

ABB MEASUREMENT & ANALYTICS | DATA SHEET

266MRT, 266GRT and 266ART

Pressure transmitters with seals



Measurement made easy

Engineered solutions for all applications

Base accuracy

- from 0.04 % of calibrated span

Reliable sensing system coupled with very latest digital technologies

- provides large turn down ratio up to 60:1

Comprehensive sensor choice

- optimize in-use total performance and stability

Flexible configuration facilities

- provided locally via local LCD keypad

TTG (Through-The-Glass) keypad technology

- allows quick and easy local configuration without opening the cover, even in explosion proof environments

IEC 61508 certification

- version for SIL2 (1oo1) and SIL3 (1oo2) applications

PED compliance to Sound Engineering Practice (SEP)

All welded constructions

- grant economically feasible and technically sound solutions
- ensuring total reliability at line pressure down to full vacuum

Wide range of seal types, fill fluids, materials and options

Special designed seals for tailored solutions

Product in compliance with Directive 2011/65/UE (RoHS II)

In-built advanced diagnostics

General description

Models detailed in this data sheet apply for those transmitters which include one or two remote seal(s) connected via a capillary to the transmitter sensor. Depending on the selected ordering code the following models are available:

- a) model 266MRT which allows a differential measurement using either
- two remote seals of same type and size or
 - one direct mount seal on positive side and one remote seal on negative side, of same type and size or
 - one remote seal on positive and a standard threaded connection direct 1/4 in – 18 NPT on flange or 1/2 in – 14 NPT through adapter, for the wet or dry leg on negative side opposite to seal, or
 - one direct mount seal on positive side and a standard threaded connection direct 1/4 in – 18 NPT on flange or 1/2 in – 14 NPT through adapter, for the wet or dry leg on negative side.
- b) model 266GRT or 266ART have the remote or direct mount seal on the positive side and the user can select the suitable code for having the reference at atmospheric or vacuum pressure respectively for gauge or absolute measure. Direct mount seal 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(s) mounting facilities. All data apply for identical characteristics of the two sides when the transmitter is differential with two seals.

Remote Seals Overview

The S26 seals are used in combination with 2600T transmitters, allowing differential, gauge or absolute pressure measurements.

Connection of the seal(s) to the relevant transmitter can be achieved as follows :

- directly mounted with a short capillary connecting the „integral“ seal to the transmitter sensor;
- through a capillary system which link the transmitter sensor to a „remote“ seal of any version.
- Using seals the transmitter can be selected with
- two seals using same fill fluid, capillary and diaphragm size
- one seal having the other side configured with a process flange for wet/dry leg connection or a blind flange providing vacuum or atmospheric reference.

Model 266GRT/ART transmitters have always one remote seal only, with a selectable reference to atmosphere or vacuum respectively for gauge or absolute pressure measurements. The S26 Series Seal System is a protective device used to isolate 2600T series transmitters from the process fluid. The seal system provides a flexible diaphragm seal between the process fluid and a liquid filled capillary tube connected to the body of the transmitter. The diaphragm isolates the process fluid while the filled capillary tube hydraulically transmits the process pressure to the transmitter sensor.

The capillary of remote seal is corrosion-resistant with robust construction in stainless steel with spiral armour protection, also PVC jacket; PVC protection is always recommended except for high temperature application, where stainless steel armour is suggested. The all welded construction assures reliable operation over the widest range of operating temperature and under vacuum conditions.

For certain applications, use of seal is necessary to prevent the process fluid from leaving its enclosure, due to reasons such as :

- the process fluid has solids in suspension or is highly viscous and can foul impulse lines.
- the process fluid can solidify in impulse lines or the transmitter.
- the process fluid is too hazardous to enter the control area where the transmitter is located.
- the process temperature exceeds the recommended limits for the transmitter.
- the application is interface level or density measurement.
- Remote seals offer the required constant and equal specific gravity of the pressure transfer fluid on the high and low sides of the transmitter.
- the transmitter must be located away from the process for easier maintenance.

The S26 series is available with process connections for ASME, EN or JIS pipe flanges, wedge flow elements, chemical tees, and threaded pipe fittings. Extended diaphragm remote seals, suitable for connection to 2in - 3in or 4in flanged tank nozzles or flanged tees, permit the seal diaphragm to be located flush with the inside of a tank or pipe. Sanitary type seals meet the stringent requirements of sanitary food, dairy, pharmaceutical and BioTech applications, offering FDA approved fillings and compliance with 3-A Sanitary Standards. Fill fluids with FDA are defined as food fills and are Generally Recognized As Safe (GRAS) by the US Food and Drug Administration (FDA).

Seal system selection criteria

Application of an S26 system in direct mount or remote seal configuration to 2600T transmitters affects performances of original devices. Effects are evident in:

- Accuracy
- Temperature effects
- Dynamic response

Accuracy is only marginally affected when seal diaphragm stiffness is relevant compared with sensor stiffness.

This is the only characteristic of the S26 system which has role on accuracy performance. High stiffness of diaphragm associated with low URL might produce increased errors of linearity, hysteresis, and long term stability; when diaphragm stiffness is accuracy related also temperature effects are significantly affected.

Some basic considerations on diaphragm stiffness help understanding effects introduced by S26 system associated with transmitters. This is physically defined by the ratio between the pressure variation applied to the diaphragm and the corresponding volume variation. The stiffness is not linear along the whole diaphragm volumetric displacement, but the S26 design is such to maintain the system linear within the service conditions of the transmitter such as:

- Operating pressure range
- Operating static pressure (for differential transmitters)
- Ambient and process temperature limits

Diaphragm stiffness is a function of material and thickness (elastic coefficient), diameter (type), convolution shape and geometry (design defined).

S26 system has effect on temperature performance of the complete transmitter. This effect is mostly on zero of the instrument and is produced by the expansion of the fill fluid into the closed volume formed by the transmitter flange cavity the capillary volume and the remote seal volume. This volume filled with a fluid with specific expansion coefficient; change in temperature of the measuring device produce a volume variation which is absorbed by the remote diaphragm, whose stiffness produces a change in the fluid pressure: this is the zero error. In real application the transmitter/seal system is not the same and stable temperature. Therefore the errors referred in this document for each type of diaphragm and different fluids should be taken as a reference for qualitative evaluation and not a true behaviour in normal application conditions. Should again be recognized that the stiffness of diaphragm and in this case, the thermal coefficient of fluid are the parameter to take into account.

Application of S26 seal to transmitters increases the original time response. The amount of the increase depends from the number of elements and condition of the instrument as follow:

- transmitter sensor range
- physical configuration (i.e. a remote seal on other side)
- type of measure/number of seal (one or two)
- fill fluid viscosity of the S26 system applied
- ambient temperature (affects the transmitter and the capillary) and process temperature on the seal diaphragm
- capillary length

The delay introduced by the seal may be considered as an added constant time to the one of the associated transmitter.

For obtaining the best application solution:

- choose sensor code with URL closest to application SPAN
- select largest diameter diaphragm seal related to URL.
- keep the capillary length as short as possible
- select the fill fluid that suits the most extreme process conditions expected (highest temperature and lowest pressure) and it is compatible with the process fluid.
- In vacuum application, choose always the all welded version and mount the transmitter primary 30 cm / 12 inches or more below the bottom seal connection.
- In a two-seal system use the same diaphragm size, capillary length and fill fluid on each side of the transmitter

Temperature errors optimization (option code DE)

Additional enhanced optimization performed during the production process allows to reduce errors caused by temperature changes on seal. Values detailed in relevant tables can be considered divided by 4 for the following conditions

- difference of capillary errors (per metre) when the two sides have different lengths
- difference of seal errors (process) when the two sides are equipped with different S26 types
- difference of system errors (ambient) when the transmitter uses one direct mount seal and one remote seal.

Ordering Information

The transmitter and each seal system are each identified by a product code number. These code numbers are stamped on the transmitter nameplate and each character identifies specific product features. Refer to ordering information for a detailed explanation of the product code numbers.

Industrial application in chemical, sanitary, food and any other process industries may require seal configurations and/or

process connection different from those reported in this document. Each "special" should be evaluated by ABB to check the correctness and its level of functionality. Ask for the "S26 series seal form" to define precisely the measuring problem and application requirements.

ABB can also cooperate with you by developing a special remote seal for problems requiring individual solutions.

PLEASE CONTACT YOUR LOCAL ABB OFFICE OR REPRESENTATIVE FOR ADDITIONAL INFORMATION, SPECIFIC SEAL DATA AND APPLICABILITY.

Specification – functional

Range and span limits

Sensor Code	Measuring range upper limit (URL)	Measuring range lower limit (LRL)			Minimum measuring span			
		266MRT Differential pressure	266GRT Gauge pressure	266ART Absolute pressure	266MRT 266GRT	266ART	266GRT with S26KN	266ART with S26KN
C	6 kPa	-6 kPa	-6 kPa	0.07 kPa abs	0.6 kPa	1.2 kPa abs		
	60 mbar	-60 mbar	-60 mbar	0.7 mbar abs	6 mbar	12 mbar abs		
	24 inH2O	-24 inH2O	-24 inH2O	0.5 mmHg	2.41 inH2O	9 mmHg		
F	40 kPa	-40 kPa	-40 kPa	0.07 kPa abs	0.67 kPa	2 kPa abs	2.0 kPa	4.0 kPa
	400 mbar	-400 mbar	-400 mbar	0.7 mbar abs	6.7 mbar	20 mbar abs.	20 mbar	40 mbar
	160 inH2O	-160 inH2O	-160 inH2O	0.5 mmHg	2.67 inH2O	15 mmHg	8 inH2O	30 mmHg
L	250 kPa	-250 kPa	-100 kPa		4.17 kPa	12.5 kPa abs	8.33 kPa	25.0 kPa
	2500 mbar	-2500 mbar	-1 bar	0 abs	41.67 mbar	125 mbar abs	83.33 mbar	250 mbar
	1000 inH2O*	-1000 inH2O	14.5 psi		16.73 inH2O**	93.8 mmHg	1.21 psi	187.5 mmHg
D	1000 kPa		-100 kPa		16.7 kPa	50 kPa abs	33.3 kPa	100 kPa
	10 bar		-1 bar	0 abs	167 mbar	500 mbar abs	333 mbar	1.0 bar
	145 psi		14.5 psi		2.42 psi	7.25 psia	4.8 psi	14.5 psia
N	2000 kPa	-2000 kPa			33.3 kPa			
	20 bar	-20 bar			333 mbar			
	290 psi	-290 psi			4.83 psi			
U	3000 kPa		-100 kPa		50 kPa	150 kPa abs	100 kPa	300 kPa
	30 bar		-1 bar	0 abs	500 mbar	1.5 bar abs	1.0 bar	3.0 bar
	450 psi		14.5 psi		7.25 psi	21.7 psia	14.5 psi	43.5 psia
R	10000 kPa	-10000 kPa	-100 kPa		167 kPa	500 kPa abs	333 kPa	1000 kPa
	100 bar	-100 bar	-1 bar	0 abs	1.67 bar	5 bar abs	3.33 bar	10 bar
	1450 psi	-1450 psi	14.5 psi		24.17 psi	72.6 psia	48.3 psi	145 psia
V	60000 kPa		-100 kPa		1000 kPa		2000 kPa	
	600 bar		-1 bar		10 bar		20 bar	
	8700 psi		14.5 psi		145 psi		290 psi	

* Measuring range upper limit (URL) for 266GRT sensor L is 250 kPa, 2500 mbar or 36.26 psi

** Measuring span limit for 266GRT sensor L is 4.17 kPa, 41.67 mbar or 0.60 psi

Span limits

Maximum span = URL

IT IS RECOMMENDED TO SELECT THE TRANSMITTER SENSOR CODE PROVIDING THE TURNDOWN VALUE AS LOWEST AS POSSIBLE TO OPTIMIZE PERFORMANCE CHARACTERISTICS.

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 \geq minimum span

Damping

Selectable time constant : between 0 and 60 s

This is in addition to sensor response time.

Turn on time

Operation within specification in less than 10 s with minimum damping.

For DDS the turn on time is 12 s and the Output current during this time is 21 mA.

Insulation resistance

> 100 M Ω at 500 V DC (terminals to earth)

Specification – operative limits

Pressure limits

Overpressure limits

Model 266MRT	Filling fluid	Overpressure limits
Sensors C to R	Silicone oil	0.07 kPa abs., 0.7 mbar abs., 0.5 mmHg and 16 MPa, 160 bar, 2.320 psi, or 25 MPa, 250 bar, 3.625 psi, or 41 MPa, 410 bar, 5.945 psi depending on code variant selected
Sensors C to R	Fluorocarbon (Galden)	17.5 kPa abs., 175 mbar abs., 131 mmHg and 16 MPa, 160 bar, 2.320 psi, or 25 MPa, 250 bar, 3.625 psi, or 41 MPa, 410 bar, 5.945 psi depending on code variant selected

Models 266GRT and 266ART	Filling fluid	Overpressure limits
Sensor C, F	-	0.07 kPa abs., 0.7 mbar abs., 0.5 mmHg and 1 MPa, 10 bar, 145 psi
Sensor L	Silicone oil	0.07 kPa abs., 0.7 mbar abs., 0.5 mmHg and 3 MPa, 30 bar, 435 psi
Sensor D	Silicone oil	0.07 kPa abs., 0.7 mbar abs., 0.5 mmHg and 6 MPa, 60 bar, 870 psi
Sensor U	Silicone oil	0.07 kPa abs., 0.7 mbar abs., 0.5 mmHg and 6 MPa, 60 bar, 870 psi
Sensor R	Silicone oil	0.07 kPa abs., 0.7 mbar abs., 0.5 mmHg and 30 MPa, 300 bar, 4350 psi
Sensor V	Silicone oil	0.07 kPa abs., 0.7 mbar abs., 0.5 mmHg and 90 MPa, 900 bar, 13050 psi
Sensor L	Fluorocarbon (Galden)	0.135 kPa abs., 1.35 mbar abs., 1 mmHg and 3 MPa, 30 bar, 435 psi
Sensor D	Fluorocarbon (Galden)	0.135 kPa abs., 1.35 mbar abs., 1 mmHg and 6 MPa, 60 bar, 870 psi
Sensor U	Fluorocarbon (Galden)	0.135 kPa abs., 1.35 mbar abs., 1 mmHg and 6 MPa, 60 bar, 870 psi
Sensor R	Fluorocarbon (Galden)	0.135 kPa abs., 1.35 mbar abs., 1 mmHg and 30 MPa, 300 bar, 4350 psi
Sensor V	Fluorocarbon (Galden)	0.135 kPa abs., 1.35 mbar abs., 1 mmHg and 90 MPa, 900 bar, 13050 psi

Static pressure limits

Transmitters for differential pressure, models 266MRT, can operate within the specifications with the following limit values.

Sensors	Filling fluid	Static pressure limits
Sensors C to R	Silicone oil	3.5 kPa abs., 35 mbar abs., 0.5 psia and 16 MPa, 160 bar, 2.320 psi, or 25 MPa, 250 bar, 3.625 psi, or 41 MPa, 410 bar, 5.945 psi depending on code variant selected
Sensors C to R	Fluorocarbon (Galden)	17.5 kPa abs., 175 mbar abs., 131 mmHg and 16 MPa, 160 bar, 2.320 psi, or 25 MPa, 250 bar, 3.625 psi, or 41 MPa, 410 bar, 5.945 psi depending on code variant selected

The overpressure limits and upper static pressure limits can be lowered by means of the nominal pressure rating of the diaphragm seal flange.

Proof pressure

The transmitters can withstand a pressure test with the following line pressure without leaking:

Model	Test pressure
266MRT	1.5 x nominal pressure (static pressure limit) simultaneously on both sides *
266GRT / 266ART	Overpressure limits of sensor *

* Or double the value of the pressure sensor flange pressure stage, depending on which value is less. Meet ANSI/ISA-S 82.03 hydrostatic test requirements.

Temperature limits °C (°F)

Ambient

is the operating temperature

Model 266MRT	Ambient temperature limits
Silicone oil for sensors C to R	-40 to 85 °C (-40 to 185 °F)
Fluorocarbon (Galden) for sensors C to R	-40 to 85 °C (-40 to 185 °F)

Models 266GRT, 266ART	Ambient temperature limits
Silicone oil for sensor	-40 to 85 °C (-40 to 185 °F)
Inert (Galden) for sensor	-40 to 85 °C (-40 to 185 °F)
White oil for sensor	-6 to 85 °C (21 to 185 °F)

Models 266XRT	Ambient temperature limits
Integrated LCD display	-40 to 85 °C (-40 to 185 °F)

LCD display may be affected in visibility below -20°C (-4°F) or above +70°C (+185°F).

Transmitters with ambient temperature limit of -50°C (-58° F) are available through special option.

IMPORTANT

For Hazardous Atmosphere applications see the temperature range specified on the certificate/approval relevant to the aimed type of protection

Process

Models 266MRT (side without diaphragm seal)	Process temperature limits
Silicone oil for sensors C to R	-40 to 121 °C (-40 to 250 °F) *
Fluorocarbon (Galden) for sensors C to R	-40 to 121 °C (-40 to 250 °F) **
Viton gasket	-20 to 121 °C (-4 to 250 °F)
PTFE gasket	-20 to 85 °C (-4 to 185 °F)

* 85 °C (185 °F) for applications under 10 kPa, 100 mbar abs., 1.45 psia up to 3.5 kPa abs., 35 mbar abs., 26 mmHg

** 85 °C (185 °F) for applications below atmospheric pressure up to 17.5 kPa abs., 175 mbar abs., 131 mmHg

...Specification – operative limits

Process - seal

Refer to the following FILL FLUID CHARACTERISTICS table detailing characteristics of fill fluids when used in transmitters with seal(s) and further limitation for specific models and/or variants.

Fill fluid (application)	Process temperature and pressure limits				Specifications @ 25 °C (77°F)		
	Tmax °C (°F) @ Pabs > of	Pmin mbar abs (mmHg)	Tmax °C (°F) @ Pmin	Tmin °C (°F)	Specific gravity (kg/dm3)	Kinematic viscosity (cst)	Thermal expansion (x 10 ⁻³ /°C)
Silicone oil PMX 200 10 cSt	250 (480) @ 385 mbar	0.7 (0.5)	130 (266)	-40 (-40)	0.934	10	1.08
Silicone oil Baysilone PD5 5 cSt	250 (480) @ 900 mbar	0.7 (0.5)	45 (113)	-85 (-121)	0.923	5	0.98
Inert oil Galden G5 (oxygen service)	160 (320) @ 1 bar	2.1 (1.52)	60 (140)	-20 (-4)	1.82	4.4	1.1
Silicone polymer Syltherm XLT (cryogenic service)	100 (212) @ 118 mbar	2.1 (1.52)	20 (68)	-100 (-148)	0.852	1.4	1
Silicone oil for high temperature (for REMOTE SEAL)	375 (707) @ 1 bar	0.7 (0.5)	220 (428)	-10 (14)	1.07	39	0.77
Silicone oil for high temperature (for DIRECT MOUNT SEAL)	250 (480) @ 3.5 mbar	0.7 (0.5)	220 (428)	-10 (14)	1.07	39	0.77
Vegetable oil Neobee M-20 (food - sanitary) FDA approved	200 (390) @ 1 bar	10 (7.2)	20 (68)	-18 (0)	0.92	9.8	1.2
Mineral oil Esso Marcol 152 (food - sanitary) FDA approved	250 (480) @ 630 mbar	0.7 (0.5)	110 (230)	-6 (21)	0.86	30	0.80
Glycerin Water 70% (food - sanitary) FDA approved	93 (200) @ 1 bar	1000 (760)	93 (200)	-7 (20)	1.08	2	0.36

Absolute viscosity (cP) = Kinematic Viscosity (cSt) x Specific gravity at specified temperature.

The absolute viscosity value is used for response time calculation.

Storage

Models 266xRT	Storage temperature limits
Storage limits	-50 and 85 °C (-58 and 185 °F)
LCD integral display	-40 and 85 °C (-40 and 185 °F)

Environmental limits

Electromagnetic compatibility (EMC)

Comply with 2014/30/UE to standards EN 61326-1:2013.
For IEC 61508 SIL certified transmitter to
EN 61326-3-1:2008.
For transmitter with option "YE" to NAMUR NE 021 (2004).
Surge immunity level (with surge protector): 4 kV
(according to IEC 61000-4-5 EN 61000-4-5)

Pressure equipment directive (PED)

Comply with 2014/68/UE to standards
ANSI/ISA 61010-1:2012
Category III Module H for PS \geq than 20 MPa, 200 bar
Sound Engineering Practice (SEP) for PS < 20 MPa, 200 bar

Humidity

Relative humidity: up to 100 %
Condensing, icing: admissible

Vibration resistance

Accelerations up to 2 g at frequency up to 1000 Hz
(according to IEC 60068-2-6)

Shock resistance

Acceleration: 50 g
Duration: 11 ms
(according to IEC 60068-2-27)

Wet and dust-laden atmospheres

The transmitter is dust and sand tight and protected
against immersion effects as defined by IEC 60529 (2001)
IP 67, IP 68 on request, NEMA 4X

- IP 65 (devices with Harting Han plug connector)
- IP 66 (devices with barrel housing made from aluminum or stainless steel housing).

