Data Sheet SS/267JS/269JS-EN

Model 267JS Multivariable
Model 269JS Multivariable
for differential and absolute pressure and temperature

2600T Series Pressure Transmitters Engineered solutions for all applications



Selectable maximum working pressure
— Up to 41 MPa, 5945 psi

Base accuracy
— ± 0.075 % / ± 0.04 %

Multi-sensor high-performance transmitter for measuring differential pressure, absolute pressure and process temperature in a single unit

One transmitter replaces three separate transmitters
— Less cabling expense, fewer valve blocks, thus reducing installation costs

Reduced process penetrations
— Less costs
— Reduces the chance of leaks

Highest level of communication flexibility
— Selectable HART, PROFIBUS, FOUNDATION Fieldbus or Modbus

Span limits
— 0.05 ... 10000 kPa; 0.2 in H_20 ... 1450 psi for differential pressure
— 0.6 ... 41 MPa; 87 ... 5945 psi for absolute pressure

Compliance with pressure device directive, PED category III

Power and productivity for a better world™

Introduction

This intelligent multivariable transmitter provides the user with precise measurements of differential pressure, absolute pressure and process temperature (the latter using an externally-mounted Pt 100 resistance thermometer).

The user may select between either the 4 to 20 mA output or digital outputs such as HART, PROFIBUS PA, FOUNDATION Fieldbus or Modbus for data transfer.

The reduced number of devices per application increases system availability while reducing the likelihood of an expensive shutdown.

Functional Specifications

Measuring range and span limits

Differential pressure sensors

Sensor code	Upper range limit (URL)	Lower range limit (LRL)	Minimum span
A	1 kPa 10 mbar 4 in H_2O	-1 kPa -10 mbar -4 in H_2O	0.05 kPa 0.5 mbar 0.2 in H_2O
C	6 kPa 60 mbar 24 in H_2O	-6 kPa -60 mbar -24 in H_2O	0.2 kPa 2 mbar 0.8 in H_2O
F	40 kPa 400 mbar 160 in H_2O	-40 kPa -400 mbar -160 in H_2O	0.4 kPa 4 mbar 1.6 in H_2O
L	250 kPa 2500 mbar 1000 in H_2O	-250 kPa -2500 mbar -1000 in H_2O	2.5 kPa 25 mbar 10 in H_2O
N	2000 kPa 20 bar 290 psi	-2000 kPa -20 bar -290 psi	20 kPa 0.2 bar 2.9 psi
R	10000 kPa 100 bar 1450 psi	-10000 kPa -100 bar -1450 psi	100 kPa 1 bar 14.5 psi

Absolute pressure sensors

Sensor code	Upper range limit (URL)	Lower range limit (LRL)	Minimum span
1	600 kPa 6 bar 87 psi	0 abs	6 kPa 0.06 bar 0.87 psi
2	2000 kPa 20 bar 290 psi	0 abs	20 kPa 0.2 bar 2.9 psi
3	10000 kPa 100 bar 1450 psi	0 abs	100 kPa 1 bar 14.5 psi
4	41000 kPa 410 bar 5945 psi	0 abs	410 kPa 4.1 bar 59.5 psi

Span limits

Maximum span = URL = upper range limit
(can be adjusted up to ± URL within the measurement span.
Example: -400 to +400 mbar)
In order to optimize performance characteristics, it is recommended to select the transmitter sensor providing the lowest turndown ratio.

Zero suppression and elevation

Zero and span can be set to any value within the range limits listed in the table, if:
– Calibrated span ≥ minimum span

Process temperature range

-50 °C to +650 °C (-58 °F to 1200 °F) with external four-wire RTD.

Damping

Adjustable time constant: 0 to 60 sec
This is in addition to sensor response time.

Warm-up period

Operation within specifications: ≤ 2.5 sec with minimal damping

Insulation resistance

> 100 MΩ at 1000 V DC (between terminals and ground)

Operating limits

Temperature limits °C (°F):

Ambient (operating temperature)

Transmitter:	-40 °C to +85 °C (-40 °F and +185 °F)
LCD display:	-20 °C to +70 °C (-4 °F and +158 °F)
Lower limit for Viton and PTFE gaskets:	-20 °C (-4 °F)

Note:
For hazardous atmosphere applications, see the temperature range specified on the relevant certificate/approval.

Process

Lower limit
– Refer to the lower ambient temperature limits

Upper limit:
– Silicone oil: 120 °C (248 °F) for operating pressures ≥ 10 kPa abs, 100 mbar abs, 1.45 psia (1)
– Carbon fluoride: 120 °C (248 °F) (2) for operating pressures ≥ atmospheric pressure

(1) 85 °C (185 °F) for applications below 10 kPa abs, 100 mbar abs, 1.45 psia to 3.5 kPa abs, 35 mbar abs, 0.5 psia
(2) 85 °C (185 °F) for applications below atmospheric pressure up to 40 kPa abs, 400 mbar abs, 5.8 psia

Storage

Lower limit:	-50 °C (-58 °F), -40 °C (-40 °F) for LCD displays
Upper limit:	+85 °C (+185 °F)

Pressure limits

Overpressure limits (without damage to the transmitter)

Lower limit
– 0.5 kPa abs, 5 mbar abs, 0.07 psia for silicone oil
– 40 kPa abs, 400 mbar abs, 5.8 psia for carbon fluoride

Upper limit:
– 0.6 MPa, 6 bar, 87 psi for differential pressure sensor code A
– 2 MPa, 20 bar, 290 psi or 10 MPa, 100 bar, 1450 psi or 41 MPa, 410 bar, 5945 psi depending upon the selected code variant for sensor code C, F, L, N, R

Static pressure

This multivariable transmitter operates within specifications with the following limits:

Lower limit
– 3.5 kPa abs, 35 mbar abs, 0.5 psia for silicone oil
– 40 kPa abs, 400 mbar abs, 5.8 psia for carbon fluoride

Upper limit:
– 0.6 MPa, 6 bar, 87 psi for sensor code A
– 2 MPa, 20 bar, 290 psi or 10 MPa, 100 bar, 1450 psi or 41 MPa, 410 bar, 5945 psi depending upon the selected code variant for sensor code C, F, L, N, R

Test pressure

For pressure testing purposes, the transmitter can withstand a pressure test applied simultaneously from both sides of up to 1.5 times the nominal pressure (static pressure range) of the transmitter.

Environmental limits

Electromagnetic compatibility (EMC)

Definition	Class 3
RFI suppression (according to EN 550011)	Limit Class B
Meets NAMUR recommendations	

Low voltage directive:

Meets 73/23/EC

Pressure equipment directive (PED)

Instruments with maximum working pressure 41 MPa, 410 bar, 5945 psi comply with 97/23/EC Category III module H.

