						None	Yes				
																			Yes					

1	2	3	4	5	6	7	8		9	10	11	12	13		14	15		16	DESCRIPTION
F	K	C					6	–						–			–		**Special applications & Filling fluids**

13	Treatment	Filling fluid
Y	None	Silicone oil
W		Fluorinated oil
G	Degreasing	Silicone oil
A	Oxygen service	Fluorinated oil (only with digit 7=J,V,W)
D	Chlorine service	Fluorinated oil (only with digit 7=H,T)
N	NACE	Silicone oil

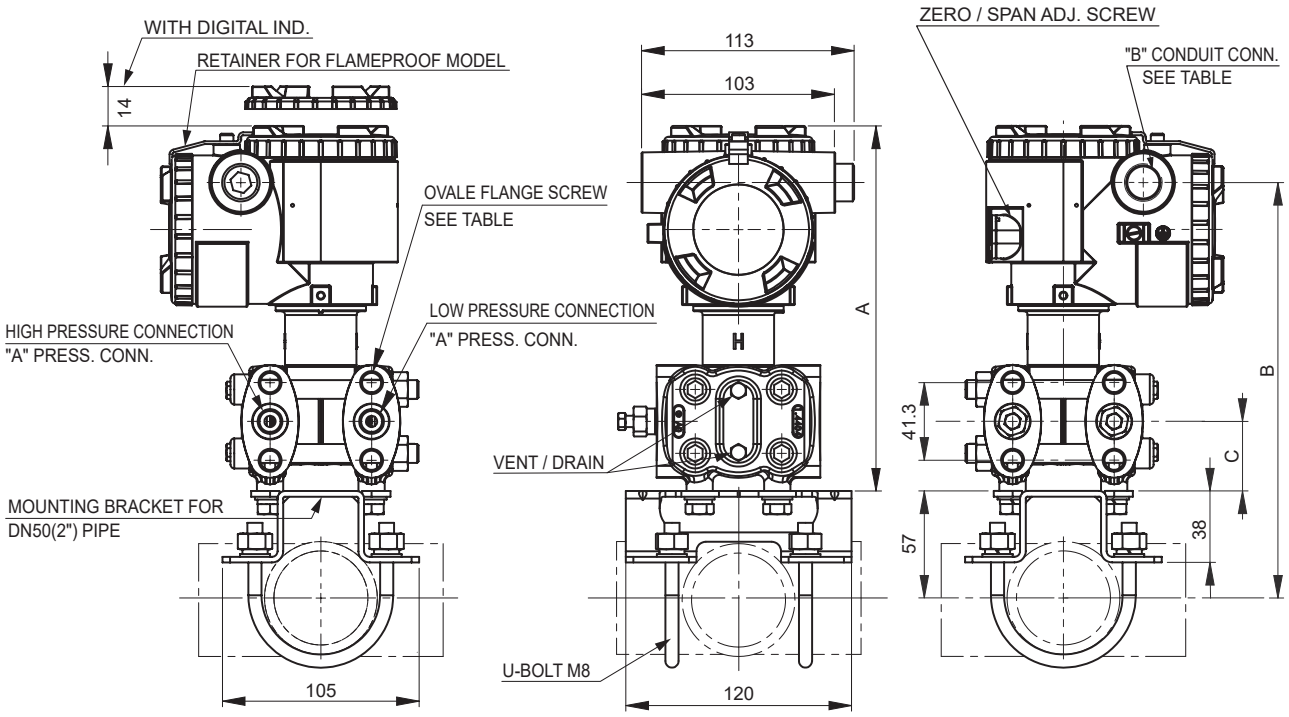
14	15	16	Process cover gasket	Vent Drain plug	Bolt/Nut
C			PTFE square section gasket	Standard type	Carbon steel - M10 for MWP ≤ 160 bar (16 MPa)
H			PTFE square section gasket	Standard type	Carbon steel - M12 for MWP > 160 bar (16 MPa)
G			PTFE square section gasket	Standard type	SS 316L - M10 for MWP ≤ 160 bar (16 MPa)
J		(*7)	PTFE square section gasket	Standard type	SS 660 - M10 for MWP ≤ 160 bar (16 MPa)
K		(*7)	PTFE square section gasket	Standard type	SS 660 - M12 for MWP > 160 bar (16 MPa)
D			PTFE square section gasket in PVDF insert	Standard type	Carbon steel - M10
E			PTFE square section gasket in PVDF insert	Standard type	SS 316L - M10
F		(*7)	PTFE square section gasket in PVDF insert	Standard type	SS 660 - M10
4			Viton	Standard type	Carbon steel - M10 for MWP ≤ 160 bar (16 MPa)
6			Viton	Standard type	Carbon steel - M12 for MWP > 160 bar (16 MPa)
5			Viton	Standard type	SS 316L - M10 for MWP ≤ 160 bar (16 MPa)
7		(*7)	Viton	Standard type	SS 660 - M10 for MWP ≤ 160 bar (16 MPa)
8		(*7)	Viton	Standard type	SS 660 - M12 for MWP > 160 bar (16 MPa)