Hazardous atmospheres

With or without integral LCD display

INTRINSIC SAFETY Ex ia:

- ATEX Europe (code E1) approval
II 1 G Ex ia IIC T6...T4 Ga, II 1/2 G Ex ia IIC T6...T4 Ga/Gb,
II 1 D Ex ia IIIC T85 °C Da, II 1/2 D Ex ia IIIC T85 °C Da;
IP66, IP67.
- IECEx (code E8) approval
Ex ia IIC T6...T4 Ga/Gb, Ex ia IIIC T85 °C Da; IP66, IP67.
- NEPSI China (code EY)
Ex ia IIC T4/T5/T6 Ga, Ex ia IIC T4/T5/T6 Ga/Gb,
Ex iaD 20 T85/T100/T135, Ex iaD 20/21 T85/T100/T135.

EXPLOSION PROOF:

- ATEX Europe (code E2) approval
II 1/2 G Ex db IIC T6 Ga/Gb Ta=-50 °C to +75 °C,
II 1/2 D Ex tb IIIC T85 °C Db Ta = -50 °C to +75 °C;
IP66, IP67.
- IECEx (code E9) approval
Ex db IIC T6 Ga/Gb Ta=-50 °C to +75 °C,
Ex tb IIIC T85 °C Db Ta = -50 °C to +75 °C; IP66, IP67.
- NEPSI China (code EZ)
Ex d IIC T6 Gb, Ex tD A21 IP67 T85 °C.

INTRINSIC SAFETY Ex ic:

- ATEX Europe (code E3) type examination
II 3 G Ex ic IIC T6...T4 Gc, II 3 D Ex tc IIIC T85 °C Dc;
IP66, IP67.
- IECEx (code ER) type examination
Ex ic IIC T6...T4 Gc, Ex tc IIIC T85 °C Dc; IP66, IP67.
- NEPSI China (code ES) type examination
Ex ic IIC T4~T6 Gc, Ex tD A22 IP67 T85 °C.

FM Approvals US (code E6) and

FM Approvals Canada (code E4):

- Explosionproof (US): Class I, Division 1,
Groups A, B, C, D; T5
- Explosionproof (Canada): Class I, Division 1,
Groups B, C, D; T5
- Dust-ignitionproof: Class II, Division 1, Groups E, F, G,
Class III, Division 1; T5
- Flameproof (US): Class I, Zone 1 AEx d IIC T4 Gb
- Flameproof (Canada): Class I, Zone 1 Ex d IIC T4 Gb
- Nonincendive: Class I, Division 2, Groups A, B, C, D T6...
T4
- Energy limited (US): Class I, Zone 2 AEx nC IIC T6...T4
- Energy limited (Canada): Class I, Zone 2 Ex nC IIC T6...T4
- Intrinsically safe: Class I, II, III, Division 1,
Groups A, B, C, D, E, F, G T6...T4
Class I, Zone 0 AEx ia IIC T6...T4 (US)
Class I, Zone 0 Ex ia IIC T6...T4
(Canada)

Type 4X, IP66, IP67 for all above markings.

COMBINED FM Approvals US and Canada

- Intrinsically safe (code EA)

FM Approvals Canada (code EB):

- Explosionproof (US): Class I, Division 1,
Groups A, B, C, D; T5
- Explosionproof (Canada): Class I, Division 1,
Groups B, C, D; T5
- Dust-ignitionproof: Class II, Division 1, Groups E, F, G;
Class III, Div. 1; T5
- Flameproof (US): Class I, Zone 1 AEx d IIC T4 Gb
- Flameproof (Canada): Class I, Zone 1 Ex d IIC T4 Gb

COMBINED ATEX, FM and IECEx Approvals (code EN)

Technical Regulations Customs Union EAC (Russia, Kazakhstan, Belarus), Inmetro (Brazil)

The permissible ambient temperature ranges (within the limits of -50 to 85 °C) are specified in the type examination certificates dependent upon the temperature class.

Specification - Electrical Characteristics and Options

LCD display

Integral display with integral keypad (code L1)

Wide screen LCD, 128 x 64 pixel, 52.5 x 27.2 mm (2.06 x 1.07 in) dot matrix. Multilanguage. Four keys for configuration and management of device. Easy setup for quick commissioning. User selectable application-specific visualizations. Totalized and instantaneous flow indication. Display may also indicate static pressure, sensor temperature and diagnostic messages and provides configuration facilities.



Integral display with Through-The-Glass (TTG) activated keypad (code L5; not with DDS)

As above integral display but equipped with the innovative TTG keypad allowing the activation of the configuration and management menus of the device without the need of removing the transmitter housing cover. TTG keypad is protected against accidental activations.



Optional surge protection

Up to 4kV

- voltage 1.2 μs rise time / 50 μs delay time to half value
- current 8 μs rise time / 20 μs delay time to half value

Process diagnostics (PILD)

Plugged impulse line detection (PILD) generates a warning via communication (HART, PA, FF). The device can be configured to drive the output to “Alarm current” or set a status “BAD”.

HART® digital communication and 4 to 20 mA output – Advanced functionality

Device type: 1a06_{hex} (listed with HCF), For DDS 1a93_{hex}

Power supply

The transmitter operates from 10.5 to 42 V DC (12 to 42 V DC for DDS version) with no load and is protected against reverse polarity connection (additional load allows operations over 42 V DC).

For Ex ia and other intrinsically safe approval power supply must not exceed 30 V DC.

Except for DDS version: Minimum operating voltage increases to 12.3 V DC with optional surge protector or to 10.8 V DC with optional conformity to NAMUR NE 21 (2004).

Ripple

20 mV max on a 250 Ω load as per HART specifications.

Load limitations

4 to 20 mA and HART total loop resistance :

$$R \text{ (k}\Omega\text{)} = \frac{\text{Supply voltage} - \text{min. operating voltage (V DC)}}{22 \text{ mA}}$$

A minimum of 250 Ω is required for HART communication.

Output signal

Two-wire 4 to 20 mA, user-selectable for linear or square root output, power of $3/2$ or $5/2$, square root for bidirectional flow, 22 points linearization table (i.e. for horizontal or spherical tank level measurement). HART® communication provides digital process variable superimposed on 4 to 20 mA signal, with protocol based on Bell 202 FSK standard.

HART revision 7 is the default HART output.

HART revision 5 is selectable on request (Not available for DDS).

Output current limits (to NAMUR NE 43 standard)

Overload condition

- Lower limit: 3.8 mA (configurable from 3.8 to 4 mA)
- Upper limit: 20.5 mA (configurable from 20 to 21 mA)

Alarm current

- Lower limit: 3.6 mA (configurable from 3.6 to 4 mA)
- Upper limit: 21 mA (configurable from 20 to 23 mA, limited to 22 mA for HART Safety; apply for electronics release 7.1.15 or later)

Factory setting: high alarm current.

FOUNDATION Fieldbus™ output

Device type

LINK MASTER DEVICE
Link Active Scheduler (LAS) capability implemented.
Manufacturer code: 000320_{hex}
Device type code: 0007_{hex}

Power supply

The transmitter operates from 9 to 32 V DC, polarity independent, with or without surge protector.
For Ex ia approval power supply must not exceed 24 V DC (FF-816 certification) or 17.5 V DC (FISCO certification).

Current consumption

operating (quiescent): 15 mA
fault current limiting: 20 mA max.

Output signal

Physical layer in compliance to IEC 61158-2/EN 61158-2.
Transmission to Manchester II modulation, at 31.25 kbit/s.

Function blocks / cycle time

3 extended analog input blocks / 25 ms max. (each)
1 extended PID block / 40 ms max.
1 Standard Arithmetic block / 25 ms
1 Standard Input Selector block / 25 ms
1 Standard Control Selector block / 25 ms
1 Standard Signal Characterization block / 25 ms
1 Standard Integrator / Totalizer block / 25 ms

Additional blocks

1 extended Resource Block
1 manufacturer-specific Pressure with Calibration Transducer Block
1 manufacturer-specific Advanced Diagnostics Transducer Block with recognition of clogged impulse lines
1 manufacturer-specific local display transducer Block

Number of link objects

35

Number of VCRs

35

Output interface

FOUNDATION fieldbus digital communication protocol to standard H1, compliant to specification V. 1.7.

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 (20 mA approx), for safety of the network.

PROFIBUS® PA output

Device type

Pressure transmitter compliant to Profiles 3.0.1
Identification number: 3450 (hex)

Power supply

The transmitter operates from 9 to 32 V DC , polarity independent, with or without surge protector.
For Ex ia approval power supply must not exceed 17.5 V DC.
Intrinsic safety installation according to FISCO model.

Current consumption

operating (quiescent): 15 mA
fault current limiting: 20 mA max.

Output signal

Physical layer in compliance to IEC 61158-2/EN 61158-2.
Transmission to Manchester II modulation, at 31.25 kbit/s.

Output interface

PROFIBUS PA communication according to Profibus DP50170 Part 2/DIN 19245 part 1-3.

Output update time

25 ms

Data blocks

3 analog input, 1 physical.

Additional blocks

1 Pressure with calibration transducer block
1 Advanced Diagnostics transducer block including Plugged Input Line Detection
1 Local Display transducer block

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.
If electronic failure or short circuit occur the transmitter consumption is electronically limited at a defined value (20 mA approx), for safety of the network.

...Specification - Electrical Characteristics and Options

Digital Diaphragm Seal (DDS)



Figure 1 Digital Diaphragm Seal

DDS is the next-gen in differential pressure measurement for ambient-temperature affected installations.

By replacing the oil-filled capillary with electronic cables, DDS leverages data from two independent gauge devices to calculate DP. This technical solution not only zeroes the so called “head-effect” error, but it also takes away the delays in signals driven by traditional measures.

With up to 95% (Versus a traditional solution) faster response time, DDS provides advantages in costs of installation (i.e., simpler mounting) and maintenance (i.e., lower cost due to modular replacements)

Main Features

- No oil-based capillary
- Contemporary single-device and combined-devices data
- Independent Primary & Secondary devices
- Modular components' structure
- Single 2-wire 4-20mA loop with single zeroing and calibration
- Opportunity for extra long cabling (up to 150 mt)

Specification – performance

Stated at reference condition to IEC 60770 ambient temperature of 20 °C (68 °F), relative humidity of 65 %, atmospheric pressure of 1013 hPa (1013 mbar), 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 and HART digital trim values equal to 4 mA and to 20 mA span end points, in linear mode.

Unless otherwise specified, errors are quoted as % of span.

Some performance referring to the Upper Range Limit 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.

All specification performance data for DDS version refers to two transmitters (primary and secondary) with identical sensor ranges.

All other performances specifications can be taken as reference of each DDS pressure sensor without correlation to differential pressure compute.

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

Model	Sensor	For TD range	Measuring error
266MRT	F to R	From 1:1 to 10:1	± 0.04 %
with seal(s)	F to R	From 10:1 to 60:1	± (0.04 + 0.005 x TD - 0.05) %
Mnemonic			
P3, F3, E3,	C	From 1:1 to 5:1	± 0.04 %
S3, F2	C	From 5:1 to 10:1	± (0.008 x TD) %
266MRT	F to R	From 1:1 to 10:1	± 0.065 %
with seal(s)	F to R	From 10:1 to 60:1	± (0.0065 x TD) %
Mnemonic			
different	C	From 1:1 to 5:1	± 0.065 %
from above	C	From 5:1 to 10:1	± (0.013 x TD) %

Model	Sensor	For TD range	Measuring error
266GRT	F to V	From 1:1 to 10:1	± 0.04 %
with seal(s)	F to V	From 10:1 to 60:1	± (0.04 + 0.005 x TD - 0.05) %
Mnemonic			
P3, F3, E3,	C	From 1:1 to 5:1	± 0.04 %
S3, F2	C	From 5:1 to 10:1	± (0.008 x TD) %
266GRT	F to V	From 1:1 to 10:1	± 0.065 %
with seal(s)	F to V	From 10:1 to 60:1	± (0.0065 x TD) %
Mnemonic			
different	C	From 1:1 to 5:1	± 0.065 %
from above	C	From 5:1 to 10:1	± (0.013 x TD) %

Model	Sensor	For TD range	Measuring error
266ART	F to R	From 1:1 to 10:1	± 0.04 %
with seal(s)	F to R	From 10:1 to 20:1	± (0.04 + 0.005 x TD - 0.05) %
Mnemonic			
P3, F3, E3,	C	From 1:1 to 5:1	± 0.04 %
S3, F2			
266ART	F to R	From 1:1 to 10:1	± 0.065 %
with seal(s)	F to R	From 10:1 to 20:1	± (0.0065 x TD) %
Mnemonic			
different	C	From 1:1 to 5:1	± 0.065 %
from above			

Model	Pabs sensor (second sensor for 266MRT)	Measuring range 41 MPa, 410 bar, 5,945 psi
266MRT	C to R	80 kPa, 800 mbar, 321 inH2O

Accuracy rating for DDS version

Model	Sensor	For TD range	Measuring error
266GRT	F to V	From 1:1 to 10:1	± 0.06 %
with seal(s)			
Mnemonic			
P3, F3, E3,	C	From 1:1 to 5:1	± 0.06 %
S3, F2			
266GRT	F to V	From 1:1 to 10:1	± 0.1 %
with seal(s)			
Mnemonic			
different	C	From 1:1 to 5:1	± 0.1 %
from above			

Stability

± 0.15 % (± 0.25 % for DDS) of URL over a 10 years period*
(± 0.05 % (± 0.1 % for DDS) URL/year)

* Value calculated over the base transmitter model (266xSH) and under stable reference conditions according to IEC 60770 ambient temperature of 20 °C (68 °F), relative humidity of 65 %, atmospheric pressure of 1013 hPa (1013 mbar).

...Specification – performance

Ambient temperature

per 20K change between the limits of –40 °C to +85 °C
(per 36 °F change between the limits of –40 to +185 °F):

Model	Sensor	For TD range	
266MRT	C to R	10:1	± (0.03 % URL + 0.045 % span)
266GRT	C and F	10:1	± (0.06 % URL + 0.09 % span)
266GRT	L to V	10:1	± (0.03 % URL + 0.045 % span)
266ART	C and F	5:1 (C) 10:1 (F)	± (0.06 % URL + 0.09 % span)
266ART	L to R	10:1	± (0.03 % URL + 0.045 % span)

Ambient temperature for DDS version

for an ambient temperature change from –10 °C to +60 °C
(+14 to +140 °F):

Model	Sensor	For TD range	
266GRT	C and F	10:1	± 0.08 % URL
266GRT	L to V	10:1	± 0.06 % URL

per 10K change between the limits of –40 °C to –10 °C or
+60° to +85 °C (per 18 °F change between the limits of –40
to +14 °F or +140° to +185 °F):

Model	Sensor	For TD range	
266GRT	C and F	10:1	± 0.05 % URL
266GRT	L to V	10:1	± 0.045 % URL

Model 266MRT / Absolute pressure sensor

For the entire temperature range of 125 K, within the
limits of –40 °C to 85 °C:

- **zero signal**
For sensors C to R:
40 kPa, 400 mbar, 160 inH₂O
(absolute pressure sensor 41MPa, 410 bar, 5945 psi)
- **measuring span**
For sensors C to R:
0.3 MPa, 3 bar, 43.5 psi
(absolute pressure sensor 41 MPa, 410 bar, 5945 psi)

REFER TO S26 SEALS ERRORS IN THE S26 DATASHEET FOR
TEMPERATURE ADDITIONAL EFFECTS OF REMOTE/
DIRECT MOUNT SEAL(S)

Static pressure

Model 266MRT with diaphragm seal(s)
(zero signal errors may be calibrated out at operating
pressure)

Measuring range	Sensors C, F, L, N	Sensor R
Zero signal error	Up to 100 bar: 0.05 % URL	Up to 100 bar: 0.1 % URL
	> 100 bar: 0.05 % URL/100 bar	> 100 bar: 0.1 % URL/100 bar
Span error	Up to 100 bar: 0.05 % span	Up to 100 bar: 0.1 % span
	> 100 bar: 0.05 % span/100 bar	> 100 bar: 0.1 % span/100 bar

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.

Electromagnetic field

Meets all the requirements of EN 61326 for surge
immunity level (of NAMUR NE 21 on request).

Common mode interference

No effect from 100Vrms @ 50Hz, or 50 V DC

Specification – physical

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

Materials (Model 266MRT only – Side without diaphragm seal)

Process isolating diaphragms*

AISI 316 L ss; Hastelloy® C-276; Monel 400®; Tantalum.
A remote seal can be selected with required diaphragm material (refer to high pressure side).

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

Stainless steel 316 (1.4408) and 316L (1.4404) (*);
Hastelloy® C-276 (**); Monel 400® .

Bolts and nuts

AISI 316 ss bolts Class A4–80 and nuts Class A4-70 per ISO 3506;
AISI 316 ss bolts and nuts Class A4–50 per ISO 3506, in compliance with NACE MR0175 Class II (std. static only).
Stainless steel per ASTM-A-453 grade 660D, in compliance with NACE MR0175 Class II (high static only).

Mounting bracket**

Galvanized C steel with chromium passivation; stainless steel AISI 316L.

Gaskets*

Viton® (FPM); Buna (NBR); EPDM; PTFE; graphite.

Materials (Model 266MRT, 266GRT, 266ART)

Seal side process diaphragm (remote/direct mount seal)*

AISI 316 L ss; Hastelloy® C-276; Hastelloy® C-2000;
Inconel 625; Tantalum; AISI 316 L ss gold plated;
AISI 316 L ss or Hastelloy® C-276 with anti-stick coating;
AISI 316 L ss with anti-corrosion coating;
Superduplex ss (UNS S32750 to ASTM SA479);
Diaflex (AISI with anti-abrasion treatment).

Extension material*

AISI 316 L ss (also for Diaflex and gold plated diaphragms);
Hastelloy® C-276; AISI 316 L ss or Hastelloy® C-276 with coating same as diaphragm

Seal side fill fluid

Silicone oil-PMX 200®; Silicone oil for high temperature;
Low viscosity silicone oil-Baysilone® M5; Inert-Galden®;
Silicone Polymer-Syltherm XLT®; Glycerin Water; Vegetable oil-Neobee® M-20; Mineral oil-Esso Marcol 152®.

Electronic housing and covers

Aluminium alloy (copper content ≤ 0.3 %) with baked epoxy finish (colour RAL9002); AISI 316 L ss.

Covers O-ring

Buna N.

Plates

Transmitter nameplate: AISI 316 ss screwed to the electronics housing.

Certification plate and optional tag/calibration plate: self-adhesive attached to the electronics housing or AISI 316 ss fastened to the electronics housing with rivets or screws.

Optional wired-on customer data plate: AISI 316 ss.

For DDS:

wired-on AISI 316 ss plates for cross identification of Primary-Secondary on both devices.

Laser printing on metal or thermal printing on self-adhesive.

For AISI 316 L ss housing it is mandatory to select option I2 or I3 for plates in AISI 316 ss.

Optional wired-on customer data plate can be populated with customized data (4 lines of 32 characters 4 mm/0.16 in high).

Customized data have to be provided separately: in case of no data, the wired-on plate will be delivered blank.

Local adjustments (zero, span and write protect)

For Standard HART version:

- Internal for zero and span (on connection board)
- External non-intrusive for zero, span and write protect in glass filled polyphenylene oxyde, removable (code R1).

For all other versions:

- External non-intrusive for zero, span and write protect in glass filled polyphenylene oxyde, removable.

Calibration

Standard:

- 0 to measuring range upper limit, for ambient temperature and atmospheric pressure

Optional:

- To specified measuring span

Device is delivered with a standard 4-point calibration record.

* Transmitter parts that come into contact with fluid.

