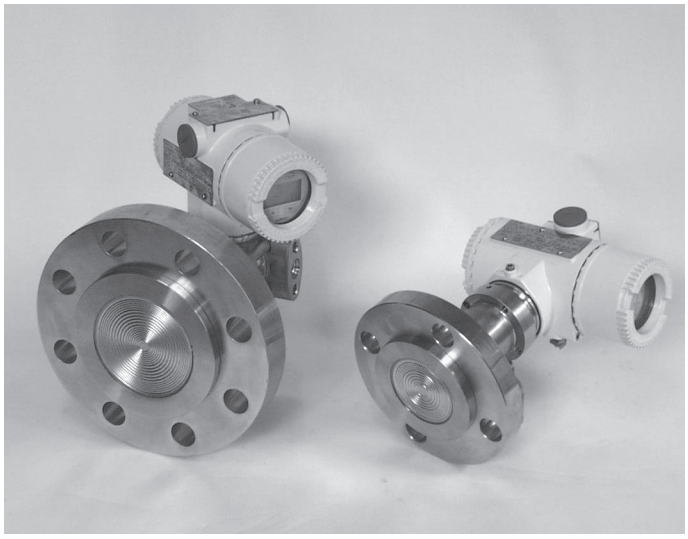
Specification sheet

600T EN Series Pressure Transmitters

Model 611ES level/differential/gauge
Model 614ES gauge/absolute
with direct mount seal

- **Base accuracy : ± 0.15%**
- **Reliable inductive sensing system coupled with the very latest digital technologies**
  - ensures high performance at all process conditions
- **Wide selection of materials and choice of fill fluids including "process-inert"**
  - meet virtually all process requirements also protecting application integrity
- **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 611ES and 614ES detailed in this specification sheet apply for those transmitters which include one measuring side, a direct mount seal which is integral to the transducer by a short capillary connection inside a protective rigid tube.

This construction forms a standalone single assembly suitable to be mounted to the process by the seal mounting facilities.

By properly selecting the high and low pressure side variant in the ordering codes model 611ES can be in the following versions :

a) one direct mount seal and one blind flange at atmospheric reference on the other side
b) one direct mount seal and one flange suitable for 1/2" NPT-f process connection through adapter which can be removed to have 1/4"NPT-f connection direct on flange; this allows also to connect the other leg (wet or dry) for differential measurement.
c) one direct mount seal and one remote seal with capillary; the two seals allow again a differential measurement and must be selected of same type/size.

These configurations can be selected to define positive and negative side as required by the application.

Model 614ES has the direct mount seal on the positive side and the user can select in the ordering code the reference at atmospheric or vacuum pressure, respectively for gauge or absolute measurements. Allowed types of direct mount seal are :

- flush diaphragm flange mounted seal model S6F
- extended diaphragm flange mounted seal model S6E which are mainly used for chemical applications
- sanitary seal model S6S with Triclamp or Union Nut mounting suitable for food and hygienic applications

Refer to S6 specification sheet for all data and details relevant to seal element. The following table list the types of standard seal which can be directly mounted with 61XES transmitters (the mnemonic is used as reference in the compatibility table).

Model	Seal type	Size	Mnemonic
S6F	Flanged flush diaphragm	2in / NW50 3-4in / NW80-100	P2 P3
S6E	Flanged extended diaphragm	2in / NW50 3in / NW80 4in / NW100	E2 E3 P3
S6S	Union nut and Triclamp sanitary	2in/F50 3-4in/F80	S2 S3

FUNCTIONAL SPECIFICATIONS

Range and span limits

• Model 611ES

Sensor code	Upper Range Limit (URL)	Lower Range Limit (LRL) 611ES Direct mount differential	Lower Range Limit (LRL) 611ES Direct mount gauge	Turndown ratio (TD) Normal	Extended	Maximum	Compatibility (allowed seal types) Direct mount seal only	Direct mount and one remote seal (max length in m)
B	10 kPa 100 mbar 40.1 inH_2O	- 10 kPa - 100 mbar - 40.1 inH_2O	- 10 kPa - 100 mbar - 40.1 inH_2O	5	10	30	P2 (•), P3 E3 (•) S3	P3 (3) E3 (2) (•) S3 (3) (•)
C	40 kPa 400 mbar 160 inH_2O	- 40 kPa - 400 mbar - 160 inH_2O	- 40 kPa - 400 mbar - 160 inH_2O	10	20	60	P2, P3 E2 (•), E3 S2 (•), S3	P2 (2) (•), P3 (5) E3 (3) S3 (4)
N	65 kPa 650 mbar 260 inH_2O	- 65 kPa - 650 mbar - 260 inH_2O	- 65 kPa - 650 mbar - 260 inH_2O	10	20	60	P2, P3 E2 (•), E3 S2 (•), S3	P2 (2) (•), P3 (5) E3 (3) S3 (4)
D	160 kPa 1600 mbar 642 inH_2O	- 160 kPa - 1600 mbar - 642 inH_2O	0.07 kPa abs (Δ) 0.7 mbar abs (Δ) 0.5 mmHg (Δ)	10	20	60	P2, P3 E2, E3 S2, S3	P2 (5), P3 (8) E2 (4), E3 (6) S2 (3), S3 (8)
E	600 kPa 6 bar 87 psi	- 600 kPa - 6 bar - 87 psi	0.07 kPa abs (Δ) 0.7 mbar abs (Δ) 0.5 mmHg (Δ)	10	20	60	P2, P3 E2, E3 S2, S3	P2 (8), P3 (8) E2 (6), E3 (8) S2 (6), S3 (8)
F	2400 kPa 24 bar 348 psi	- 2400 kPa - 24 bar - 348 psi	0.07 kPa abs (Δ) 0.7 mbar abs (Δ) 0.5 mmHg (Δ)	10	20	60	P2, P3 E2, E3 S2, S3	P2 (8), P3 (8) E2 (6), E3 (8) S2 (6), S3 (8)

• Model 614ES

Sensor code	Upper Range Limit (URL)	Lower Range Limit (LRL) (Δ) 614ES with direct mount seal	Turndown ratio (TD) Normal	Extended	Maximum
D	160 kPa 1600 mbar 642 inH_2O	0.07 kPa abs 0.7 mbar abs 0.5 mmHg	10	20	60
E	600 kPa 6 bar 87 psi	0.07 kPa abs 0.7 mbar abs 0.5 mmHg	10	20	60
F	2400 kPa 24 bar 348 psi	0.07 kPa abs 0.7 mbar abs 0.5 mmHg	10	20	60
W	8000 kPa 80 bar 1160 psi	0.07 kPa abs 0.7 mbar abs 0.5 mmHg	10	20	60
U	16000 kPa 160 bar 2320 psi	0.07 kPa abs 0.7 mbar abs 0.5 mmHg	10	20	60

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

All available seals for direct mount are suitable for listed ranges of model 614ES.