Humidity

Relative humidity:	up to 100 %
Condensation, icing:	permitted

Vibration resistance

Acceleration up to 2 g at frequencies up to 1000 Hz (according to 60068-2-26)

Shock resistance (according to IEC 60068-2-27)

Acceleration:	50 g
Duration:	11 ms

Wet and dust-laden atmospheres (protection type)

The transmitter is dust and sand-tight and protected against immersion effects as defined by IEC EN60529 (1989) to IP 67 (IP 68 on request) or by NEMA to 4X or by JIS C0920.
Protection type with plugged connection: IP 65

Hazardous atmospheres

Transmitters with protection type "Intrinsically safe EEx ia" according to Directive 94/9/EC (ATEX)

For applications in explosive areas, the connected RTD must also have the respective Ex protection class as the transmitter.

Transmitters with 4 to 20 mA output signal and HART communication
Identification: II 1/2 GD T 50 °C EEx ia IIC T6
II 1/2 GD T 95 °C EEx ia IIC T4

Power supply and signal circuit with protection type Intrinsic Safety EEx ib IIB/IIC or EEx ia IIB/IIC for connection to supply units with maximum values:
II 1/2 GD T 50°C EEx ia or ib IIC T6
II 1/2 GD T 95°C EEx ia or ib IIC T4

Temperature class T4:
U_i = 30 V
I_i = 200 mA
P_i = 0.8 W for T4 with Ta = -40 °C to +85 °C (-40 °F to +185 °F)
P_i = 1.0 W for T4 where Ta = -40 °C to +70 °C (-40 °F to +158 °F)

Temperature class T6:
P_i = 0.7 W for T4 where Ta = -40 °C to +40 °C (-40 °F to +104 °F)

Effective internal capacitance: $C_i \leq 10$ nF
Effective internal inductance: $L_i \approx 0$

Fieldbus transmitters (PROFIBUS PA / FOUNDATION Fieldbus)
Identification: II 1/2 GD T 50 °C EEx ia IIC T6
II 1/2 GD T 95 °C EEx ia IIC T4

Supply and signal circuit in Intrinsic Safety protection type EEx ia IIB/IIC or EEx ib IIB/IIC for connection to FISCO supply units with rectangular or trapezoidal characteristics with maximum values:

II 1/2 GD T 50 °C EEx ia or ib IIC T6	U_i = 17.5 V
II 1/2 GD T 95 °C EEx ia or ib IIC T4	I_i = 360 mA
	P_i = 2.52 W
II 1/2 GD T 50 °C EEx ia or ib IIB T6	U_i = 17.5 V
II 1/2 GD T 95 °C EEx ia or ib IIB T4	I_i = 380 mA
	P_i = 5.32 W

or connection to supply units or barriers with linear characteristics:
Maximum values:

II 1/2 GD T 50 °C EEx ia or ib IIC T6	U_i = 24 V
II 1/2 GD T 95 °C EEx ia or ib IIC T4	I_i = 250 mA
	P_i = 1.2 W
Effective internal capacitance:	$C_i \approx 0$
Effective internal inductance:	$L_i \leq 10$ µH,

Maximum permissible ambient temperatures depending on the temperature class:
T4: -40 °C to +85 °C (-40 °F to +185 °F)
T5, T6: -40 °C to +40 °C (-40 °F to +104 °F)

Transmitter of category 3 for the application in "Zone 2" according to Directive 94/9/EC (ATEX)

Transmitters with 4 to 20 mA output signal and HART communication
Identification: II 3 GD T 50 °C EEx nL IIC T6
II 3 GD T 95 °C EEx nL IIC T4

Operating conditions:
Supply and signal circuit (terminal signal +/-):
U ≤ 45 V
I ≤ 22.5 mA
Ambient temperature range:
Temperat. class T4 Ta = -40 °C to +85 °C (-40 °F to +185 °F)
Temperat. class T5 and T6 Ta = -40 °C to +40 °C (-40 °F to +104 °F)

Transmitter of protection type "flameproof enclosure EEx d" according to Directive 94/9/EC (ATEX)

Transmitter with 4 to 20 mA output signal and HART communication and Fieldbus transmitter (PROFIBUS PA/FOUNDATION Fieldbus)

Identification: II 1/2 G EEx d IIC T6

Operating conditions:
Ambient temperature range: -40 °C to +75 °C (-40 °F to +167 °F)

Transmitter of protection type "Intrinsically safe EEx ia" according to Directive 94/9/EC (ATEX), or

protection type "flameproof enclosure EEx d" according to Directive 94/9/EC (ATEX), or

protection type "Limited energy equipment EEx nL" according to Directive 94/9/EC (ATEX) (alternate certification)

Transmitters with 4 to 20 mA output signal and HART communication
Identification: II 1/2 GD T50 °C EEx ia IIC T6
II 1/2 GD T95 °C EEx ia IIC T4;
(refer to "EEx ia" for additional data)
or

Identification: II 1/2 GD T85 °C EEx d IIC T6

Ambient temperature range:
-40 °C to +75 °C (-40 °F to +167 °F)
or

Identification: II 3 GD T 50 °C EEx nL IIC T6
II 3 GD T95 °C EEx nL IIC T4
(refer to "EEx nL" for additional data)

Factory Mutual (FM)

Transmitters with 4 to 20 mA output signal and HART communication
Intrinsically Safe: Class I; Division 1; Group A, B, C, D;
Class I; Zone 0; Group IIC; AEx ia IIC
Protection type: NEMA type 4X (interior or exterior)

Maximum permissible ambient temperatures depending on the temperature class:

U_{max} = 30 V, C_i = 10.5 nF, L_i = 10 µH			
Ambient temperature	**Temperature class**	**I_{max}**	**P_i**
-40 °C to +85 °C (-40 °F to +185 °F)	T4	200 mA	0.8 W
-40 °C to +70 °C (-40 °F to +158 °F)			1 W
-40 °C to +40 °C (-40 °F to +104 °F)	T5	25 mA	0.75 W
	T6		0.5 W

Fieldbus transmitters
(PROFIBUS PA / FOUNDATION Fieldbus)
Intrinsically Safe:
Class I, II, and III; Division 1; Group A, B, C, D, E, F, G
Class I; Zone 0; AEx ia Group IIC T6, T4;
Non-incendive Class I, II, and III; Division 2; Group A, B, C, D, F, G

Transmitters with 4 to 20 mA output signal and HART communication and Fieldbus transmitter
(PROFIBUS PA / FOUNDATION Fieldbus)
Explosion-Proof: Class I; Division 1, Group A, B, C, D
Class II/III, Division 1, Group E, F, G
Degree of protection: NEMA Type 4X (indoor or outdoor)

Canadian standard (CSA)

Transmitters with 4 to 20 mA output signal and HART communication and Fieldbus transmitter
(PROFIBUS PA / FOUNDATION Fieldbus)
Explosion-Proof: Class I; Division 1; Group B, C, D
Class II/III; Division 1; Group E, F, G
Degree of protection: NEMA Type 4X (indoor or outdoor)

Standards Association of Australia (SAA)

Transmitters of protection type "Intrinsically safe Ex ia" and "Non-sparking material" Ex n

Transmitters with 4 to 20 mA output signal and HART communication
Identification:
Ex ia IIC T4 (P_i 0.8 W Ta = 85 °C) / T6 (P_i 0.7 W Ta = 40 °C)
Ex n IIC T4 (Ta = 85 °C / T6 (Ta = 40 °C)
IP 66