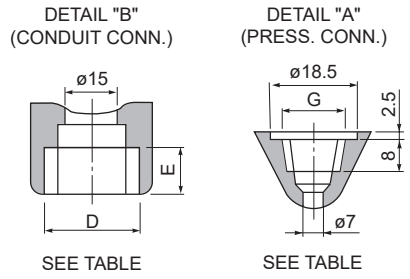
15	16	Special options	
		None	Instruction manual unattached
L		None	
T		High accuracy type	
	(*8) *	special, no code available	

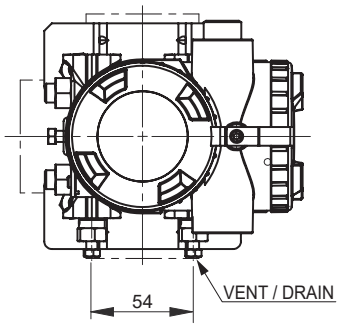
Notes*:
1- Isoplanar process connection (bottom side) with side vent/drain only. 160 bar MWP with M10 process cover bolting.
2- Select M12 bolting if static pressure > 160 bar.
3- A Turn Down Ratio ≤ 10 is recommended for optimal performances.
4- Gold/ceramic coating available upon request.
5- Only with M20x1.5 & 1/2''-14 NPT electrical conduits.
6- Process cover with PVDF insert: 1/2''-14 NPT side process connection only, square section PTFE gasket, no vent/drain.
7- SS 660 bolts/nuts are in conformity with NACE MR0175/ISO 15156 and must be ued for NACE service.
8- When no code can be found in the current model code, place “*” in the corresponding digit code as well as in the 16th digit.

OUTLINE DIAGRAM (Unit : mm)

<L SHAPE> <4TH DIGIT CODE: R, T, U, V, W, X AND 7TH DIGIT CODE V, H, M, T>







4TH MODEL CODE	CONDUIT CONNECTION		PRESS. CONN.	OVAL FLANGE SCREW
	D	E	G	
R	M20×1.5	16	1/4-18NPT	7/16-20UNF
T	1/2-14NPT	16	1/4-18NPT	7/16-20UNF
U	1/2-14NPT	16	1/4-18NPT	M10 or M12
V	Pg13.5	10.5	1/4-18NPT	M10 or M12
W	M20×1.5	16	1/4-18NPT	M10 or M12
X	Pg13.5	10.5	1/4-18NPT	7/16-20 UNF

TABLE

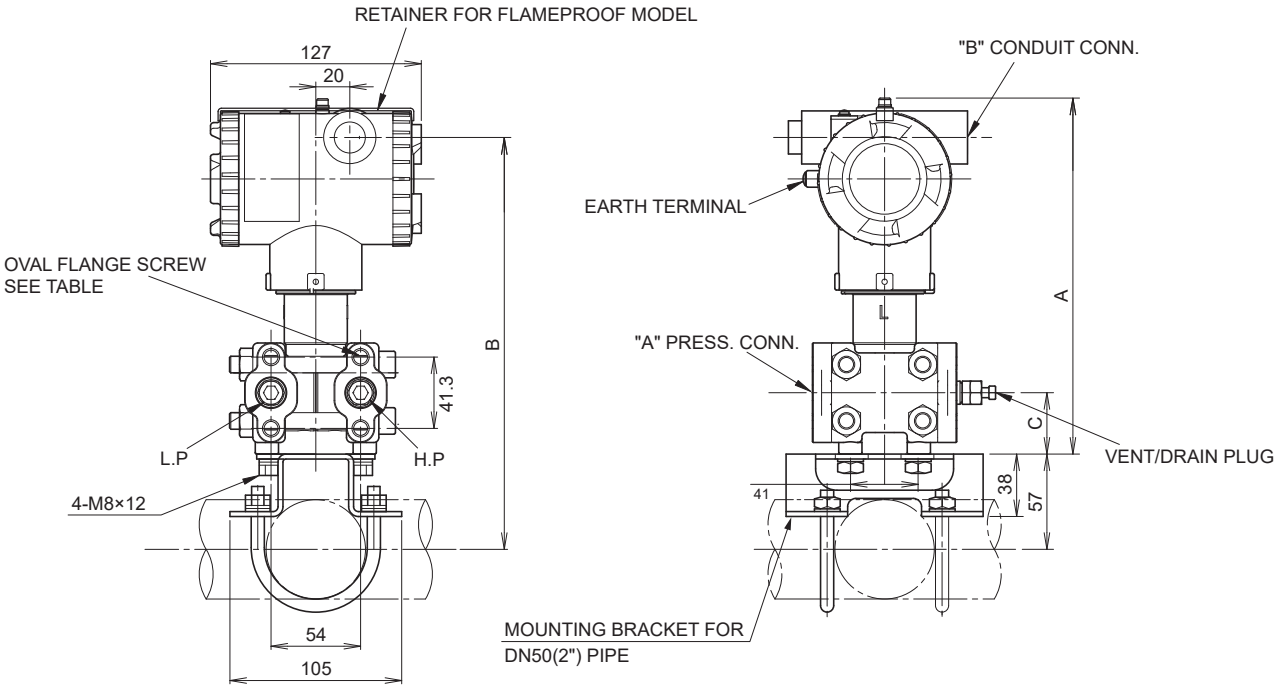
MODEL	DIMENSIONS		
	A	B	C
FKC□11	198.5	225.5	38.5
FKC□22			
FKC□33	194 (198) NOTE	221 (225) NOTE	37 (38.5) NOTE
FKC□35			
FKC□36			
FKC□38	198.5	225.5	38.5
FKC□43			
FKC□45			
FKC□46			
FKC□48			