** U-bolt material: stainless steel AISI 400;
screw material: high-strength alloy steel or stainless steel AISI 316.

Specification – physical

Optional extras

Mounting brackets (code Bx)

For vertical and horizontal 60 mm (2 in) pipes or wall mounting

LCD display (code Lx)

Can be rotated in 90° increments into 4 positions

Additional tag plates (code Ix)

Code I2: For for tag and/or calibration details (up to 20 characters), in stainless steel, fastened to the transmitter housing.

Code I1: For customer data (4 lines of 30 characters each), in stainless steel, wired to the transmitter housing

Overvoltage protection (code S2)

Cleaning stage for oxygen application (O2) (code P1)

Certificates (inspection, implementation, characteristics, material certificate) (codes Cx and Hx)

Name plate and operating instruction language (codes Tx and Mx)

Communication plug connector (code Ux)

Valve manifold installation (code A1)

Factory installation and pressure test of the ABB M26 valve manifold.

Process connections

On standard process flange: 1/4-18 NPT on the process axis

Via adapter: 1/2-14 NPT on the process axis

Fastening screw threads: 7/16–20 UNF with 41.3 mm center distance

Refer to S26 pages for process connection variants through diaphragm seal.

Electrical connections

Two 1/2-14 NPT or M20 x 1.5 threaded bores for cable glands, directly on housing.

Special communication connector (on request)

- HART: Straight or angled Harting Han 8D connector and one mating plug.
- FOUNDATION fieldbus, PROFIBUS PA: M12 x 1 or 7/8 in plug

Terminals block

HART version: Three connections for signal / external display, for wire cross sections of up to 2.5 mm² (14 AWG), and connection points for testing and communication purposes

Fieldbus versions: Two signal connections (bus connection) for wire cross sections of up to 2.5 mm² (14 AWG)

DDS version: three terminals for signal/external meter wiring up to 2.5 mm² (14 AWG), also connection points for test and communication purposes. Additional four terminals to connect Primary to Secondary and vice versa.

Grounding

Internal and external ground terminals are provided for 6 mm² (10 AWG) wire cross sections.

Mounting position

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

In applications where a dynamic inclined installation is required (e.g. naval applications), the maximum error (excluding capillary effects) can be up to 2,5 mbar for differential pressure and multivariable / multisensory models, 0,5 mbar for 266GRT and 2 mbar for 266ART.

Such error might be resulting in a deviation from the standard accuracy with percentual magnitude depending on the range of the selected device.

In case of non-dynamic inclined installations, this effect can be eliminated by performing a zero calibration in the field.

Please contact ABB to assess more in details on the installation effects

Weight

(without options or diaphragm seal)

Model 266MRT: Approx. 3.7 kg (8.2 lb)

Models 266GRT, 266ART: Approx. 2 kg (4.4 lb)

Add 1.5 kg (3.3 lb) for stainless steel housings.

Add 650 g (1.5 lb) for packaging.

Take into account additional weight of up to 50 kg (110 lb) for diaphragm seals.

Packaging

Carton.

Specification – 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	kPa
4 mA	Zero
20 mA	Upper Range Limit (URL)
Output	Linear
Damping	1 s
Transmitter failure mode	Upscale
Tag	Blank (up to 20 alphanumeric characters - long; only last 8 visible on display - short)
Optional LCD display	PV in kPa; output in mA and in percentage on bargraph

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 or by a PC running the configuration software with DTM for 266 models. The transmitter database is customized with specified flange type and material, O-ring and drain/vent materials and meter code option.

Tag and Calibration

Tag and/or specific calibrated span can be requested when configuring the device.

Two tag types are available: Short Tag and Long Tag.

See below table for details about tag type applicability / presence:

Type	Max Length	On Display	On Certification	On Device Label
Short Tag	8 digits	YES	YES	NO
Long Tag	32 digits	NO	YES	YES

In case no specific indication will be given about the tag type, data will be considered as Long Tag by default.

In case tag is required on the optional wired-on customer data plate (optional digits I1, I3) specific indication needs to be given.

On DDS version the Long Tag is used to interconnect the primary and secondary devices and it is not changeable by the User.

Custom configuration (option N6)

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

For HART protocol available engineering units of pressure measure are :

Pa, kPa, MPa
 inH₂O@4 °C, mmH₂O@4 °C, psi
 inH₂O@68 °F, ftH₂O@68 °F, mmH₂O@68 °F
 inHg, mmHg, Torr
 g/cm², kg/cm², atm
 mbar, bar

These and others are available for PROFIBUS and FOUNDATION Fieldbus.

Specification – configuration

Transmitter with FOUNDATION Fieldbus communication

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 the analog input function block FB1 is 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 s
Tag	PI000 (up to 32 alphanumeric characters; only 8 visible on display)
Optional LCD display	PV in kPa; output in percentage on bargraph

The analog input function block FB2 and FB3 are configured respectively for the sensor temperature measured in °C and for the static pressure measured in MPa.

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.

Custom configuration (option N6)

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

Transmitter with PROFIBUS PA communication

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:

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 s
Address (set by local key)	126
Tag	PI000 (up to 32 alphanumeric characters; only 8 visible on display)
Optional LCD display	PV in kPa; output in percentage on bargraph

Any or all the above configurable parameters, including the range values which must be the same unit of measure, can be easily changed by a PC running the configuration software with DTM for 266 models. The transmitter database is customized with specified flange type and material, O–ring and drain/vent materials and meter code option.

Custom configuration (option N6)

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

Dimensions

(not for construction unless certified) – dimensions in mm (in)

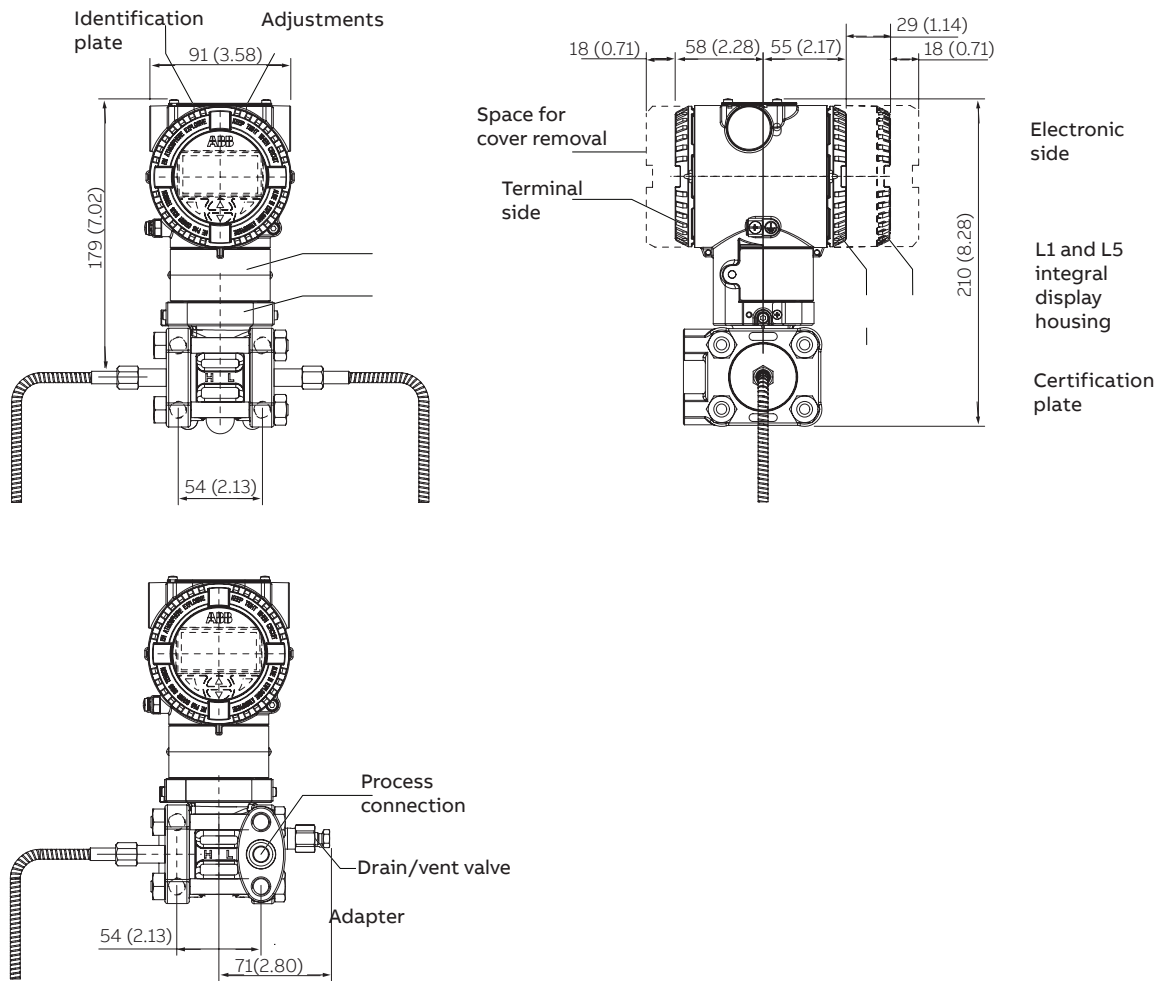
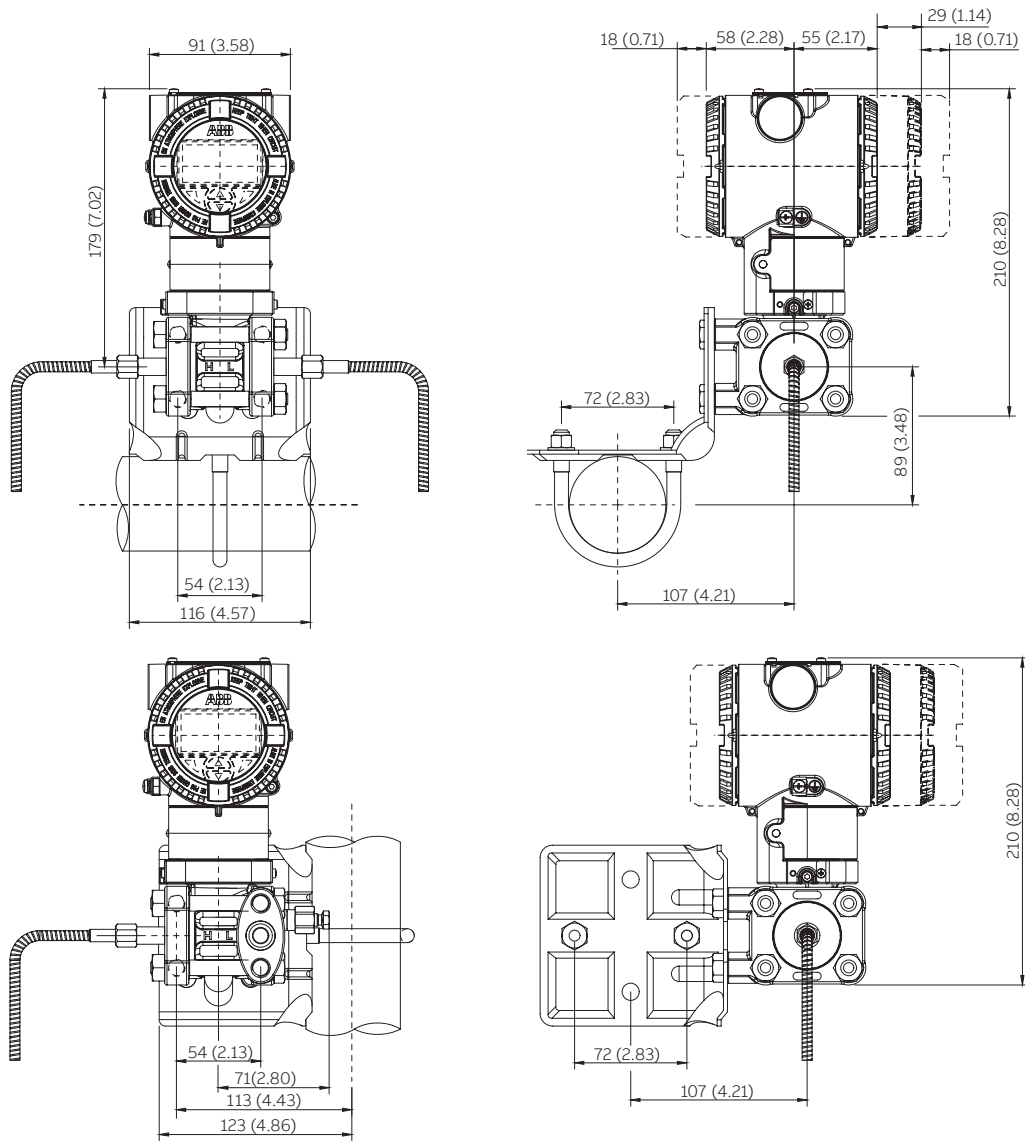


Figure 1 266MRT with barrel housing and remote seal(s)

Important

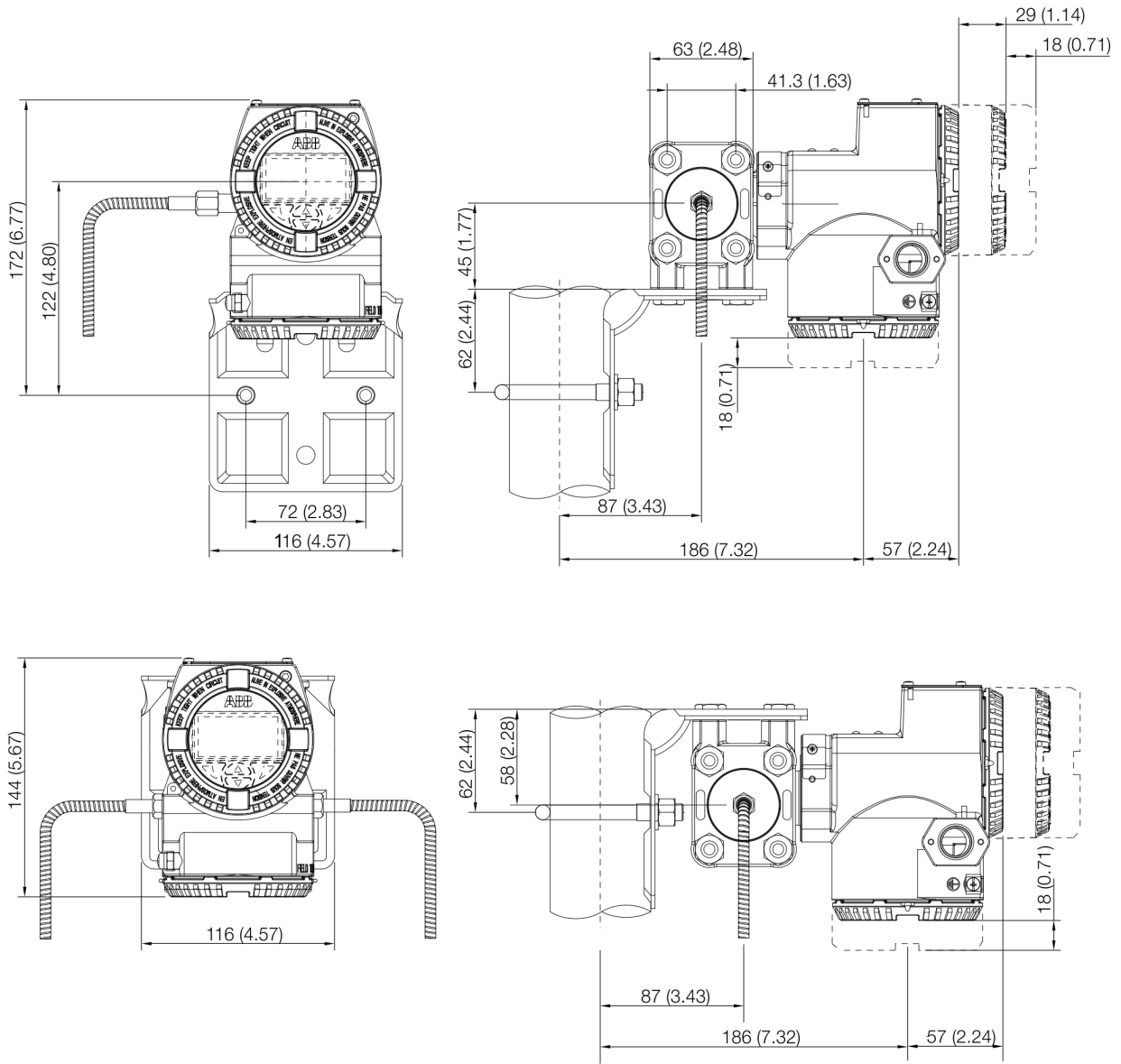
In the case of model 266MRT with only one diaphragm seal, the threaded connection (1/4 – 18 NPT direct or 1/2 – 14 NPT via adapter) of the standard process flange, the gasket groove, and the gasket comply with IEC 61518. The screw-on thread for attaching the adapter or other devices (e.g., manifold) to the process flange is 7/16-20 UNF.

...Dimensions



M10030

Figure 2 266MRT with barrel housing and remote seal(s) on bracket for vertical or horizontal 60 mm. (2 in) pipe



M10031

Figure 3 266MRT with DIN housing and remote seal(s) on bracket for vertical or horizontal 60 mm. (2 in) pipe

...Dimensions

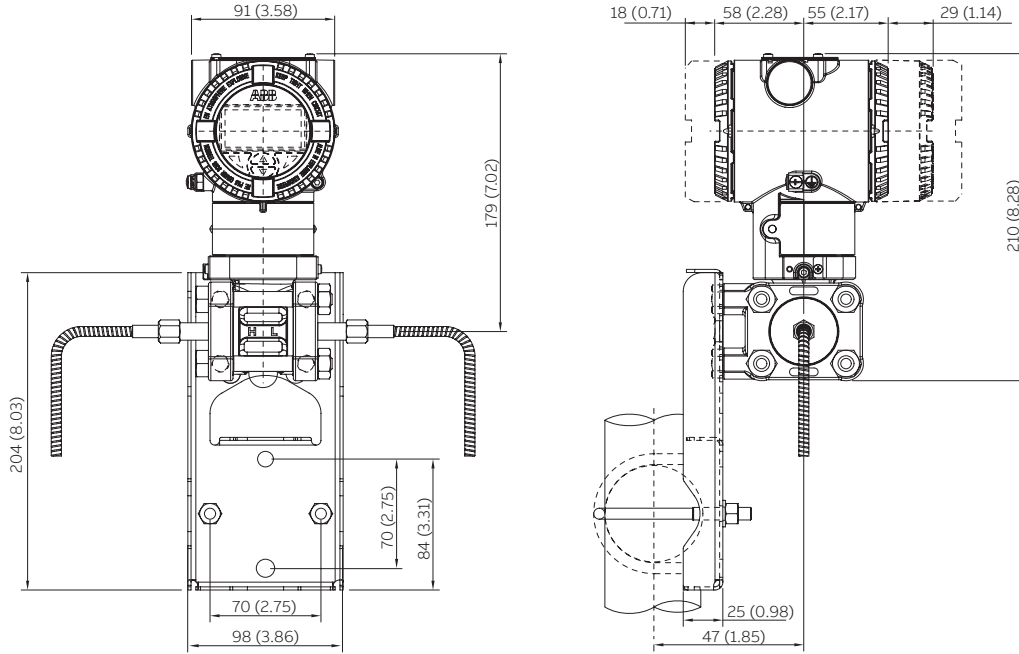
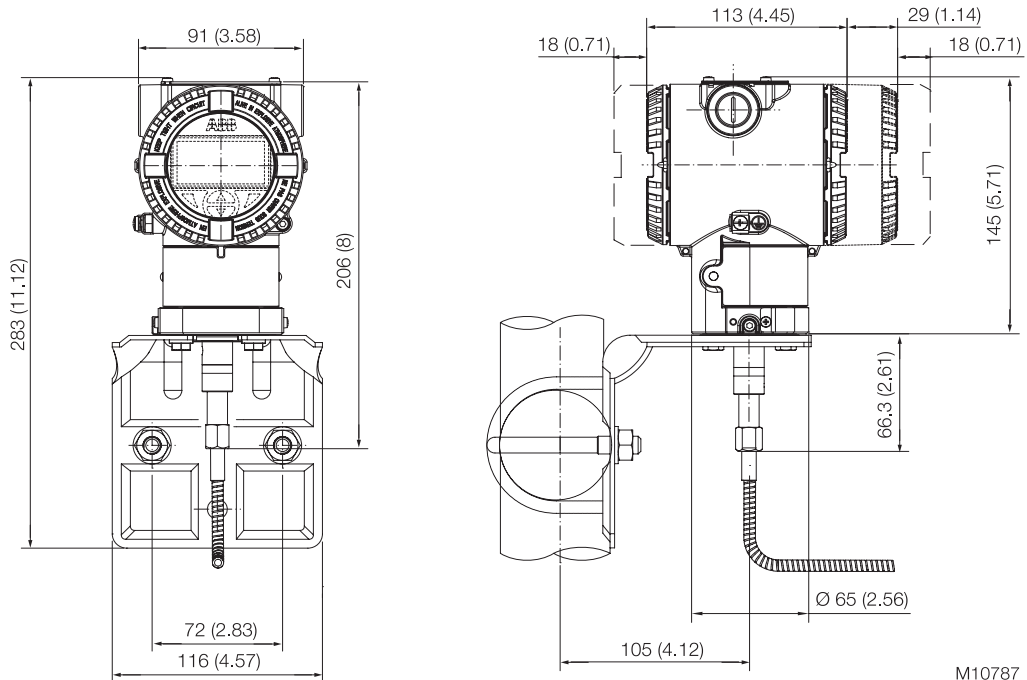


