ABB MEASUREMENT & ANALYTICS | DATA SHEET

ProcessMaster FEP620

Electromagnetic flowmeter



Redefining Electromagnetic Flow Meters

Seamlessly merging High performance, Modularity and IOT connectivity

ABB common look and feel
- Easy set-up function
- Simple and intuitive configuration
- Backlit, integrated four-direction rotatable LCD display
- Configurable display pages

Sensor Memory technology
- Secure storage of calibration- and application-specific data
- Quick change-out of transmitter without reprogramming

Verification and online diagnostic
- Easy to check based on fingerprint technology - the reference signature of the device
- Service interval monitoring. Message at end of service interval
- Function and simulation routines for all outputs

Easy-to-understand diagnostic messages
- Continuous monitoring of sensor and transmitter integrity and process conditions
- Text in help menu in response to diagnostic results for fast and efficient error handling

One single transmitter fits all design types
- Integral mount design or remote mount design
- Universal AC/DC power supply

Easily customizable output signals
- One HART/4 - 20 mA current output
- Two fully configurable digital output cumulant and alarm status
- Optional MODBUS module for rich outputs

ProcessMaster series

ProcessMaster is available in two series – ProcessMaster 620 the good fit for everyday applications and ProcessMaster 630 the first choice for all process industry applications delivering best in class functionality and options.

Applicability	**FEP620 series**	**FEP630 series**
	Good fit for everyday applications	**The first choice for all industrial applications**
Chemical Industry Corrosive liquids, acids, bases	✔	✔
Power Coal slurry, Lime slurry, Cooling	✔	✔
Mining Abrasive slurries, hydraulic transport	✔	✔
Pulp & Paper Stock Flows, Latex, Clay, Liquor, Chemicals	Up to 2 % Stock	Up to 4 % Stock
Oil & Gas High pressure applications	✔	✔
Food & Beverage Hygienic applications	✔	✔
Measuring medium minimum conductivity	20 µS/cm	5 µS/cm
Measuring medium temperature	Up to 130 °C (266 °F)	Up to 180 °C (356 °F)
Pressure	≤ PN 40 / Cl 300	≤ PN 40 / Cl 300, option for high pressure
Hazardous area	—	Yes

Features	**FEP620 series**	**FEP630 series**
Nominal diameter	DN 3 to 2000 (⅛ to 80 in)	DN 3 to 2000 (⅛ to 80 in)
Liner material	Hard rubber, Soft rubber, ETFE, PTFE, PFA, Linatex®	Hard rubber, Soft rubber, ETFE, PTFE, PFA, Thick PTFE, Ceramic-Carbide, Linatex®
I/O's	1 x analog, 2 x digital	1 x analog, 2 x digital, option for add-in modules
Communication	HART®, Modbus RTU®	HART®, PROFIBUS DP®, PROFIBUS PA®, Modbus RTU®, Modbus TCP®, Ethernet IP®, PROFINET®
Process diagnostics	Empty pipe	Empty pipe, Partially filling, Gas bubbles, Electrode Impedance, Conductivity, Sensor temperature

… ProcessMaster series

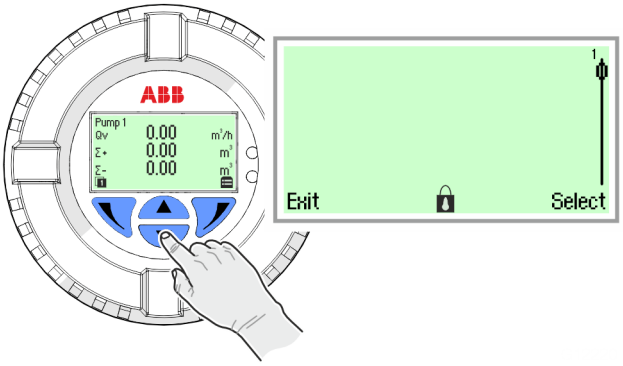
Features and Functions

On-board Health Check

ProcessMaster's in-built fingerprint technology helps to ensure Sensor and Transmitter Integrity without the need to remove the flowmeter from the process. The Check provides a pass / failed result based on a comparison of the current flowmeter status to a set of reference data.

Benefits:

- Easy to operate
- No additional equipment required
- No training necessary
- Quick check of flowmeter integrity

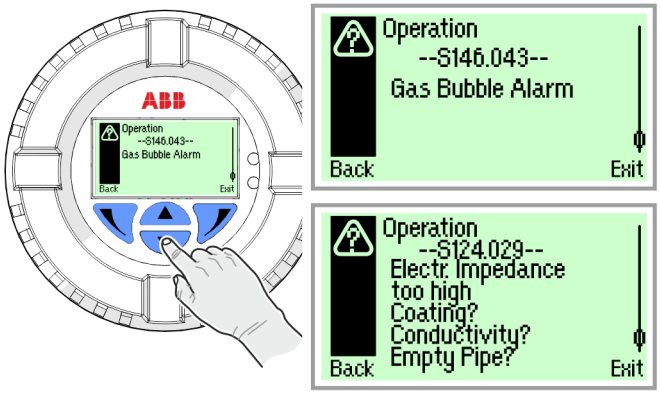


Diagnostics for real-life situations

Detecting critical process conditions at an early stage helps reducing unscheduled downtime and maintenance. Clear text messages simplify troubleshooting.
Device diagnostic information can be accessed without any intervention – either through the HMI or bus communication.

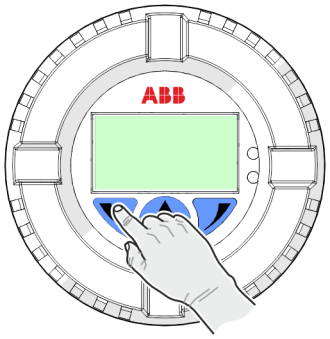
Benefits:

- Peace-of-mind that flowmeter is operating within its specification
- Prioritized alarms to correct most important alarm first
- Through-the-glass operation without the need to open the housing



Verify the Installation is correct - from day one

Improving quality and reducing cost can be a challenge if the flow measurement is unstable. A proper grounding is fundamental to an accurate electromagnetic flow measurement. ProcessMaster's in-built noise / grounding check helps getting the wiring / grounding right from day one without the need for further Tools.



Diagnostic functions

Standard functionality

Noise check / Grounding check

This function allows checking for noise and proper electrical grounding of the device. While the check is in progress, no flow measurement can take place.

Pre-requisites using the functionality:

- Flowmeter sensor must be completely filled
- No flow must occur in the flowmeter sensor

Fingerprint

The "fingerprint" database integrated in the transmitter allows for comparison of the values at the time of factory calibration or commissioning with the currently recorded values.
A quick "on-board health check" resulting in a pass / fail information can be performed.
For an in-depth verification, an external tool is available from ABB (in preparation).

Detection of partial filling

A partially filled sensor affects the flowmeter reading and the measuring accuracy.
If the flowmeter sensor is ordered with a full pipe detection electrode, which is located at the Top of the sensor, the transmitter's '...Diagnosis Tfe' function enables for an alarm in case the sensor tube starts to become partially filled.

Pre-requisites using the functionality:

- Nominal diameter: > DN 50 (> 2")
- Flowmeter sensor design level A
- Conductivity of the measuring medium: 20 to 20000 µS/cm
- Flowmeter in integral mount design

Installation conditions:

- The flowmeter sensor must be installed horizontally with the terminal box pointing upward.

Verification

There is an Option for an in-depth verification of the device using an external Tool from ABB.
This Tool provides a brief documentation of the Verification results allowing for a print out.

Overview

Sensor

Integral mount design
FEP621



Remote mount design
FET622



FEP622



Figure 1: Designs

Flowmeter sensor	
Model	ProcessMaster FEP621, FEP622, FET622
Housing	Integral mount design, remote mount design
Measuring accuracy for liquids	0.4 % of the measured value, option for 0.3%+/-2mm/s ,0.2%+/-2mm/s, of the measured value
Permissible measuring medium temperature T_{medium}	−5 to 130 °C (−4 to 266 °F)
Minimum conductivity	> 20 µS/cm, (20 µS/cm for demineralized water)
Nominal pressure rating	PN 10 to 40; ASME CL 150, CL 300
Nominal diameter	DN 3 to 2000 (⅛ to 80 in)
Process connection	Flange based on DIN, ASME
Materials process connection	Steel, stainless steel
Lining material	Hard rubber (DN 25 to 2000), soft rubber (DN 50 to 2000), PTFE (DN 10 to 600), PFA (DN 3 to 200), ETFE (DN 25 to 600), Ceramic Carbide (DN 25 to 1000), Linatex® (DN 50 to 600)
Electrode material	Stainless steel, Hastelloy B®, Hastelloy C®, Platinum-iridium, Tantalum, Titanium, Double Layer, Tungsten carbide
IP rating	Integral mount design: IP 66 / IP 67 Remote mount design: IP 66 / IP 67 / IP 68 (sensor only)

Approvals	
Pressure Equipment Directive 2014/68/EU	Conformity assessment in accordance with category III, fluid group 1
CRN (Canadian regulatory number)	On request
Explosion protection	ATEX / IECEx (in preparation) Class 1, Division 2 (in preparation)
Additional approvals	At www.abb.com/flow or on request.