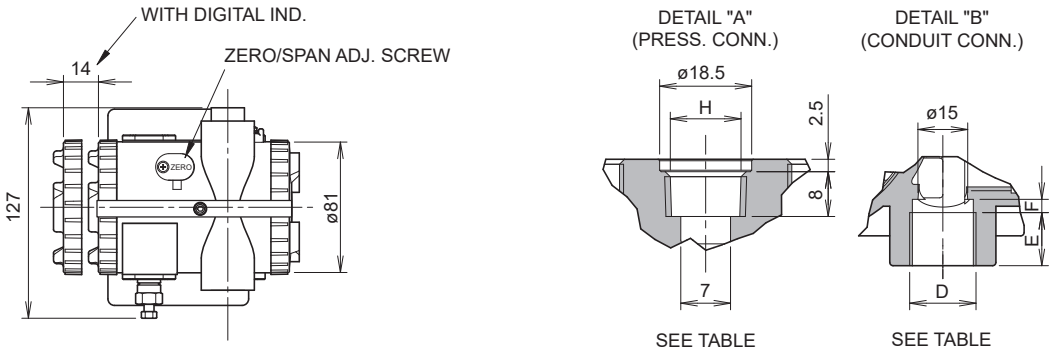
NOTE: 7TH MODEL CODE "M", "T"

WEIGHT : - 3.5 kg (WITHOUT OPTION)
ADD : - 0.2 kg FOR INDICATOR
- 0.5 kg FOR MOUNTING BRACKET
- 2.0 kg FOR STAINLESS STEEL HOUSING OPTION

OUTLINE DIAGRAM (Unit : mm)

<T SHAPE> <4TH DIGIT CODE: 3, 4, 6, 7, 8, 9 AND 7TH DIGIT CODE V, H, M, T>





4TH MODEL CODE	CONDUIT CONNECTION			PRESS. CONN.	OVAL FLANGE SCREW
	D	E	F	H	
3	M20×1.5	16	4	Rc1/4	7/16-20UNF
4	1/2-14NPT	16	4	1/4-18NPT	M10 or M12
6	1/2-14NPT	16	4	1/4-18NPT	7/16-20UNF
7	Pg13.5	10.5	4.5	1/4-18NPT	M10 or M12
8	M20×1.5	16	4	1/4-18NPT	M10 or M12
9	Pg13.5	10.5	4.5	1/4-18NPT	7/16-20UNF

TABLE

MODEL	DIMENSIONS		
	A	B	C
FKC□11	219	252	38.5
FKC□22			
FKC□33	215	248	37
FKC□35	(219)	(252)	(38.5)
FKC□36	NOTE	NOTE	NOTE
FKC□38	219	252	38.5
FKC□43			
FKC□45			
FKC□46			
FKC□48			

NOTE: 7TH MODEL CODE "M", "T"

WEIGHT : - 3.5 kg (WITHOUT OPTION)
ADD : - 0.2 kg FOR INDICATOR
- 0.5 kg FOR MOUNTING BRACKET
- 2.0 kg FOR STAINLESS STEEL HOUSING OPTION

Fuji Electric

Fuji Electric France S.A.S.
46 rue Georges Besse - ZI du brézet - 63039 Clermont ferrand
Tél : 04 73 98 26 98 - Fax : 04 73 98 26 99
Mail : sales.dpt@fujielectric.fr - web : www.fujielectric.fr