

- **High installed base accuracy : $\pm 0.10\%$**
- **Reliable inductive sensing system coupled with the very latest digital technologies**
 - ensures high performance at all process conditions
- **Specific design for low pressure**
- **Wide selection of materials**
 - meet virtually all process requirements
- **HART 4-20 mA, Profibus PA, FF versions with plug-and-play electronics replacement**
 - provides interchangeability for upgrading transmitter
- **Local snap calibration and full management via hand terminal or PC-running software**
- **HART®, Profibus PA, FF communications**
 - allows integration with standard process bus
- **CoMeter display option**
 - offers HART Configuration capabilities combined with local indication
- **Ecoefficient life cycle**
 - ensures low environmental impact in compliance with LCA assessment to ISO 14040 standard



***The all new 600T Series transmitter
The first choice pressure transmitter is
now an even bigger choice***

GENERAL DESCRIPTION

Model 621EM is a specific application transmitter using a differential design for liquid level interface and density measurements, typically for two non mixable liquids (one upon the other) of different specific gravity, in a tank.

The transmitter has a defined structure with two seals :

- one direct mount flanged flush diaphragm seal is on the high pressure side.

- one remote seal, selectable wafer or flanged flush diaphragm, is fitted via capillary to the low pressure side.

The seals should have the same physical characteristics (size, materials, etc.) for the two sides; these are suitable to interface tank nozzle of 2in/3in to ANSI or DN50/DN80 to DIN.

FUNCTIONAL SPECIFICATIONS

Range and span limits

Sensor code	Upper Range Limit (URL)	Lower Range Limit (LRL) 621EM Liquid level interface, density	Minimum Span	Compatibility (allowed seal types) Direct mount and one remote seal (max length in m)
A	2.5 kPa 25 mbar 10 inH ₂ O	- 2.5 kPa - 25 mbar - 10 inH ₂ O	0.25 kPa 2.5 mbar 1 inH ₂ O	3in/DN80 wafer or flanged flush diaphragm seal (2)
B	10 kPa 100 mbar 40.1 inH ₂ O	- 10 kPa - 100 mbar - 40.1 inH ₂ O	1 kPa 10 mbar 4 inH ₂ O	2in/DN50 wafer or flanged flush diaphragm seal (2)(*) 3in/DN80 wafer or flanged flush diaphragm seal (4)

The combinations sensor code/ seal type marked (*) modify the base accuracy rating and static pressure effect; refer to performance specifications.

Turndown ratio (TD) :

up to 10:1

Span limits

Maximum span = URL

Minimum span = URL/TD

Zero suppression and elevation

Zero and span can be adjusted to any value within the range limits detailed in the table as long as:

- calibrated span ≥ minimum span

Damping

Selectable time constant : 0, 0.25, 0.5, 1, 2, 4, 8 or 16 sec.

Electromagnetic compatibility (EMC)

Comply with EN 50081-2 for emission and EN 50082-2 for immunity requirements and test; CE marking.

Turn on time

Operation within specification in less than 2 sec. with minimum damping.

Insulation resistance

> 100 MΩ @ 1000 Vdc (terminals to earth)

Temperature limits °C (°F)

• Process

The following table shows characteristics of fill fluid used in the seals on the two sides of transmitter model 621EM.

FILL FLUIDS (APPLICATION)	OPERATING CONDITIONS	
	Tmax @ P > of	Tmin
Silicone oil DC 200 (General purpose)	150 (302) @ 35 mbar abs	-20 (-4)
Inert (Galden) (Oxygen Service)	100 (212) @ 75 mbar abs	-10 (+14)

• Ambient (is the operating temperature)

Silicone oil : -20 and +85°C (-4 and +185°F)

Inert : -10 and +85°C (+14 and +185°F)

Upper ambient limit for CoMeter : +70°C (+158°F)

• Storage

Lower limit : -50°C (-58°F); -40°C (-40°F) for LCD indicators

Upper limit : +120°C (+248°F); +85°C (+185°F) for LCD indicators

Time response

The time response of a transmitter/seal system is function of some characteristics which define relevant coefficients as follows :

Configuration coefficient (K1)

- 2in/DN50 seal : 9.2 x L

- 3in/DN80 seal : 9.2 x L

"L" is the capillary length of the remote seal; if present

Filling coefficient (K2 and K3)

Fill Fluid	K2	K3
Silicone oil DC 200	1	0.12
Inert (Galden)	1.9	0.37

Operating temperature coefficient (K4)

to be considered only for operating temperature less than 25°C (77°F)

$$K4 = |T - 25| \text{ (absolute value)}$$

Coefficient K4 should be considered = 0 for temperatures above 25°C (77°F)

Sensor (URL) coefficient K5

Sensor Code	K5
A	0.4
B	0.2

The seal(s) constant time is calculated by the following formula

$$T_{S6} \text{ (sec)} = [K1 \times (K2 + K3 \times K4) \times K5]$$

The total constant time of the transmitter/seal system is the combination of relevant response times by the following formula:

$$T_{TX} \text{ (sec)} = T_{TR} + T_{S6} \times 1.2] + 0.1$$

The following table details the transmitter time values (T_{TR}) in sec. for the transducers with specific filling fluids @25°C (77°F)

Sensor Code	Silicone oil DC 200	Inert (Galden)
A	2	7.3
B	0.9	3.2

Overpressure limits (without damage to the transmitter)

- Lower : 0.067 kPa abs, 0.67 mbar abs, 0.01 psia (0.13 kPa abs, 1.33 mbar abs, 0.02 psia for sensor A). Double the lower limit with inert filling.
- Upper (transmitter sensor limit or flange / fitting rating of the seal, whichever is less)
 - **model 621EM**
 - sensor code A : 1 MPa, 10 bar, 145 psi
 - sensor code B : 5 MPa, 50 bar, 725 psi
 - **flanged seals (S6F)**
 - ANSI CL 150 : 2 MPa, 20 bar, 290 psi
 - ANSI CL 300 : 5 MPa, 50 bar, 725 psi
 - DIN ND 16 : 1.6 MPa, 16 bar, 230 psi
 - DIN ND 40 : 4 MPa, 40 bar, 580 psi

Static pressure

Transmitters model 621EM operate within specifications between the following limits

- Lower atmosphere (the two sides are wetted)
- Upper same of overpressure limit

Proof pressure

The transmitter meets SAMA PMC 27.1 requirements and can be exposed without leaking to line pressure of up to 10 MPa, 100 bar, 1450 psi (2 MPa, 20 bar, 290 psi for sensor A) or two times the flange/fitting rating of the seal, whichever is less.