Transmitter



Figure 2: Transmitter FET622

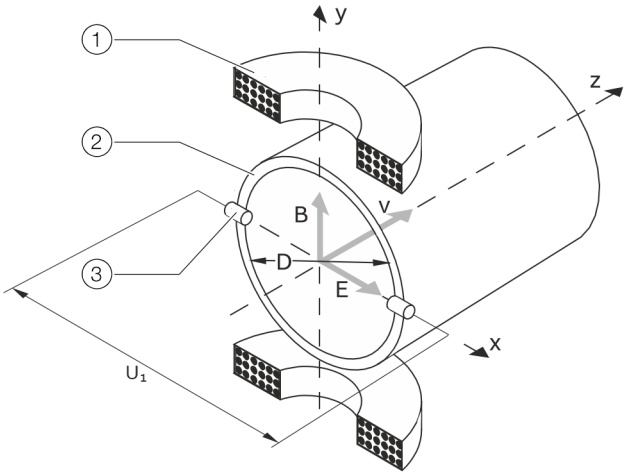
Transmitter	
Model	FET622
Housing	Remote mount design
IP rating	IP 66 / IP 67
Cable length	Maximum 200 m (656 ft), remote mount design only
Power supply	100 to 240 V AC (−15 / +10 %) 24 to 48 V DC (−10 / +10 %)
Outputs	HART: 4 to 20 mA, active Digital output 1: passive, configurable as pulse, frequency or switch output formatting Digital output 2: passive, configurable as pulse or switch output Optional Modbus RTU® output module RS485, two sets of terminals
Communication	HART 7.9 Option: Modbus RTU®
Local display	Configurable graphical display

Approvals	
Additional approvals	At www.abb.com/flow or on request.

Flowmeter sensor

Measuring principle

Measurements performed by the electromagnetic flowmeter are based on Faraday's law of induction. A voltage is generated in a conductor when it moves through a magnetic field.



(1) Magnet coil
(2) Measuring tube in electrode plane
(3) Measuring electrode

Figure 3: Electromagnetic flowmeter diagram

$U_1 \sim B \times D \times v$ $\quad qv = \frac{D^2 \times \pi}{4} \times v$ $\quad U_1 \sim qv$

U_1	Measuring span	v	Average flow velocity
B	Magnetic induction	qv	Volume flow rate
D	Electrode spacing		

With the device-relevant application of this measuring principle, a conductive measuring medium flows through a tube in which a magnetic field is generated perpendicular to the flow direction (see Figure 3).
The voltage induced in the measuring medium is tapped by two diametrically opposed electrodes. This measurement voltage is proportional to the magnetic induction, the electrode spacing and the average medium velocity v.
Taking into account that the magnetic induction and the electrode spacing are constant values results in a proportion between the measurement voltage U_1 and the average medium velocity.
From the calculation of the volume flow rate follows that the measurement voltage is linear and proportional to the volume flow rate.

The induced voltage is converted by the transmitter to standardized, analog and digital signals.

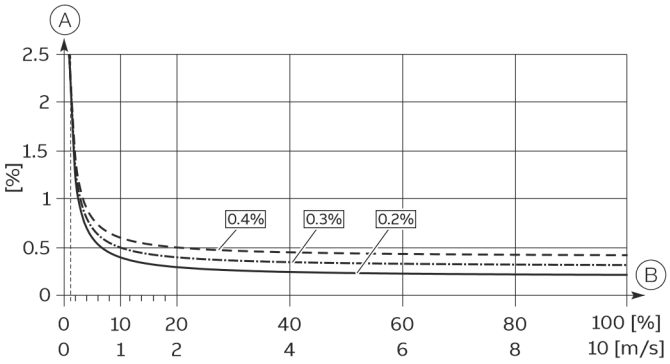
Measuring accuracy

Reference conditions

Based on EN 29104	
Temperature of medium being measured	20 °C (68 °F) ±2 K
Ambient temperature	20 °C (68 °F) ±2 K
Power supply	Nominal voltage acc. to name plate U = ±1 %; frequency f = ±1 %
Installation conditions	• Upstream: > 10 x DN straight section • Downstream: > 5 x DN straight section
Warm-up phase	30 minutes

Measurement value deviation and reproducibility

Measuring error



(A) Accuracy ± of measured value in %
(B) Flow velocity v in m/s, Q / Q_{max}DN in %

Figure 4: Measuring error

Impulse output
Standard calibration DN 3 to 2000
±0.4 % of measured value, ±2 mm/s
Optional calibration
Optional 0.4 % of measured value, ±1 mm/s
Optional 0.3 % of measured value ±2 mm/s*
Optional 0.2% of measured value +/-2 mm/s

* ≤ DN 600: PAC (Pattern Approval of China)
* ≥ DN 700: 0.4 % ± mm/s

Current output
Same as pulse output plus ±0.1 % of measured value ±0.01 mA

Repeatability, response time

Repeatability	**Response time*** **
≤ 0.11 % of measured value, t_{meas} = 100 s, v = 0.5 to 10 m/s	As step function 0 to 99 % 5 τ ≥ 200 ms at 25 Hz excitation frequency 5 τ ≥ 400 ms at 12.5 Hz excitation frequency 5 τ ≥ 500 ms at 6.25 Hz excitation frequency

*** Of current output with damping of 0.04 seconds.

Permitted pipe vibration

In accordance with EN 60068-2-6
Applicable to sensors in remote mount design and sensors in integral mount design.

- Maximum deflection:
  0.15 mm (0.006 in) in the frequency range of 10 to 58 Hz
- Maximum acceleration:
  2 g in the frequency range of 58 to 150 Hz

IP rating

- IP 66 / IP 67 in accordance with EN 60529
- IP 68 in accordance with EN 60529
  (for remote mount design only)
  Test conditions for IP 68 in accordance with EN 60529:
  Continuous submergence for 14 days (2 weeks) at 7 m (23 ft) depth.

Signal cables

For remote mount design only.
A preamplifier is required for cables > 50 m (> 164 ft).

Maximum signal cable length between flowmeter sensor and transmitter:

Preamplifier	Signal cable length
Without	Max. 50 m (164 ft)
With	Max. 200 m (656 ft)

Temperature data

Storage temperature range
−40 to 70 °C (−40 to 158 °F)

The temperature range offered by the device is dependent on a number of different factors.
These factors include the measuring medium temperature T_{medium}, the ambient temperature T_{amb}, operating pressure P_{medium}, liner material and the approval for explosion protection.

Maximum permissible cleaning temperature

CIP media	Liner	Cleaning temperature
Steam	PTFE, PFA	150 °C (302 °F)
Cleaning fluid	PTFE, PFA	140 °C (284 °F)

- The maximum cleaning temperature specified applies to a maximum ambient temperature of 25 °C (77 °F).
  If the ambient temperature up-scales > 25 °C (> 77 °F), then the temperature difference to the current temperature must be subtracted from the max. cleaning temperature.
- The specified cleaning temperature may have an effect for a maximum of 60 minutes.

