

■ DATA SHEET

The ProcessX absolute pressure transmitter (direct mount type) accurately measures absolute pressure and transmits proportional 4 to 20mA signal.

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



■ FEATURES

1. High accuracy

0.2% accuracy for all calibrated spans is the standard feature. Georgin's micro-capacitance silicon sensor assures this feature for all suppressed calibration ranges without additional adjustment.

2. Minimum inventory

Electronics unit, communication module, local indicators and electronics housing are interchangeable among all ProcessX models.

3. Replaceable Communication Module

Georgin micro-electronics manufacturing technology offers replaceable communication module that makes ProcessX transmitter very unique design. In case of change in communication protocol all that needs to be done is just replace the module and the transmitter gets upgraded to the new version.

4. GEORGIN//HART™ bilingual communication module

The communication module is "bilingual" to speak both Georgin proprietary protocol and HART®. Any HART® compatible devices can communicate with ProcessX series transmitters.

5. Application flexibility

Example features that render the ProcessX suitable for almost any process applications includes:

- Full range of hazardous location approvals.
- Built-in RFI filter and lightning arrester.
- 5-digits LCD meter.
- The maximum span of each sensor can be converted to in different units using below factors.

■ SPECIFICATIONS

■ FUNCTIONAL SPECIFICATIONS

Type:

FKH: Smart, 4 to 20mA DC + Georgin/Hart® digital signal

Service:

Liquid, gas or vapor

Span, range and overrange limit:

Type	Span limit [kPa abs.] {bar abs.}		Range limit [kPa abs.] {bar abs.}	Overrange limit [MPa] {bar}
	Min.	Max.		
FKH*02	8.125 {0.08125}	130 {1.3}	0 à 130 {0 à 1.3}	0.5 {5}
FKH*03	31.25 {0.3125}	500 {5}	0 à 500 {0 à 5}	1.5 {15}
FKH*04	187.5 {1.875}	3000 {30}	0 à 3000 {0 à 30}	9 {90}

Output signal:

4 to 20 mA DC with digital signal superimposed 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.

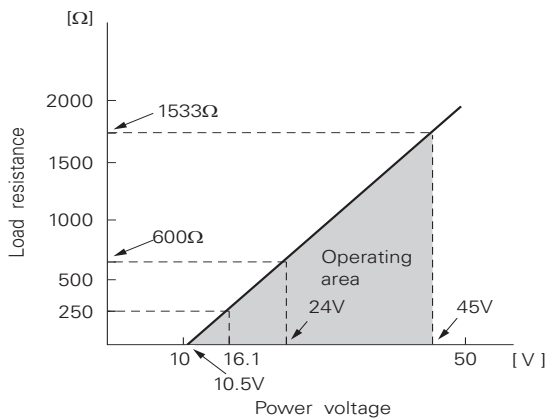


FKH...5 Absolute pressure transmitter



Safety for Industrial Processes

LOAD LIMITATIONS: see figure below



Note: for communication with HHC ⁽¹⁾ min. of 250W required.

HAZARDOUS LOCATION:

Authority (Digit 10 =)	Intrinsic safety																					
ATEX (K)	Ex II 1 G 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																					
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CSA (E)	Class I, Groups C and D; Class II, Groups E, F and G ; Class III Maximum ambient temperature 85°C Maximum working pressure 50 Mpa Electrical ratings Model Without arrester: Ui ≤ 45 Vdc, 4-20 mA Model With arrester: Ui ≤ 32 Vdc, 4-20 mA Note: "Seal not required"																					
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ZERO/SPAN ADJUSTMENT:

Zero and span are adjustable either from the HHC⁽¹⁾ in Hart® or Georgin protocol. Zero is also adjustable externally from the adjustable screw.

DAMPING: (Adjustable from the HHC⁽¹⁾)

A damping of the output signal is possible between 0 to 32.0 seconds

ZERO ELEVATION/SUPPRESSION:

Zero may be elevated within the specified range limit of each sensor model.