(Δ) Double the value with inert filling

Span limits

Maximum span = URL
(can be further adjusted up to ± URL (TD = 0.5) for differential models, within the range limits)
Minimum recommended span = URL/TD extended
(can be further turndown to URL/TD maximum at no stated performances)

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 when used in transmitter with direct mount seal

FILL FLUIDS (APPLICATION)	OPERATING CONDITIONS Tmax @ P >of	Pmin mbar abs (psia)	Tmax @ P min	Tmin
Silicone oil DC 200 (General purpose)	200 (390) @ 35 mbar abs	0.7 (0.1)	160 (320)	-40 (-40)
Silicone oil DC 702 (High temperature)	250 (480) @ 35 mbar abs	0.7 (0.1)	200 (390)	-7 (+20)
Silicone oil DC 704 (High temperature)	250 (480) @ 35 mbar abs	0.7 (0.1)	230 (445)	20 (70)
Neobee M-20 (Food-Sanitary)	200 (390) @ atmosphere	130 (1.9)	150 (300)	-18 (0)
Glycerin Water (70%) (Food-Sanitary)	93 (200) @ atmosphere	1000 (14.5)	93 (200)	-7 (+20)
DC 97-9120 PHARMA B GRADE (Food-Sanitary)	200 (390) @ 35 mbar abs	0.7 (0.1)	160 (320)	-40 (-40)
Inert (Galden) (Oxygen Service)	160 (320) @ atmosphere	0.7 (0.1)	65 (150)	-18 (0)
KTFILL-1 (Paints and specials)	250 (480) @ 35 mbar abs	0.7 (0.1)	160 (200)	-10 (+14)

Lower process limit for Viton gasket: -20°C (-4°F)

- **Ambient (is the operating temperature)**

Filling	Model 611ES Sensor C to F	Model 611ES Sensor B	Model 614ES Sensor D to U
Silicone oil DC 200	-40 and +85 (-40 and +185)	-25 and +85 (-13 and +185)	-40 and +85 (-40 and +185)
Inert	-20 and +85 (-4 and +185)	-10 and +85 (+14 and +185)	
KTFILL-1	-40 and +85 (-40 and +185)	-10 and +85 (+14 and +185)	

Lower ambient limit for LCD indicators: -20°C (-4°F)
Upper ambient limit for CoMeter : +70°C (+158°F)
Upper ambient limit for inert filling for use below atmospheric pressure is 65°C (150°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)

	Seal type P2	P3	E2	E3	S2	S3
Direct mount seal only	2.8	0.25	2.8	0.25	2.8	0.25
Direct mount plus remote seal	12 x L	1 x L	12 x L	1 x L	12 x L	1 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
Silicone oil DC 702	5.2	0.54
Silicone oil DC 704	4.5	0.04
Neobee M-20	0.97	0.2
Glycerin Water (70%)	0.26	0.03
DC 97-9120	5.2	0.27
Inert (Galden)	1.9	0.37
KTFILL-1	1.7	0.5

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
B	0.2
C, N	0.05
D	0.0125
E, F, W, U	0.001

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 times as follows:

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

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)	KTFILL-1
B	0.9	3.2	3.1
C, N	0.26	0.93	0.9
D	0.13	0.46	0.45
E, F, W, U	0.075	0.26	0.25

Overpressure limits (without damage to the transmitter)

- Lower : 0.07 kPa abs, 0,7 mbar abs, 0.5 mmHg (Double the lower value with inert filling).
- Upper (transmitter sensor limit or flange / fitting rating of the seal, whichever is less)

- model 611ES
all sensor codes : 10 MPa, 100 bar, 1450 psi

- model 614ES
sensor code D, E, F, W : 14 MPa, 140 bar, 2030 psi
sensor code U : 25 MPa, 250 bar, 3620 psi

- flanged seals (S6E/S6F)
ANSI CL 150 : 2 MPa, 20 bar, 290 psi
ANSI CL 300 : 5 MPa, 50 bar, 725 psi
ANSI CL 600 : 10 MPa, 100 bar, 1450 psi
ANSI CL 900 : 16 MPa, 160 bar, 2320 psi
DIN ND 16 : 1.6 MPa, 16 bar, 230 psi
DIN ND 40 : 4 MPa, 40 bar, 580 psi
DIN ND 64 : 6.4 MPa, 64 bar, 930 psi
DIN ND100 : 10 MPa, 100 bar, 1450 psi
DIN ND160 : 16 MPa, 160 bar, 2320 psi

- sanitary seals (S6S)
2 in Triclamp : 3.8 MPa, 38 bar, 550 psi
3 in Triclamp : 2.4 MPa, 24 bar, 350 psi
4 in Triclamp : 1.7 MPa, 17 bar, 250 psi
F50/F80 Union nut : 2.5 MPa, 25 bar, 360 psi

Static pressure

Transmitters model 611ES for differential pressure operate within specifications between the following limits