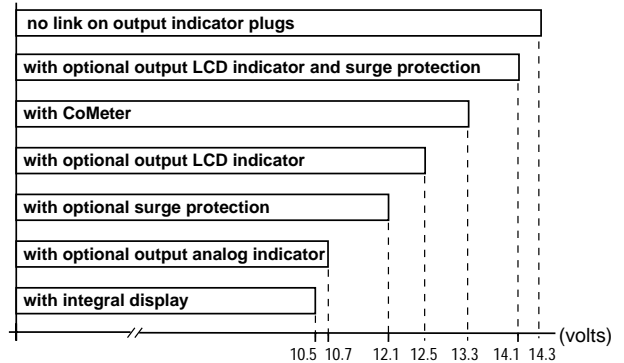
ELECTRICAL CHARACTERISTICS AND OPTIONS

• HART digital communication and 4 to 20 mA output Power Supply

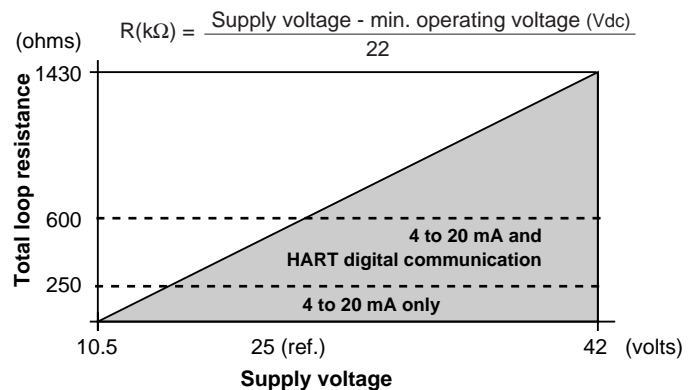
The transmitter operates from 10.5 to 42 Vdc with no load and is protected against reverse polarity connection (additional load allows operations over 42 Vdc).

For EEx ia and intrinsically safe (FM, CSA and SAA) approval power supply must not exceed 30 Vdc.

MINIMUM OPERATING VOLTAGES



Load limitations - 4-20 mA and HART total loop resistance :



Optional indicators

• Output meter (user adjustable)

- LCD : 3 1/2-digit with 10 mm (3/8 in) high, 7-segment characters. Engineering unit labels are provided. LCD output meter may be calibrated within the range -1999 to +1999 with a span adjustable between 100 and 3998 units. (Display of decimal point, if required, is switch selectable)
- analog : 36 mm (1.4 in) scale on 90°

• Integral display

- LCD: 4-digit with 8 mm. (5/16 in) high, 9-segment alphanumeric characters.
- User-definable display mode with HART communication :
 - process variable in engineering units, or
 - percent of range, or
 - process variable in engineering units and percent of range alternating every 3 seconds, or
 - process variable in engineering units and digital output (4 to 20 mA) alternating every 3 seconds.
- Factory selectable display mode with 4 to 20 mA output :
 - percent of range
 - percent of range and 4 to 20 mA output alternating every 3 seconds
- Display also indicates diagnostic messages.

• CoMeter

- 5-digit (± 99999 counts) programmable with 7.6 mm. high (3 in), 7-segment numeric characters plus sign and digital point
- 10-segment bargraph display (10% per segment)
- 7-digit LCD with 6 mm. high (2.3 in), 14-segment alphanumeric characters.

Optional surge protection

Up to 2.5 kV (5 kA discharge current) of 8 μ s rise time/20 μ s decay.

Output signal

Two-wire 4 to 20 mA dc, user-selectable for linear or square root output, power of 3/2 or 5/2, 5th order or two 2nd order switching point selectable programmable polynomial output. HART® communication provides digital process variable (% , mA or engineering units) superimposed on 4 to 20 mA signal, with protocol based on Bell 202 FSK standard.

Output current limits (to NAMUR standard)

Overload condition
- Lower limit : 3.8 mA dc
- Upper limit : 20.8 mA dc

Transmitter failure mode (to NAMUR standard)

The output signal can be user-selected to a value of 3.6 or 21.6 mA on gross transmitter failure condition, detected by self-diagnostics.
In case of CPU failure the output is driven <3.6 mA or >21.6 mA.

• *Profibus PA output*

Power supply

The transmitter operates from 10.5 to 32 Vdc with no polarity. For EEx ia approval power supply must not exceed 15 Vdc. Intrinsic safety installation according to FISCO model.

Current consumption

- operating (quiescent) : 10.5 mA
- communicating : 20.5 mA
- fault current limiting : 16 mA max.

Output signal

Physical layer in compliance to IEC 1158-2/EN 61158-2 with transmission to Manchester II modulation, at 31.25 kbit/sec.

Output interface

Profibus PA communication according to Profibus DP50170 Part 2/DIN 19245 part 1-3 compliant to Profiles 3.0 Class A & B for pressure transmitter; ident. number 052B HEX.

Output update time : 25 ms

Function blocks

2 analog input, 1 transducer, 1 physical

Optional indicator

Integral display
- LCD : 4 digit characters, displaying process variable in engineering units or as percentage value.
Display also indicates diagnostic messages.

Transmitter failure mode

On gross transmitter failure condition, detected by self-diagnostics, the output signal can be driven to defined conditions, selectable by the user as safe, last valid or calculated value.

• *FOUNDATION fieldbus output*

Device type

Link Active Scheduler (LAS) capability implemented

Power supply

The transmitter operates from 9 to 32 Vdc with no polarity. For EEx ia approval power supply must not exceed 24 Vdc. Intrinsic safety installation according to FF application guide.