Figure 4 266MRT with barrel housing and remote seal(s) on flat bracket for vertical or horizontal 60 mm. (2 in) pipe



M10787

Figure 5 266GRT, 266ART with barrel housing and remote seal(s) on bracket for vertical or horizontal 60 mm. (2 in) pipe

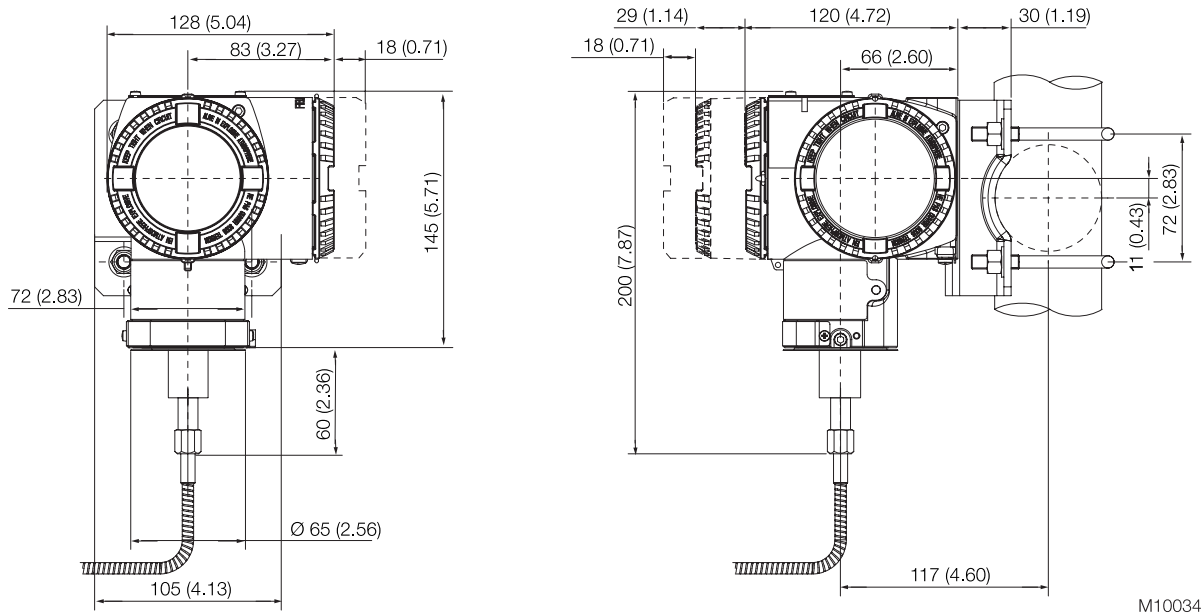


Figure 6 266GRT, 266ART with DIN housing and remote seal(s) on bracket for vertical or horizontal 60 mm. (2 in) pipe

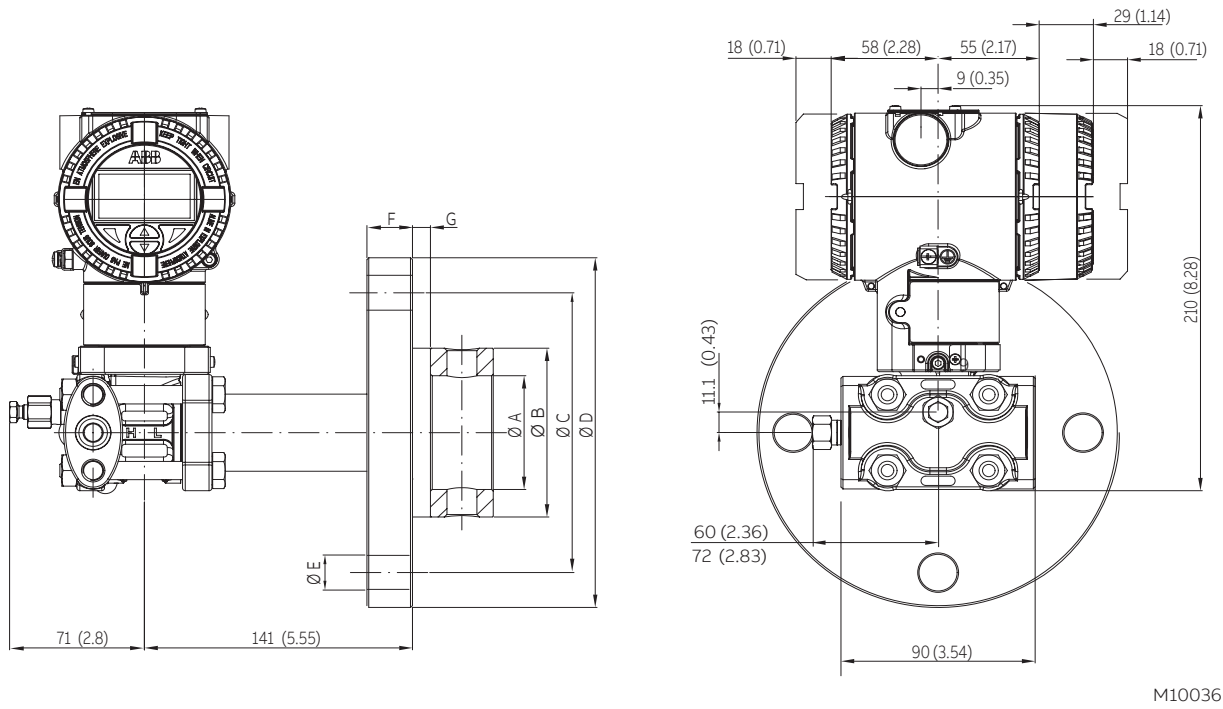


Figure 7 266MRT with barrel housing and direct mount seal S26RA/S26RE/S26RJ rotating flange Raised Face flush diaphragm (For dimensions of S26 seals refer to the S26 datasheet)

...Dimensions

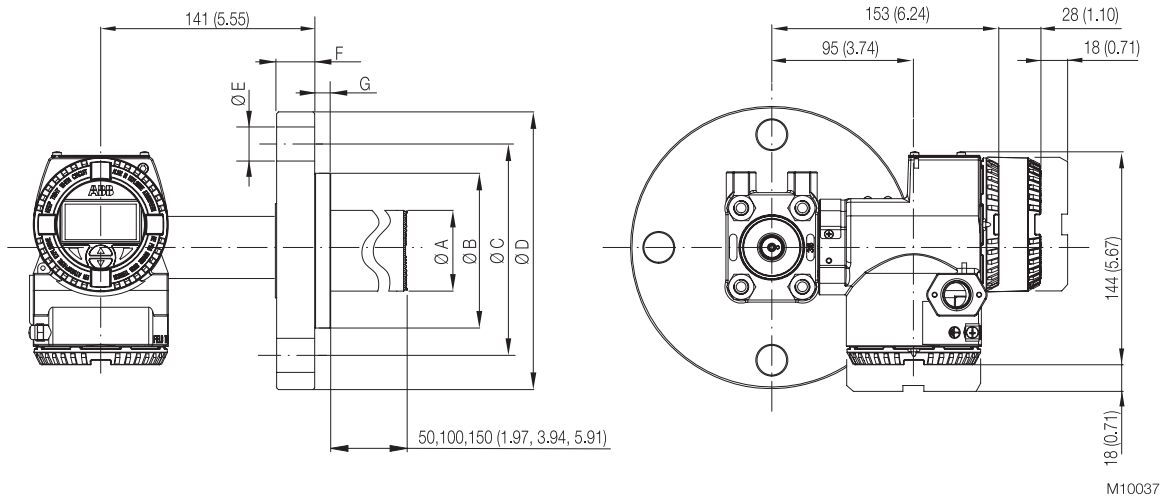


Figure 8 266MRT with DIN housing and direct mount seal S26RA/S26RE/S26RJ rotating flange Raised Face extended diaphragm (For dimensions of S26 seals refer to the S26 datasheet)

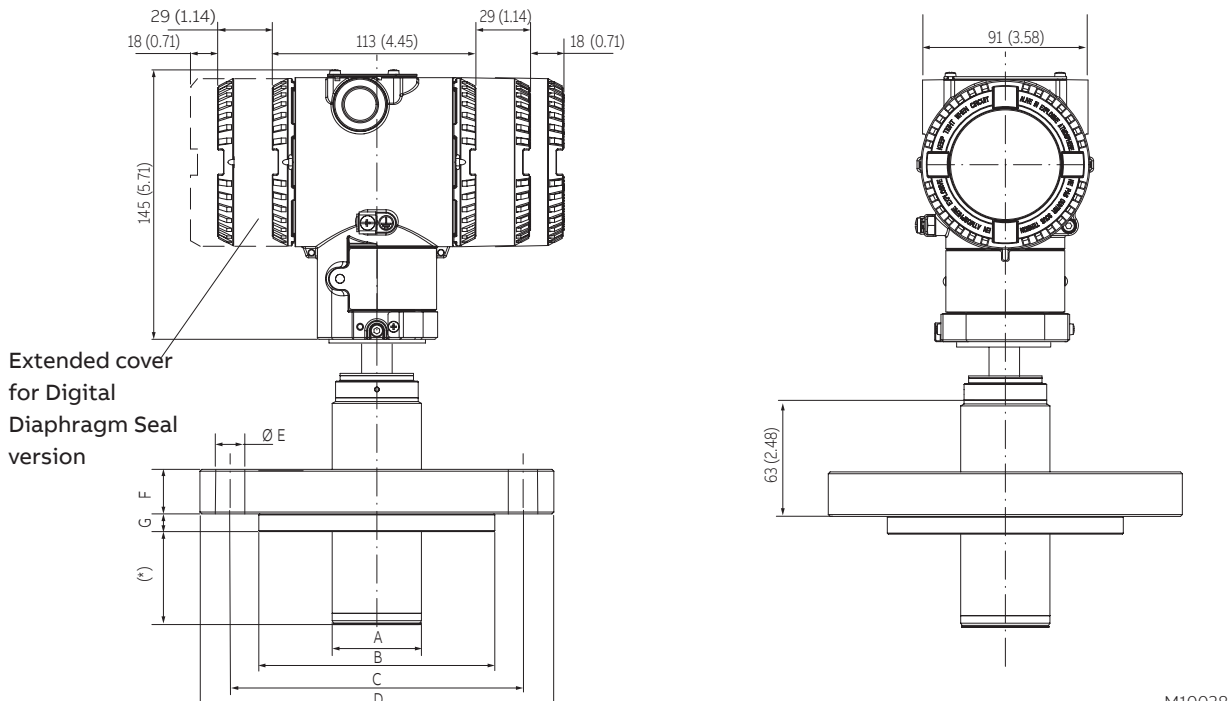


Figure 9 266GRT, 266ART with barrel housing and direct mount seal S26RA/S26RE/S26RJ flanged Raised Face extended diaphragm (For dimensions of S26 seals refer to the S26 datasheet)

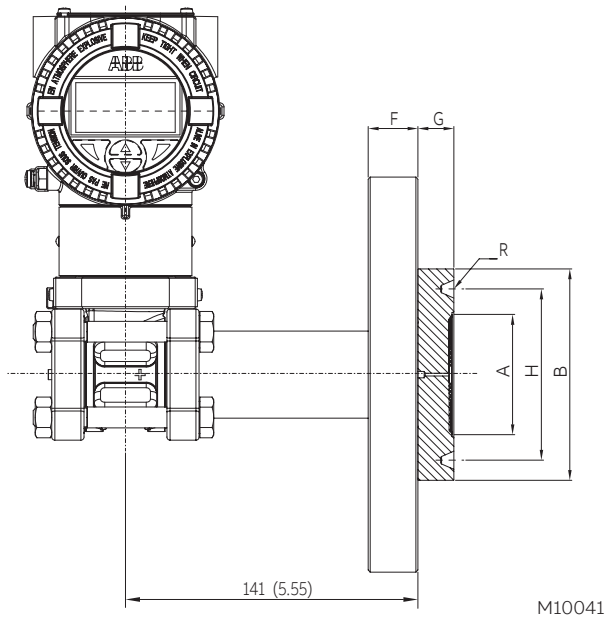


Figure 10 266MRT with barrel housing and direct mount seal S26RR flanged Ring Joint flush diaphragm (For dimensions of S26 seals refer to the S26 datasheet)

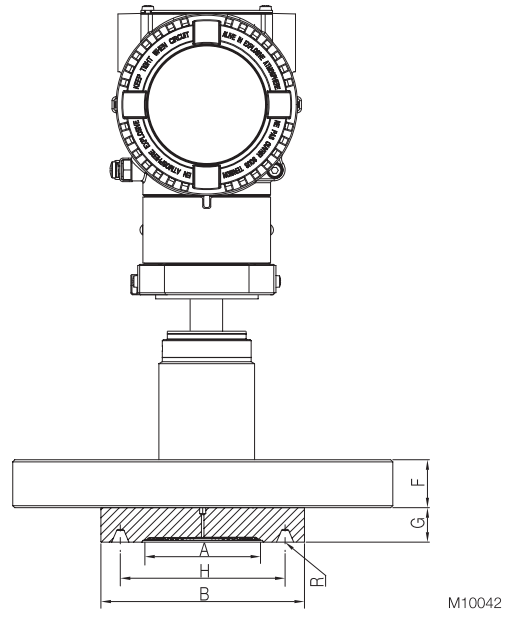


Figure 11 266GRT, 266ART with barrel housing and direct mount seal S26RR flanged Ring Joint flush diaphragm (For dimensions of S26 seals refer to the S26 datasheet)

...Dimensions

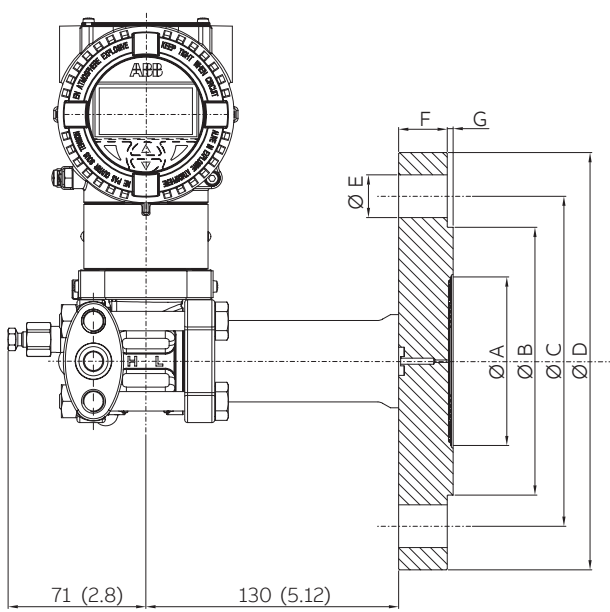


Figure 12 266MRT with barrel housing and direct mount seal S26FA/S26FE fixed flange Raised Face flush diaphragm ASME and EN 1092/1 smooth and Form B1 (flushing ring as option, only for flush version); Form E (For dimensions of S26 seals refer to the S26 datasheet)

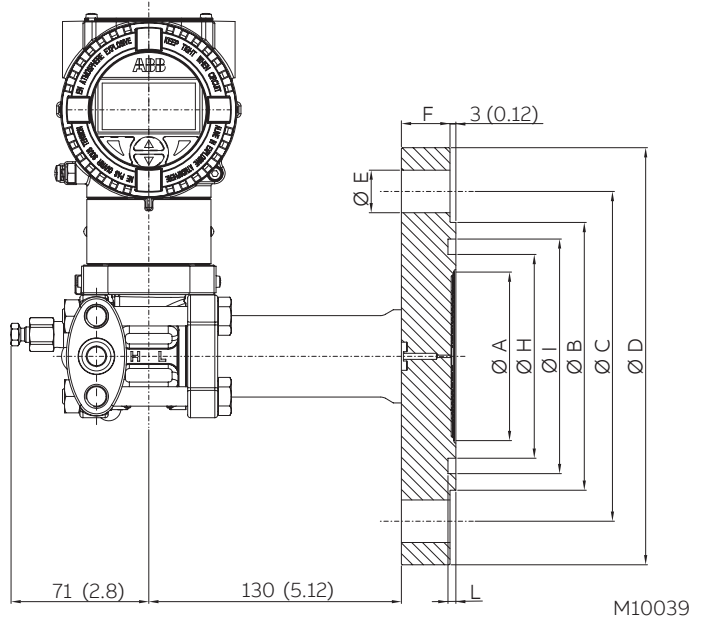


Figure 13 266MRT with barrel housing and direct mount seal S26FA/S26FE fixed flange Raised Face flush diaphragm EN 1092/1 Form D (For dimensions of S26 seals refer to the S26 datasheet)

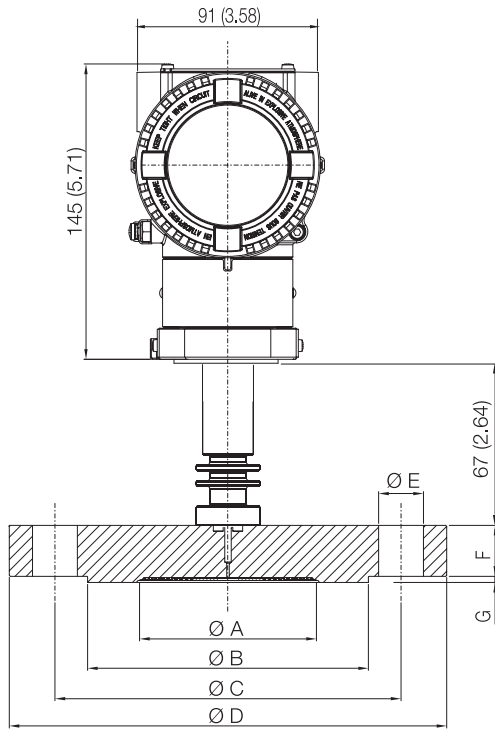


Figure 14 266GRT, 266ART with barrel housing and direct mount seal S26FA/S26FE fixed flange Raised Face ASME and EN 1092/1 smooth and Form B1; Form E (extension not available). (For dimensions of S26 seals refer to the S26 datasheet)

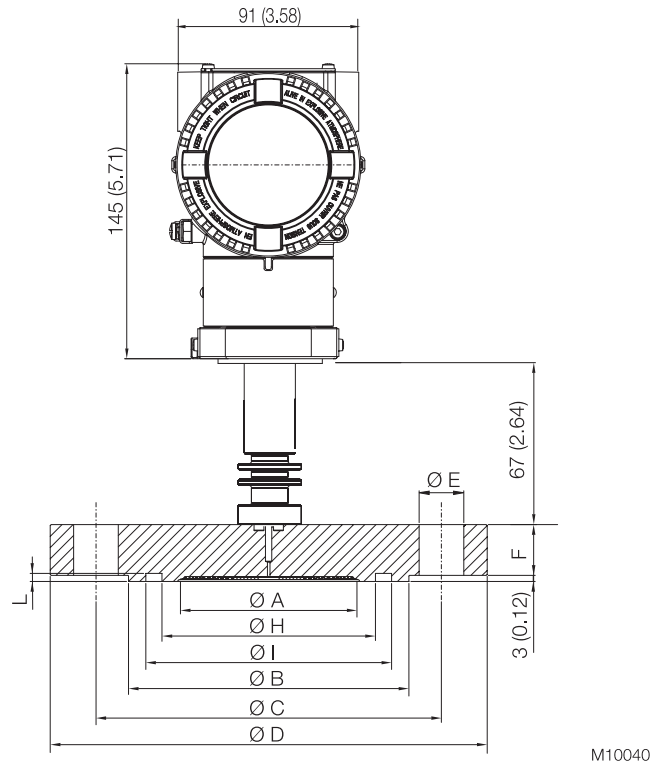
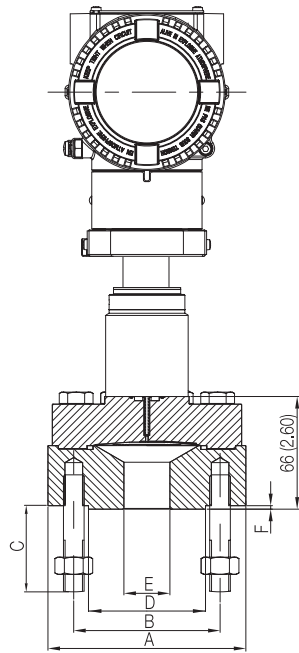