Intrinsically safe installation input parameters:
U_i = 30 V
I_i = 200 mA
P_i = 0.8 W for T4 where Ta = +85 °C (+185 °F) or
P_i = 0.7 W for T4 where Ta = +40 °C (+104 °F)

Effective internal capacitance: Ci = 52 nF
Effective internal inductance: Li ≈ 0 mH

Ex n installation input parameters:
U_i = 30 V

Transmitter with protection type "flameproof enclosure Ex d"

Transmitter with 4 to 20 mA output signal and HART communication and Fieldbus transmitter (PROFIBUS PA/FOUNDATION Fieldbus, Modbus)
Identification:
Zone 1: Ex d IIC T6 (Tamb +75 °C) IP66/IP67
Zone A21: Ex tD A21 T85 (Tamb +75 °C) IP66/IP67

Electrical Data and Options

HART digital communication and 4 to 20 mA output

Power supply

The transmitter operates from 10.5 to 45 V DC with no load and is protected against reverse polarity connection (additional load allows operations over 45 V DC).
Minimum power supply is 14 V DC with backlit display.
For EEx ia and other intrinsically safe approval power supply must not exceed 30 V DC.

Ripple

Maximum permissible voltage ripple of power supply during communication:
7 Vss at f = 50 to 100 Hz
1 Vss at f = 100 to 200 Hz
0.2 Vss at f = 200 to 300 Hz

Load limitations

Total loop resistance at 4 to 20 mA and HART:

$$R(k\Omega) = \frac{\text{Supply voltage} - \text{minimum operating voltage (V DC)}}{22.5\ \text{mA}}$$

A minimum of 250 Ω is required for HART communication.

LCD display (optional)

19-segment alphanumeric display (2-line, 6-character) with additional bar chart display, optionally with back illumination.
User-specific display:
Output current in percent or
Output current in mA or
Freely-selectable process variable
Diagnostic messages, alarms, measuring range infringements and changes to the configuration are also displayed.

Output signal

Two-wire 4 to 20 mA related to differential pressure
HART® communication provides digital process variables (%, mA or engineering units), absolute pressure and process temperature (engineering unit) superimposed on the 4 to 20 mA signal.

Output current limits (according to NAMUR standard)

Overload condition
– Lower limit: 3.8 mA (configurable down to 3.5 mA)
– Upper limit: 20.5 mA (configurable up to 22.5 mA)

Alarm current

Minimum alarm current:	configurable from 3.5 to 4 mA Standard setting: 3.6 mA
Maximum alarm current:	configurable from 20 to 22.5 mA Standard setting: 21 mA
Standard setting:	maximum alarm current

SIL: Functional safety (optional) according to IEC 61508/61511

Device with certificate of conformity for use in safety-relevant applications, including SIL 2.

PROFIBUS PA output

Type of appliance

Pressure transmitter in conformance with Profile 3.0, Class A and B; ID number 04C2 HEX

Power supply

The transmitter is driven with 10.2 to 32 V DC (no polarity).
The power supply must not exceed 17.5 V DC when used in EEx ia zones.
Intrinsic safety installation according to FISCO model.

Current consumption

Operating (quiescent): 11.7 mA
Fault current limiting: 17.3 mA max.

Output signal

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

Output interface

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

Output cycle time

40 ms

Function blocks

3 standard analog input function blocks,
2 transducer blocks
1 physical block

LCD display (optional)

19-segment alphanumeric display (2-line, 6-character) with additional bar chart display, optionally with back illumination.
User-specific display:
Output value in percent or
OUT (analog input)
Diagnostic messages, alarms, measuring range infringements and changes to the configuration are also displayed.

Transmitter failure mode

Permanent self-diagnostic; possible errors indicated in diagnostic parameters and in the status of process values.

FOUNDATION Fieldbus output

Power supply

The transmitter is driven with 10.2 to 32 V DC (no polarity).
The power supply must not exceed 17.5 V DC when used in EEx ia zones.
Intrinsic safety installation according to FISCO model.

Current consumption

Operating (quiescent): 11.7 mA
Fault current limiting: 17.3 mA max.

Output signal

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

Function blocks/execution time

3 standard analog input function blocks (each 80 ms)
1 standard PID function block (100 ms)

Additional blocks

1 custom pressure with calibration transducer block
1 standard resource block
1 custom temperature with calibration transducer block

Number of link objects

10

Number of VCRs

16

Output interface

FOUNDATION Fieldbus digital communication protocol to standard H1, compliant with specification V. 1.5

LCD display (optional)

19-segment alphanumeric display (2-line, 6-character) with additional bar chart display, optionally with back illumination.
User-specific display:
Output value in percent or
OUT (analog input)
Diagnostic messages, alarms, measuring range infringements and changes to the configuration are also displayed.

Transmitter interference mode

Permanent self-diagnostic; possible errors indicated in diagnostic parameters and in the status of process values.

Measuring accuracy

Reference conditions according to IEC 60770 apply: 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 Hastelloy and silicone oil fill. Measurement range with HART digital trim values equal to 4 to 20 mA span end points and linear characteristic.

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

The accuracy related to the Upper Range Limits (URL) is affected by the actual turndown (TD) as a ratio between Upper Range Limit (URL) and calibrated span (URL/span).

In order to optimize performance characteristics, it is recommended to select the transmitter sensor providing the lowest turndown ratio.

Dynamic behavior (according to IEC 61298-1)

Devices with standard configuration and turndown to 30:1 and linear output characteristic
Dead time: 30 ms
Time constant (63.2 % of total step change):
– Sensors F to R: 150 ms
– Sensor C: 400 ms
– Sensor A: 1000 ms

Accuracy rating

Percentage of calibrated span including combined effects of linearity, hysteresis and reproducibility.
For Fieldbus versions SPAN refers to analog input function block outscale range.

Differential pressure sensor
267JS
– ± 0.075 % for turndown from 1:1 to 10:1

– $\pm\left(0.075\ \% + 0.005 \times \frac{\text{URL}}{\text{Span}} - 0.05\right)\%$ At turndown > 10:1

269JS
– ± 0.04 % for turndown from 1:1 to 10:1

– $\pm\left(0.04\ \% + 0.005 \times \frac{\text{URL}}{\text{Span}} - 0.05\right)\%$ At turndown > 10:1

Absolute pressure sensor
– 0.1 % URL for absolute pressure sensor

Process temperature measurement (Pt 100)
– ± 0.3 °C (0.54 °F)

Operating influences

Ambient temperature

(turndown to 15:1)
Per 20 K change between the limits of -20 °C to +65 °C (-4 °F to +149 °F)

Differential pressure sensor
267JS
± (0.04 % URL + 0.065 % span)

269JS
± (0.03 % URL + 0.05 % span)

Absolute pressure sensor
± (0.08 % URL + 0.08 % span)
Limited to ± (0.1 % URL + 0.1 % span) per the complete temperature range of 120 K (216 °F)

Static pressure

(zero errors can be calibrated out at operating pressure)

Meas. range	Sensor A	Sensor C, F, L, N	Sensor R
On zero	to 2 bar: 0.05 % URL	to 100 bar: 0.05 % URL	to 100 bar: 0.1 % URL
	> 2 bar: 0.05 % URL/bar	> 100 bar: 0.05 % URL/100 bar	> 100 bar: 0.1 % URL/100 bar
On span	to 2 bar: 0.05 % span	to 100 bar: 0.05 % span	to 100 bar: 0.1 % span
	> 2 bar: 0.05 % span/bar	> 100 bar: 0.05 % span/ 100 bar	> 100 bar: 0.1 % span/ 100 bar

Power supply

Within the specified limits for the voltage/load the total influence is less than 0.001 % per volt.