NORMAL/REVERSE ACTION:

Configurable 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" :

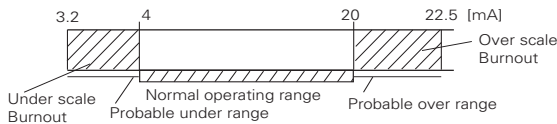
Output signal is hold as the value just before failure happens.

"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⁾:



LOOP-CHECK OUTPUT:

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

TEMPÉRATURE LIMITE:

Ambient : - 40 to +85°C

- 20 to +80°C (for LCD indicator)

- 40 to +60°C (for arrester option)

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

Process : - 40 to +85°C (for silicone fill sensor)

Storage : -40 to +90°C

HUMIDITY LIMIT :

0 to 100% RH

COMMUNICATION:

With HHC⁽¹⁾, following items can be remotely displayed or configured

Note:

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

Items	Georgin protocol with HHC ⁽¹⁾		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 (as 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	v	v	v	v
- Ambient temperature history	v	—	v	—

(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 (Georgin Protocol list) except "Linearize" function.

PROGRAMMABLE OUTPUT LINEARIZATION FUNCTION:

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



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■ PERFORMANCE SPECIFICATIONS

- **ACCURACY RATING:**
(including linearity, hysteresis, and repeatability)
For span > than 1/10 of URL:
 $\pm 0.2\%$ of span
For span < than 1/10 of URL:
 $\pm (0.1 + 0.1 \frac{0.1 \times \text{URL}}{\text{span}}) \%$ of span
- **STABILITY:**
 $\pm 0.2\%$ of upper range limit (URL) for 10 years (in case of 6th digit code "3", "4").
- **TEMPERATURE EFFECT:**
Effect per 28°C change between the limits of -40°C and +85°C:
Zero shift:
 $\pm (0.4 + 0.2 \frac{\text{URL}}{\text{span}}) \%/28^\circ\text{C}$
Total effect:
 $\pm (0.475 + 0.2 \frac{\text{URL}}{\text{span}}) \%/28^\circ\text{C}$
- **OVERRANGE EFFECT:**
Zero shift, 0.3% of URL for any overrange to maximum limit.
- **UPDATE RATE:**
60 msec
- **RESPONSE TIME:** (without electrical damping)
Time constant: 0.08 s (at 23°C)
Dead time: about 0.12 s
Response time = time constant + dead time
- **MOUNTING POSITION EFFECT:**
Zero shift, less than 0.1kPa for a 10° tilt in any plane.
No effect on span.
This error can be corrected by adjusting zero.
- **VIBRATION EFFECT:**
< $\pm 0.25\%$ of span for spans greater than 1/10 of URL.
Frequency 10 to 150Hz, acceleration 39.2m/sec²
- **MATERIAL FATIGUE:**
Consult Georgin.
- **DIELECTRIC STRENGTH:**
500 V AC 50/60Hz 1 min., between circuit and earth.
- **INSULATION RESISTANCE:**
> than 100 MΩ at 500 V DC.
- **INTERNAL RESISTANCE FOR EXTERNAL FIELD INDICATOR:**
12 Ω max. (connected to test terminal CK+ and CK-).

■ PHYSICAL SPECIFICATIONS

- **ELECTRICAL CONNECTIONS:**
1/2 -14 NPT, Pg13.5 or M20 x 1.5.
- **PROCESS CONNECTIONS:**
1/2-14 NPT, 1/4-18NPT, Rc1/2, G1/2 A manometer fitting.
- **PROCESS-WETTED PARTS MATERIAL:**

Code (7th digit)	Process cover	Diaphragm	Wetted sensor body	Vent/drain
J	316L SS	316L SS+ gold coat	316L SS	316 SS
V	316 SS	316L SS	316L SS	316 SS

- **NON-WETTED PARTS MATERIAL:**
Electronics housing:
Low copper die cast aluminum alloy finished with polyester coating (standard), or 316SS as specified.
Fill fluid: Silicone oil
Mounting bracket: 304 stainless steel
- **ENVIRONMENTAL PROTECTION:**
IEC IP67 and NEMA 4X
- **MOUNTING:**
On 60.5mm (JIS 50A or 2B) pipe using mounting bracket, direct wall mounting, or direct process mounting.
- **MASS {WEIGHT}:**
Transmitter approximately 2.2kg without options.
Add 0.5kg for mounting bracket