Figure 15 266GRT, 266ART with barrel housing and direct mount seal S26FA/S26FE fixed flange Raised Face EN 1092/1 Form D (For dimensions of S26 seals refer to the S26 datasheet)



M10043b

Figure 16 266GRT, 266ART with barrel housing and direct mount seal S26Mx off-line flanged (For dimensions of S26 seals refer to the S26 datasheet)

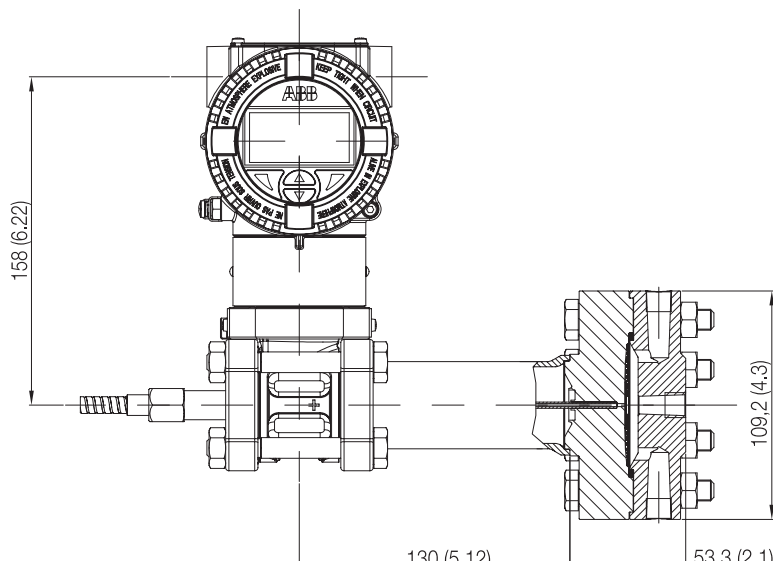


Figure 17 266MRT with barrel housing and direct mount seal S26Mx off-line flanged

...Dimensions

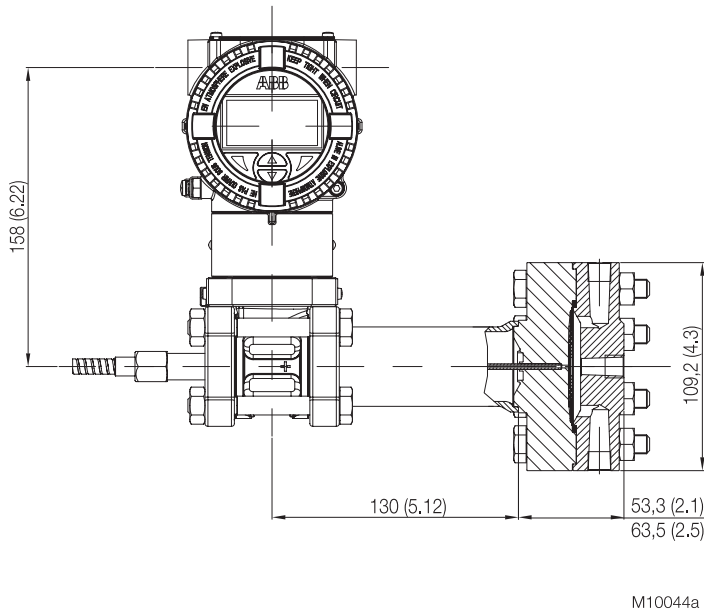


Figure 18 266MRT with barrel housing and direct mount seal S26TT off-line threaded flange

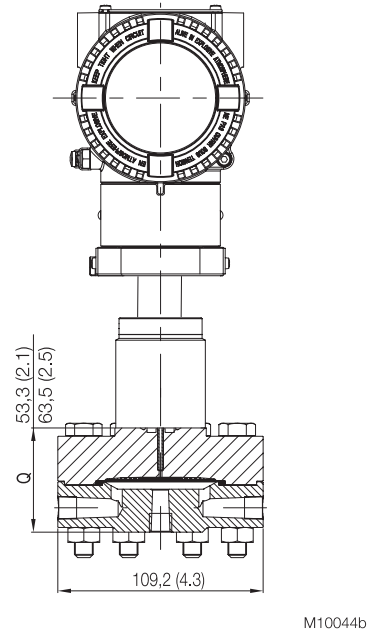


Figure 19 266GRT, 266ART with barrel housing and direct mount seal S26TT off-line threaded flange

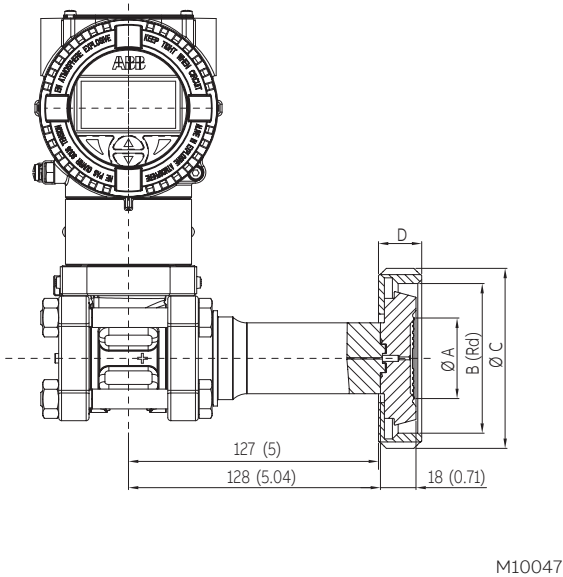


Figure 20 266MRT with barrel housing and direct mount seal S26SS Union Nut (For dimensions of S26 seals refer to the S26 datasheet)

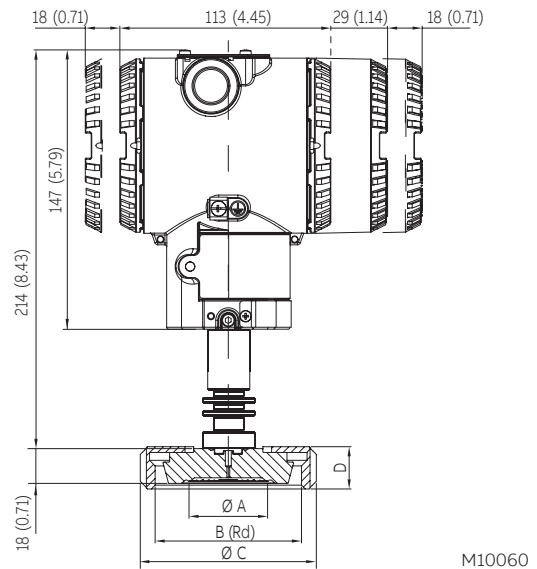
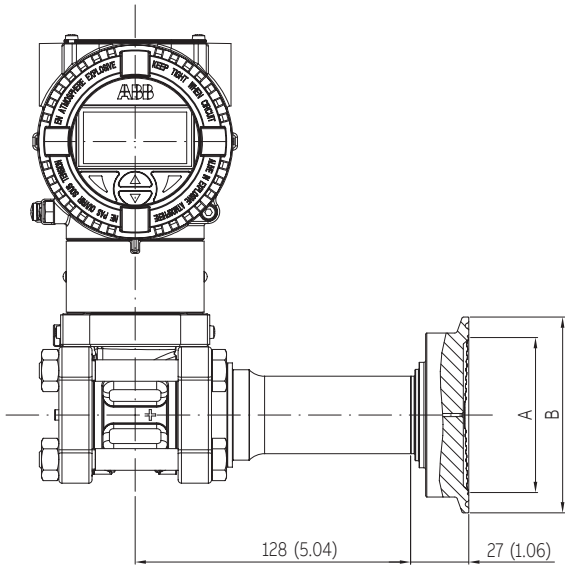
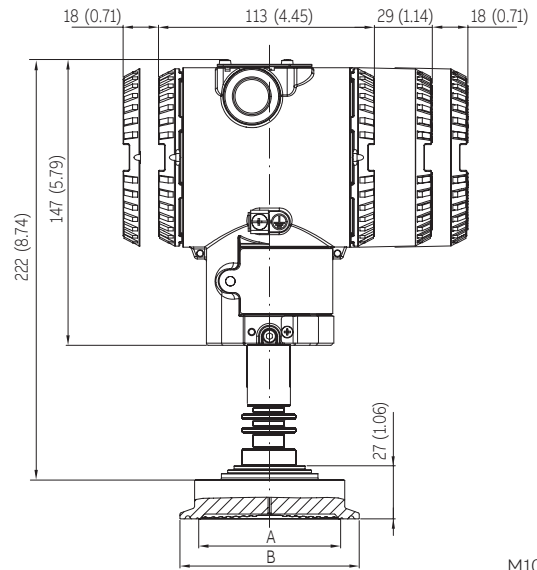


Figure 21 266GRT, 266ART with barrel housing and direct mount seal S26SS Union Nut (For dimensions of S26 seals refer to the S26 datasheet)



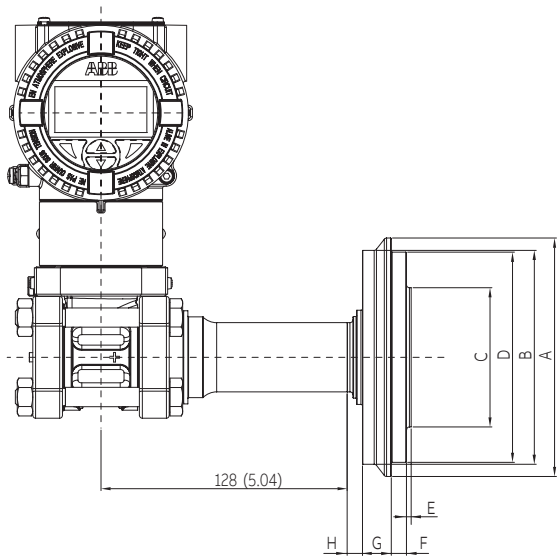
M10046

Figure 22 266MRT with barrel housing and direct mount seal S26SS Triclamp (For dimensions of S26 seals refer to the S26 datasheet)



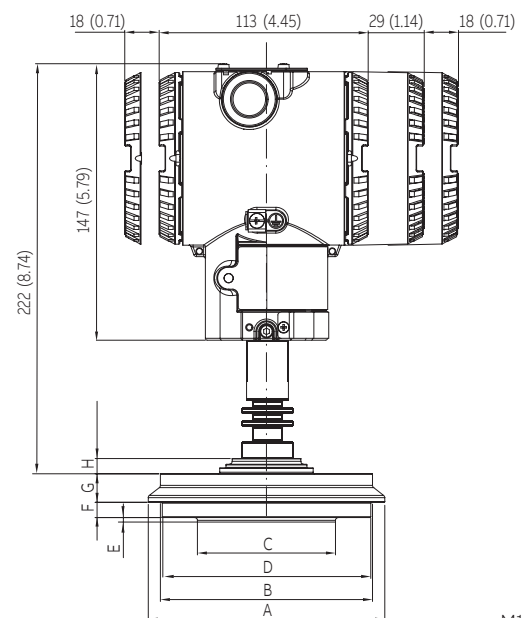
M10059

Figure 23 266GRT, 266ART with barrel housing and direct mount seal S26SS Triclamp (For dimensions of S26 seals refer to the S26 datasheet)



M10048

Figure 24 266MRT with barrel housing and direct mount seal S26SS Cherry Burrell (For dimensions of S26 seals refer to the S26 datasheet)



M10061

Figure 25 266GRT, 266ART with barrel housing and direct mount seal S26SS Cherry Burrell (For dimensions of S26 seals refer to the S26 datasheet)

...Dimensions

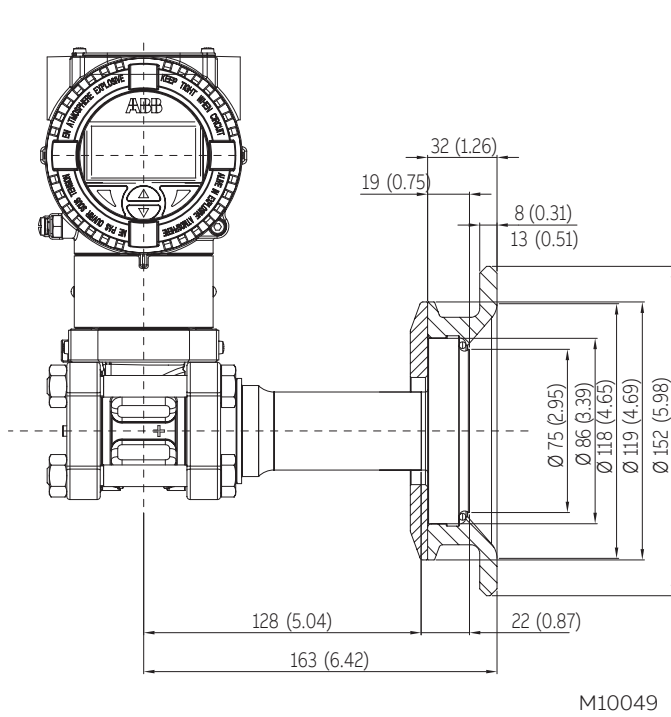


Figure 26 266MRT with barrel housing and direct mount seal S26SS Sanitary flush (For dimensions of S26 seals refer to the S26 datasheet)

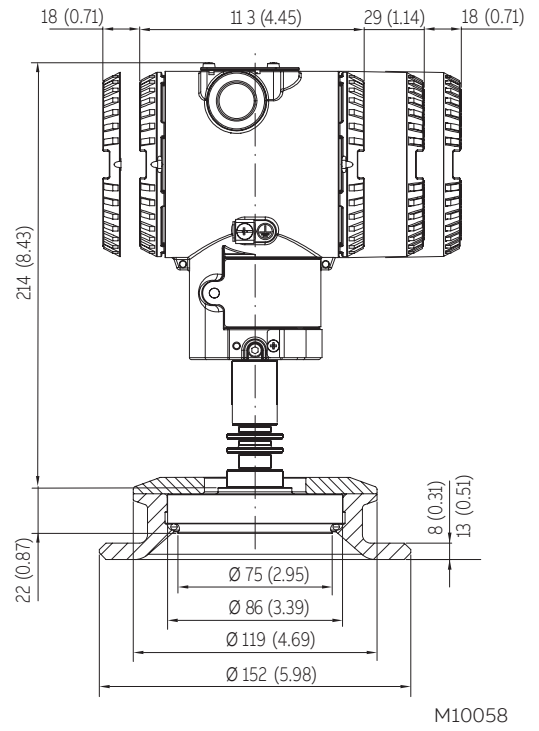


Figure 27 266GRT, 266ART with barrel housing and direct mount seal S26SS Sanitary flush (For dimensions of S26 seals refer to the S26 data sheet)

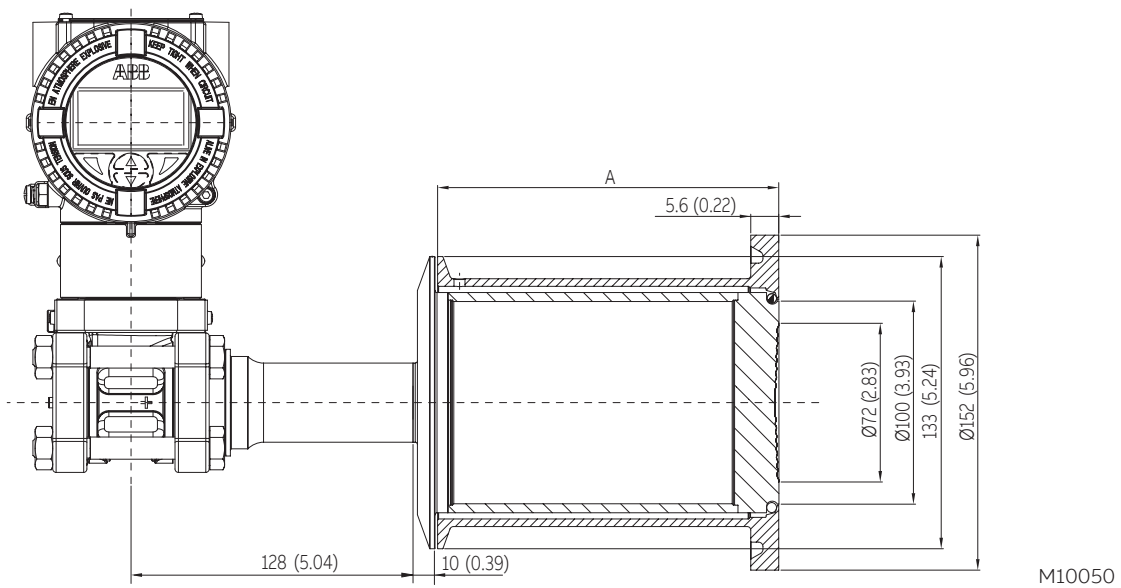


Figure 28 266MRT with barrel housing and direct mount seal S26SS Sanitary extended (For dimensions of S26 seals refer to the S26 datasheet)

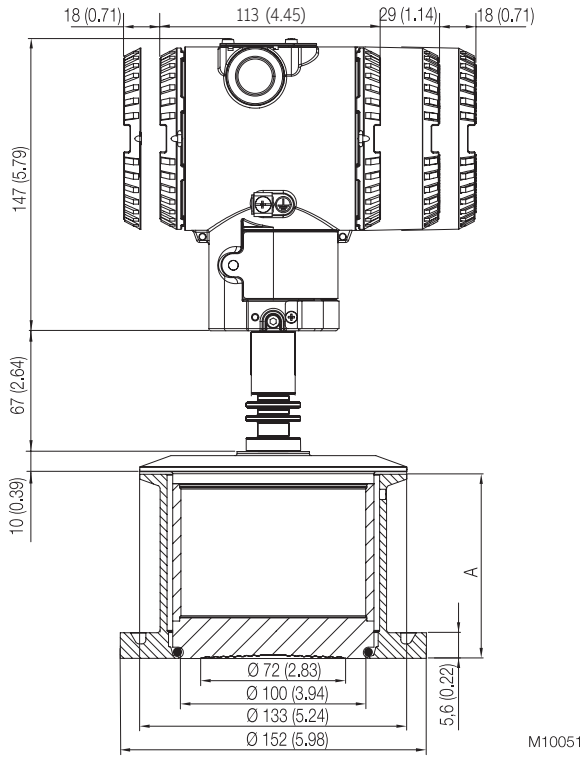


Figure 29 266GRT/ART with barrel housing and direct mount seal S265S Sanitary extended

...Dimensions

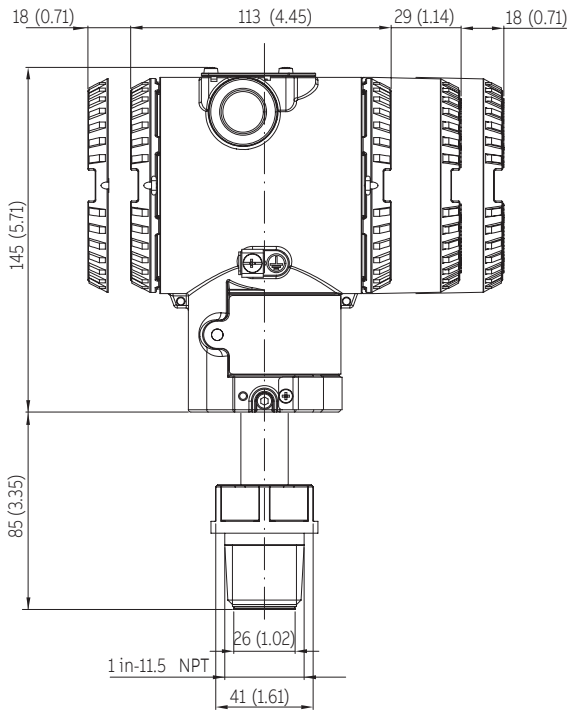


Figure 30 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper 1 in. NPT threaded connections