Current consumption

- operating (quiescent) : 10.5 mA
- communicating : 20.5 mA
- fault current limiting : 16 mA max.

Output signal

Physical layer in compliance to IEC 1158-2/EN 61158-2 with transmission to Manchester II modulation, at 31.25 kbit/sec.

Function blocks/execution period

2 standard Analog Input blocks / 25 msec. max (each)
1 standard PID block / 70 msec. max.

Additional blocks

Transducer block, 1 standard Resource block,
1 custom Pressure with calibration block

Number of link objects : 25

Number of VCRs : 24

Output interface

FOUNDATION fieldbus digital communication protocol to standard H1, compliant to specification V. 1.4; FF registration IT011000.

Optional indicator

Integral display
- LCD : 4 digit characters, displaying process variable in engineering units or as percentage value.
Display also indicates diagnostic messages.

Transmitter failure mode

The output signal is "frozen" to the last valid value on gross transmitter failure condition, detected by self-diagnostics which also indicate a BAD conditions. If electronic failure or short circuit occur the transmitter consumption is electronically limited at a defined value (16 mA approx), for safety of the network.

PERFORMANCE SPECIFICATIONS

Stated at ambient temperature of 23°C \pm 3K (75°F \pm 5), relative humidity of 50% \pm 20%, atmospheric pressure, mounting position with vertical diaphragm and zero based range for transmitter with seal isolating diaphragms in AISI 316 L ss and silicone oil fill and HART digital trim values equal to 4-20 mA span end points, in linear mode.

Unless otherwise specified, errors are quoted as % of span. Some performance data are affected by the actual turndown (TD) as ratio between Upper Range Limit (URL) and calibrated span. IT IS RECOMMENDED TO SELECT THE TRANSMITTER SENSOR CODE PROVIDING THE TURNDOWN VALUE AS LOWEST AS POSSIBLE TO OPTIMIZE PERFORMANCE CHARACTERISTICS.

Accuracy rating

% of calibrated span, including combined effects of terminal based linearity, hysteresis and repeatability.
For fieldbus versions SPAN refer to analog input function block outscale range

- \pm 0.10% for TD from 1:1 to 5:1
- \pm 0.02 x $\frac{URL}{span}$ for TD from 5:1 to 10:1

Multiply the values by 2 for sensor/seal combination marked (•)

Optional indicators accuracy

- integral display (microprocessor driven) : no error
- analog output meter : $\pm 2\%$ full scale deflection
- LCD output meter : $\pm 0.1\%$ of calibrated span ± 1 unit
- CoMeter
 - digital : $\pm 0.10\%$ of max span(16 mA) ± 1 digit
 - analog (bargraph) : 10%

Operating influences

Temperature effects

total effect per 20 K (36°F) ambient temperature change on transmitter sensor between the limits of -20°C to +65°C (-4 to +150°F) and per 20 K (36°F) process temperature change on seals diaphragm between the process operating temperature limits

- sensor A with 3in/DN80 seals : 0.01 kPa, 0.1 mbar, 0.04inH₂O
- sensor B with 2in/DN50 seals : 0.03 kPa, 0.3 mbar, 0.12 inH₂O
- sensor B with 3in/DN80 seals : 0.02 kPa, 0.2 mbar, 0.08 inH₂O

Optional LCD output meter ambient temperature

per 1 K (1.8°F) change between the limits of -20 and +80°C (-4 and +176°F)

Total effect : $\pm (0.0002 \times \text{span units} + 0.1)$ of reading.

Optional CoMeter ambient temperature

Total reading error per 20K (36°F) change between the ambient limits of -20 and +70°C (-4 and +158°F) :

$\pm 0.15\%$ of max span (16 mA).

Static pressure (zero errors can be calibrated out at line pressure)

per 1 MPa, 10 bar or 145 psi

• sensor code A

- zero error : $\pm 0.15\%$ of URL
- span error : $\pm 0.15\%$ of reading

• sensor code B

- zero error : $\pm 0.08\%$ of URL
- span error : $\pm 0.08\%$ of reading

Multiply by 1.5 the errors for sensor/seal combinations marked (•)

Supply voltage

Within voltage/load specified limits the total effect is less than 0.005% of URL per volt.

Load

Within load/voltage specified limits the total effect is negligible.

Radio frequency interference

Total effect : less than 0.10% of span from 20 to 1000 MHz and for field strengths up to 30 V/m when tested with shielded conduit and grounding, with or without meter. Meets IEC 801.

Common mode interference

No effect from 100 V rms @ 50 Hz, or 50 Vdc.

Series mode interference

No effect from 1 V rms @ 50 Hz.

PHYSICAL SPECIFICATIONS

(Refer to ordering information sheets for variant availability related to specific model or versions code)

Materials

Process seal isolating diaphragms (*)

AISI 316 L ss, Hastelloy C276 ◊;

Fill fluids

Silicone oil (DC200) or inert fill (perfluorinated polyethers - Galden ◊)

Mounting flanges

Carbon steel ; AISI 316 ss

Sensor housing : AISI 316 L ss

Bolts and nuts

- Plated carbon steel bolts class 8.8 per UNI 5737 (ISO 4014) and nuts class 6.S per UNI 3740/4 (ISO 898/2).
- AISI 316 ss bolts and nuts Class A4-50 per UNI 7323 (ISO 3506), in compliance with NACE MR0175 Class II.

Electronic housing and covers

Barrel version

- Low-copper content aluminium alloy with baked epoxy finish;
- AISI 316 L ss.

DIN version

- Low-copper content aluminium alloy with baked epoxy finish

Covers O-ring: Buna N.

Local zero and span adjustments:

Glass filled polycarbonate plastic (removable)

Tagging

AISI 316 ss data plate attached to the electronics housing.

Calibration

- Standard: at maximum span, zero based range, ambient temperature and pressure
- Optional: at specified range and ambient conditions; or at operating temperature.

Optional extras

Output indicator:

plug-in rotatable type, LCD or analog.

Standard LCD output meter scale is 0 to 100% linear; special linear scale to specified range and engineering unit is available. Standard analog output meter scale is 0 to 100% linear; special graduation is available.