… Flowmeter sensor

… Temperature data

Maximum ambient temperature depending on measuring medium temperature

Integral mount design

Flowmeter sensor in standard version

Lining material	Flange material	Ambient temperature range (T_{amb})		Measuring medium temperature (T_{medium})	
		Minimum	Maximum	Minimum	Maximum
Hard rubber	Steel	−10 °C (14 °F)	60 °C (140 °F)	−5 °C (23 °F)	80 °C (176 °F)
Hard rubber	Stainless steel	−15 °C (5 °F)	60 °C (140 °F)	−5 °C (23 °F)	80 °C (176 °F)
Soft rubber	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	60 °C (140 °F)
Soft rubber	Stainless steel	−15 °C (5 °F)	60 °C (140 °F)	−15 °C (5 °F)	60 °C (140 °F)
PTFE	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	90 °C (194 °F)
			45 °C (113 °F)		130 °C (266 °F)
PTFE	Stainless steel	−20 °C (−4 °F)	60 °C (140 °F)	−25 °C (−13 °F)	90 °C (194 °F)
		−40 °C (−40 °F)**	45 °C (113 °F)		130 °C (266 °F)
PFA	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	90 °C (194 °F)
			45 °C (113 °F)		130 °C (266 °F)
PFA	Stainless steel	−20 °C (−4 °F)	60 °C (140 °F)	−25 °C (−13 °F)	90 °C (194 °F)
		−40 °C (−40 °F)**	45 °C (113 °F)		130 °C (266 °F)
ETFE	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	90 °C (194 °F)
			45 °C (113 °F)		130 °C (266 °F)
ETFE	Stainless steel	−20 °C (−4 °F)	60 °C (140 °F)	−25 °C (−13 °F)	90 °C (194 °F)
		−40 °C (−40 °F)**	45 °C (113 °F)		130 °C (266 °F)
Linatex	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	70 °C (158 °F)
Linatex	Stainless steel	−20 °C (−4 °F)	60 °C (140 °F)	−20 °C (−4 °F)	70 °C (158 °F)

Remote mount design

Flowmeter sensor in standard version

Lining material	Flange material	Ambient temperature range (T_{amb})		Measuring medium temperature (T_{medium})	
		Minimum	Maximum	Minimum	Maximum
Hard rubber	Steel	−10 °C (14 °F)	60 °C (140 °F)	−5 °C (23 °F)	80 °C (176 °F)
Hard rubber	Stainless steel	−15 °C (5 °F)	60 °C (140 °F)	−5 °C (23 °F)	80 °C (176 °F)
Soft rubber	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	60 °C (140 °F)
Soft rubber	Stainless steel	−15 °C (5 °F)	60 °C (140 °F)	−15 °C (5 °F)	60 °C (140 °F)
PTFE	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	90 °C (194 °F)
		−10 °C (14 °F)	45 °C (113 °F)	−10 °C (14 °F)	130 °C (266 °F)
PTFE	Stainless steel	−25 °C (−13 °F)	60 °C (140 °F)	−25 °C (−13 °F)	130 °C (266 °F)
		−40 °C (−40 °F)**			
PFA	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	130 °C (266 °F)
PFA	Stainless steel	−25 °C (−13 °F)	60 °C (140 °F)	−25 °C (−13 °F)	130 °C (266 °F)
		−40 °C (−40 °F)**			
ETFE	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	130 °C (266 °F)
ETFE	Stainless steel	−25 °C (−13 °F)	60 °C (140 °F)	−25 °C (−13 °F)	130 °C (266 °F)
Linatex	Steel	−10 °C (14 °F)	60 °C (140 °F)	−10 °C (14 °F)	70 °C (158 °F)
Linatex	Stainless steel	−20 °C (−4 °F)	60 °C (140 °F)	−20 °C (−4 °F)	70 °C (158 °F)

Measuring range table

The full-scale value can be set between 0.02 x Q_{max}DN and 2 x Q_{max}DN.

Nominal diameter		Lower range value	Q_{max}DN	Upper range value
DN	**in**	**0.02 x Q_{max}DN (≈ 0.2 m/s)**	**0 to ≈ 10 m/s**	**2 x Q_{max}DN (≈ 20 m/s)**
3	1/10	0.08 l/min (0.02 US gal/min)	4 l/min (1.06 US gal/min)	8 l/min (2.11 US gal/min)
4	5/32	0.16 l/min (0.04 US gal/min)	8 l/min (2.11 US gal/min)	16 l/min (4.23 US gal/min)
6	¼	0.4 l/min (0.11 US gal/min)	20 l/min (5.28 US gal/min)	40 l/min (10.57 US gal/min)
8	5/16	0.6 l/min (0.16 US gal/min)	30 l/min (7.93 US gal/min)	60 l/min (15.85 US gal/min)
10	⅜	0.9 l/min (0.24 US gal/min)	45 l/min (11.9 US gal/min)	90 l/min (23.78 US gal/min)
15	½	2 l/min (0.53 US gal/min)	100 l/min (26.4 US gal/min)	200 l/min (52.8 US gal/min)
20	¾	3 l/min (0.79 US gal/min)	150 l/min (39.6 US gal/min)	300 l/min (79.3 US gal/min)
25	1	4 l/min (1.06 US gal/min)	200 l/min (52.8 US gal/min)	400 l/min (106 US gal/min)
32	1 ¼	8 l/min (2.11 US gal/min)	400 l/min (106 US gal/min)	800 l/min (211 US gal/min)
40	1 ½	12 l/min (3.17 US gal/min)	600 l/min (159 US gal/min)	1200 l/min (317 US gal/min)
50	2	1.2 m^3/h (5.28 US gal/min)	60 m^3/h (264 US gal/min)	120 m^3/h (528 US gal/min)
65	2 ½	2.4 m^3/h (10.57 US gal/min)	120 m^3/h (528 US gal/min)	240 m^3/h (1057 US gal/min)
80	3	3.6 m^3/h (15.9 US gal/min)	180 m^3/h (793 US gal/min)	360 m^3/h (1585 US gal/min)
100	4	4.8 m^3/h (21.1 US gal/min)	240 m^3/h (1057 US gal/min)	480 m^3/h (2113 US gal/min)
125	5	8.4 m^3/h (37 US gal/min)	420 m^3/h (1849 US gal/min)	840 m^3/h (3698 US gal/min)
150	6	12 m^3/h (52.8 US gal/min)	600 m^3/h (2642 US gal/min)	1200 m^3/h (5283 US gal/min)
200	8	21.6 m^3/h (95.1 US gal/min)	1080 m^3/h (4755 US gal/min)	2160 m^3/h (9510 US gal/min)
250	10	36 m^3/h (159 US gal/min)	1800 m^3/h (7925 US gal/min)	3600 m^3/h (15850 US gal/min)
300	12	48 m^3/h (211 US gal/min)	2400 m^3/h (10567 US gal/min)	4800 m^3/h (21134 US gal/min)
350	14	66 m^3/h (291 US gal/min)	3300 m^3/h (14529 US gal/min)	6600 m^3/h (29059 US gal/min)
400	16	90 m^3/h (396 US gal/min)	4500 m^3/h (19813 US gal/min)	9000 m^3/h (39626 US gal/min)
450	18	120 m^3/h (528 US gal/min)	6000 m^3/h (26417 US gal/min)	12000 m^3/h (52834 US gal/min)
500	20	132 m^3/h (581 US gal/min)	6600 m^3/h (29059 US gal/min)	13200 m^3/h (58117 US gal/min)
600	24	192 m^3/h (845 US gal/min)	9600 m^3/h (42268 US gal/min)	19200 m^3/h (84535 US gal/min)
700	28	264 m^3/h (1162 US gal/min)	13200 m^3/h (58118 US gal/min)	26400 m^3/h (116236 US gal/min)
760	30	312 m^3/h (1374 US gal/min)	15600 m^3/h (68685 US gal/min)	31200 m^3/h (137369 US gal/min)
800	32	360 m^3/h (1585 US gal/min)	18000 m^3/h (79252 US gal/min)	36000 m^3/h (158503 US gal/min)
900	36	480 m^3/h (2113 US gal/min)	24000 m^3/h (105669 US gal/min)	48000 m^3/h (211337 US gal/min)
1000	40	540 m^3/h (2378 US gal/min)	27000 m^3/h (118877 US gal/min)	54000 m^3/h (237754 US gal/min)
1050	42	616 m^3/h (2712 US gal/min)	30800 m^3/h (135608 US gal/min)	61600 m^3/h (271217 US gal/min)
1100	44	660 m^3/h (3038 US gal/min)	33000 m^3/h (151899 US gal/min)	66000 m^3/h (290589 US gal/min)
1200	48	840 m^3/h (3698 US gal/min)	42000 m^3/h (184920 US gal/min)	84000 m^3/h (369841 US gal/min)
1400	54	1080 m^3/h (4755 US gal/min)	54000 m^3/h (237755 US gal/min)	108000 m^3/h (475510 US gal/min)
1500	60	1260 m^3/h (5548 US gal/min)	63000 m^3/h (277381 US gal/min)	126000 m^3/h (554761 US gal/min)
1600	66	1440 m^3/h (6340 US gal/min)	72000 m^3/h (317006 US gal/min)	144000 m^3/h (634013 US gal/min)
1800	72	1800 m^3/h (7925 US gal/min)	90000 m^3/h (396258 US gal/min)	180000 m^3/h (792516 US gal/min)
2000	80	2280 m^3/h (10039 US gal/min)	114000 m^3/h (501927 US gal/min)	228000 m^3/h (1003853 US gal/min)

… Flowmeter sensor

Process connections

For an overview of available process connection versions, see **Overview** on page 6.