- Lower : 1.3 kPa abs,13 mbar abs, 0.2 psia (0.067 kPa abs, 0,67 mbar abs, 0.01 psia for direct mount plus remote seals)
- 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
- 20 MPa, 200 bar, 2900 psi for 611ES
- 28 MPa, 280 bar, 4000 psi for 614ES

or two times the flange/fitting rating of the seal, whichever is less

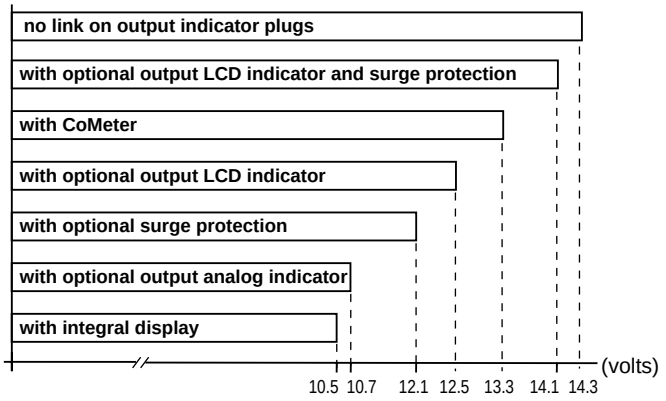
ELECTRICAL CHARACTERISTICS AND OPTIONS

- ***HART digital communication and 4 to 20 mA output***

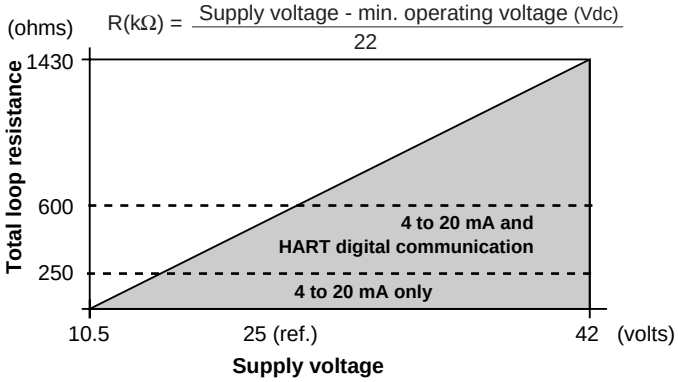
Power Supply

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 LCD (± 99999 counts programmable) with 7.6 mm. high (3 in), 7-segment numeric characters plus sign and digital point
  - 10-segment LCD 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 µs rise time/20 µs 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 ± 3K (75°F ± 5), relative humidity of 50% ±20%, atmospheric pressure, mounting position with vertical diaphragm and zero based range for transmitter with isolating diaphragms in AISI 316 L ss or Hastelloy and silicone oil fill or KTFILL-1 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

- **Using direct mount seal sizes < NW 80/3in/F80**
  - ± 0.15% for TD from 1:1 to 10:1
    (± 0.20% for sensor code C
    ± 0.20% for sensor code B for TD from 1:1 to 5:1)
  - $\pm 0.015\% \times \frac{URL}{Span}$ for TD from 10:1 to 20:1
    $(\pm 0.020\% \times \frac{URL}{Span}$ for sensor code C
    $\pm 0.04\% \times \frac{URL}{Span}$ for sensor code B for TD from 5:1 to 10:1)
- **Using direct mount seal sizes ≥ NW 80/3in/F80**
  - ± 0.15% for TD from 1:1 to 10:1
    (± 0.20% for sensor code B for TD from 1:1 to 5:1)
  - $\pm 0.015\% \times \frac{URL}{Span}$ for TD from 10:1 to 20:1
    $(\pm 0.04\% \times \frac{URL}{Span}$ for sensor code B for TD from 5:1 to 10:1)

Multiply the values by 1.5 for sensor/seal combination marked (•)
Multiply by 1.5 for transmitter with direct mount seal plus one remote seal.

Optional indicators accuracy

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

Operating influences

Temperature effects

per 20 K (36°F) ambient temperature change on transmitter sensor between the limits of - 20°C to + 65°C (-4 to +150°F)

Seal type size	Error		
	kPa	mbar	inH_2O
Flush 2in/DN50	0.15	1.5	0.6
Flush 3-4in/DN80-100	0.023	0.23	0.09
Extended 2in/DN50	0.24	2.4	0.96
Extended 3in/DN80	0.07	0.7	0.28
Extended 4in/DN100	0.023	0.23	0.09
Sanitary 2in/F50	1.1	11	4.4
Sanitary 3-4in/F80	0.023	0.23	0.09

per 20 K (36°F) process temperature change on seal diaphragm between the process operating temperature limits

Seal type size	Error		
	kPa	mbar	inH_2O
Flush 2in/DN50	0.48	4.8	1.92
Flush 3-4in/DN80-100	0.15	1.5	0.6
Extended 2in/DN50	0.52	5.2	2.1
Extended 3in/DN80	0.25	2.5	1
Extended 4in/DN100	0.15	1.5	0.6
Sanitary 2in/F50	1.4	14	5.6
Sanitary 3-4in/F80	0.09	0.9	0.36

The total zero temperature error is the combination of the two above effects, as applicable due to application temperatures.
Using a second seal (remote) on the side opposite to the direct mount seal, refer to S6 specification sheet for the additional effects of the capillary length, of the system and of the seal, dividing by two the errors as specified for the remote seal variant.

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 : ± (0.0002 x 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):
± 0.15% of max span (16 mA).

Static pressure (zero errors can be calibrated out at line pressure)
seal effect additional to transmitter sensor effect applicable for differential measurement per 2 MPa, 20 bar or 290 psi

- **Model 611ES direct mount seal only**
  - zero error : ± 0.22% of URL
  - span error : ± 0.22% of reading
- **Model 611ES direct mount plus remote seal**
  - zero error : ± 0.30% of URL
  - span error : ± 0.30% 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

• **Model 611ES only**

Process isolating diaphragms (*)

AISI 316 L ss, Hastelloy C276 ◊;

Process flanges, adapters, plugs and drain/vent valves (*)

AISI 316 L ss; Hastelloy C ◊;
Plated carbon steel with AISI 316 L ss valves

Blind flange (reference side)

AISI 316 L ss.

Gaskets (*)

Viton ◊, PTFE.

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).
- Plated alloy steel bolts per ASTM-A-193-77a grade B7M and nuts per ASTM A194/A 194 M-90 grade 2HM, in compliance with NACE MR0175 Class II.
- AISI 316 ss bolts Class A4-80 and nuts Class A4-70 per UNI 7323 (ISO 3506).
- AISI 316 ss bolts and nuts Class A4-50 per UNI 7323 (ISO 3506), in compliance with NACE MR0175 Class II.

• **Model 611ES and 614ES**

Sensor housing : AISI 316 L ss

Sensor fill fluid

Silicone oil (DC200) or "process-inert" fill (KTFILL-1) or inert fill (perfluorinated polyethers Galden ◊).