Safety for Industrial Processes

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CE



SIL
CAPABILITY

OPTIONAL FEATURES

- **INDICATOR:**
A plug-in turnable analog indicator (2.5% accuracy)
An optional 5 digits LCD meter 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.
- **ARRESTER:**
A built-in arrester protects the electronics from lightning surges.
Lightning surge immunity: 4kV (1.2×50µs).
- **DEGREASING:**
Process-wetted parts are cleaned, but the fill fluid is standard silicone oil. Not for use for oxygen or chlorine measurement.
- **NACE SPECIFICATION:**
Metallic materials for all pressure boundary parts comply with NACE MR-01-75.
- **CUSTOMER TAG:**
A stainless steel tag for customer tag data is wired to the transmitter.

ACCESSORIES

- **TWO VALVE MANIFOLD:**
Available in 316 stainless steel and pressure rating 10MPa (100bar).
- **HAND HELD COMMUNICATOR (HHC)**



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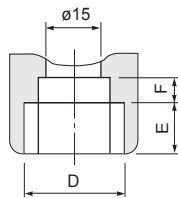
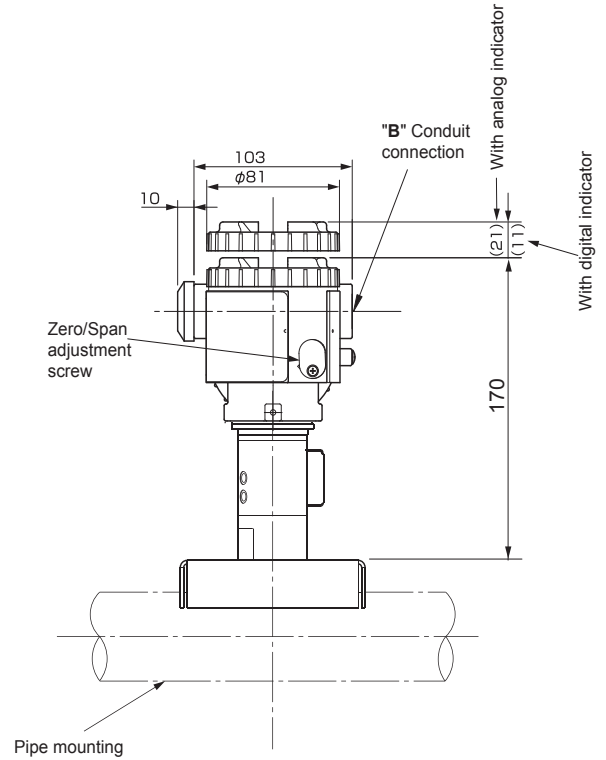
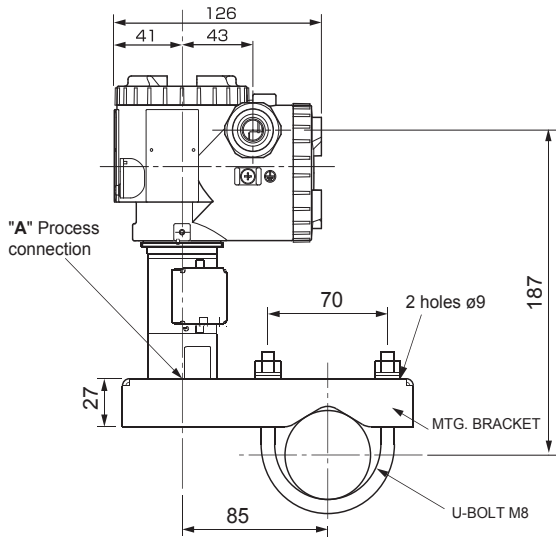
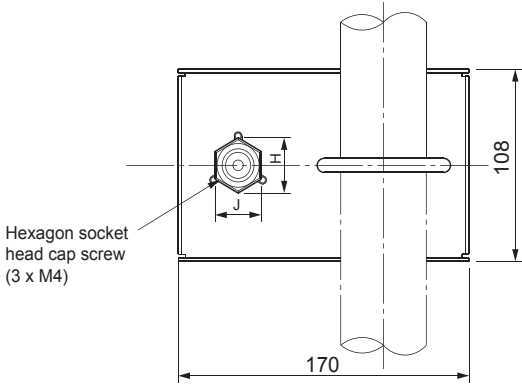
CODE SYMBOLS