Installation length

The sensor installation length is based on ISO 13359.
For further details, refer to chapter **Dimensions** on page 26.

Materials

Wetted parts		
Part	**Standard**	**Option**
Liner material	PTFE, PFA, ETFE, hard rubber, soft rubber	Linatex
Measurement and grounding electrode for liner material		
• Hard rubber • Soft rubber	SST 1.4571 (AISI 316Ti)	Hastelloy B-3 (2.4600), Hastelloy C-4 (2.4610), Titanium, Tantalum, Platinum-Iridium, SST 1.4539 (AISI 904L)
• PTFE, PFA, ETFE	SST 1.4539 (AISI 904L)	SST 1.4571 (AISI 316Ti), Hastelloy B-3 (2.4600), Hastelloy C-4 (2.4610), Titanium, Tantalum, Platinum-iridium
Grounding ring	Stainless steel	On request
Protection plate	Stainless steel	On request

Non-wetted parts (process connection)



DN	**Standard**[1)]	**Option**[1)]
DN 3 to 15 (1/10 to ½ in)	Stainless steel	–
DN 20 to 400 (¾ to 16 in)	Steel (galvanized)	Stainless steel
DN 450 to 2000 (18 to 80 in)	Steel (painted)	–

1) The Flanges are made from one of the materials listed below:
Carbon Steel Flanges (Code 'B' in Modelcode):
1.0432 (A105), 1.0460 (A105), CL1 (20#)
Stainless Steel Flanges (Code 'C' in Modelcode)
1.4301 (304), 1.4404 (316L), 1.4401 (316), 1.4435 (317L), 1.4541 (321)

Sensor housing



Part / DN	**Material**
Housing	
DN 3 to 400	Cast aluminum (painted)
(1/10 to 16 in)	Paint coat: ≥ 80 µm thick, RAL 9002
DN 450 to 2000	Welded steel design (painted)
(18 to 80 in)	Paint coat: ≥ 80 µm thick, RAL 9002
Meter tube	Stainless steel [1)]
Terminal box	Plastic, gray white, Polycarbonate
Cable gland [2)]	Polyamide

1) The meter tube in-between the flanges is made from one of the materials listed below:
1.4301 (304), 1.4404 (316L), 1.4401 (316), 1.4435 (317L), 1.4541 (321), 1.4571 (316TI)
2) Cable gland with M 20 x 1.5 or NPT thread, to be selected via the order number.

Material load for process connections

The limits of the permissible measuring medium temperature (T_{medium}) and permissible pressure (P_{medium}) are calculated on the basis of the liner and flange material used in the device (see device name plate).

Minimum permissible operating pressure

The following tables show the permissible minimum operating pressure (P_{medium}) as a function of the measuring medium temperature (T_{medium}) and the liner material.

Flowmeter sensor FEP621, FEP622



Lining material	Nominal diameter	P_{medium} [mbar abs]	T_{medium}*
Hard rubber	DN 25 to DN 2000 (1 to 80 in)	0	< 80 °C (176 °F)
Soft rubber	DN 50 to DN 2000 (2 to 80 in)	0	< 60 °C (140 °F)
PTFE	DN 10 to DN 600 (⅜ to 24 in)	270	< 20 °C (68 °F)
		400	< 100 °C (212 °F)
		500	< 130 °C (266 °F)
PFA	DN 3 to DN 200 (1/10 to 8 in)	0	< 180 °C (356 °F)
ETFE	DN 25 to DN 600 (1 to 24 in)	100	< 130 °C (266 °F)
Linatex**	DN 50 to DN 600 (6 to 24 in)	0	< 70 °C (158 °F)

* For CIP/SIP cleaning, higher temperatures are permitted for limited time periods; refer to **Maximum permissible cleaning temperature** on page 9.

** Only for China production site

… Flowmeter sensor

… Material load for process connections

Material load

Devices with DN 3 to 600 (1/10 to 24 in)

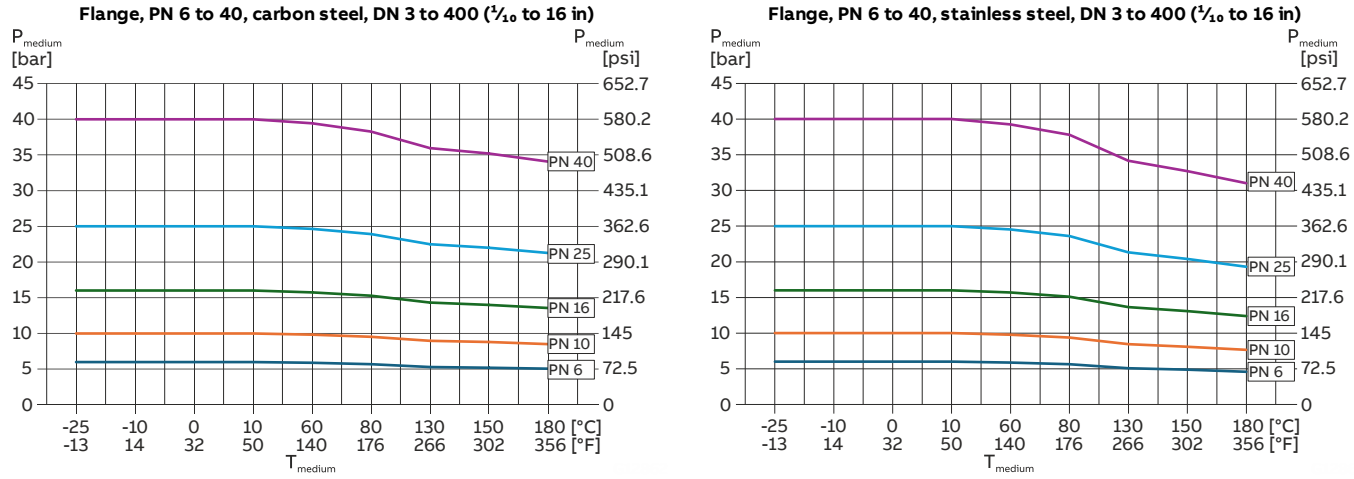


Figure 5: Flowmeter sensor with carbon steel flange or stainless steel flange, Nominal Diameter DN 3 to 400, Pressure Rating PN 6 to 40

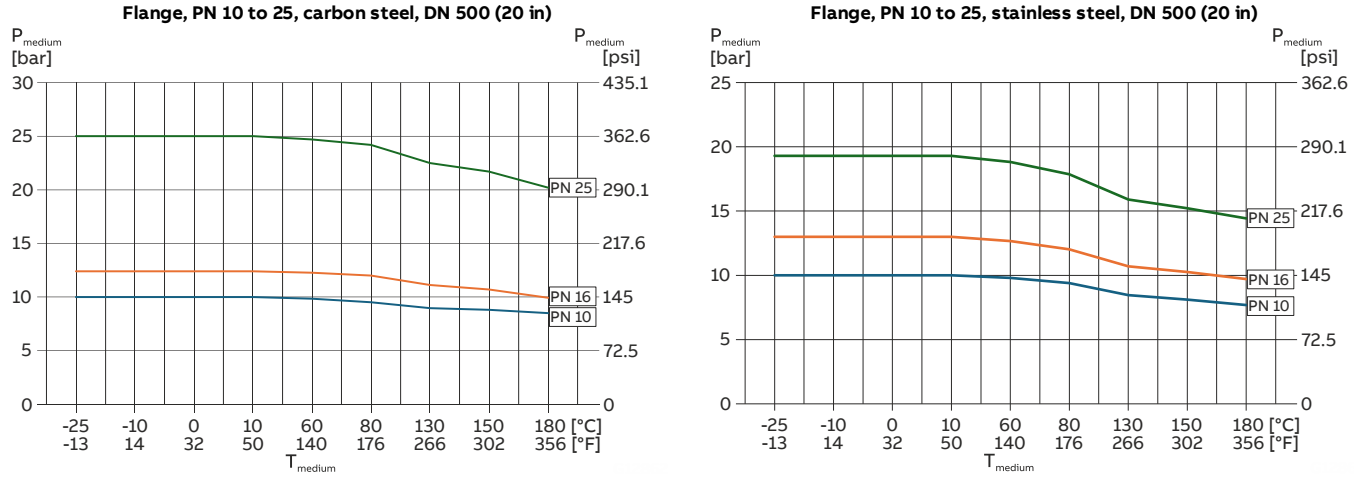


Figure 6: Flowmeter sensor with carbon steel flange or stainless steel flange, Nominal Diameter DN 500, Pressure Rating PN 10 to 25