Electronic housing and covers

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

DIN version (611ES only)
- 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 or 0 to 10 square-root; 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
<u>INTRINSIC SAFETY/EUROPE:</u>
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)
<u>TYPE "N"/EUROPE :</u>
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)
<u>FLAMEPROOF/EUROPE:</u>
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)
<u>CANADIAN STANDARDS ASSOCIATION and FACTORY MUTUAL :</u>
- 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
<u>STANDARDS AUSTRALIA (SAA)</u>
TS/WCA Approval (HART only)
• Conformity Certificate no. AUS Ex 3117X
Ex d IIC T5 (T_{amb} +85°C)/T6 (T_{amb} +70°C) Class 1 Zone 1;
Ex ia IIC T4 (T_{amb} +85°C) /T5 (T_{amb} +55°C) T6 Class 1 Zone 0

Process connections

Conventional flange (611ES) : 1/2 NPT on adapter or 1/4 NPT direct on process axis (according to DIN 19213)
Flush diaphragm flanged seal (**) :
2 in or 3 in ANSI 150 to 900 RF; 4in ANSI 150 - 300 RF.
DN50 or DN80 DIN ND 16-40 Form C, ND 64 - 160 Form E; DN100 ND16 - 40 Form C.
Extended diaphragm flanged seal (**) :
2 in, 3 in, 4 in ANSI 150 - 300 RF.
DN50, DN80, DN100 DIN ND16 - 40 Form C.
Triclamp sanitary seal
2 in, 3 in, 4 in
Union nut sanitary seal
F50, F80 according to DIN 11851

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 mm^2 (14 AWG) and three connection points for test and communication purposes.
- Fieldbus versions
Two terminals for signal wiring (bus connection) up to 2.5 mm^2 (14 AWG)

Grounding

Internal and external 6 mm^2 (10 AWG) ground termination points are provided.

Mounting position

Transmitter can be mounted in any position.
Electronics housing may be rotated to any position. A positive stop prevents over travel.

Mass (without options)

9 to 30 kg approx (20 to 65 lb) according to specified seal(s) options; 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
◊ Viton is a Dupont de Nemour 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
- PV 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:

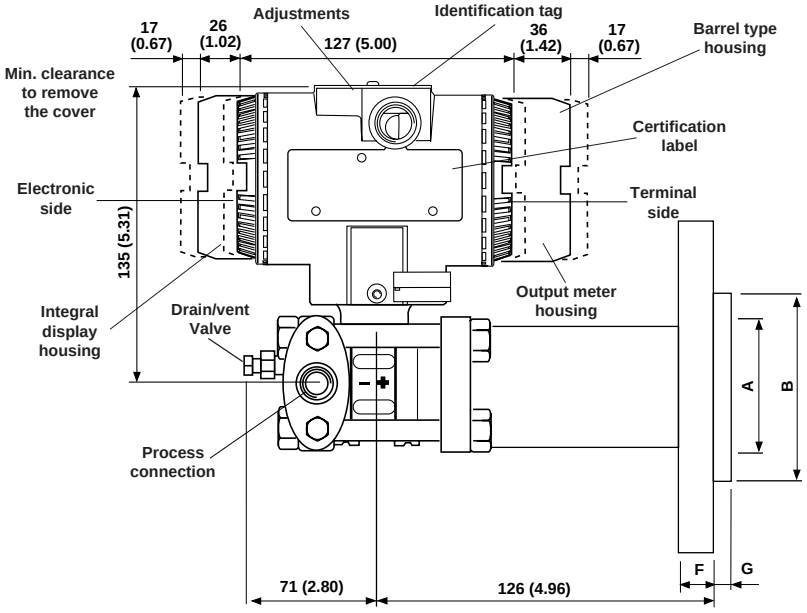
- Measure Profile: Pressure
- Engineering Unit: kPa
- Output scale 0%: Lower Range Limit (LRL)
- Output scale 100%: Upper Range Limit (URL)
- Output : Linear
- Hi-Hi Limit : Upper Range Limit (URL)
- Hi Limit : Upper Range Limit (URL)
- Low Limit : Lower Range Limit (LRL)
- Low-Low Limit : Lower Range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

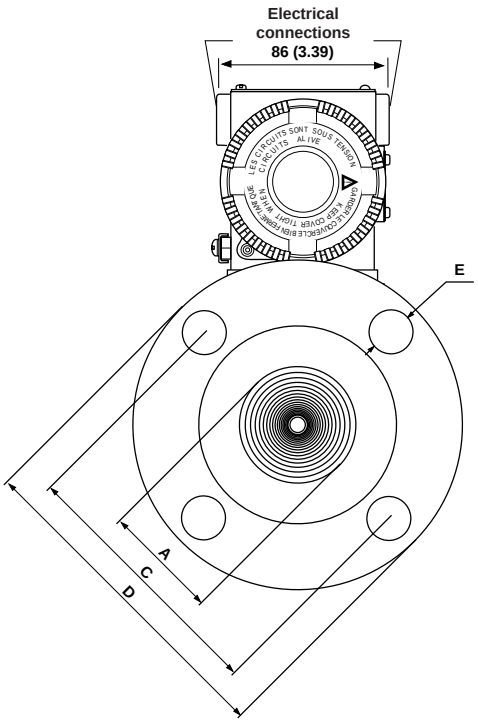
Any or all the above configurable parameters, including the range values, can be changed using any host compliant to FOUNDATION fieldbus. The transmitter database is customized with specified flange type and material, O-ring and drain/vent materials and meter code option.

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/cm^2, kg/cm^2, atm
mbar, bar

MOUNTING DIMENSIONS
(not for construction unless certified)

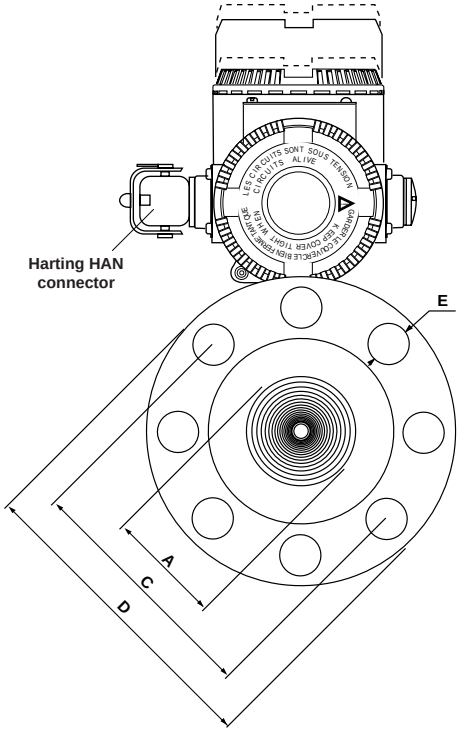
- **611ES with direct mount flanged flush diaphragm seal S6F (barrel housing)**