Load

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

Electromagnetic fields

Total effect: less than 0.05 % of span from 80 to 1000 MHz and for field strengths up to 10 V/m when tested with unshielded conduit, with or without meter.

Common-mode interference

No effect from 250 Veff (50 Hz) or 50 V DC

Installation position

Rotations in the plane of the transmitter diaphragm have negligible effect. A tilt from vertical causes a zero shift of sin α x 0.35kPa (3.5 mbar, 1.4 in H_2O) of URL which can be corrected with the zero adjustment. No effect on the span.

Stability

± 0.15 % of URL over a sixty-month period

Vibration effect

± 0.10 % of URL (according to IEC 61298–3)

Technical Specification

(Refer to ordering information sheets for variant availability related to the specific model)

Materials

Process isolating diaphragms[1)]

Hastelloy C276™ stainless steel (1.4435); Monel 400™, Tantalum

Process flange, adapter, plugs and drain/vent valves[1)]

Hastelloy C276™ stainless steel (1.4404); Monel 400™, Kynar (PVDF)

Sensor fill fluid

Silicone oil, inert fill (carbon fluoride)

Sensor housing

Stainless steel

Mounting bracket

Stainless steel

Gaskets[1)]

Viton™ (FPM), Perbunan (NBR), EPDM, PTFE (for sensor C, F, L, N, R) or FEP coated Viton™ (for sensor A)

Bolts and nuts

Stainless steel, bolts and nuts Class A4-70 according to ISO 3506, conforming to NACE MR0175 Class II

Electronics housing and cover

Barrel version
– Aluminum alloy with low copper content, baked epoxy finish
– Stainless steel

DIN version
– Aluminum alloy with low copper content, baked epoxy finish

Covers O-ring

Viton™

Local zero and span adjustments:

Fiberglass-reinforced polycarbonate plastic (removable), no local control keys for stainless steel housings.

Type plate

Stainless steel (316) or plastic data plate attached to the electronics housing

Calibration

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

™ Hastelloy is a Cabot Corporation trademark
™ Monel is an International Nickel Co. trademark
™ Viton is a DuPont de Nemours trademark

1) Wetted transmitter parts

Optional accessories

Mounting bracket

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

LCD display

Plug-in and rotatable

Additional tag plate

Tag with wire (both stainless steel) attached to the transmitter, with a maximum of 30 characters including spaces.

Cleanliness level for oxygen application

Preparation for hydrogen application

Certificates (test, model, calibration, material traceability)

Process connections

Flange: ¼-18 NPT on the process axis, selectable with fixing threads 7/16-20 UNF or DIN 19213 connection with M10 threading for operating pressures up to 10 MPa, 100 bar, 1450 psi or M12 threading for higher operating pressures up to 41 MPa, 410 bar, 5945 psi
Adapter: ½-14 NPT on process axis
Center distance between flanges: 54 mm (2.13 in); 51, 54 or 57 mm (2.01, 2.13 or 2.24 in) as per adapter fittings

Electrical connections

Two ½-14 NPT or M20 x 1.5 threaded bores for cable glands, direct on housing
or plug connector
– HART: straight or angle Harting Han 8D (8U) connector and one mating plug
– FOUNDATION-Fieldbus/PROFIBUS PA; plug 7/8 in / M12 x 1

Terminal blocks

HART version: four terminals for signal/external display, for wiring up to 2.5 mm² (14 AWG) and four connection points for test and communication purposes.
Fieldbus versions: two signal terminals (bus connector) for wiring up to 2.5 mm² (14 AWG)

Ground

Internal and external 4 mm² (12 AWG) ground termination points are provided.

Installation position

The transmitter can be mounted in any position.
The electronics housing may be rotated 360°. A positive stop prevents over-travel.

Weight (without options)

Approximately 3.5 kg (8lb), add 1.5 kg (3.4lb) for stainless steel housing. Packaging adds 650 g

Packaging

Carton approx. 230 x 250 x 270 mm (9 x 10 x 11 in)

Configuration

Transmitter with HART communication and 4 to 20 mA output current

Standard configuration

Transmitters are factory calibrated to the customer's specified range. Calibrated range and measuring point number are stamped on the type plate. If this data has not been specified, the transmitter will be delivered configured as follows:

4 mA	Zero point
20 mA	Upper range limit (URL)
Output	linear
Damping	0.125 sec
Transmitter failure mode	21 mA
Optional LCD display	0 to 100 % linear

Any or all the above configurable parameters, including lower range value and upper range value can be easily changed by a PC, running the configuration software SMART VISION with DTM for 2600T. Data regarding flange type and material, O-rings and filling liquid is stored in the device.

Transmitter with PROFIBUS PA communication

Transmitters are factory calibrated to the customer's specified range. Calibrated range and measuring point number are stamped on the type plate. If this data has not been specified, the transmitter will be delivered configured as follows:

Measure profile	Pressure
Engineering unit	mbar/bar
Output scale 0 %	Lower range limit (LRL)
Output scale 100 %	Upper range limit (URL)
Output	linear
Upper alarm limit	Upper range limit (URL)
Upper warning limit	Upper range limit (URL)
Lower warning limit	Lower range limit (LRL)
Lower alarm limit	Lower range limit (LRL)
Limit hysteresis	0.5 % of output scale
PV filter	0.125 sec
Address	126

Any or all the above configurable parameters, including lower range value and upper range value can be easily changed by a PC, running the configuration software SMART VISION with DTM for 2600T. Data regarding flange type and material, O-rings and filling liquid is stored in the device.

Transmitter with FOUNDATION Fieldbus communication

Transmitters are factory calibrated to the customer's specified range. Calibrated range and measuring point number are stamped on the type plate. If this data has not been specified, the transmitter will be delivered configured as follows:

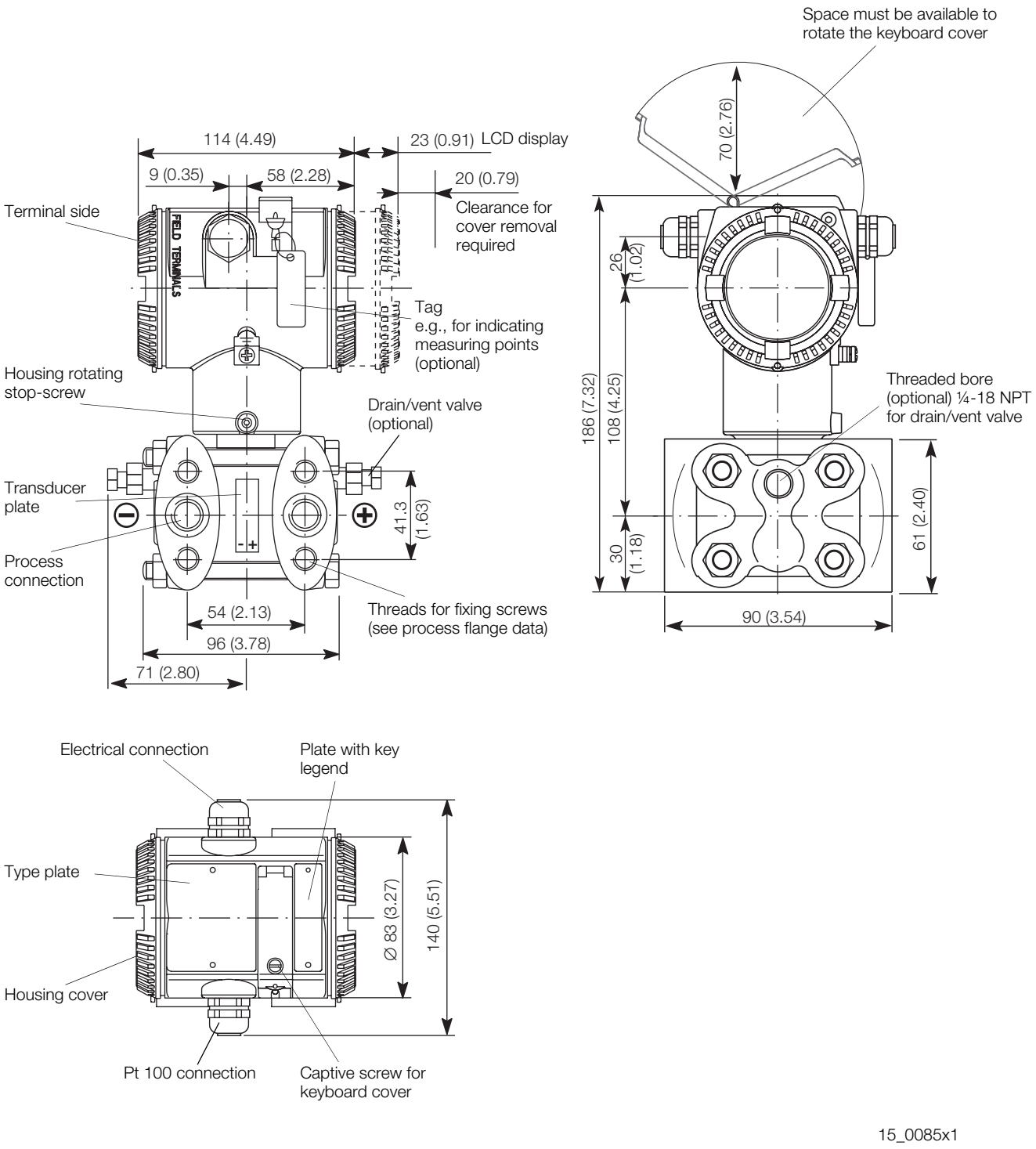
Measure profile	Pressure
Engineering unit	mbar/bar
Output scale 0 %	Lower range limit (LRL)
Output scale 100 %	Upper range limit (URL)
Output	linear
Upper alarm limit	Upper range limit (URL)
Upper warning limit	Upper range limit (URL)
Lower warning limit	Lower range limit (LRL)
Lower alarm limit	Lower range limit (LRL)
Limit hysteresis	0.5 % of output scale
PV filter	0.125 sec
Address	not required

Any or all the above configurable parameters, including lower range value and upper range-value can be changed by any FOUNDATION Fieldbus-compatible configurator. Data regarding flange type and material, O-rings and filling liquid is stored in the device.

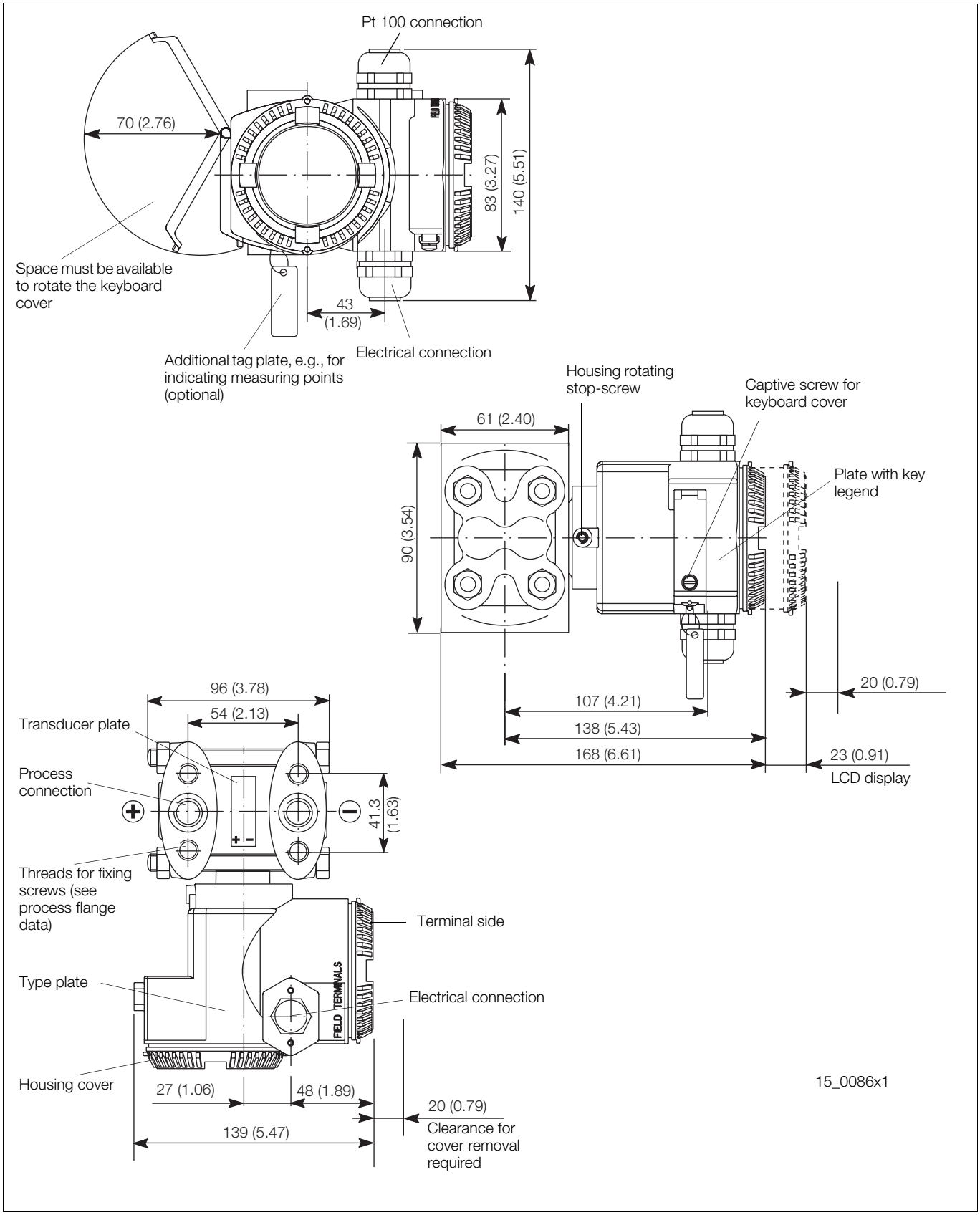
Mounting Dimensions (not design data)