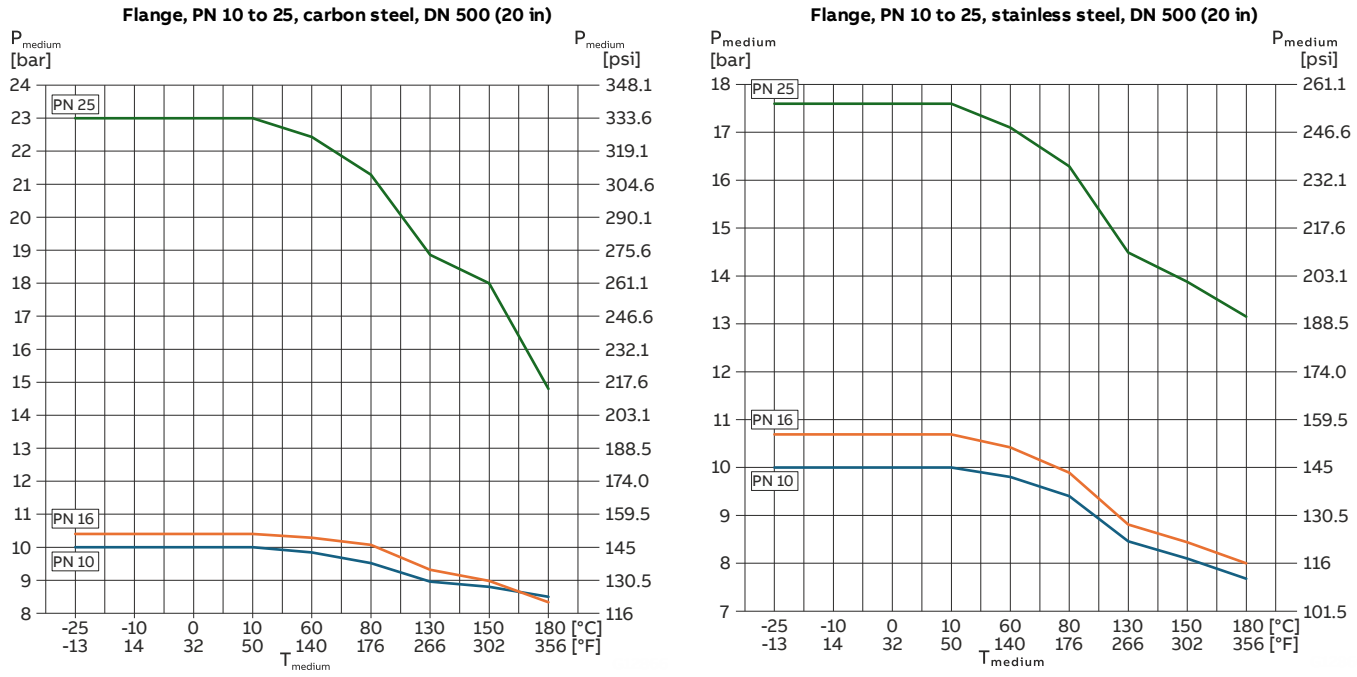


Figure 7: Flowmeter sensor with carbon steel flange or stainless steel flange, Nominal Diameter DN 500, Pressure Rating PN 10 to 25

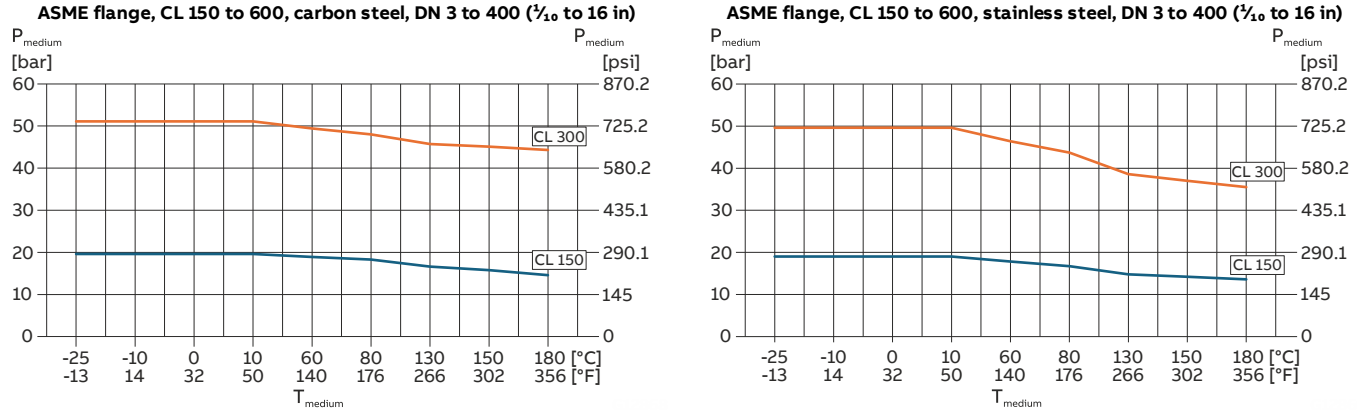


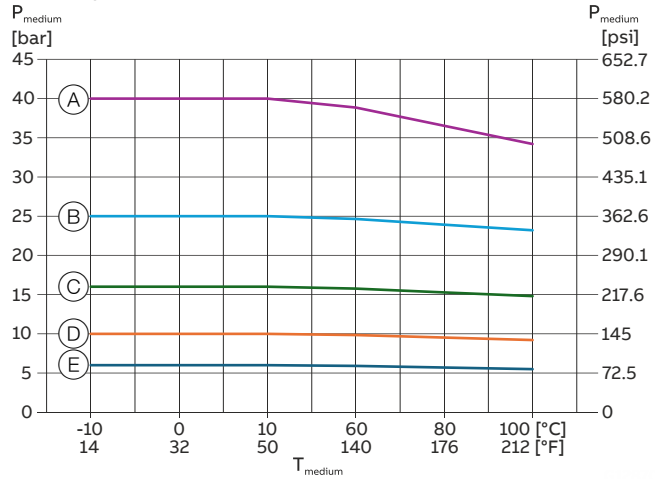
Figure 8: Flowmeter sensor with carbon steel flange or stainless steel flange, Nominal Diameter DN 3 to 400 (⅛ to 24 in), Pressure Rating CL 150 to 600

… Flowmeter sensor

… Material load for process connections

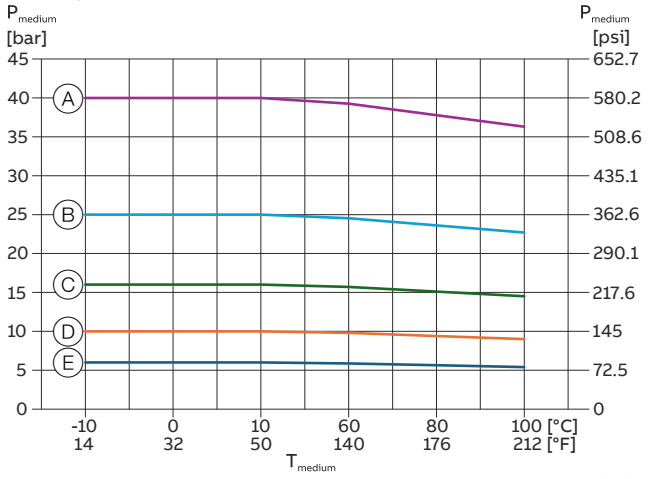
Devices with DN 700 to 1000 (28 to 40 in), ABB standard lay length (1.3 × D)

Flange, PN 6 to 40, carbon steel, DN 700 to 1000 (28 to 40 in)



Ⓐ DN 700 to 1000 (28 to 40 in), PN 40
Ⓑ DN 700 to 1000 (28 to 40 in), PN 25
Ⓒ DN 700 to 1000 (28 to 40 in), PN 16
Ⓓ DN 700 to 1000 (28 to 40 in), PN 10
Ⓔ DN 1000 (40 in), PN 6

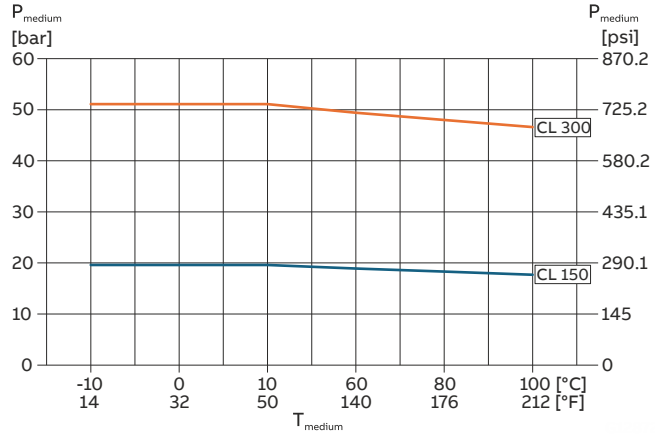
Flange, PN 6 to 40, stainless steel, DN 700 to 1000 (28 to 40 in)