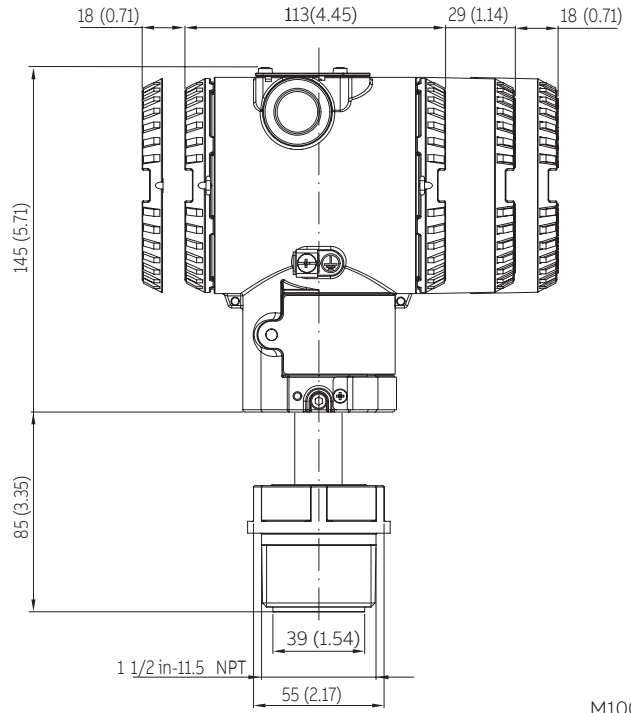


Figure 31 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper 1 1/2 in. NPT threaded connections

M10052

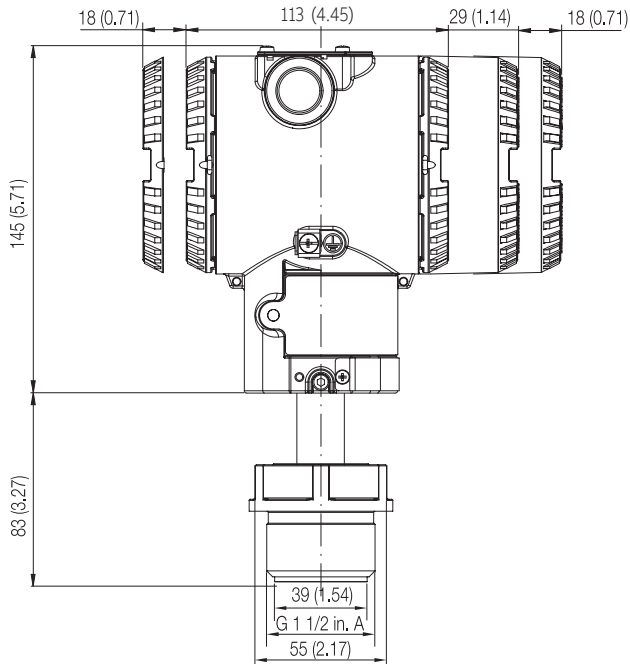


Figure 32 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper 1 in Gas threaded connections

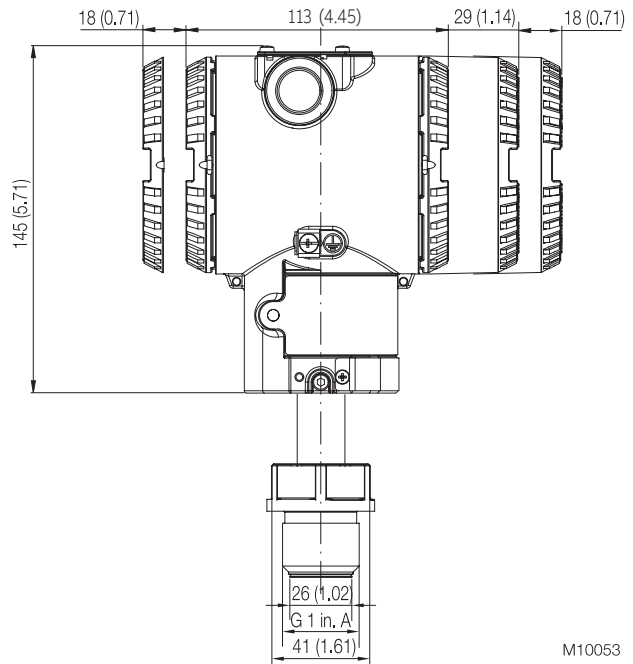


Figure 33 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper 1 1/2 in Gas threaded connections

M10053

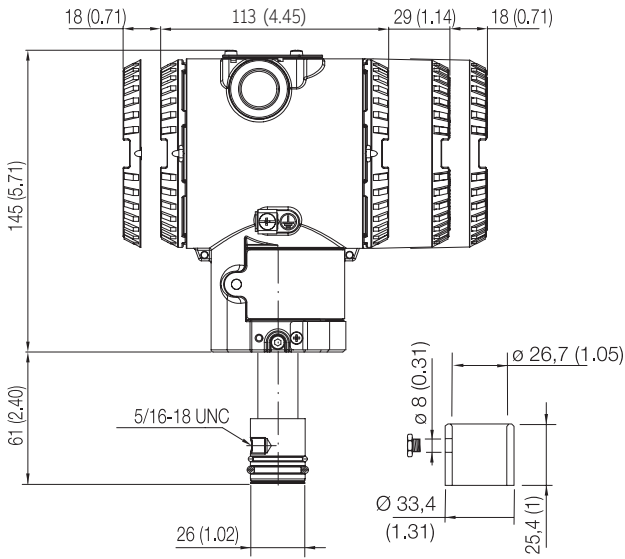


Figure 34 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper 1 in sealing with gasket

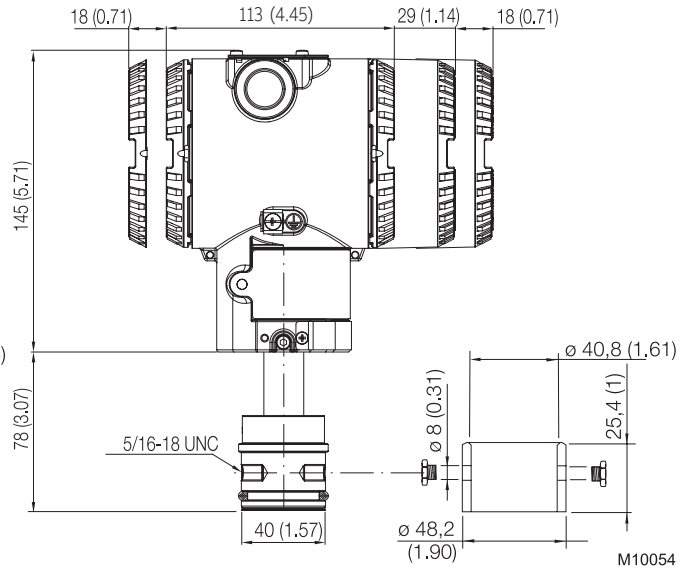


Figure 35 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper 1 1/2 in. sealing with gasket

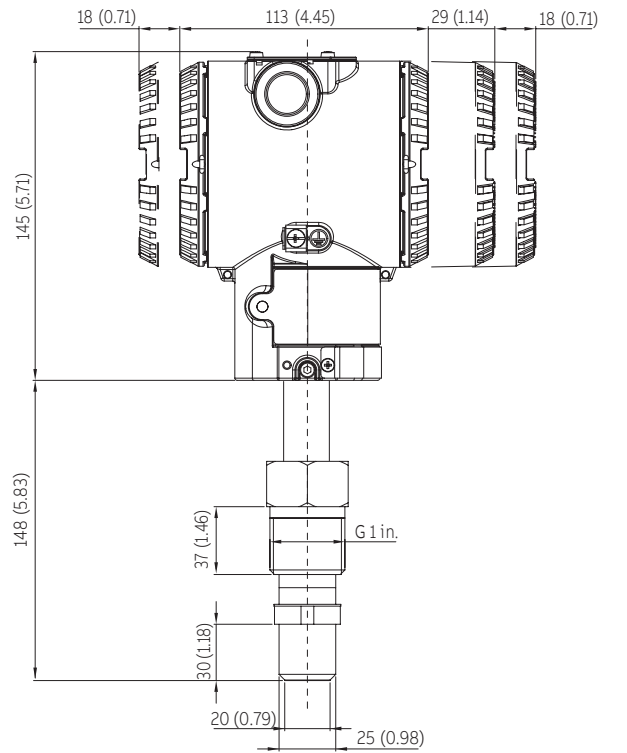


Figure 36 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper ball valve connections

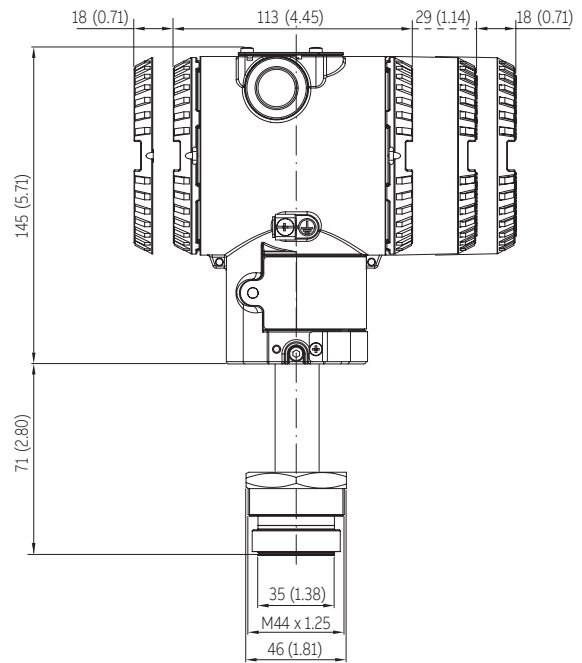


Figure 37 266GRT, 266ART with barrel housing and direct mount seal S26KN pulp and paper to threaded spud

M10055

M10057

...Dimensions

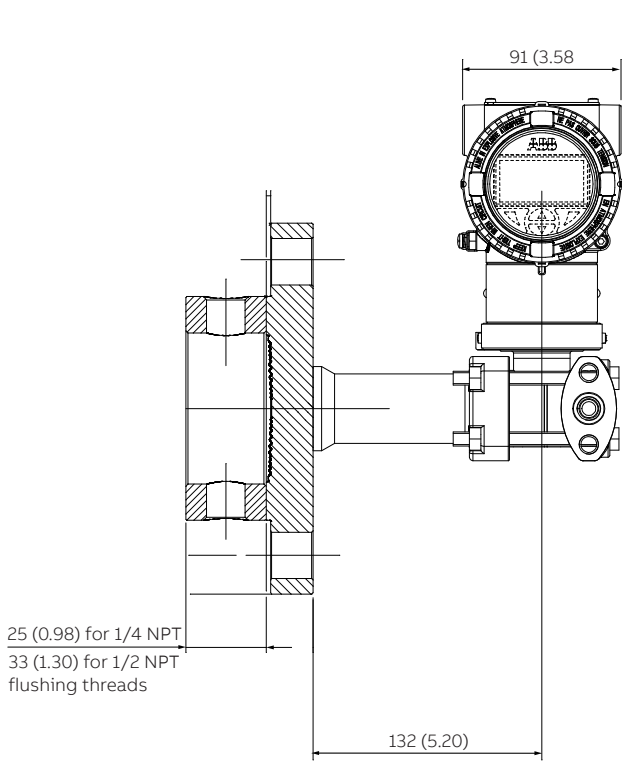


Figure 38 266MRT with barrel housing and direct mount seal S26FE fixed flange

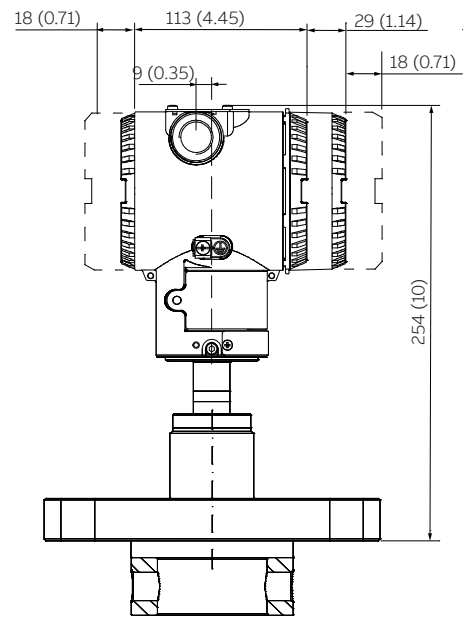
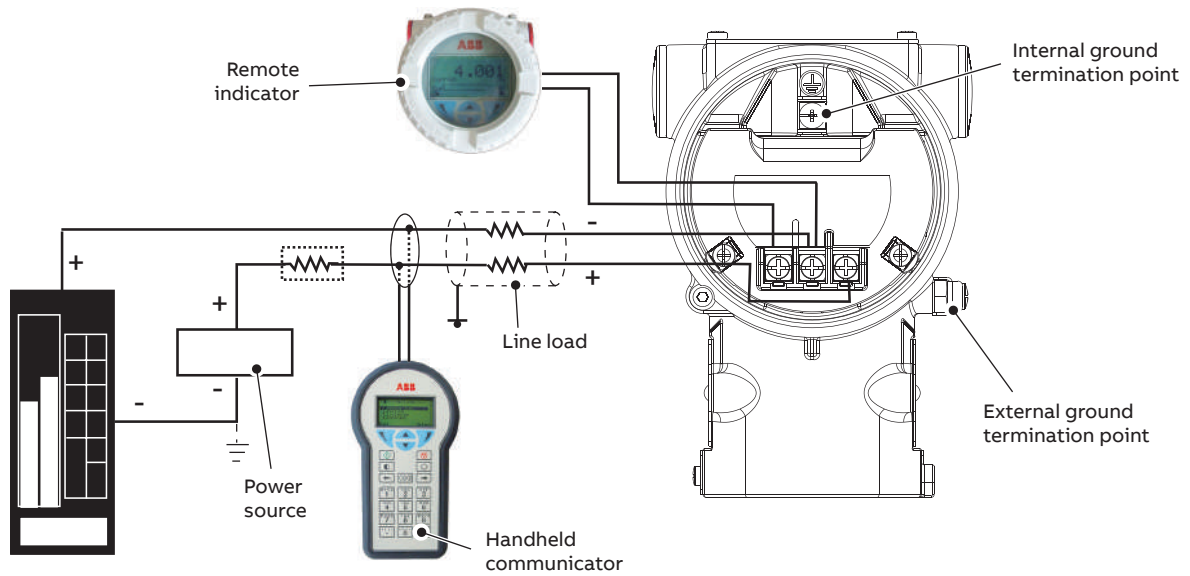


Figure 39 266GRT with barrel housing and direct mount seal S26RE

Electrical connections



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. Maximum voltage drop on external remote indicator is 0.7 V DC.

Figure 63 HART Version

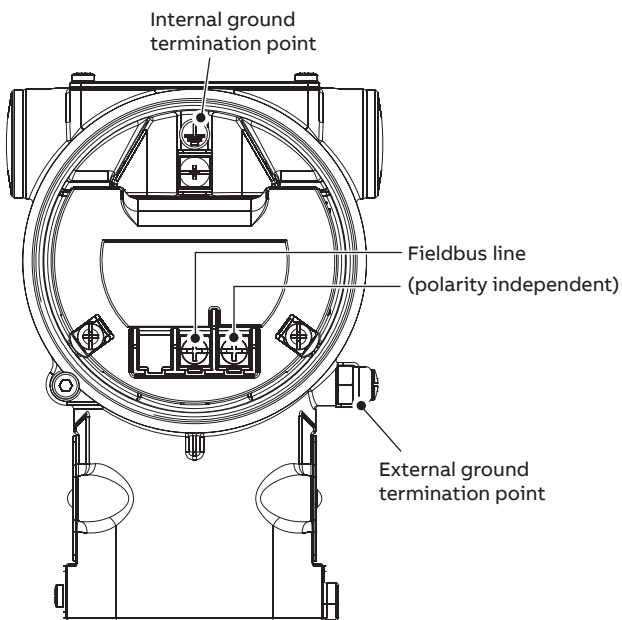


Figure 64 FIELDBUS Versions

...Electrical connections

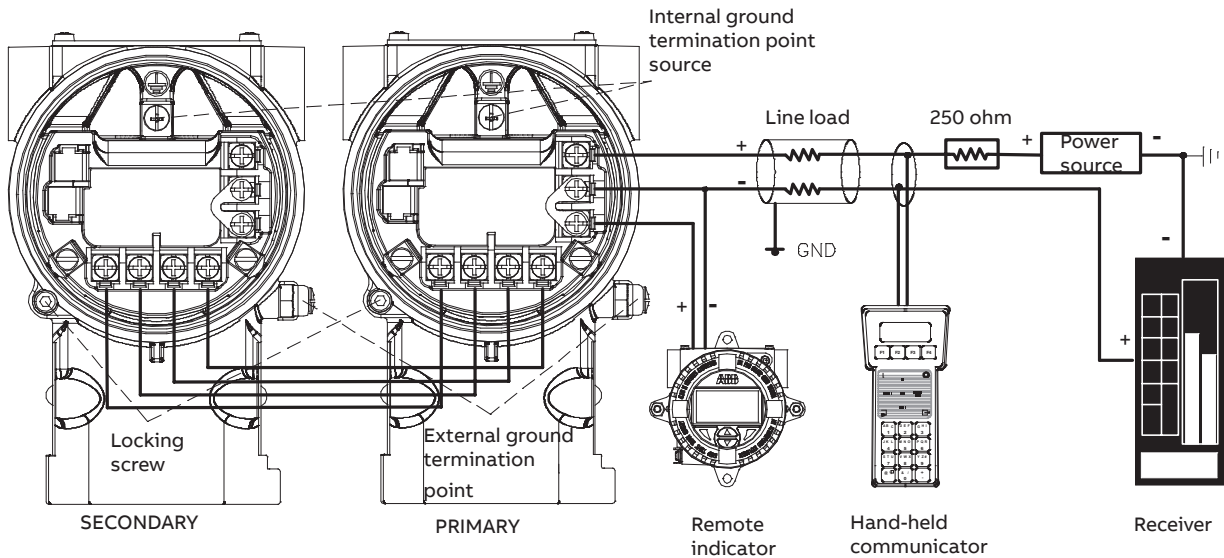


Figure 65 DDS Version

DDS Entity Parameters

Here below the cable parameters to be respected when selecting a connection cable to connect primary and the secondary units.