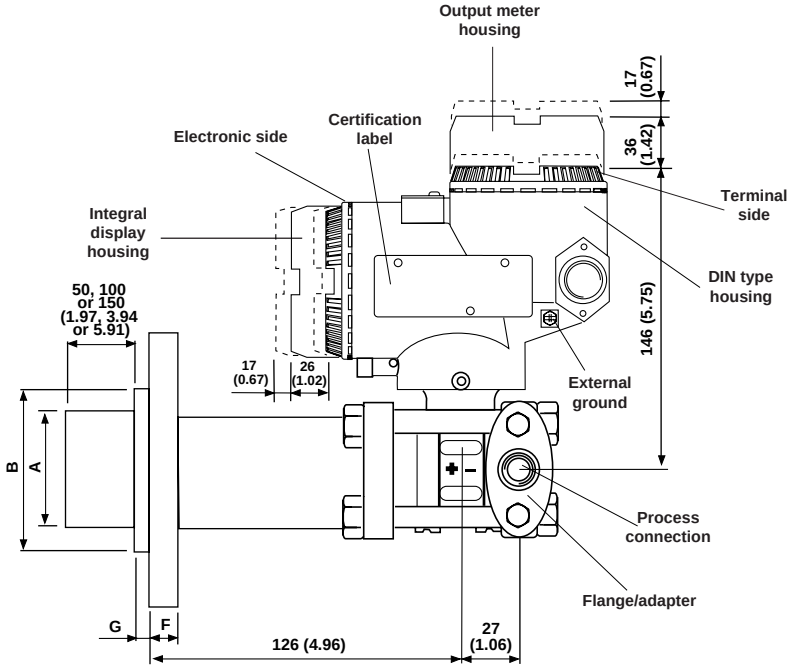




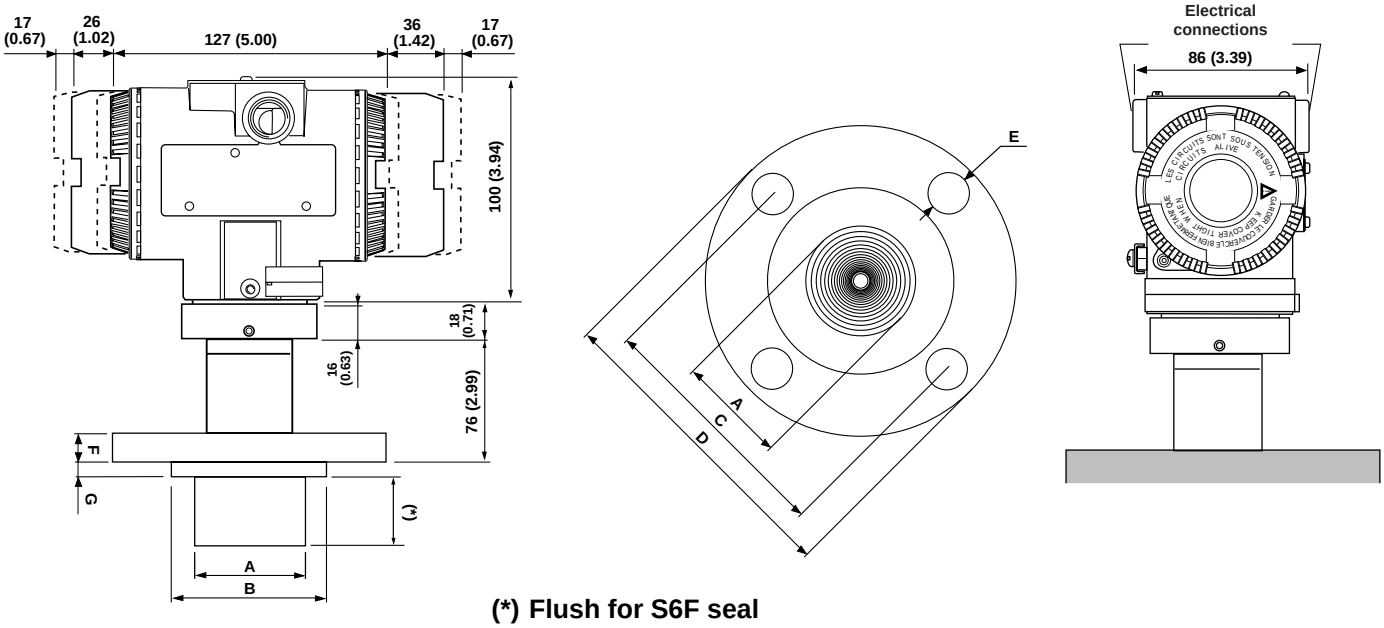
NOTE : **Side opposite to direct mount seal can be a flange blind type or suitable for capillary to remote seal.**
For 611ES side with 1/2"-14 NPT threaded process flange connection, gasket groove and gaskets are in accordance with DIN 19213; removing adapter the flange provides a direct 1/4"-18 NPT thread. Bolting threads for fixing adapter or other devices (i.e. manifold etc.) on process flange is 7/16"-20 UNF.