Ⓐ DN 700 to 1000 (28 to 40 in), PN 40
Ⓑ DN 700 to 1000 (28 to 40 in), PN 25
Ⓒ DN 700 to 1000 (28 to 40 in), PN 16
Ⓓ DN 700 to 1000 (28 to 40 in), PN 10
Ⓔ DN 1000 (40 in), PN 6

Figure 9: Flowmeter sensor with carbon steel flange or stainless steel flange, nominal diameter DN 700 to 100 (28 to 40 in), pressure Rating PN 6 to 40

ASME flange, CL 150 to 300, carbon steel, DN 700 to 1000 (28 to 40 in)



ASME flange, CL 150 to 300, stainless steel, DN 700 to 1000 (28 to 40 in)

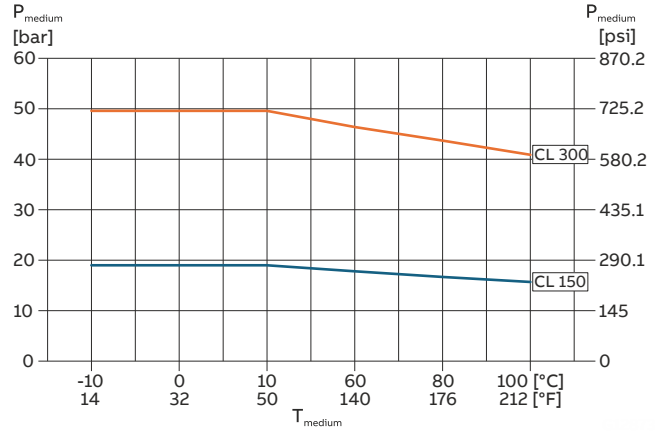
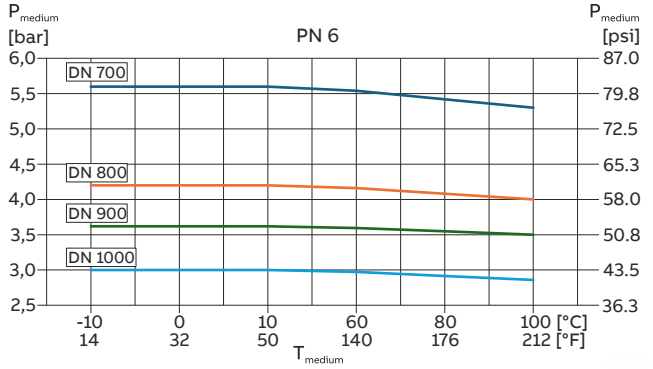


Figure 10: Flowmeter sensor with carbon steel flange or stainless steel flange, nominal diameter DN 700 to 1000 (28 to 40 in), pressure Rating CL 150 to 300

Devices with DN 700 to 1000 (28 to 40 in), ABB short lay length (1 × D)

Flange, PN 6, carbon steel, DN 700 to 1000 (28 to 40 in)



Flange, PN 10, carbon steel, DN 700 to 1000 (28 to 40 in)

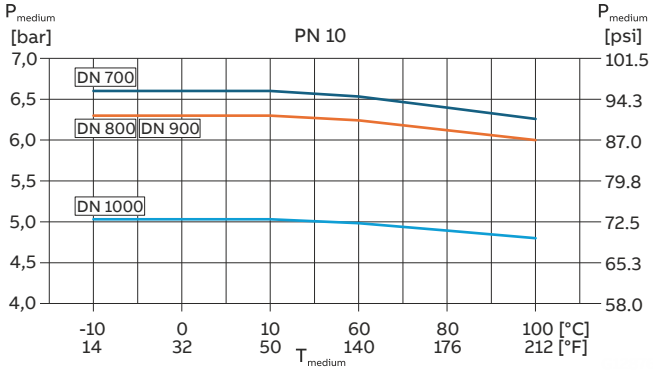
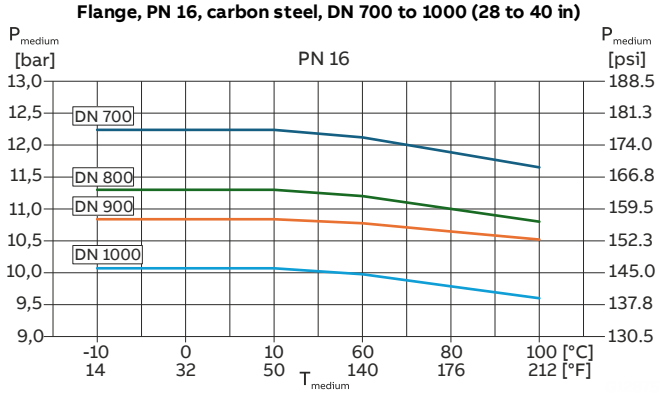


Figure 11: Flowmeter sensor with carbon steel flange, nominal diameter DN 700 to 1000 (28 to 40 in), pressure Rating PN 6 and PN 10

Flange, PN 16, carbon steel, DN 700 to 1000 (28 to 40 in)



Flange, PN 25, carbon steel, DN 700 to 1000 (28 to 40 in)

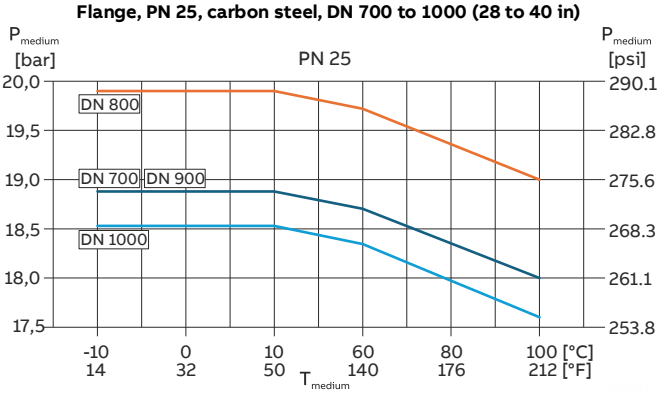


Figure 12: Flowmeter sensor with carbon steel flange, nominal diameter DN 700 to 1000 (28 to 40 in), pressure Rating PN 16 and PN 25

ASME flange, CL 150 and CL300, stainless steel, DN 700 to 1000 (28 to 40 in)

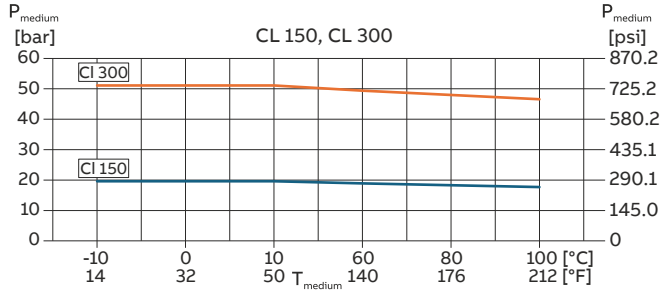


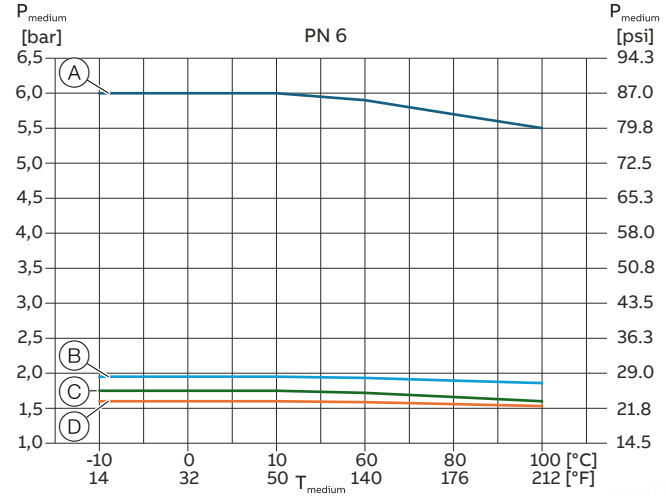
Figure 13: Flowmeter sensor with stainless steel flange, nominal diameter DN 700 to 1000 (28 to 40 in), pressure Rating CL 150 and CL 300