Supplemental customer tag

AISI 316 ss tag screwed/fastened to the transmitter for customer's tag data up to a maximum of 20 characters and spaces on one line for tag number and tag name, and up to a maximum of 3 spaced strings of 10 characters each for calibration details (lower and upper values plus unit). Special typing evaluated on request for charges.

Surge protection (not available with Profibus PA and FF output)

Material traceability

Environmental protection

Wet and dust-laden atmospheres

The transmitter is dust and sand tight and protected against immersion effects as defined by IEC 529 (1989) to IP 67 (IP 68 on request) or by NEMA to 4X or by JIS to C0920

Hazardous atmospheres

With or without output meter/integral display

INTRINSIC SAFETY/EUROPE:

ATEX/BASEEFA approval

- EC-Type Examination Certificate no. BAS 99ATEX 1180 - (HART)

II 1 GD T50°C, EEx ia IIC T6/T5 (-40°C ≤ Ta ≤ +40°C)
T95°C, EEx ia IIC T4 (-40°C ≤ Ta ≤ +85°C)

- (FOUNDATION Fieldbus)

II 1 GD T70°C, EEx ia IIC T4 (-40°C ≤ Ta ≤ +60°C)

- EC-Type Examination Certificate no. BAS 00ATEX 1241 - (PROFIBUS-PA)

II 1 GD T70°C, EEx ia IIB T4 (-40°C ≤ Ta ≤ +60°C)

TYPE "N"/EUROPE :

ATEX/BASEEFA type examination

- Design compliance by Certificate no. BAS 01ATEX 3380X - (HART)

II 3 GD T50°C, EEx nL IIC T5 (-40°C ≤ Ta ≤ +40°C)
T95°C, EEx nL IIC T4 (-40°C ≤ Ta ≤ +85°C)

- (FOUNDATION Fieldbus)

II 3 GD T70°C, EEx nL IIC T4 (-40°C ≤ Ta ≤ +60°C)

- Design compliance by Certificate no. BAS 01ATEX 3384X - (PROFIBUS-PA)

II 3 GD T70°C, EEx nL IIB T4 (-40°C ≤ Ta ≤ +60°C)

FLAMEPROOF/EUROPE:

ATEX/CESI approval;

- EC-Type Examination Certificate no. CESI 00 ATEX 035

II 1/2 GD T80°C, EEx d IIC T6 (-40°C ≤ Ta ≤ +70°C)
T95°C, EEx d IIC T5 (-40°C ≤ Ta ≤ +85°C)

CANADIAN STANDARDS ASSOCIATION

and FACTORY MUTUAL :

- Explosionproof: Class I, Div. 1, Groups A, B, C, D
- Dust ignitionproof : Class II, Div. 1, Groups E, F, G
- Suitable for : Class II, Div. 2, Groups F, G; Class III, Div. 1, 2
- Nonincendive: Class I, Div. 2, Groups A, B, C, D
- Intrinsically safe: Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G

STANDARDS AUSTRALIA (SAA)

TS/WCA Approval (HART only)

- Conformity Certificate no. AUS Ex 3117X

Ex d IIC T5 (Tamb +85°C)/T6 (Tamb +70°C) Class 1 Zone 1;

Ex ia IIC T4 (Tamb +85°C) /T5 (Tamb +55°C) T6 Class 1 Zone 0

Process connections

Flush diaphragm flanged seal (**):

2in or 3in ANSI 150 to 300 RF

DN50 or DN80 DIN ND 16-40 Form C

Wafer seal (backup flange not supplied)

2in, 3in to ANSI; DN50, DN80 to DIN.

Electrical connections

Two 1/2 NPT or M20x1.5 or PG 13.5 or 1/2 GK threaded conduit entries, direct on housing; straight or angle Harting HAN connector and one plug, on request.

Terminal block

- HART version

Three terminals for signal/external meter wiring up to 2.5 mm² (14 AWG) and three connection points for test and communication purposes.

- Fieldbus versions

Two terminals for signal wiring (bus connection) up to 2.5 mm² (14 AWG)

Grounding

Internal and external 6 mm² (10 AWG) ground termination points are provided.

Mounting position

Transmitter can be mounted in any position but with a maximum ± 1° from vertical.

Electronics housing may be rotated to any position. A positive stop prevents over travel.

Mass (without options)

9 to 12 kg approx (20 to 27 lb); add 1.5 kg (3.4 lb) for AISI housing.

Add 650 g (1.5 lb) for packing.

Packing

Carton

◊ Hastelloy is a Cabot Corporation trademark

◊ Galden is a Montefluos trademark

(*) Wetted parts of the transmitter.

(**) Bolts and nuts, gasket and mating flange supplied by Customer

CONFIGURATION

• **Transmitter with HART communication and 4 to 20 mA Standard configuration**

Transmitters are factory calibrated to customer's specified range. Calibrated range and tag number are stamped on the tag plate. If a calibration range and tag data are not specified, the transmitter will be supplied with the plate left blank and configured as follows:

- Engineering Unit: Specify code option
- 4 mA: Zero
- 20 mA: Upper Range Limit (URL)
- Output : Linear
- Damping: 1 sec.
- Transmitter failure mode: Upscale
- Software tag characters: Blank
- Optional LCD output indicator : 0 to 100.0% linear

Any or all the above configurable parameters, including Lower range-value and Upper range-value which must be the same unit of measure, can be easily changed using the HART hand-held communicator. The transmitter database is customized with specified flange type and material, O-ring and drain/vent materials and meter code option.