- **611ES with direct mount flanged extended diaphragm seal S6E (DIN housing)**





- **614ES with direct mount flanged extended diaphragm seal S6E (barrel housing)**



(*) Flush for S6F seal
50, 100 or 150 mm (1.97, 3.94 or 5.91 in) for S6E seal

FLANGED FLUSH DIAPHRAGM SEAL

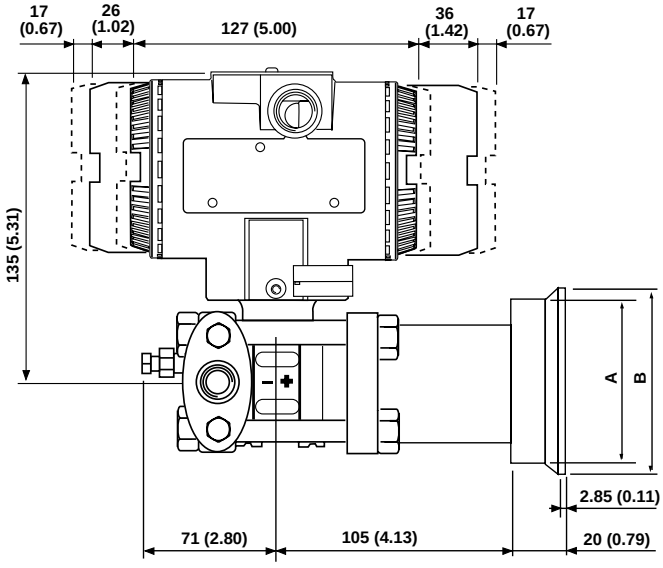
SIZE/RATING	DIMENSIONS mm (in)								N° OF HOLES
	A (dia) flush	A (dia) extended	B (dia)	C (dia)	D (dia)	E (dia)	F	G	
2in ANSI CL 150	60 (2.36)	48 (1.9)	92.1 (3.62)	120.5 (4.74)	152.5 (6)	20 (0.79)	19.5 (0.77)	9.5 (0.37)	4
2in ANSI CL 300	60 (2.36)	48 (1.9)	92.1 (3.62)	127 (5)	165 (6.5)	20 (0.79)	22.5 (0.88)	9.5 (0.37)	8
2in ANSI CL 600	60 (2.36)	NA	92.1 (3.62)	127 (5)	165 (6.5)	20 (0.79)	25.5 (1)	9.5 (0.37)	8
2in ANSI CL 900	60 (2.36)	NA	92.1 (3.62)	165 (6.5)	216 (8.5)	26 (1.02)	38.5 (1.51)	9.5 (0.37)	8
3in ANSI CL 150	89 (3.5)	72 (2.83)	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)	72 (2.83)	127 (5)	168.5 (6.63)	210 (8.26)	22 (0.86)	28.5 (1.12)	9.5 (0.37)	8
3in ANSI CL 600	89 (3.5)	NA	127 (5)	168.5 (6.63)	210 (8.26)	22 (0.86)	32 (1.26)	9.5 (0.37)	8
3in ANSI CL 900	89 (3.5)	NA	127 (5)	190.5 (7.5)	241 (9.48)	26 (1.02)	38.5 (1.51)	9.5 (0.37)	8
4in ANSI CL 150	89 (3.5)	94 (3.7)	157.2 (6.2)	190.5 (7.5)	228.6 (9)	20 (0.79)	24 (0.94)	9.5 (0.37)	8
4in ANSI CL 300	89 (3.5)	94 (3.7)	157.2 (6.2)	200.2 (7.88)	254 (10)	22 (0.86)	32 (1.26)	9.5 (0.37)	8
DN50 DIN ND16	60 (2.36)	48 (1.9)	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)	48 (1.9)	102 (4.02)	125 (4.92)	165 (6.5)	18 (0.71)	20 (0.79)	9.5 (0.37)	4
DN50 DIN ND64	60 (2.36)	NA	102 (4.02)	135 (5.31	180 (7.08)	22 (0.86)	26 (1.02)	9.5 (0.37)	4
DN50 DIN ND100	60 (2.36)	NA	102 (4.02)	145 (5.71)	195 (7.67)	26 (1.02)	28 (1.1)	9.5 (0.37)	4
DN50 DIN ND160	60 (2.36)	NA	102 (4.02)	145 (5.71)	195 (7.67)	26 (1.02)	30 (1.18)	9.5 (0.37)	4
DN80 DIN ND16	89 (3.5)	72 (2.83)	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)	72 (2.83)	138 (5.43)	160 (6.3)	200 (7.87)	18 (0.71)	24 (0.94)	9.5 (0.37)	8
DN80 DIN ND64	89 (3.5)	NA	138 (5.43)	170 (6.7)	215 (8.46)	22 (0.86)	28 (1.1)	9.5 (0.37)	8
DN80 DIN ND100	89 (3.5)	NA	138 (5.43)	180 (7.08)	230 (9.05)	26 (1.02)	32 (1.26)	9.5 (0.37)	8
DN80 DIN ND160	89 (3.5)	NA	138 (5.43)	180 (7.08)	230 (9.05)	26 (1.02)	36 (1.42)	9.5 (0.37)	8
DN100 DIN ND16	89 (3.5)	94 (3.7)	158 (6.22)	180 (7.08)	220 (8.66)	18 (0.71)	20 (0.79)	9.5 (0.37)	8
DN100 DIN ND40	89 (3.5)	94 (3.7)	162 (6.38)	190 (7.48)	235 (9.25)	22 (0.86)	24 (0.94)	9.5 (0.37)	8

TRICLAMP SEAL DIMENSIONS

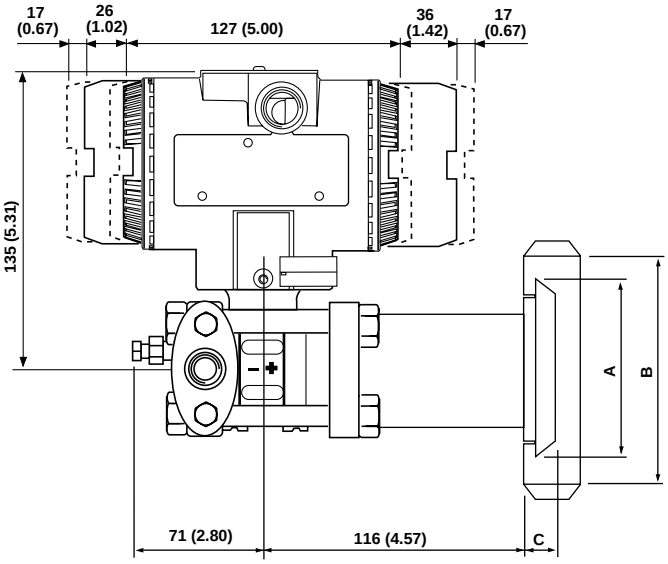
	TRICLAMP		
	2in	3in	4in
A (dia)	56.3 (2.2)	83 (3.26)	110.3 (4.34)
B (dia)	64 (2.5)	91 (3.58)	119 (4.68)