… Flowmeter sensor

… Material load for process connections

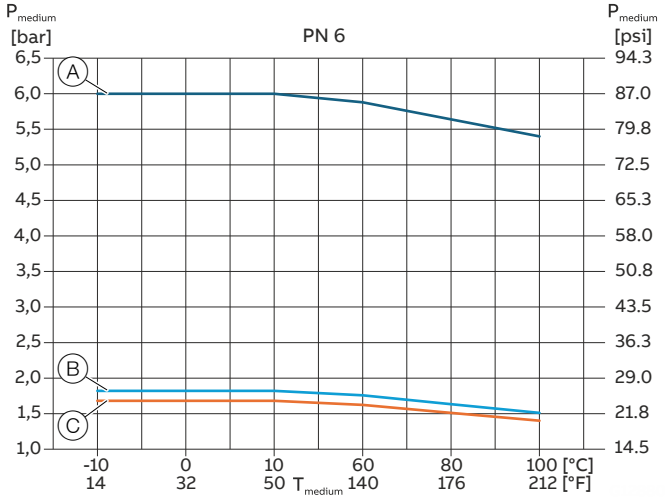
Devices with DN 1200 to 2400 (48 to 96 in), ABB standard lay length (1.3 × D)

Flange, PN 6, carbon steel, DN 1200 to 2400 (48 to 96 in)



Ⓐ DN 1200 to 1800 (48 to 72 in)
Ⓒ DN 2200 (88 in)
Ⓑ DN 2400 (96 in)
Ⓓ DN 2000 (80 in)

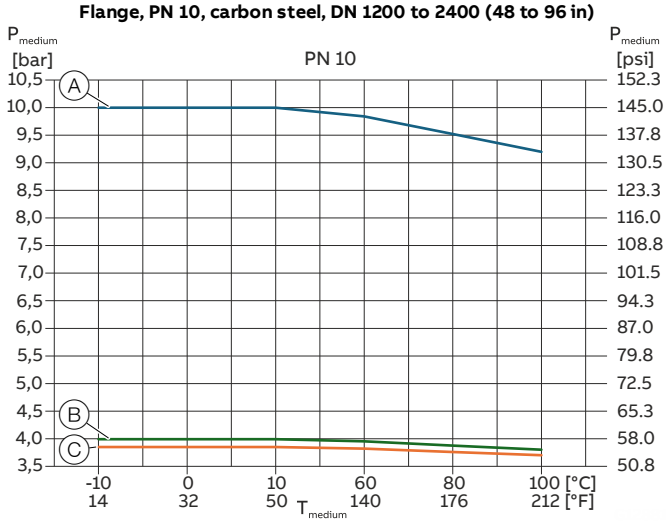
Flange, PN 6, stainless steel, DN 1200 to 2400 (48 to 96 in)



Ⓐ DN 1200 to 1800 (48 to 72 in)
Ⓒ DN 2000 to 2200 (80 to 88 in)
Ⓑ DN 2400 (96 in)

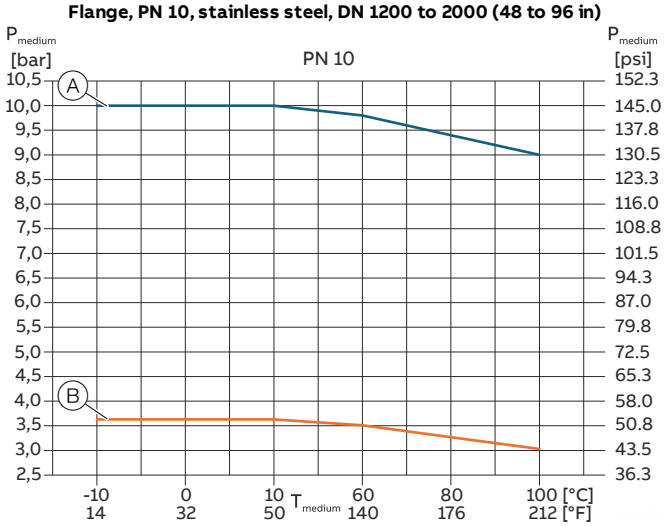
Figure 14: Flowmeter sensor with carbon steel flange and stainless steel flange, nominal diameter DN 1200 to 2400 (48 to 96 in), pressure Rating PN 6

Flange, PN 10, carbon steel, DN 1200 to 2400 (48 to 96 in)



Ⓐ DN 1200 to 1800 (48 to 72 in)
Ⓒ DN 2000 and DN 2200 (80 and 96 in)
Ⓑ DN 2200 (88 in)

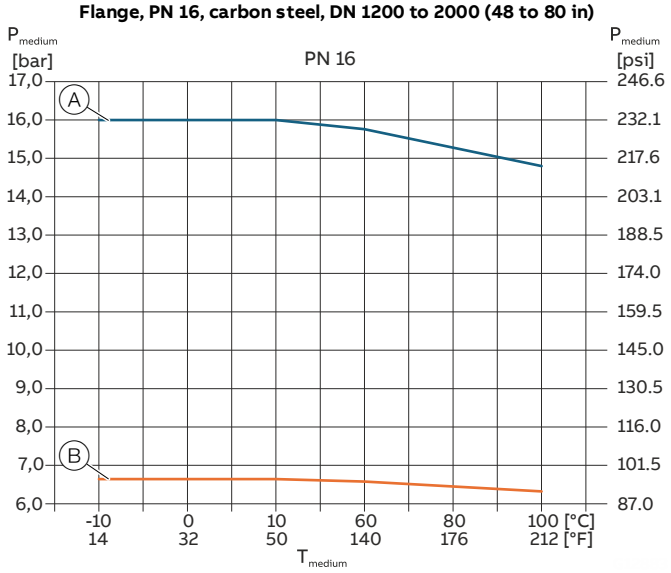
Flange, PN 10, stainless steel, DN 1200 to 2000 (48 to 96 in)



Ⓐ DN 1200 to 1800 (48 to 72 in)
Ⓑ DN 2000 and DN 2200 (80 and 96 in)

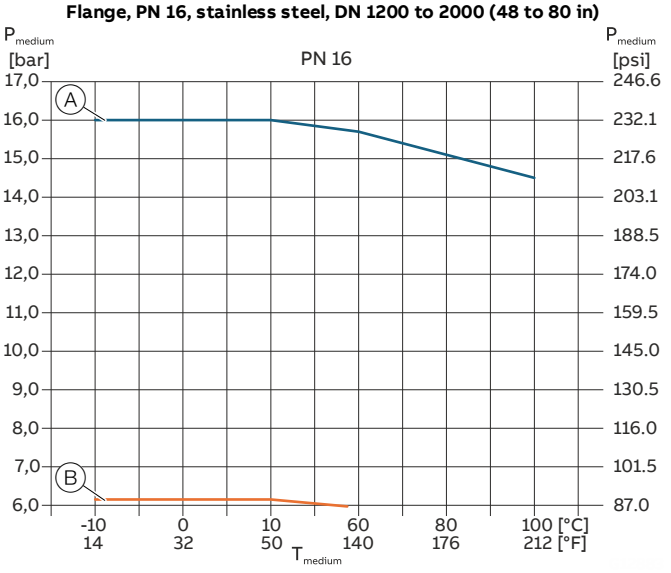
Figure 15: Flowmeter sensor with carbon steel flange and stainless steel flange, nominal diameter DN 1200 to 2400 (48 to 96 in), pressure Rating PN 10

Flange, PN 16, carbon steel, DN 1200 to 2000 (48 to 80 in)



Ⓐ DN 1200 to 1800 (48 to 72 in) Ⓑ DN 2000 (80 in)

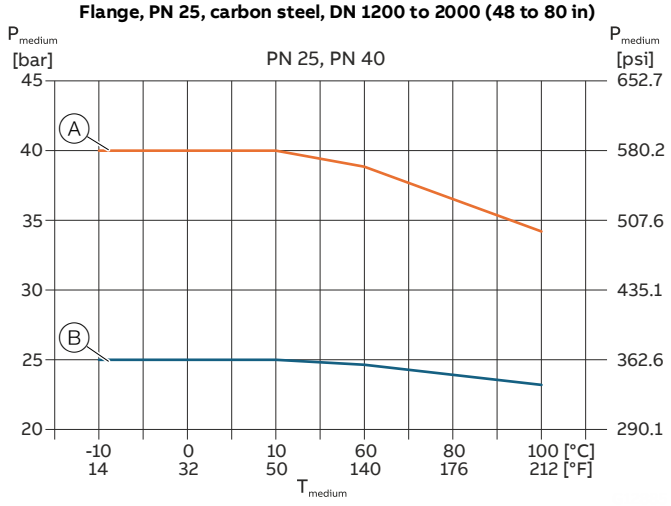
Flange, PN 16, stainless steel, DN 1200 to 2000 (48 to 80 in)



Ⓐ DN 1200 to 1800 (48 to 72 in) Ⓑ DN 2000 (80 in)