Custom configuration (option)

The following data may be specified in addition to the standard configuration parameters:

- Descriptor : 16 alphanumeric characters
- Message: 32 alphanumeric characters
- Date: Day, month, year
- Damping: Seconds

• **Transmitter with Profibus PA communication**

Transmitters are factory calibrated to customer's specified range. Calibrated range and tag number are stamped on the tag plate. If a calibration range and tag data are not specified, the transmitter will be supplied with the plate left blank and configured as follows:

- Measure Profile: Pressure
- Engineering Unit: kPa
- Output scale 0%: Lower Range Limit (LRL)
- Output scale 100%: Upper Range Limit (URL)
- Output : Linear
- Hi-Hi Limit : Upper Range Limit (URL)
- Hi Limit : Upper Range Limit (URL)
- Low Limit : Lower Range Limit (LRL)
- Low-Low Limit : Lower Range Limit (LRL)
- Limits hysteresis: 0.5% of output scale
- PV filter: 0 sec.
- Address (settable by local key): 126
- Tag : 32 alphanumeric characters

Any or all the above configurable parameters, including Lower range-value and Upper range-value which must be the same unit of measure, can be easily changed by a PC running the configuration software Smart Vision with DTM for 600T or 600T template for Siemens Simatic PDM System. The transmitter database is customized with specified flange type and material, O-ring and drain/vent materials and meter code option.

Custom configuration (option)

The following data may be specified in addition to the standard configuration parameters:

- Descriptor : 32 alphanumeric characters
- Message: 32 alphanumeric characters
- Date: Day, month, year
- Air filter: Seconds

• **Transmitter with FOUNDATION fieldbus communication**

Transmitters are factory calibrated to customer's specified range. Calibrated range and tag number are stamped on the tag plate. If a calibration range and tag data are not specified, the transmitter will be supplied with the plate left blank and configured as follows:

- Measure Profile: Pressure
- Engineering Unit: kPa
- Output scale 0%: Lower Range Limit (LRL)
- Output scale 100%: Upper Range Limit (URL)
- Output : Linear
- Hi-Hi Limit : Upper Range Limit (URL)
- Hi Limit : Upper Range Limit (URL)
- Low Limit : Lower Range Limit (LRL)
- Low-Low Limit : Lower Range Limit (LRL)
- Limits hysteresis: 0.5% of output scale
- PV filter time: 0 sec.
- Tag : 32 alphanumeric characters

Any or all the above configurable parameters, including the range values, can be changed using any host compliant to FOUNDATION fieldbus. The transmitter database is customized with specified flange type and material, O-ring and drain/vent materials and meter code option.

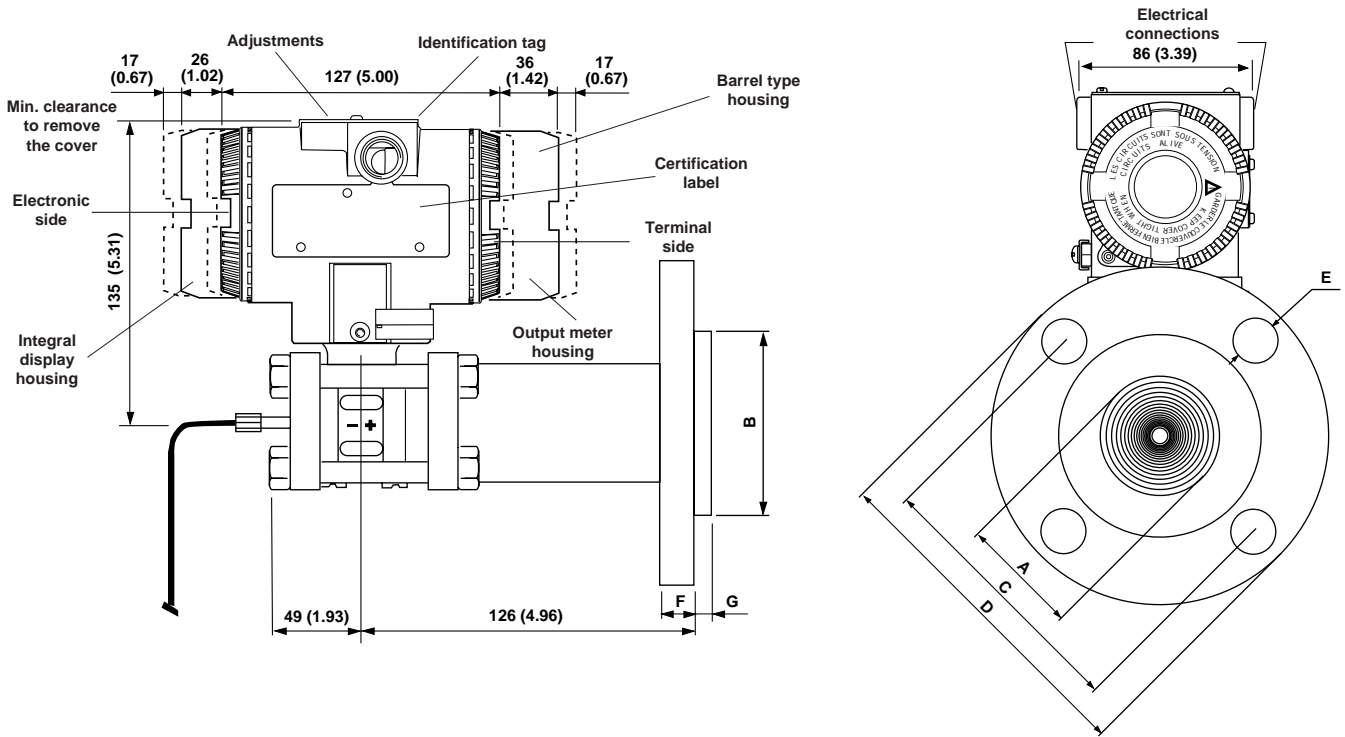
Available engineering units of pressure measure are :

Pa, kPa, MPa
inH₂O@4°C, mmH₂O@4°C, psi
inH₂O@20°C, ftH₂O@20°C, mmH₂O@20°C
inHg, mmHg, Torr
g/cm², kg/cm², atm
mbar, bar