UNION NUT SEAL DIMENSIONS

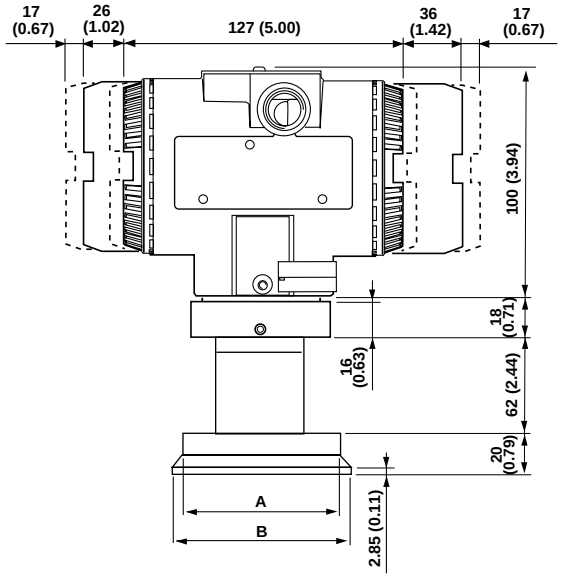
	UNION NUT	
	F50	F80
A (dia)	68 (2.68)	100 (3.93)
B (RD)	78 (3.07)	110 (4.33)
C	16 (0.63)	19 (0.74)



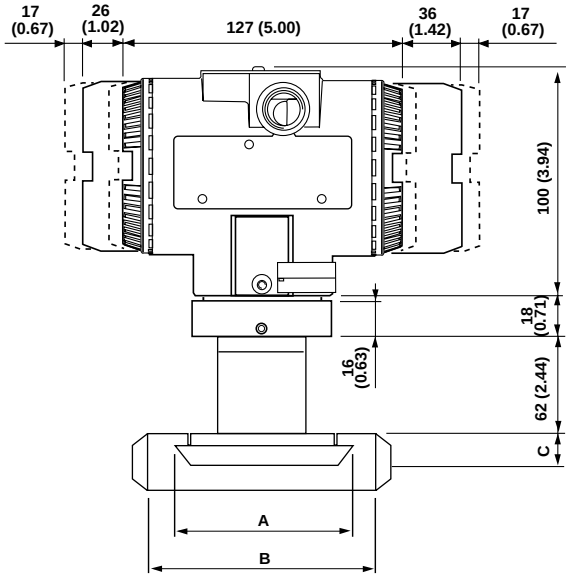
611ES with direct mount sanitary Triclamp seal



611ES with direct mount sanitary union nut seal



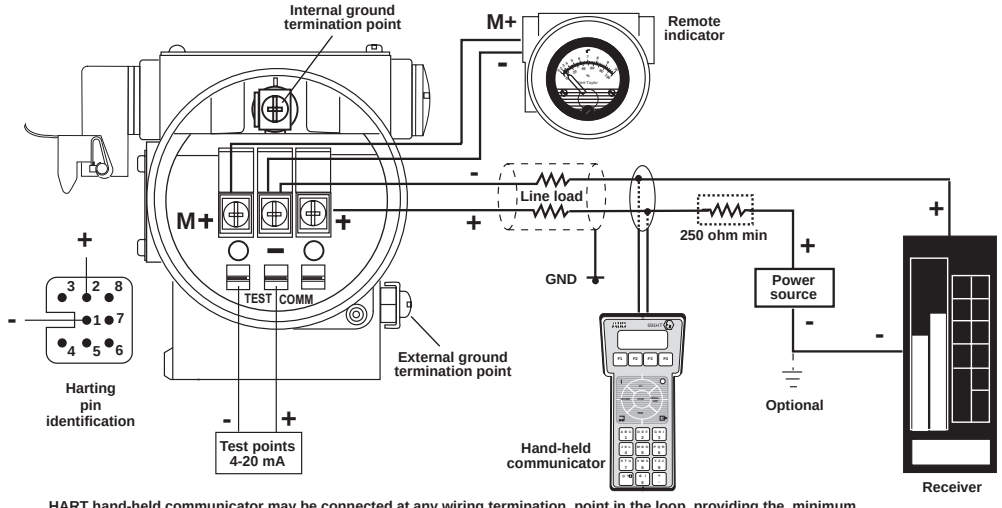
614ES with direct mount sanitary Triclamp seal



614ES with direct mount sanitary union nut seal

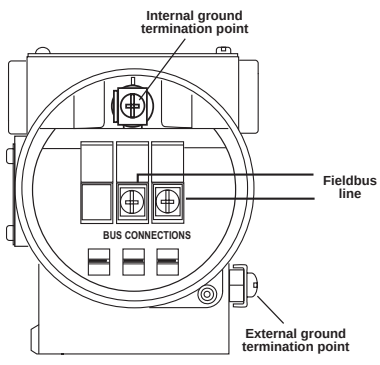
ELECTRICAL CONNECTIONS

- **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 611ES Liquid level/differential 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 fg hij k l m n op

1

BASE MODEL
SENSOR
BOTTOM WORKS
OUTPUT
ELECTRICAL CERTIFICATION
TOP WORKS
ELECTRICAL OPTIONS

abcde **BASE MODEL -** 1st to 5th characters

	Code
Level transmitter (with integral direct mount seal)	**611ES**

SENSOR

f **Span limits -** 6th character

1 and 10 kPa	10 and 100 mbar	4 and 40.1 inH2O	**B**
2 and 40 kPa	20 and 400 mbar	8 and 160 inH2O	**C**
3.25 and 65 kPa	32.5 and 650 mbar	13 and 260 inH2O	**N**
8 and 160 kPa	80 and 1600 mbar	32 and 642 inH2O	**D**
30 and 600 kPa	0.3 and 6 bar	4.35 and 87 psi	**E**
120 and 2400 kPa	1.2 and 24 bar	17.4 and 348 psi	**F**

7th character

g

Diaphragm material (*)	**Fill fluid**		
AISI 316 L ss	Silicone oil		**2**
Hastelloy C276 ◊	Silicone oil	(Note)	**3**
AISI 316 L ss	Inert fluid	(Note)	**A**
Hastelloy C276 ◊	Inert fluid	(Note)	**B**
AISI 316 L ss	KTFILL-1		**L**
Hastelloy C276 ◊	KTFILL-1	(Note)	**N**

Note : can be used only with 1/2" NPT-f process connection code Z, 5, H, L, J or Q at position "h" or "i"