Transmitter with barrel housing

Deviations in the drawing are possible. Measurements in mm (inches)

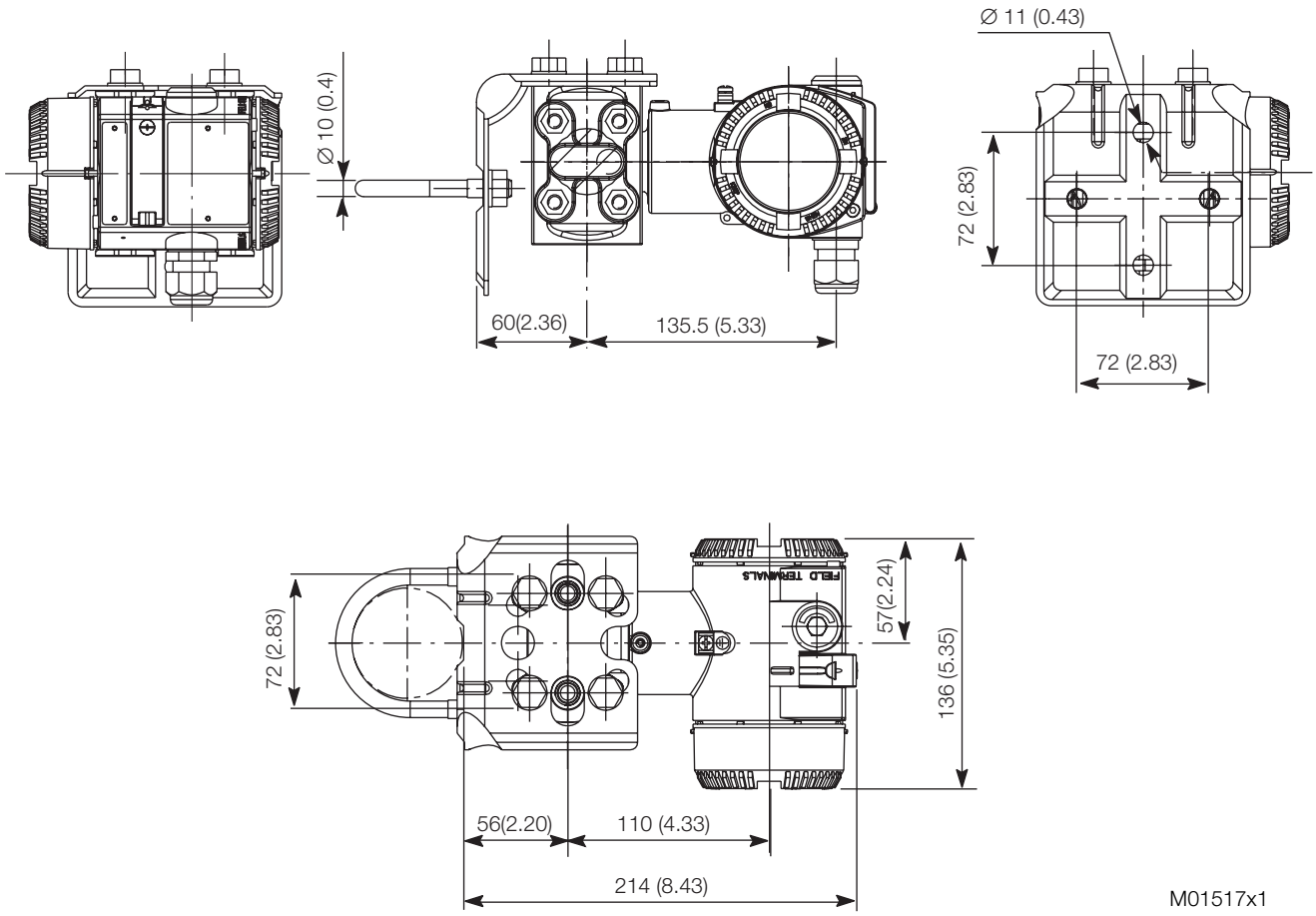


Transmitter with DIN housing



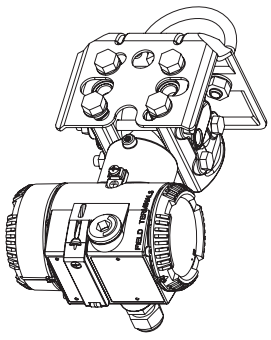
Mounting options with bracket

Deviations in the drawing are possible. Measurements in mm (inches)