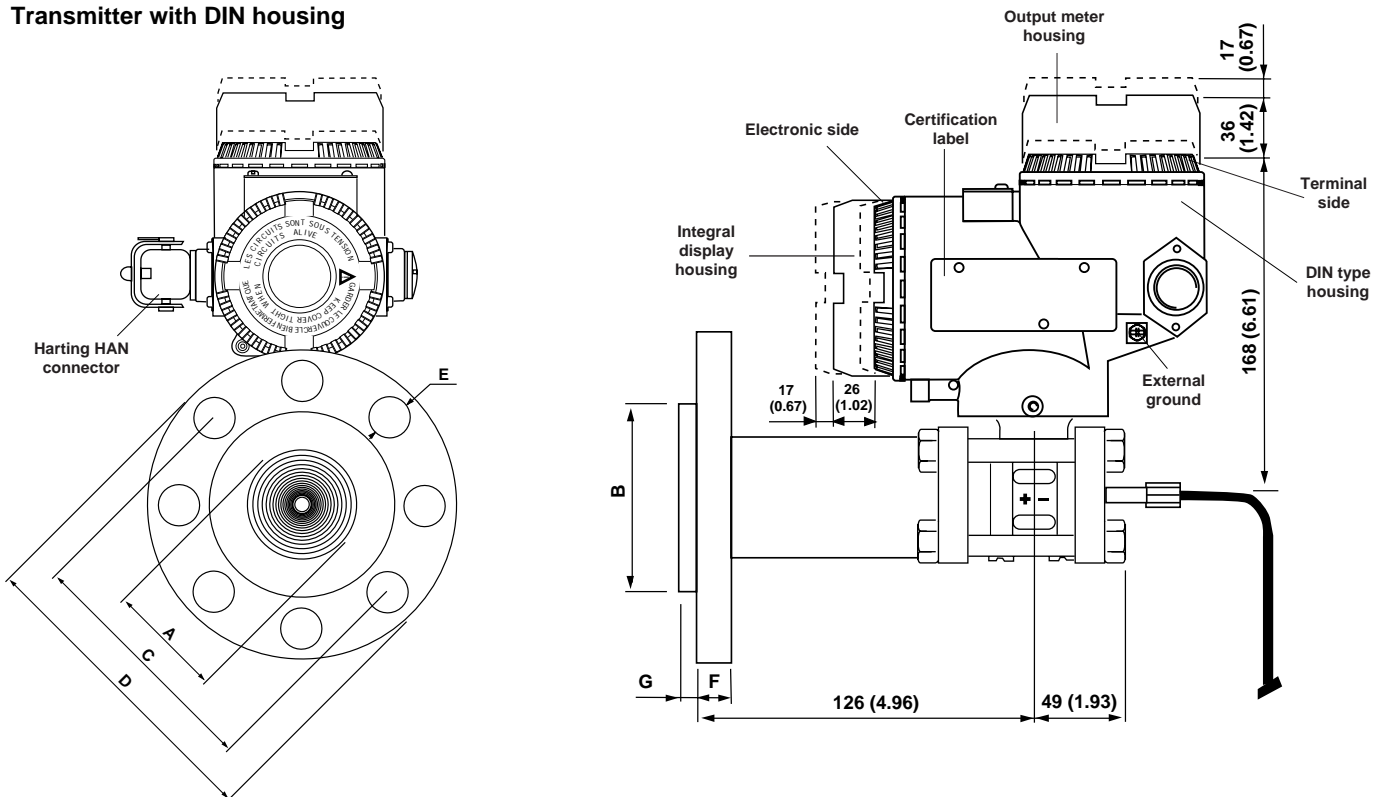
MOUNTING DIMENSIONS

(not for construction unless certified)

• Transmitter with barrel housing

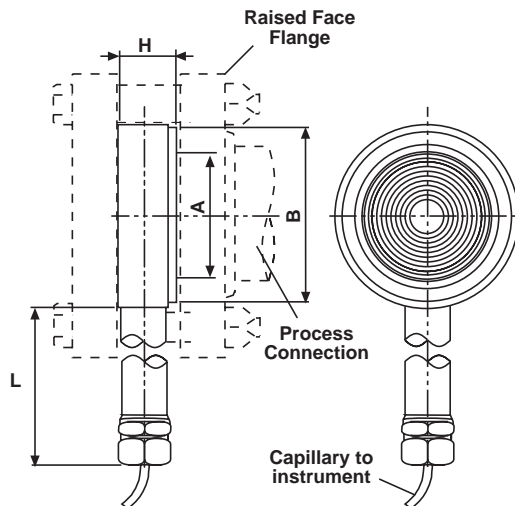


• Transmitter with DIN housing

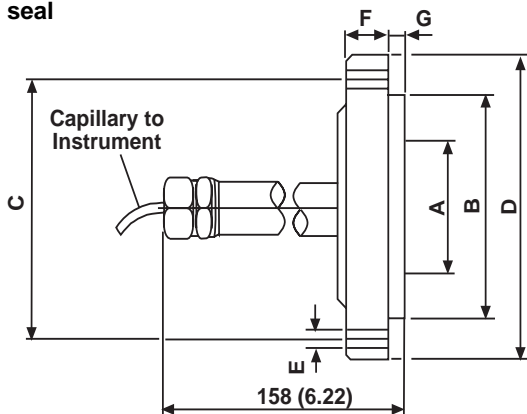


• Wafer type seal

SIZE	DIMENSIONS mm (in)			
	A (dia)	B dia)	H	L
2 in	60 (2.36)	92.1 (3.62)	23 (0.9)	139.7 (5.5)
3 in	89 (3.5)	127 (5)	23 (0.9)	139.7 (5.5)
DN 50	60 (2.36)	102 (4.02)	23 (0.9)	139.7 (5.5)
DN 80	89 (3.5)	138 (5.43)	23 (0.9)	139.7 (5.5)