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Note*:

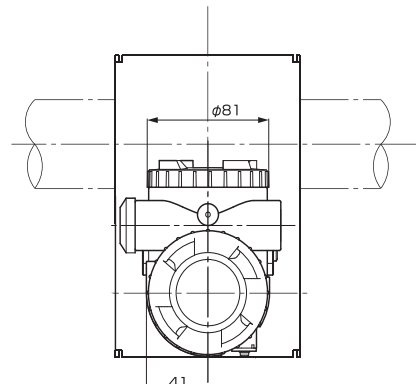
1- Code "D" FM approval only possible with electrical connection 1/2" NPT.

■ OUTLINE DIAGRAM (UNIT:MM)



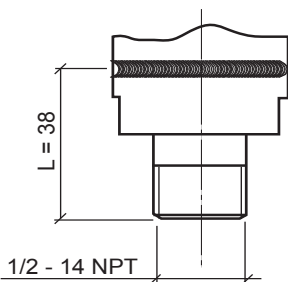
Details of "B"

4th digit of the code symbols	Conduit connections		
	D	E	F
T	1/2-14 NPT	16	5
V	Pg13.5	8	4.5
W	M20x1.5	16	5

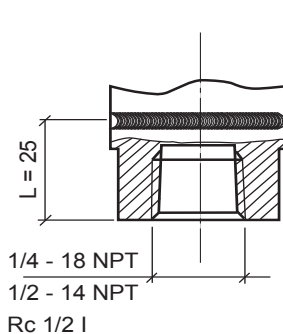


■ DETAILS "A" - PROCESS CONNECTION

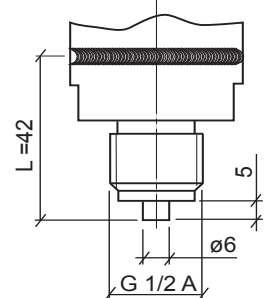
Code digit 15 = D



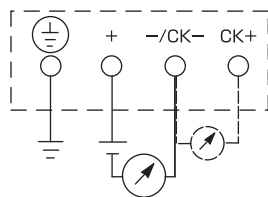
Code digit 15 = Y, B or C



Code digit 15 = E



■ CONNEXION ÉLECTRIQUE



EMC Directive (2004/108/EC)

All models of ProcessX series transmitters are in accordance with the harmonized standards :

- EN 61326-1 : 2006 (Electrical equipment for measurement, control and laboratory use - EMC requirements).
- EN 61326-2-3 : 2006 (Part 2-3 : Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning).

Emission limits : EN 61326-1 : 2006

Frequency range (MHz)	Limits	Basic standard
30 to 230	40dB ($\mu\text{V/m}$) quasi peak, measured at 10m distance	EN 55011 / CISPR 11 Group 1 Class A
230 to 1000	47dB ($\mu\text{V/m}$) quasi peak, measured at 10m distance	

Immunity requirements : EN 61326-1 : 2006 (Table 2)

Phenomenon	Test value	Basic standard	Performance criteria
Electrostatic discharge (EDS)	4 kV (Contact) 8 kV (Air)	EN 61000-4-2 IEC 61000-4-2	B
Electromagnetic field	10V/m (80-1000MHz) 3 V/m (1.4-2.0 GHz) 1V/m (2.0-2.7 GHz)	EN 61000-4-3 IEC 61000-4-3	A
Rated power frequency Magnetic field	30 A/m	EN 61000-4-8 IEC 61000-4-8	A
Burst	2kV (5/50 NS, 5 kHz)	EN 61000-4-4 IEC 61000-4-4	B
Surge	1 kV Line to line 2 kV Line to line	EN 61000-4-5 IEC 61000-4-5	B
Conducted RF	3 V (150 kHz to 80 MHz)	EN 61000-4-6 IEC 61000-4-6	A

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.