Shielded cable with 4 conductors (n° 2 twisted pairs)

Temperature range suitable for the application ambient temperature

Compliant with the Hazardous area specifications for Intrinsic Safety and Explosion Proof versions

CABLE PARAMETERS (maximum allowed)

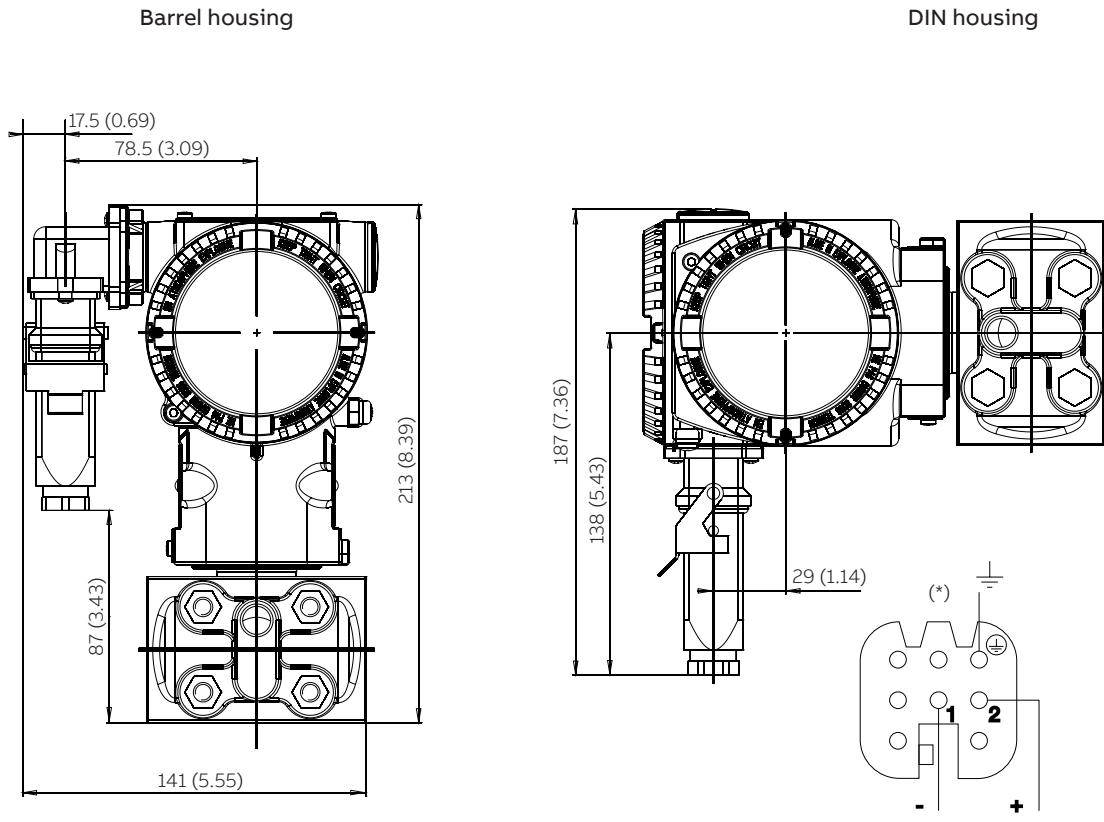
	Intrinsic Safety	Explosion Proof	General Purpose
Cc/c [nF]	10	10	10
Cc/s [nF]	20	20	20
Lc [uH]	100	100	100
l [m]	80	50	150

Cc/c = Total cable to cable capacitance;

Cc/S = Total cable to shield capacitance;

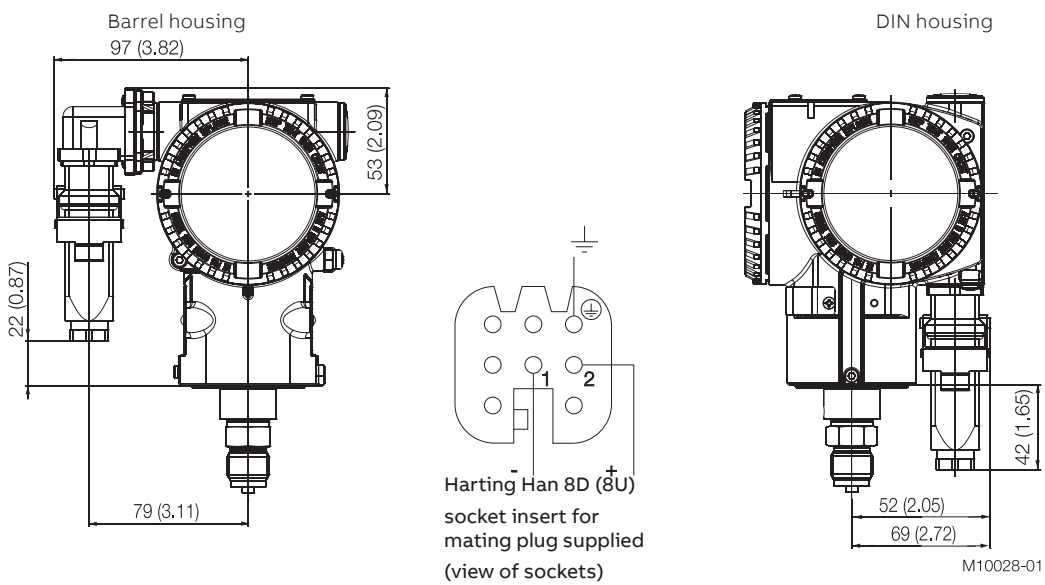
Lc = Total cable inductance;

l = cable length;



M10008-01

Figure 66 Harting Han connection – differential pressure transmitter (application example)



M10028-01

Figure 67 Harting Han plug connector - gauge / absolute pressure transmitter (application example)

Ordering Information

Basic ordering information model 266MRT Differential Pressure Transmitter with remote seal(s), maximum working pressure depending on seal / sensor limits

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

Refer to additional ordering information and specify one or more codes for each transmitter if additional options are required.

Base model - 1st to 6th characters			2 6 6 M R T	X	X	X	X	X	X	X
Differential pressure transmitter with remote seal(s), base accuracy 0.04 %										
Sensor Span Limits – 7th character										
0.6 and 6 kPa	6 and 60 mbar	2.41 and 24 inH2O		C						
0.67 and 40 kPa	6.7 and 400 mbar	2.67 and 160 inH2O		F						
4.17 and 250 kPa	41.7 and 2500 mbar	16.7 and 1000 inH2O		L						
33.3 and 2000 kPa	0.333 and 20 bar	4.83 and 290 psi		N						
167 and 10000 kPa	1.67 and 100 bar	24.2 and 1450 psi		R						
Maximum Working Pressure – 8th character										
16 MPa	160 bar	2320 psi						C		
25 MPa	250 bar	3625 psi						Z		
41 MPa	410 bar	5945 psi						T		
Diaphragm Material / Fill Fluid – 9th character										
AISI 316L SST (1.4435)		Silicone oil		NACE				S		
Hastelloy® C-276		Silicone oil		NACE				K		
Monel 400®		Silicone oil		NACE				M		
Monel 400® gold-plated		Silicone oil		NACE				V		
Tantalum		Silicone oil		NACE				T		
AISI 316L SST (1.4435)		Inert fluid – Galden (Suitable for oxygen applications)		NACE				A		
Hastelloy® C-276		Inert fluid – Galden (Suitable for oxygen applications)		NACE				F		
Monel 400®		Inert fluid – Galden (Suitable for oxygen applications)		NACE				C		
Monel 400® gold-plated		Inert fluid – Galden (Suitable for oxygen applications)		NACE				Y		
Tantalum		Inert fluid – Galden (Suitable for oxygen applications)		NACE				D		
Diaphragm seal		Silicone oil (Seal to be quoted separately)						R		
Diaphragm seal		Inert fluid – Galden (Seal to be quoted separately)						2		
Process Flanges and Adapters Material / Connection – 10th character										
AISI 316 SST (1.4408)	1/4 in - 18 NPT female direct	(horizontal connection)		NACE				A		
AISI 316 SST (1.4408)	1/2 in - 14 NPT female through adapter	(horizontal connection)		NACE				B		
AISI 316 SST (1.4408)	1/4 in - 18 NPT female direct (DIN 19213)	(horizontal connection)		NACE				C		
Hastelloy® C-276	1/4 in - 18 NPT female direct	(horizontal connection)		NACE				D		
Hastelloy® C-276	1/2 in - 14 NPT female through adapter	(horizontal connection)		NACE				E		
Monel 400®	1/4 in - 18 NPT female direct	(horizontal connection)		NACE				G		
Monel 400®	1/2 in - 14 NPT female through adapter	(horizontal connection)		NACE				H		
AISI 316 SST (1.4408)	For two seals construction			NACE				R		

continued on next page

				X	X	X
Bolts Material / Gaskets Material – 11th character						
AISI 316L SST (NACE - non exposed to H2S) / Viton (Suitable for oxygen applications)				3		
AISI 316L SST (NACE - non exposed to H2S) / PTFE (Max. 25 MPa / 250 bar / 3625 psi)				4		
AISI 316L SST (NACE - non exposed to H2S) / EPDM				5		
AISI 316L SST (NACE - non exposed to H2S) / Perbunan				6		
AISI 316L SST (NACE - non exposed to H2S) / Graphite				7		
AISI 316L SST (NACE - non exposed to H2S) / Without gaskets (For two seals construction)				R		
Housing Material / Electrical Connection – 12th character						
Aluminium alloy (Barrel type)	1/2 in - 14 NPT					A
Aluminium alloy (Barrel type)	M20 x 1.5					B
Aluminium alloy (Barrel type)	Harting Han connector	(General purpose only)	(Note 1)			E
Aluminium alloy (Barrel type)	Fieldbus connector	(General purpose only)	(Note 1)			G
AISI 316L SST (Barrel type)	1/2 in - 14 NPT					S
AISI 316L SST (Barrel type)	M20 x 1.5					T
Aluminium alloy (DIN type)	M20 x 1.5					J
Aluminium alloy (DIN type)	Harting Han connector	(General purpose only)	(Note 1)			K
Aluminium alloy (DIN type)	Fieldbus connector	(General purpose only)	(Note 1)			W
AISI 316L SST (Barrel type)	Fieldbus connector	(General purpose only)	(Note 1)			Z
Output – 13th character						
HART digital communication and 4 to 20 mA			(Note 4)			1
PROFIBUS PA			(Note 5)			2
FOUNDATION fieldbus			(Note 5)			3
HART digital communication and 4 to 20 mA, SIL2 and SIL3-certified in acc. with IEC 61508			(Note 4)			8

...Ordering Information

...Additional ordering information for model 266MRT Differential Pressure Transmitter with remote seal(s)

Add one or more 2-digit code(s) after the basic ordering information to select all required options.

			XX	XX
Vent and drain valve Material / Position				
AISI 316L SST (1.4404)	On process axis	NACE	V1	
AISI 316L SST (1.4404)	On flanges side top	NACE	V2	
AISI 316L SST (1.4404)	On flanges side bottom	NACE	V3	
Hastelloy® C-276	On process axis	NACE	V4	
Hastelloy® C-276	On flanges side top	NACE	V5	
Hastelloy® C-276	On flanges side bottom	NACE	V6	
Monel 400®	On process axis	NACE	V7	
Monel 400®	On flanges side top	NACE	V8	
Monel 400®	On flanges side bottom	NACE	V9	
Explosion Protection Certification				
ATEX Intrinsic Safety Ex ia		(Note 6)		E1
ATEX Explosion Proof Ex db_tb		(Note 7)		E2
ATEX Intrinsic Safety Ex ic_tc		(Note 6)		E3
FM Approvals (Canada) approval (XP, DIP, IS, NI)		(Note 7)		E4
FM Approvals (USA) approval (XP, DIP, IS, NI)		(Note 7)		E6
FM Approvals (USA and Canada) Intrinsically safe		(Note 6)		EA
FM Approvals (USA and Canada) Explosionproof		(Note 7)		EB
FM Approvals (USA and Canada) Nonincendive		(Note 6)		EC
Combined ATEX, IECEx and FM Approvals (USA and Canada)		(Note 7)		EN
Combined ATEX Ex ia, Ex db_tc and Ex ic_tc		(Note 7)		EW
IECEx Intrinsic Safety Ex ia		(Note 6)		E8
IECEx Explosion Proof Ex db_tb		(Note 7)		E9
IECEx Intrinsic Safety Ex ic_tc		(Note 6)		ER
Combined IEC Approval Ex ia and Ex db_tb		(Note 7)		EH
Combined IEC Approval Ex ia, Ex db_tb and Ex ic_tc		(Note 7)		EI
NEPSI Intrinsic Safety Ex ia_iaD		(Note 6)		EY
NEPSI Explosion Proof Ex d_tD		(Note 7)		EZ
NEPSI Intrinsic Safety Ex ic_nA_tD		(Note 6)		ES
Combined NEPSI Ex ia_iaD and Ex d_tD		(Note 7)		EP
Combined NEPSI Ex ia_iaD, Ex d_tD and Ex ic_nA_tD		(Note 7)		EQ

	XX	XX	XX	XX	XX	XX
Other Explosion Protection Certifications						
For TR CU EAC Ex ia for Russia (incl. GOST Metrologic Approval)	(Notes 6, 9)	W1				
For TR CU EAC Ex d for Russia (incl. GOST Metrologic Approval)	(Notes 7, 10)	W2				
For TR CU EAC Ex ia for Kazakhstan (incl. GOST Metrologic Approval)	(Notes 6, 9)	W3				
For TR CU EAC Ex d for Kazakhstan (incl. GOST Metrologic Approval)	(Notes 7, 10)	W4				
For TR CU EAC Ex ia for Belarus (incl. GOST Metrologic Approval)	(Notes 6, 9)	WF				
For TR CU EAC Ex d for Belarus (incl. GOST Metrologic Approval)	(Notes 7, 10)	WG				
Inmetro (Brazil) Ex ia	(Notes 7, 17)	W5				
Inmetro (Brazil) Ex d	(Notes 7, 17)	W6				
Inmetro (Brazil) Ex nL	(Notes 7, 17)	W7				
Integral LCD						
With integral LCD display					L1	
With integral touch screen LCD display (TTG)					L5	
Mounting Bracket Shape / Material						
For pipe/wall mounting / Carbon steel (Not suitable for AISI housing)					B1	
For pipe/wall mounting / AISI 316 SST (1.4401) (Not suitable for AISI housing)					B2	
Flat type bracket / AISI 316 SST (1.4401) (Not suitable for AISI housing)					B5	
Surge						
Surge/Transient Protector					S2	
Operating Instruction Language						
German (FOR HART, WirelessHART and PROFIBUS VERSIONS)						M1
Italian (ONLY FOR HART VERSIONS)						M2
Spanish (FOR HART, WirelessHART and FOUNDATION Fieldbus VERSIONS)						M3
French (ONLY FOR HART VERSIONS)						M4
English						M5
Portuguese (ONLY FOR HART VERSIONS)						MA
Russian (ONLY FOR HART VERSIONS)						MB
Label and Tag Language						
German						T1
Italian						T2
Spanish						T3
Franch						T4

...Ordering Information

...Additional ordering information for model 266MRT Differential Pressure Transmitter with remote seal(s)

	XX	XX	XX	XX
Additional Tag Plate				
Supplemental wired-on stainless steel plate	I1			
Tag and certification stainless steel plates (laser printed)	I2			
Tag, certification and supplemental wired-on stainless steel plates (laser printed)	I3			
Configuration				
Standard – Pressure = inH ₂ O/ psi at 68 °F; Temperature = deg. F		N2		
Standard – Pressure = inH ₂ O/ psi at 39.2 °F; Temperature = deg. F		N3		
Standard – Pressure = inH ₂ O/ psi at 20 °C; Temperature = deg. C		N4		
Standard – Pressure = inH ₂ O/ psi at 4 °C; Temperature = deg. C		N5		
Custom		N6		
Configured for HART revision 5	(Note 2)	NH		
Certificates				
Inspection certificate 3.1 to EN 10204 of calibration			C1	
Inspection certificate 3.1 to EN 10204 of helium leakage test of the sensor module			C4	
Certificate of compliance with the order EN 10204–2.1 of instrument design			C6	
PMI test of wetted parts			CT	
Approvals				
Metrologic Pattern for Russia	(NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)			Y1
Metrologic Pattern for Kazakhstan	(NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)			Y2
Metrologic Pattern for Belarus	(NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)			Y4
CRN (Canadian Registration Number 0F14838.5C)				YR
DNV GL		(Notes 2, 11)		YA
Conformity to NAMUR NE 021 (2004)	(NOT APPLICABLE WITH SURGE PROTECTOR CODE “S2”)	(Notes 2, 8)		YE
American Bureau of Shipping (ABS)		(Notes 2, 11)		YS
Lloyd's Register Group Ltd. (LR)		(Notes 2, 11)		YB
Combined Naval (DNV / ABS / LLR)		(Notes 2, 11)		YM

		XX	XX	XX
Material Traceability				
Inspection certificate EN 10204–3.1 of process wetted parts (not for gaskets)	(Note 3)	H3		
Test report EN 10204–2.2 of pressure bearing and process wetted parts (not for gaskets)		H4		
Connector				
Fieldbus M12 x 1 (Recommended for PROFIBUS PA, supplied loose, without mating plug)	(Note 12, 17)		U1	
Fieldbus M12 x 1 (Recommended for PROFIBUS PA, supplied loose, without mating plug)	(Note 12, 17)		U2	
Harting Han 8D (8U), straight entry (supplied loose)	(Note 13, 17)		U3	
Harting Han 8D (8U), angle entry (supplied loose)	(Note 14, 17)		U4	
Harting Han 7D (supplied loose)	(Note 15, 17)		U5	
With cable gland M20 x 1.5 (Plastic, black, supplied loose)	(Note 16, 17)		U8	
Seal Type High / Low Pressure Side				
For ordering information please refer to S26 datasheet				

- Note 1: Select connector with additional ordering code
- Note 2: Not available with Output code 2, 3
- Note 3: Minor parts with factory certificate according to EN 10204
- Note 4: Not available with housing material / electrical connection code G, W, Z
- Note 5: Not available with housing material / electrical connection code E, K
- Note 6: Not available with housing material / electrical connection code E, G, K, W, Z
- Note 7: Not available with housing material / electrical connection code E, G, J, K, W, Z
- Note 8: Not available with Hazardous area certification code E4, E6, EA, EB, EC, EN, EY, EZ, ES, EP, EQ, W1, W2, W3, W4, WF, WG
- Note 9: The ambient temperature lower limit is -55 degrees C
- Note 10: The ambient temperature lower limit is -52 degrees C
- Note 11: Not available with Approval code YE
- Note 12: Not available with Housing code other than G, W, Z
- Note 13: Not available with Housing code other than K
- Note 14: Not available with Housing code other than E
- Note 15: Not available with Housing code other than E, K
- Note 16: Not available with Housing code other than B, K. Not available with Explosion Protection Certification
- Note 17: Not available with any Hazardous area certification codes Ex or Wx

Standard delivery scope (changes possible with additional ordering code)

- Adapters supplied loose
- Plugs for process axis (no vent / drain valves)
- For standard applications (without explosion protection)
- No display, no mounting bracket, no surge protection
- Short-form leaflet instruction and labels in English (metal nameplate; self-adhesive certification and tag)
- Configuration with kPa and °C units
- No test, inspection, or material certificates

Ordering Information

Basic ordering information for model 266GRT gauge pressure transmitter with remote diaphragm seal, overpressure limit dependent upon diaphragm seal / pressure sensor limits

Select one or more characters from each category and enter the complete catalog number.

Enter one or more codes for additional order information if you are purchasing optional extras for each transmitter.

Base model - 1st to 6th characters				2 6 6 G R T	X	X	X	X	X
Gauge pressure transmitter with remote seal, base accuracy 0.04 %									
Sensor Span Limits – 7th character									
0.6 and 6 kPa	6 and 60 mbar	2.41 and 24 inH2O	/ 1 MPa (10 bar, 145 psi)	C					
0.67 and 40 kPa	6.7 and 400 mbar	2.67 and 160 inH2O	/ 1 MPa (10 bar, 145 psi)	F					
4.17 and 250 kPa	41.7 and 2500 mbar	0.60 and 36.26 psi	/ 3 MPa (30 bar, 435 psi)	L					
16.7 and 1000 kPa	0.167 and 10 bar	2.42 and 145 psi	/ 6 MPa (60 bar, 870 psi)	D					
50 and 3000 kPa	0.5 and 30 bar	7.25 and 435 psi	/ 6 MPa (60 bar, 870 psi)	U					
167 and 10000 kPa	1.67 and 100 bar	24.2 and 1450 psi	/ 30 MPa (300 bar, 4350 psi)	R					
1000 and 60000 kPa	10 and 600 bar	145 and 8700 psi	/ 90 MPa (900 bar, 13050 psi)	V					
Diaphragm Material / Fill Fluid – 8th character									
Diaphragm seal mounted		Silicone oil (specify diaphragm seal separately)		R					
Diaphragm seal mounted		Fluorocarbon - Galden (specify diaphragm seal separately)		2					
Diaphragm seal mounted		White oil (specify diaphragm seal separately)		N					
Process Connection Material / Type – 9th character									
Diaphragm seal (except in the case of button diaphragm seals, specify diaphragm seal separately)								R	
Button diaphragm seal (specify button diaphragm seal separately)								G	
Direct mount diaphragm seal (one direct mount seal to be quoted)								M	
Housing Material / Electrical Connection – 10th character									
Aluminium alloy (Barrel type)	1/2 in - 14 NPT								A
Aluminium alloy (Barrel type)	M20 x 1.5								B
Aluminium alloy (Barrel type)	Harting Han plug connector	(General purpose only)	(Note 1)						E
Aluminium alloy (Barrel type)	Fieldbus plug connector	(General purpose only)	(Note 1)						G
Stainless steel (Barrel type)	1/2 in - 14 NPT								S
Stainless steel (Barrel type)	M20 x 1.5								T
Aluminium alloy (DIN type)	M20 x 1.5								J
Aluminium alloy (DIN type)	Harting Han plug connector	(General purpose only)	(Note 1)						K
Aluminium alloy (DIN type)	Fieldbus plug connector	(General purpose only)	(Note 1)						W
Stainless steel (Barrel type)	Fieldbus plug connector	(General purpose only)	(Note 1)						Z
Output – 11th character									
HART digital communication and 4 to 20 mA		(Note 4)							1
PROFIBUS PA		(Note 5)							2
FOUNDATION fieldbus		(Note 5)							3
HART digital communication and 4 to 20 mA, SIL2 and SIL3-certified in acc. with IEC 61508		(Note 4)							8
Digital Diaphragm Seal, 4-20 mA + HART (Mandatory to select one Primary or Secondary device)		(Note 18)							D

Additional ordering information for model 266GRT gauge pressure transmitter with remote diaphragm seal

Add one or more 2-digit code(s) after the basic ordering information to select all required options.