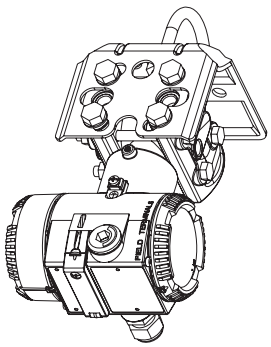
M01517x1

Vertical pipe mounting



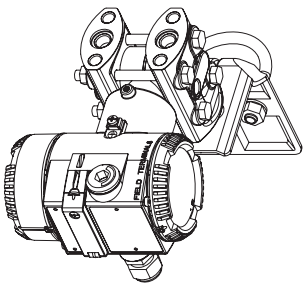
M01518x1

Horizontal pipe mounting



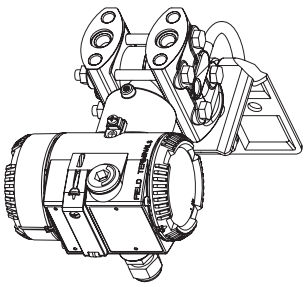
M01519x1

Vertical pipe mounting and transmitter above the mounting bracket



M01520x1

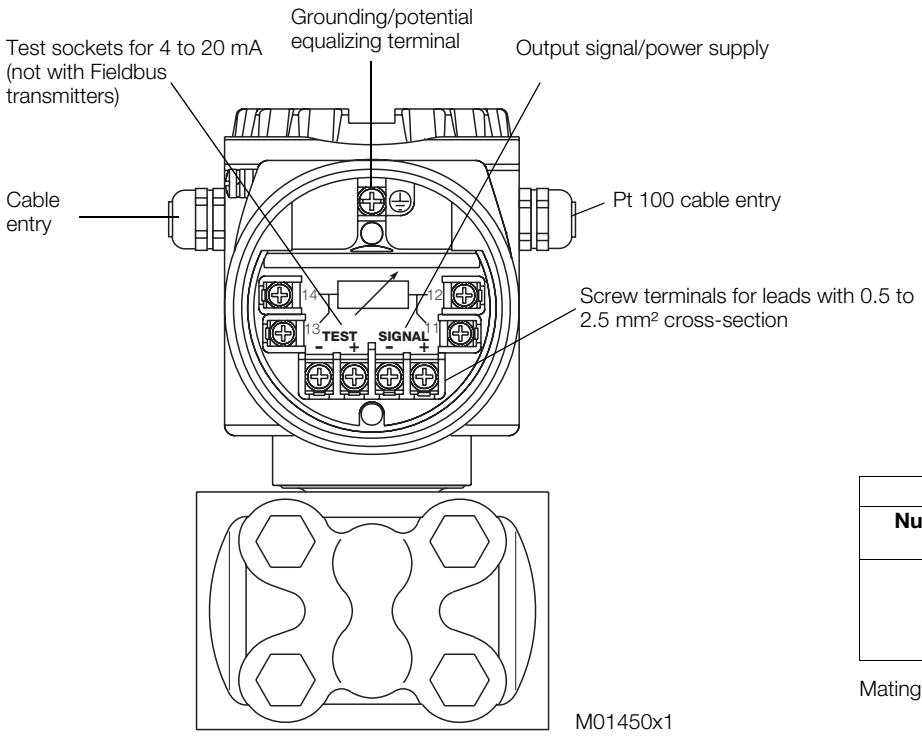
Horizontal pipe mounting and transmitter above the mounting bracket



M01521x1

Electrical connections

Standard terminal block



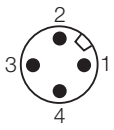
M01450x1

Fieldbus plug connector

7/8 in connector



M12 x 1 connector



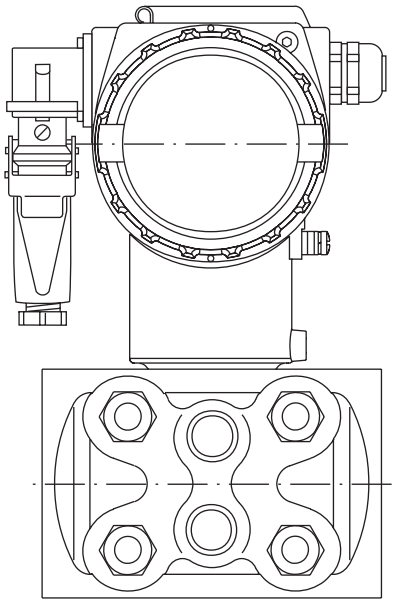
15_0066x1

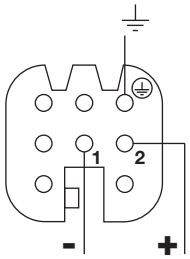
Pin (male) assignment		
Number	**FOUNDATION Fieldbus**	**PROFIBUS PA**
1	FF-	PA+
2	FF+	Ground
3	Shield	PA-
4	Ground	Shield

Mating plug (socket) not supplied

Harting Han 8D (8U) connector

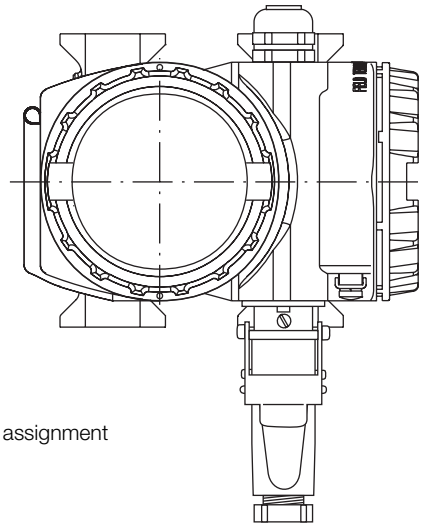
DIN housing





Harting Han 8D (8U) pin assignment (socket view)

Barrel housing



15_0079x1

Ordering Information

Multivariable transmitter			Variant digit No.	1-6	7	8	9	10	11	Code			
for differential & absolute pressure / temperature													
267JS	**Base accuracy: 0.075 %**		Catalog No.	**267JS-**									
269JS	**Base accuracy: 0.04 %**		Catalog No.	**269JS-**									
Sensor - Span limits													
0.05 ... 1 kPa	0.5 ... 10 mbar	0.2 ... 4 in H_2O			A								
0.2 ... 6 kPa	2 ... 60 mbar	0.8 ... 24 in H_2O			C								
0.4 ... 40 kPa	4 ... 400 mbar	1.6 ... 160 in H_2O			F								
2.5 ... 250 kPa	25 ... 2500 mbar	10 ... 1000 in H_2O			L								
20 ... 2000 kPa	0.2 ... 20 bar	2.9 ... 290 psi			N								
100 ... 10000 kPa	1 ... 100 bar	14.5 ... 1450 psi			R								
Static pressure													
0 ... 0.6 MPa	0 ... 6 bar	0 ... 87 psi		1)		1							
0 ... 2 MPa	0 ... 20 bar	0 ... 290 psi		2)		2							
0 ... 10 MPa	0 ... 100 bar	0 ... 1450 psi		3)		3							
0 ... 41 MPa	0 ... 410 bar	0 ... 5945 psi		3)		4							
Diaphragm material / Fill fluid		**(wetted parts)**											
AISI 316L ss		Silicone oil		NACE			S						
Hastelloy C276		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 ss		Inert fluid		NACE	4)		A						
Hastelloy C276		Inert fluid		NACE	4)		F						
Monel 400		Inert fluid		NACE	4)		C						
Monel 400 gold plated		Inert fluid		NACE	4)		Y						
Tantalum		Inert fluid		NACE	4)		D						
Process connection material / Process connection				**(wetted)**									
AISI 316L ss		(horizontal)	1/4-18 NPT-f direct (7/16-20 UNF U.S. thread)		NACE			A					
AISI 316L ss		(horizontal)	1/4-18 NPT-f direct (DIN 19213)		NACE			C					
AISI 316L ss		(horizontal)	1/2-14 NPT-f through adapter (7/16-20 UNF U.S. thread)		NACE			B					
Hastelloy C276		(horizontal)	1/4-18 NPT-f direct (7/16-20 UNF U.S. thread)		NACE			D					
Hastelloy C276		(horizontal)	1/4-18 NPT-f direct (DIN 19213)		NACE			F					
Hastelloy C276		(horizontal)	1/2-14 NPT-f through adapter (7/16-20 UNF U.S. thread)		NACE			E					
Monel 400		(horizontal)	1/4-18 NPT-f direct (7/16-20 UNF U.S. thread)		NACE			G					
Monel 400		(horizontal)	1/4-18 NPT-f direct (DIN 19213)		NACE			L					
Monel 400		(horizontal)	1/2-14 NPT-f through adapter (7/16-20 UNF U.S. thread)		NACE			H					
Kynar (PVDF)	(MWP 1 MPa)	(lateral / axial)	1/4-18 NPT-f direct (7/16-20 UNF U.S. thread)					P					
Bolts / Gaskets			**(wetted)**										
AISI 316L ss		Viton		NACE			4)		3				
AISI 316L ss		PTFE	(max. 10 MPa)	NACE					4				
AISI 316L ss		EPDM		NACE					5				
AISI 316L ss		Perbunan							6				

1) Not available with Sensor - Span limits code C, F, L, N, R
2) Not available with Sensor - Span limits code A, R
3) Not available with Sensor - Span limits code A
4) Suitable for oxygen applications