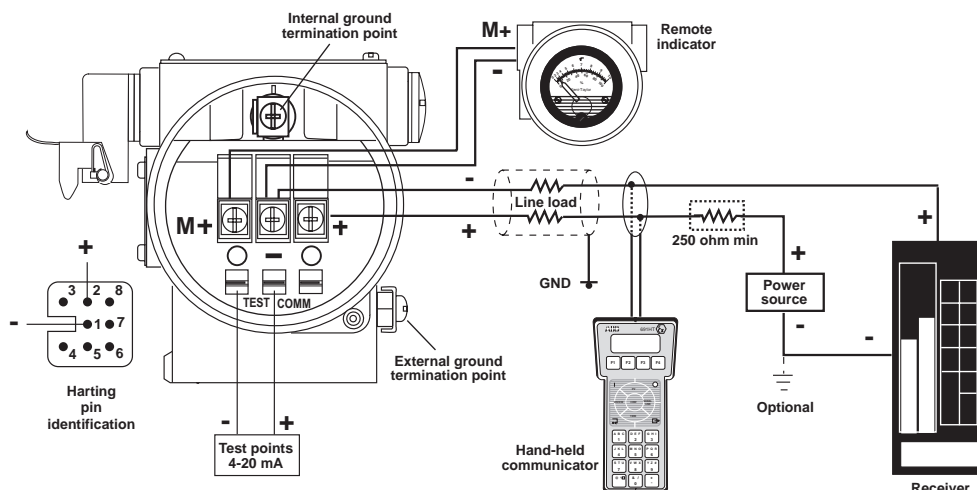
• Flanged flush diaphragm seal



SIZE/RATING	DIMENSIONS mm (in)							N° OF HOLES
	A (dia)	B (dia)	C (dia)	D (dia)	E (dia)	F	G	
2in ANSI CL 150	60 (2.36)	92.1 (3.62)	120.5 (4.74)	152.5 (6)	20 (0.79)	19.5 (0.77)	9.5 (0.37)	4
2in ANSI CL 300	60 (2.36)	92.1 (3.62)	127 (5)	165 (6.5)	20 (0.79)	22.5 (0.88)	9.5 (0.37)	8
3in ANSI CL 150	89 (3.5)	127 (5)	152.5 (6)	190.5 (7.5)	20 (0.79)	24 (0.94)	9.5 (0.37)	4
3in ANSI CL 300	89 (3.5)	127 (5)	168.5 (6.63)	210 (8.26)	22 (0.86)	28.5 (1.12)	9.5 (0.37)	8
DN50 DIN ND16	60 (2.36)	102 (4.02)	125 (4.92)	165 (6.5)	18 (0.71)	20 (0.79)	9.5 (0.37)	4
DN50 DIN ND40	60 (2.36)	102 (4.02)	125 (4.92)	165 (6.5)	18 (0.71)	20 (0.79)	9.5 (0.37)	4
DN80 DIN ND16	89 (3.5)	138 (5.43)	160 (6.3)	200 (7.87)	18 (0.71)	20 (0.79)	9.5 (0.37)	8
DN80 DIN ND40	89 (3.5)	138 (5.43)	160 (6.3)	200 (7.87)	18 (0.71)	24 (0.94)	9.5 (0.37)	8

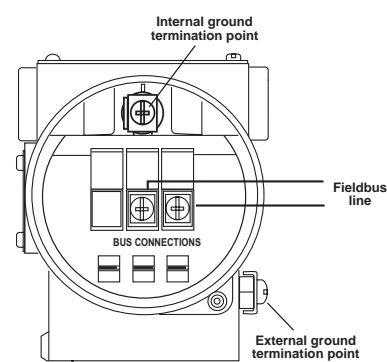
ELECTRICAL CONNECTIONS

• HART Version



HART hand-held communicator may be connected at any wiring termination point in the loop, providing the minimum resistance is 250 ohm. If this is less than 250 ohm, additional resistance should be added to allow communications.

• FIELDBUS Versions



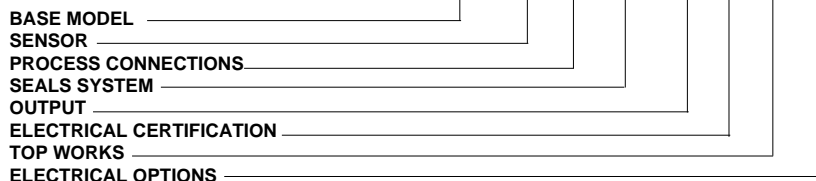
ORDERING INFORMATION model 621EM Liquid level interface and density transmitter

Select one character or set of characters from each category and specify complete catalog number.

Refer to supplementary code and specify another number for each transmitter if additional options are required.

PRODUCT CODE

abcde f g hijk l m n op



abcde	BASE MODEL - 1st to 5th characters	Code
	Liquid level, interface and density transmitter	621EM

f	SENSOR Span limits - 6th character		Code	
	0.25 and 2.5 kPa	2.5 and 25 mbar	1 and 10 inH ₂ O (Note)	A
	1 and 10 kPa	10 and 100 mbar	4 and 40.1 inH ₂ O	B
	Note : only available with 3in/DN80 seal size			

g	PROCESS CONNECTIONS - TYPE OF SEALS (*) - 7th character		Code
	High pressure side	Low pressure side	
	All-welded direct mount flanged flush diaphragm seal	All-welded remote flanged flush diaphragm seal	F
		All-welded remote wafer seal	W

h	FLANGED CONNECTION(S) TYPE (SEAL SIZE) AND RATING (High and Low Pressure Sides) - 8th character		Code
	Material	Rating/size	
	Carbon steel	ANSI 150 RF - 2in	1
		ANSI 150 RF - 3in	2
		ANSI 300 RF - 2in	3
		ANSI 300 RF - 3in	4
		DIN ND 16 Form C-DN 50	7
		DIN ND 16 Form C-DN 80	8
		DIN ND 40 Form C-DN 50	A
	AISI 316 ss	DIN ND 40 Form C-DN 80	C
		ANSI 150 RF - 2in	J
		ANSI 150 RF - 3in	K
		ANSI 300 RF - 2in	L
		ANSI 300 RF - 3in	M
		DIN ND 16 Form C-DN 50	Q
		DIN ND 16 Form C-DN 80	R
	DIN ND 40 Form C-DN 50	S	
	DIN ND 40 Form C-DN 80	T	