PROCESS CONNECTIONS (*) - 8th and 9th character

hi

High pressure side	**Low pressure side**	
All-welded direct mount seal, Chemical (to be coded separately as S6E or S6F)	Plated Carbon Steel 1/2" NPT-f through adapter (Note 1)	**RZ**
	AISI 316 L ss 1/2" NPT-f through adapter (Note 1)	**R5**
	Hastelloy C 276 1/2" NPT-f through adapter (Note 1)	**RH**
	Plated Carbon Steel 1/2" NPT-f through adapter (Note 2)	**RL**
	AISI 316 L ss 1/2" NPT-f through adapter (Note 2)	**RJ**
	Hastelloy C 276 1/2" NPT-f through adapter (Note 2)	**RQ**
	AISI 316 L ss blind flange	**RB**
	All-welded remote diaphragm seal, Chemical (to be coded separately as S6E or S6F)	**RU**
All-welded direct mount seal, Food & Sanitary (to be coded separately as S6S)	AISI 316 L ss 1/2" NPT-f through adapter (Note 1)	**S5**
	Hastelloy C 276 1/2" NPT-f through adapter (Note 1)	**SH**
	AISI 316 L ss 1/2" NPT-f through adapter (Note 2)	**SJ**
	Hastelloy C 276 1/2" NPT-f through adapter (Note 2)	**SQ**
	AISI 316 L ss blind flange	**SB**
	All-welded remote diaphragm seal, Food & Sanitary (to be coded separately as S6S)	**SF**
Plated Carbon Steel 1/2" NPT-f through adapter (Note 1)	All-welded direct mount seal, Chemical (to be coded separately as S6E or S6F)	**ZR**
AISI 316 L ss 1/2" NPT-f through adapter (Note 1)		**5R**
Hastelloy C 276 1/2" NPT-f through adapter (Note 1)		**HR**
Plated Carbon Steel 1/2" NPT-f through adapter (Note 2)		**LR**
AISI 316 L ss 1/2" NPT-f through adapter (Note 2)		**JR**
Hastelloy C 276 1/2" NPT-f through adapter (Note 2)		**QR**
AISI 316 L ss blind flange		**BR**
All-welded remote diaphragm seal, Chemical (to be coded separately as S6E or S6F)		**UR**
AISI 316 L ss 1/2" NPT-f through adapter (Note 1)	All-welded direct mount seal, Food & Sanitary (to be coded separately as S6S)	**5S**
Hastelloy C 276 1/2" NPT-f through adapter (Note 1)		**HS**
AISI 316 L ss 1/2" NPT-f through adapter (Note 2)		**JS**
Hastelloy C 276 1/2" NPT-f through adapter (Note 2)		**QS**
AISI 316 L ss blind flange		**BS**
All-welded remote diaphragm seal, Food & Sanitary (to be coded separately as S6S)		**FS**

Note 1 : drain/vent valve fitted on flange side and plug fitted on process axis
Note 2 : drain/vent valve fitted on process axis

■ Compliance to NACE class II bolting, according to specification MR0175, latest revision
(*) Process wetted-parts

◊ Hastelloy is a Cabot Corporation trademark
◊ Viton is a Dupont de Nemour trademark

ORDERING INFORMATION model 611ES Liquid level/differential transmitter

10th character

j	Bolts	Gaskets (*)	
	Carbon Steel	Viton ◊	1
		PTFE	3
		None (Note)	0
	AISI 316 ss	Viton ◊	4
		PTFE	6
		None (Note)	L
	AISI 316 ss (NACE)	Viton ◊	S
		PTFE	T
		None (Note)	R
	Plated alloy steel	Viton ◊	7
		PTFE	A
		None (Note)	N

Note : not available with 1/2" NPT-f process connection code Z, 5, H, L, J or Q at position "h" or "i"

k 11th character

Use code	1

12th character

l **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 "l"

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 "l"

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 square root 0-10 scale	(Note)	8
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 "l"

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 "l"

ORDERING INFORMATION model 614ES Transmitter with direct mount seal

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 fg h i j k l m n op

1 0

BASE MODEL
SENSOR
PROCESS CONNECTION
REFERENCE CHAMBER
OUTPUT
ELECTRICAL CERTIFICATION
TOP WORKS
ELECTRICAL OPTIONS

abcde **BASE MODEL -** 1st to 5th characters

	Code
Pressure transmitter with integral direct mount seal	**614ES**

SENSOR

f **Span limits -** 6th character

8 and 160 kPa	80 and 1600 mbar	32 and 642 inH_2O	**D**
30 and 600 kPa	0.3 and 6 bar	4.35 and 87 psi	**E**
120 and 2400 kPa	1.2 and 24 bar	17.4 and 348 psi	**F**
400 and 8000 kPa	4 and 80 bar	58 and 1160 psi	**W**
800 and 16000 kPa	8 and 160 bar	116 and 2320 psi	**U**

g 7th character

Diaphragm material	**Fill fluid**	
AISI 316 L ss	Silicone oil	**0**

h **PROCESS CONNECTION -** 8th character

All-welded direct mount seal, Chemical (to be coded separately as S6E or S6F)	**R**
All-welded direct mount seal, Food & Sanitary (to be coded separately as S6S)	**S**

i **REFERENCE CHAMBER (negative) -** 9th character

At atmospheric pressure for gauge measurement	**B**
At vacuum for absolute measurement	**W**

j 10th character

Use code	**1**

k 11th character

Use code	**0**

l 12th character

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 "l"

■ Compliance to NACE class II bolting, according to specification MR0175, latest revision

ORDERING INFORMATION model 614ES Transmitter with direct mount seal

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

Note 1 : requires certification code 1 at position "m"
Note 2 : not available with output code P and F at position "l"

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 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 "l"

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 "l"

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 c d e f

BASE MODEL
CONFIGURATION
CALIBRATION
PROCEDURE
INTEGRAL MOUNTING OF ASSOCIATED INSTRUMENTATION

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	Certificate	
Standard (max span = 0 to URL)	Reference temperature	None	1
		Yes (3 copies)	2
	Operating temperature	None	3
		Yes (3 copies)	4
At specified range	Reference temperature	None	5
		Yes (3 copies)	6
	Operating temperature	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

SS/61XES-DM Rev. 8

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