Continued on next page

Ordering Information, continued

Multivariable transmitter			Variant digit No.	1 - 6	9	10	11	12	13	Code
for differential & absolute pressure / temperature										
267JS	**Base accuracy: 0.075 %**		Catalog No.	**267JS-**						
269JS	**Base accuracy: 0.04 %**		Catalog No.	**269JS-**						
Electronic housing material		**Electrical connection**								
Aluminium alloy	(Barrel version)	1/2-14 NPT						A		
Aluminium alloy	(Barrel version)	M20 x 1.5	(N/A: FM, CSA)					B		
Aluminium alloy	(Barrel version)	Harting Han connector	(N/A: EExnL, EExd, FM, CSA)				5)	E		
Aluminium alloy	(Barrel version)	Fieldbus connector	(N/A: EExnL, EExd, FM, CSA)				5)	G		
AISI 316L ss	(Barrel version)	1/2-14 NPT						S		
AISI 316L ss	(Barrel version)	M20 x 1.5	(N/A: FM, CSA)					T		
Aluminium alloy	(DIN version)	M20 x 1.5	(N/A: FM, CSA)					J		
Aluminium alloy	(DIN version)	Harting Han connector	(N/A: EExnL, EExd, FM, CSA)				5)	K		
Aluminium alloy	(DIN version)	Fieldbus connector	(N/A: ATEX EExd, FM, CSA)				5)	W		
Output		**Additional options**								
HART digital communication and 4 ... 20 mA		No additional options					6) 7)		H	
HART digital communication and 4 ... 20 mA		Options requested					6)		1	
		(to be ordered by Additional ordering code)								
PROFIBUS PA		No additional options					6) 7)		P	
PROFIBUS PA		Options requested					7)		2	
		(to be ordered by Additional ordering code)								
FOUNDATION Fieldbus		No additional options					6) 7)		F	
FOUNDATION Fieldbus		Options requested					7)		3	
		(to be ordered by Additional ordering code)								

Additional ordering information

267JS , 269JS					Code
Vent valve material / Position	**(wetted parts)**				
AISI 316L ss	On process axis	NACE		8)	V1
AISI 316L ss	On flanges side top	NACE		8)	V2
AISI 316L ss	On flanges side bottom	NACE		8)	V3
Hastelloy C276	On process axis	NACE		9)	V4
Hastelloy C276	On flanges side top	NACE		9)	V5
Hastelloy C276	On flanges side bottom	NACE		9)	V6
Monel 400	On process axis	NACE		10)	V7
Monel 400	On flanges side top	NACE		10)	V8
Monel 400	On flanges side bottom	NACE		10)	V9

N/A - Not available with

Continued on next page

5) Select connector type with additional ordering code
6) Not available with Electronic housing material / Electrical connection code G, W
7) Not available with Electronic housing material / Electrical connection code E, K
8) Not available with Process connection material / Process connection code D, E, F, G, H, L, P
9) Not available with Process connection material / Process connection code A, B, C, G, H, L, P
10) Not available with Process connection material / Process connection code A, B, C, D, E, F, P

Additional ordering information

267JS , 269JS			Code			
Explosion protection						
ATEX Group II Category 1/2 GD - Intrinsic Safety EEx ia			E1			
ATEX Group II Category 1/2 G - Flameproof EEx d			E2			
ATEX Group II Category 3 GD - Type of protection N EEx nL energy limited			E3			
ATEX II 1/2 GD, EEx ia + ATEX II 1/2 GD EEx d + ATEX EEx nL			EW			
Factory Mutual (FM) - Intrinsically Safe			EA			
Factory Mutual (FM) - Explosion Proof			EB			
(only with electrical connection 1/2-14 NPT and Stainless steel Tag plate)						
Canadian Standard Association - Intrinsically Safe			ED			
Canadian Standard Association - Explosion Proof			EE			
Canadian Standard Association - Explosion Proof (Canada & USA)			EM			
SAA Ex d IIC T6 and Ex td A21 IP66 T85 °C			X1			
SAA Ex ia IIC T4/T6 and Ex n IIC T4/T6	(only with output HART / 4 ... 20 mA)		X2			
Integrated digital display (LCD)						
With integrated LCD display			L1			
With integrated LCD display (backlit)			L2			
Mounting bracket shape / Material						
For pipe mounting	AISI 316L ss		B2			
For wall mounting	AISI 316L ss		B4			
Operating manual						
German			M1			
Label and Tag Language						
German (stainless steel)	(not with DIN Electronic Housing code J, K, W)		T1			
German and English (plastic)	(not with Factory Mutual - Explosion Proof)		TA			
Additional tag plate						
Stainless steel			I1			
Applications						
Oxygen service cleaning	(Pmax = 12 MPa, Tmax = 60 °C)		P1			
(only available with inert fill and Viton gasket)						
Hydrogen application (H_2) (fluid film)			P2			
Certificates						
Inspection certificate EN 10204-3.1 B of calibration			C1			
Inspection certificate EN 10204-3.1 B of the cleanliness stage according to DIN 25410			C3			
Inspection certificate EN 10204-3.1 B of helium leakage test of the sensor module			C4			
Inspection certificate EN 10204-3.1 B of the pressure test			C5			
Certificate of compliance with the order EN 10204-2.1 of instrument design			C6			
Material traceability						
Certificate of compliance with the order EN 10204-2.1 of process wetted parts			H1			
Inspection certificate EN 10204-3.1.B for pressure-bearing process wetted parts			H3			
with analysis certificates as material verification						
(minor parts with Factory Certificate acc. to EN 10204)						
Test report EN 10204-2.2 of the pressure bearing and process wetted parts			H4			
Connectors						
Fieldbus 7/8 in	(without mating plug, recommended for FOUNDATION Fieldbus)	7) 11)	U1			
Fieldbus M12 x 1	(without mating plug, recommended for PROFIBUS PA)	7) 11)	U2			
Harting Han 8D (8U) - straight entry		6) 11)	U3			
Harting Han 8D (8U) - angle entry		6) 12)	U4			

6) Not available with Electronic housing material / Electrical connection code G, W
7) Not available with Electronic housing material / Electrical connection code E, K
11) Not available with Electronic housing material / Electrical connection code T, S, A, B, J, E
12) Not available with Electronic housing material / Electrical connection code T, S, A, B, J, K

Hastelloy is a trademark of Cabot Corporation
Monel is a trademark of International Nickel Corporation
Viton is a trademark of DuPont Dow Elastomers

Standard delivery items (changes possible by an additional ordering code)

- Adapters supplied singly
- Plugs for process axis (no drain/vent valves)
- General purpose (no Ex application)
- No display, no mounting bracket
- English-language manual and labels
- Type plate material: barrel electronics housing code A, B, E, G, S, T – stainless steel
  DIN electronics housing code J, K, W – plastic
- Configuration with kPa and °C units
- No test, inspection or material certificates

If not otherwise specified prior to manufacture, the customer shall be responsible for the selection of suitable wetted parts and appropriate fill fluid to assure compatibility with the relevant process medium.

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SS/267JS/269JS-EN 01.2011

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