FLANGE IS NOT SUPPLIED WHEN WAFER TYPE SEAL IS SELECTED ON LOW PRESSURE SIDE

i	9th character Seal diaphragm material (*)	Fill fluid	Code
	AISI 316 L ss	Silicone oil	2
	Hastelloy C276 ◊	Silicone oil	3
	AISI 316 L ss	Inert fluid	A
	Hastelloy C276 ◊	Inert fluid	B

j	CAPILLARY LENGTH (low pressure side) 10th character	Code
	0.5 m	A
	1 m	1
	1.5 m	B
	2 m	2
	2.5 m	C
	3 m	3
	3.5 m (Note)	D
	4 m (Note)	4

Note : not available with 2in or DN50 seals code 1, 3, 7, A, J, L, Q, S at position "h"

■ Compliance to NACE class II bolting, according to specification MR0175, latest revision ◊ Hastelloy is a Cabot Corporation trademark
 (*) Process wetted-parts

ORDERING INFORMATION model 621EM Liquid level interface and density transmitter

11th character

k	Bolts	
	Carbon steel	0
	AISI 316 ss (NACE)	R

12th character

i	OUTPUT	
	HART digital communication and 4 to 20 mA	G
	Profibus PA communication	P
	FOUNDATION Fieldbus Communication	F

m	ELECTRICAL CERTIFICATION - 13th character	
	General Purpose	1
	ATEX Group II Category 1/2 GD - Flameproof EEx d CESI approval	F
	ATEX Group II Category 1 GD - Intrinsic Safety EEx ia BASEEFA approval	L
	ATEX Group II Category 3 GD - Type of protection "N" EEx nL design compliance	N
	Factory Mutual (FM) and Canadian Standard Association (CSA) approvals (only with 1/2" NPT and M20 electrical connection)	8
Intrinsic Safety and Flameproof to Standards Australia SAA approval Ex ia IIC T6/T5/T4 + Ex d IIC T6/T5 (Note)	W	

Note : not available with output code P and F at position "i"

TOP WORKS - 14th character

n	Housing material	Electrical connection		
	Aluminium alloy (Barrel version)	1/2" NPT		1
		M20 x 1.5 (CM 20)		2
		Pg 13.5		3
		1/2" GK		4
		Harting HAN connector - straight entry (Note 1, 2)		5
		Harting HAN connector - angle entry (Note 1, 2)		6
	AISI 316 L ss (Barrel version)	1/2" NPT		A
		M20 x 1.5 (CM 20)		C
		Pg 13.5		D
		1/2" GK		F
	Aluminium alloy (DIN version)	Pg 13.5 (Note 1)		7
		M20 x 1.5 (CM 20) (Note 1)		8
		Harting HAN connector - straight entry (Note 1, 2)		K

Note 1 : requires certification code 1 at position "m"

Note 2 : not available with output code P and F at position "i"

ELECTRICAL OPTIONS - 15th character

o	Internal meter type	
	None	1
	Digital LCD output indicator linear 0-100%, user scalable (Note)	3
	Digital LCD output indicator linear scale (specify range and engineering units) (Note)	5
	Analog output indicator linear 0-100% scale (Note)	7
	Analog output indicator, special graduation (to be specified for linear or square root scale) (Note)	9
	Digital LCD integral display	A
	Digital LCD integral display and digital LCD output indicator linear 4-20 mA (Note)	C
	Digital LCD integral display and analog output indicator linear 0-100% scale (Note)	E
	Programmable signal meter and HART configurator (CoMeter) (Note)	P
Programmable signal meter and HART configurator (CoMeter) and digital LCD integral display (Note)	R	

Note : not available with output code P and F at position "i"

16th character

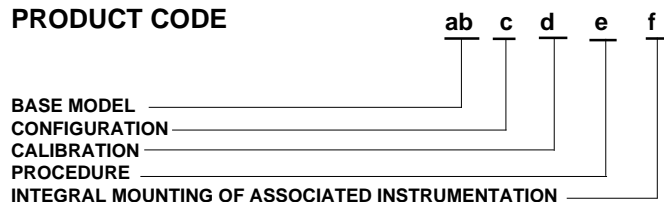
p	Electrical options	Labels language	
	Standard terminal block	English	1
		German	2
		Italian	7
	Surge protector (Note)	English	3
		German	4
		Italian	8
	Terminal block for external meter (Note)	English	5
		German	6
		Italian	9

Note : not available with output code P and F at position "i"

ORDERING INFORMATION

Select one character or set of characters from each category and specify complete catalog number in addition to each transmitter code, if required.

PRODUCT CODE



ab	BASE MODEL - 1st to 2nd characters	Code
	Supplementary code	SC

c	CONFIGURATION - 3rd character	
	Standard - Pressure = kPa; Temperature = deg. C	1
	Standard - Pressure = inH2O/psi (@ 20°C); Temperature = deg. F	2
	Standard - Pressure = inH2O/psi (@ 4°C); Temperature = deg. F	3
	Standard - Pressure = inH2O/psi (@ 20°C); Temperature = deg. C	4
	Standard - Pressure = inH2O/psi (@ 4°C); Temperature = deg. C	5
	Custom	C

d	CALIBRATION - 4th character		
	Calibration range	Calibration	
	Standard (max span = 0 to URL)	Reference temperature	
		Operating temperature	
		At specified range	
		Operating temperature	
		Certificate	
		None	1
		Yes (3 copies)	2
		None	3
		Yes (3 copies)	4
		None	5
		Yes (3 copies)	6
		None	7
		Yes (3 copies)	8

e	5th character		
	PROCEDURE	Material traceability	
	None	None	0
		To EN10204 - 3.1.B (certificates for flanges, adapters, diaphragms)	A
		To EN10204 - 2.1 (declaration for instrument)	B

f	INTEGRAL MOUNTING OF ASSOCIATED INSTRUMENTATION - 6th character	
	None	0



The Company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.

ABB Instrumentation spa
Via Statale 113
22016 Lenno (Como)
Italia
Tel. 0344 58111
Facsimile 0344 56278

ABB Ltd.
Howard Road
St. Neots, Cambs.
England PE19 3EU
Tel. (01480) 475321,
Facsimile (01480) 217948

ABB Inc.
125 East County Line Road
Warminster, Pa.
18974-4995 USA
Tel. (215) 674-6693/6320/6777
Facsimile (215) 674-7184