		XX	XX
Explosion Protection Certification			
ATEX Intrinsic Safety Ex ia	(Note 6)	E1	
ATEX Explosion Proof Ex db_tb	(Notes 7, 19)	E2	
ATEX Intrinsic Safety Ex ic_tc	(Note 6)	E3	
FM Approvals (Canada) approval (XP, DIP, IS, NI)	(Notes 7)	E4	
FM Approvals (USA) approval (XP, DIP, IS, NI)	(Notes 7)	E6	
FM Approvals (USA and Canada) Intrinsically safe	(Note 6)	EA	
FM Approvals (USA and Canada) Explosionproof	(Note 7, 19)	EB	
FM Approvals (USA and Canada) Nonincendive	(Note 6)	EC	
Combined ATEX, IECEx and FM Approvals (USA and Canada)	(Notes 7)	EN	
Combined ATEX Ex ia, Ex db_tc and Ex ic_tc	(Note 7)	EW	
IECEx Intrinsic Safety Ex ia	(Note 6)	E8	
IECEx Explosion Proof Ex db_tb	(Notes 7, 19)	E9	
IECEx Intrinsic Safety Ex ic_tc	(Note 6)	ER	
Combined IEC Approval Ex ia and Ex db_tb	(Note 7)	EH	
Combined IEC Approval Ex ia, Ex db_tb and Ex ic_tc	(Note 7)	EI	
NEPSI Intrinsic Safety Ex ia_iaD	(Note 6)	EY	
NEPSI Explosion Proof Ex d_tD	(Notes 7)	EZ	
NEPSI Intrinsic Safety Ex ic_nA_tD	(Note 6)	ES	
Combined NEPSI Ex ia_iaD and Ex d_tD	(Note 7)	EP	
Combined NEPSI Ex ia_iaD, Ex d_tD and Ex ic_nA_tD	(Note 7)	EQ	
Other Explosion Protection Certifications			
For TR CU EAC Ex ia for Russia (incl. GOST Metrologic Approval)	(Notes 6, 9)		W1
For TR CU EAC Ex d for Russia (incl. GOST Metrologic Approval)	(Notes 7, 10)		W2
For TR CU EAC Ex ia for Kazakhstan (incl. GOST Metrologic Approval)	(Notes 6, 9)		W3
For TR CU EAC Ex d for Kazakhstan (incl. GOST Metrologic Approval)	(Notes 7, 10)		W4
For TR CU EAC Ex ia for Belarus (incl. GOST Metrologic Approval)	(Notes 6, 9)		WF
For TR CU EAC Ex d for Belarus (incl. GOST Metrologic Approval)	(Notes 7, 10)		WG
Inmetro (Brazil) Ex ia	(Notes 7, 31)		W5
Inmetro (Brazil) Ex d	(Notes 7, 31)		W6
Inmetro (Brazil) Ex nL	(Notes 7, 31)		W7

...Ordering Information

...Additional ordering information for model 266GRT gauge pressure transmitter with remote diaphragm seal

	XX	XX	XX	XX	XX	XX	XX	XX	XX
Integral LCD									
With integral LCD display		L1							
TTG (Through The Glass) integral digital LCD display (Note 20)		L5							
Mounting Bracket Shape / Material									
For horizontal or vertical pipe and wall mounting / carbon steel		B6							
For horizontal or vertical pipe and wall mounting / AISI 316 (1.4401)		B7							
Surge									
Surge/Transient Protector			S2						
Language of documentation									
German (FOR HART, WirelessHART and PROFIBUS VERSIONS)				M1					
Italian (ONLY FOR HART VERSIONS)				M2					
Spanish (FOR HART, WirelessHART and FOUNDATION Fieldbus VERSIONS)				M3					
French (ONLY FOR HART VERSIONS)				M4					
English				M5					
Portuguese (ONLY FOR HART VERSIONS)				MA					
Russian (ONLY FOR HART VERSIONS)				MB					
Label and Tag Language (material)									
German					T1				
Italian					T2				
Spanish					T3				
French					T4				
Additional Tag Plate									
Supplemental wired-on stainless steel plate							I1		
Tag and certification stainless steel plates (laser printed)							I2		
Tag, certification and supplemental wired-on stainless steel plates (laser printed)							I3		
Configuration									
DDS Primary unit (Note 20, 21, 25)								NM	
DDS Secondary unit (Note 20, 23, 26)								NS	
DDS single item Primary unit (Note 20, 22, 25)								NF	
DDS single item Secondary unit (Note 20, 24, 26)								NG	
Standard – Pressure = inH2O/ psi at 68 °F; Temperature = deg. F								N2	
Standard – Pressure = inH2O/ psi at 39.2 °F; Temperature = deg. F								N3	
Standard – Pressure = inH2O/ psi at 20 °C; Temperature = deg. C								N4	
Standard – Pressure = inH2O/ psi at 4 °C; Temperature = deg. C								N5	
Custom								N6	
Configured for HART revision 5 (Note 2)								NH	
Certificates									
Inspection certificate 3.1 to EN 10204 of calibration									C1
Inspection certificate 3.1 to EN 10204 of helium leakage test of the sensor module									C4
Certificate of compliance with the order EN 10204–2.1 of instrument design									C6
PMI test of wetted parts									CT
Approvals									
Metrologic Pattern for Russia (NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)									Y1
Metrologic Pattern for Kazakhstan (NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)									Y2
Metrologic Pattern for Belarus (NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)									Y4
CRN (Canadian Registration Number OF14838.5C)									YR
DNV GL						(Notes 2, 11, 12)			YA
Conformity to NAMUR NE 021 (2004) (NOT APPLICABLE WITH SURGE PROTECTOR CODE “S2”)						(Note 2, 8)			YE
American Bureau of Shipping (ABS)						(Notes 2, 11, 12)			YS
Lloyd's Register Group Ltd. (LR)						(Notes 2, 11, 12)			YB
Combined Naval (DNV / ABS / LLR)						(Notes 2, 11, 12)			YM

	XX	XX	XX
Material traceability			
Inspection certificate EN 10204–3.1 of process wetted parts (not for gaskets) (Note 3)	H3		
Test report EN 10204–2.2 of pressure bearing and process wetted parts (not for gaskets)	H4		
Connector			
Fieldbus 7/8 in (Recommended for FOUNDATION Fieldbus, supplied loose, without mating plug) (Note 13, 31)		U1	
Fieldbus M12 x 1 (Recommended for PROFIBUS PA, supplied loose, without mating plug) (Note 13, 31)		U2	
Harting Han 8D (8U), straight entry (supplied loose) (Note 14, 31)		U3	
Harting Han 8D (8U), angle entry (supplied loose) (Note 15, 31)		U4	
Harting Han 7D (supplied loose) (Note 16, 31)		U5	
With cable gland M20 x 1.5 (Plastic, black, supplied loose) (Note 17, 31)		U8	
Seal Type High Pressure Side			
For ordering information please refer to S26 datasheet			

Note 1: Select connector with additional ordering code

Note 2: Not available with Output code 2, 3

Note 3: Minor parts with factory certificate according to EN 10204

Note 4: Not available with housing material / electrical connection code G, W, Z

Note 5: Not available with housing material / electrical connection code E, K

Note 6: Not available with housing material / electrical connection code E, G, K, W, Z

Note 7: Not available with housing material / electrical connection code E, G, J, K, W, Z

Note 8: Not available with Hazardous area certification code E4, E6, EA, EB, EC, EN, EY, EZ, ES, EP, EQ, W1, W2, W3, W4, WF, WG

Note 9: The ambient temperature lower limit is -55 degrees C

Note 10: The ambient temperature lower limit is -52 degrees C

Note 11: Not available with Output code D

Note 12: Not available with Approval code YE

Note 13: Not available with Housing code other than G, W, Z

Note 14: Not available with Housing code other than K

Note 15: Not available with Housing code other than E

Note 16: Not available with Housing code other than E, K

Note 17: Not available with Housing code other than B, K. Not available with Explosion Protection Certifications

Note 18: Not available with Housing code J. Not available with Mounting bracket codes B6, B7. Not available with Hazardous area certifications except E2, EB and E9. Not available with Other hazardous area certifications codes and Approvals

Note 19: Available with Output codes D only if combined with Housing codes S, T

Note 20: Only available with Output code D

Note 21: Not available with Configuration codes NH, NS, NF, NG

Note 22: Not available with Configuration codes NH,NS,NM,NG

Note 23: Not available with Configuration codes NH,NM,NF,NG,N2,N3,N4,N5

Note 24: Not available with Configuration codes NH,NS,NF,NM,N2,N3,N4,N5

Note 25: Not available with Display code L5

Note 26: Not available with any Display codes

Note 30: Not available with Configuration codes NS,NG

Note 31: Not available with any Hazardous area certification codes Ex or Wx

Standard delivery scope (changes possible with additional ordering code)

- For standard applications (without explosion protection)
- No display, no mounting bracket, no surge protection
- Short-form leaflet instruction and labels in English (metal nameplate; self-adhesive certification and tag)
- Configuration with kPa and °C units
- No test, inspection, or material certificates

Ordering information

Main ordering information for model 266ART absolute pressure transmitter with remote diaphragm seal, overpressure limit dependent upon diaphragm seal / pressure sensor limits

Select one or more characters from each category and enter the complete catalog number.

Enter one or more codes for additional order information if you are purchasing optional extras for each transmitter.

Base model - 1st to 6th characters				2 6 6 A R T	X	X	X	X	X
Gauge pressure transmitter with remote seal, base accuracy 0.04 %									
Sensor Span Limits – 7th character									
1.2 and 6 kPa	12 and 60 mbar	4.82 and 24 inH2O	9 and 45 mmHg	/ 1 MPa (10 bar, 145 psi)	C				
2 and 40 kPa	20 and 400 mbar	15 and 300 mmHg		/ 1 MPa (10 bar, 145 psi)	F				
12.5 and 250 kPa	125 and 2500 mbar	93.8 and 1.875 mmHg		/ 3 MPa (30 bar, 435 psi)	L				
50 and 1000 kPa	0.5 and 10 bar	7.25 and 145 psi		/ 6 MPa (60 bar, 870 psi)	D				
150 and 3000 kPa	1.5 and 30 bar	21.7 and 435 psi		/ 6 MPa (60 bar, 870 psi)	U				
500 and 10000 kPa	5 and 100 bar	72.5 and 1450 psi		/ 30 MPa (300 bar, 4350 psi)	R				
Diaphragm Material / Fill Fluid – 8th character									
Diaphragm seal mounted		Silicone oil (specify diaphragm seal separately)							R
Diaphragm seal mounted		Fluorocarbon - Galden (specify diaphragm seal separately)							2
Diaphragm seal mounted		White oil (specify diaphragm seal separately)							N
Process Connection Material / Type – 9th character									
Diaphragm seal (except in the case of button diaphragm seals, specify diaphragm seal separately)									R
Button diaphragm seal (specify button diaphragm seal separately)									G
Direct mount diaphragm seal (one direct mount seal to be quoted)									M
Housing Material / Electrical Connection – 10th character									
Aluminium alloy (Barrel type)	1/2 in - 14 NPT								A
Aluminium alloy (Barrel type)	M20 x 1.5								B
Aluminium alloy (Barrel type)	Harting Han plug connector	(General purpose only)	(Note 1)						E
Aluminium alloy (Barrel type)	Fieldbus plug connector	(General purpose only)	(Note 1)						G
Stainless steel (Barrel type)	1/2 in - 14 NPT								S
Stainless steel (Barrel type)	M20 x 1.5								T
Aluminium alloy (DIN type)	M20 x 1.5								J
Aluminium alloy (DIN type)	Harting Han plug connector	(General purpose only)	(Note 1)						K
Aluminium alloy (DIN type)	Fieldbus plug connector	(General purpose only)	(Note 1)						W
Stainless steel (Barrel type)	Fieldbus plug connector	(General purpose only)	(Note 1)						Z
Output – 11th character									
HART digital communication and 4 to 20 mA			(Note 4)						1
PROFIBUS PA			(Note 5)						2
FOUNDATION fieldbus			(Note 5)						3
HART digital communication and 4 to 20 mA, SIL2 and SIL3-certified in acc. with IEC 61508			(Note 4)						8

Additional ordering information for model 266ART absolute pressure transmitter with remote diaphragm seal

Add one or more 2-digit code(s) after the basic ordering information to select all required options.

		XX	XX
Explosion Protection Certification			
ATEX Intrinsic Safety Ex ia	(Note 6)	E1	
ATEX Explosion Proof Ex db_tb	(Note 7)	E2	
ATEX Intrinsic Safety Ex ic_tc	(Note 6)	E3	
FM Approvals (Canada) approval (XP, DIP, IS, NI)	(Note 7)	E4	
FM Approvals (USA) approval (XP, DIP, IS, NI)	(Note 7)	E6	
FM Approvals (USA and Canada) Intrinsically safe	(Note 6)	EA	
FM Approvals (USA and Canada) Explosionproof	(Note 7)	EB	
FM Approvals (USA and Canada) Nonincendive	(Note 6)	EC	
Combined ATEX, IECEx and FM Approvals (USA and Canada)	(Note 7)	EN	
Combined ATEX Ex ia, Ex db_tc and Ex ic_tc	(Note 7)	EW	
IECEx Intrinsic Safety Ex ia	(Note 6)	E8	
IECEx Explosion Proof Ex db_tb	(Note 7)	E9	
IECEx Intrinsic Safety Ex ic_tc	(Note 6)	ER	
Combined IEC Approval Ex ia and Ex db_tb	(Note 7)	EH	
Combined IEC Approval Ex ia, Ex db_tb and Ex ic_tc	(Note 7)	EI	
NEPSI Intrinsic Safety Ex ia_iaD	(Note 6)	EY	
NEPSI Explosion Proof Ex d_tD	(Note 7)	EZ	
NEPSI Intrinsic Safety Ex ic_nA_tD	(Note 6)	ES	
Combined NEPSI Ex ia_iaD and Ex d_tD	(Note 7)	EP	
Combined NEPSI Ex ia_iaD, Ex d_tD and Ex ic_nA_tD	(Note 7)	EQ	
Other Explosion Protection Certifications			
For TR CU EAC Ex ia for Russia (incl. GOST Metrologic Approval)	(Notes 6, 9)		W1
For TR CU EAC Ex d for Russia (incl. GOST Metrologic Approval)	(Notes 7, 10)		W2
For TR CU EAC Ex ia for Kazakhstan (incl. GOST Metrologic Approval)	(Notes 6, 9)		W3
For TR CU EAC Ex d for Kazakhstan (incl. GOST Metrologic Approval)	(Notes 7, 10)		W4
For TR CU EAC Ex ia for Belarus (incl. GOST Metrologic Approval)	(Notes 6, 9)		WF
For TR CU EAC Ex d for Belarus (incl. GOST Metrologic Approval)	(Notes 7, 10)		WG
Inmetro (Brazil) Ex ia	(Notes 7, 17)		W5
Inmetro (Brazil) Ex d	(Notes 7, 17)		W6
Inmetro (Brazil) Ex nL	(Notes 7, 17)		W7

...Ordering Information

...Additional ordering information for model 266ART absolute pressure transmitter with remote diaphragm seal

	XX	XX	XX	XX	XX	XX
Integral LCD						
With integral LCD display	L1					
TTG (Through The Glass) integral digital LCD display	L5					
Mounting Bracket Shape / Material						
For horizontal or vertical pipe and wall mounting / carbon steel		B6				
For horizontal or vertical pipe and wall mounting / AISI 316 (1.4401)		B7				
Surge						
Surge/Transient Protector			S2			
Operating Instruction Language						
German (FOR HART, WirelessHART and PROFIBUS VERSIONS)				M1		
Italian (ONLY FOR HART VERSIONS)				M2		
Spanish (FOR HART, WirelessHART and FOUNDATION Fieldbus VERSIONS)				M3		
French (ONLY FOR HART VERSIONS)				M4		
English				M5		
Portuguese (ONLY FOR HART VERSIONS)				MA		
Russian (ONLY FOR HART VERSIONS)				MB		
Label and Tag Language						
German					T1	
Italian					T2	
Spanish					T3	
French					T4	
Additional Tag Plate						
Supplemental wired-on stainless steel plate						I1
Tag and certification stainless steel plates (laser printed)						I2
Tag, certification and supplemental wired-on stainless steel plates (laser printed)						I3
Label and Tag Language						
Standard – Pressure = inH2O/ psi at 68 °F; Temperature = deg. F						N2
Standard – Pressure = inH2O/ psi at 39.2 °F; Temperature = deg. F						N3
Standard – Pressure = inH2O/ psi at 20 °C; Temperature = deg. C						N4
Standard – Pressure = inH2O/ psi at 4 °C; Temperature = deg. C						N5
Custom						N6
Configured for HART revision 5				(Note 2)		NH

	XX	XX	XX	XX	XX
Certificates					
Inspection certificate 3.1 to EN 10204 of calibration	C1				
Inspection certificate 3.1 to EN 10204 of helium leakage test of the sensor module	C4				
Certificate of compliance with the order EN 10204–2.1 of instrument design	C6				
PMI test of wetted parts	CT				
Approvals					
Metrologic Pattern for Russia (NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)		Y1			
Metrologic Pattern for Kazakhstan (NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)		Y2			
Metrologic Pattern for Belarus (NOT APPLICABLE WITH ANY HAZARDOUS AREA CERTIFICATION)		Y4			
CRN (Canadian Registration Number OF14838.5C)		YR			
DNV GL (Notes 2,11)		YA			
Conformity to NAMUR NE 021 (2004) (NOT APPLICABLE WITH SURGE PROTECTOR CODE “S2”) (Notes 2, 8)		YE			
American Bureau of Shipping (ABS) (Notes 2,11)		YS			
Lloyd's Register Group Ltd. (LR) (Notes 2,11)		YB			
Combined Naval (DNV / ABS / LLR) (Notes 2,11)		YM			
Material traceability					
Inspection certificate EN 10204–3.1 of process wetted parts (not for gaskets) (Note 3)				H3	
Test report EN 10204–2.2 of pressure bearing and process wetted parts (not for gaskets)				H4	
Connector					
Fieldbus 7/8 in (Recommended for FOUNDATION Fieldbus, supplied loose, without mating plug) (Note 12, 17)					U1
Fieldbus M12 x 1 (Recommended for PROFIBUS PA, supplied loose, without mating plug) (Note 12, 17)					U2
Harting Han 8D (8U), straight entry (supplied loose) (Note 13, 17)					U3
Harting Han 8D (8U), angle entry (supplied loose) (Note 14, 17)					U4
Harting Han 7D (supplied loose) (Note 15, 17)					U5
With cable gland M20 x 1.5 (Plastic, black, supplied loose) (Note 16, 17)					U8
Seal Type High Pressure Side					
For ordering information please refer to S26 datasheet					

Note 1: Select connector with additional ordering code

Note 2: Not available with Output code 2, 3

Note 3: Minor parts with factory certificate according to EN 10204

Note 4: Not available with housing material / electrical connection code G, W, Z

Note 5: Not available with housing material / electrical connection code E, K

Note 6: Not available with housing material / electrical connection code E, G, K, W, Z

Note 7: Not available with housing material / electrical connection code E, G, J, K, W, Z

Note 8: Not available with Hazardous area certification code E4, E6, EA, EB, EC, EN, EY, EZ, ES, EP, EQ, W1, W2, W3, W4, WF, WG

Note 9: The ambient temperature lower limit is -55 degrees C

Note 10: The ambient temperature lower limit is -52 degrees C

Note 11: Not available with Approval code YE

Note 12: Not available with Housing code other than G, W, Z

Note 13: Not available with Housing code other than K

Note 14: Not available with Housing code other than E

Note 15: Not available with Housing code other than E, K

Note 16: Not available with Housing code other than B, K. Not available with Explosion Protection Certification

Note 17: Not available with any Hazardous area certification codes Ex or Wx

Standard delivery scope (changes possible with additional ordering code)

- For standard applications (without explosion protection)
- No display, no mounting bracket, no surge protection
- Short-form leaflet instruction and labels in English (metal nameplate; self-adhesive certification and tag)
- Configuration with kPa and °C units
- No test, inspection, or material certificates

Notes

ABB Measurement & Analytics

For your local ABB contact, visit:
www.abb.com/contacts

For more product information, visit:
www.abb.com/pressure

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