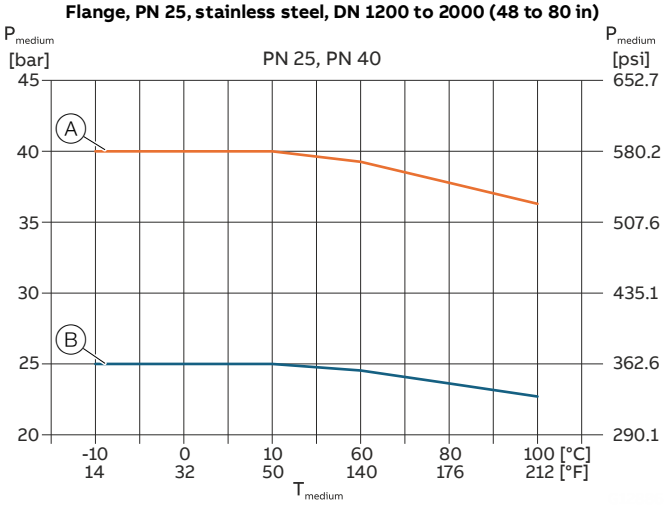
Figure 16: Flowmeter sensor with carbon steel flange and stainless steel flange, nominal diameter DN 1200 to 2000 (48 to 80 in), pressure Rating PN 16

Flange, PN 25, carbon steel, DN 1200 to 2000 (48 to 80 in)



Ⓐ DN 1200 to 2000 (48 to 80 in), PN 40 Ⓑ DN 1200 to 2000 (48 to 80 in), PN 25

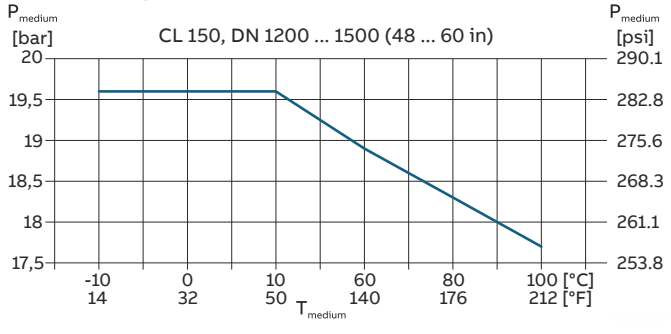
Flange, PN 25, stainless steel, DN 1200 to 2000 (48 to 80 in)



Ⓐ DN 1200 to 2000 (48 to 80 in), PN 40 Ⓑ DN 1200 to 2000 (48 to 80 in), PN 25

Figure 17: Flowmeter sensor with carbon steel flange and stainless steel flange, nominal diameter DN 1200 to 2000 (48 to 80 in), pressure Rating PN 25

ASME flange, CL 150, carbon steel, DN 1200 to 1200 (48 to 60 in)



ASME flange, CL 150, stainless steel, DN 1200 to 1200 (48 to 60 in)

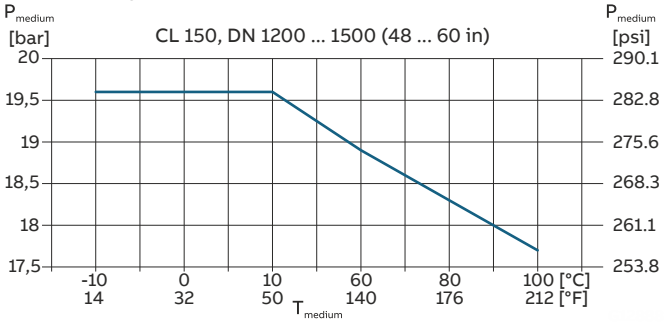


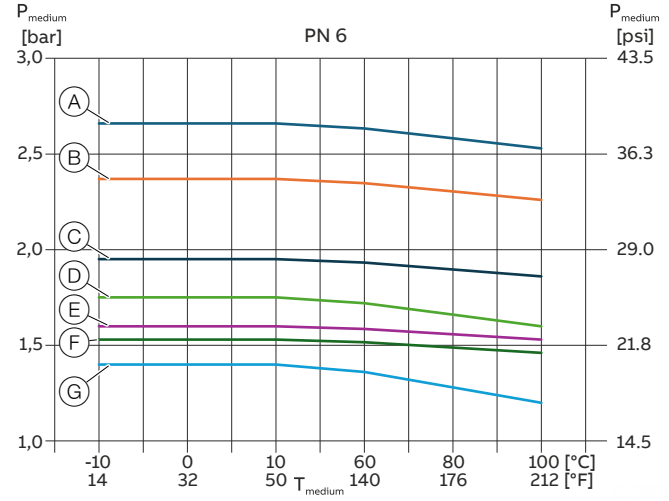
Figure 18: Flowmeter sensor with carbon steel flange and stainless steel flange, nominal diameter DN 1200 to 1200 (48 to 60 in), pressure Rating CL 150

… Flowmeter sensor

… Material load for process connections

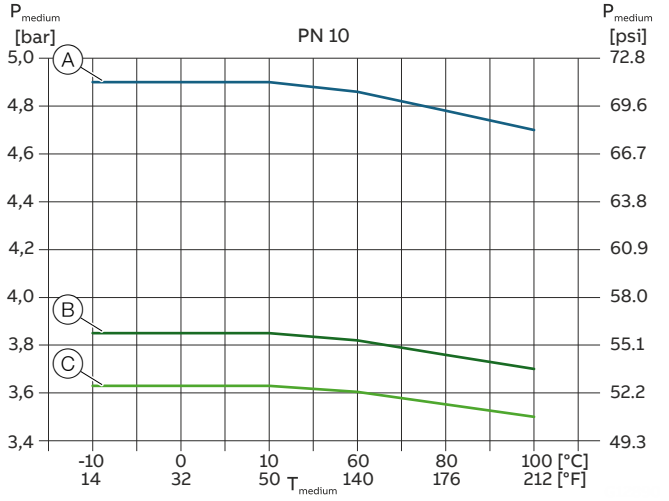
Devices with DN 1200 to 2400 (48 to 96 in), ABB short lay length (1 × D)

Flange, PN 6, carbon steel, DN 1200 to 2400 (48 to 96 in)



(A) DN 1200 (48 in)
(B) DN 1400 (56 in)
(C) DN 2400 (96 in)
(D) DN 2200 (88 in)
(E) DN 2000 (80 in)
(F) DN 1600 (64 in)
(G) DN 1800 (72 in)

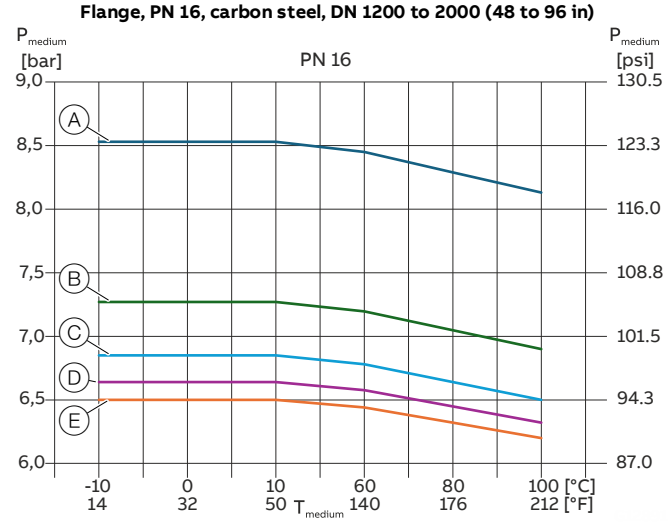
Flange, PN 10, carbon steel, DN 1200 to 2000 (48 to 96 in)



(A) DN 1200 (48 in)
(B) DN 1600 (64 in), DN 1800 (72 in), DN 2000 (80 in), DN 2400 (96 in)
(C) DN 2200 (88 in)

Figure 19: Flowmeter sensor with carbon steel flange, nominal diameter DN 1200 to 2400 (48 to 96 in), pressure Rating PN 6 and PN 10

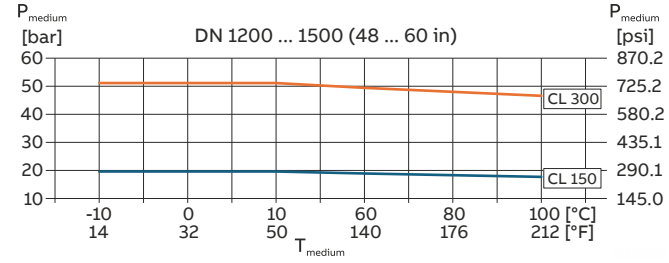
Flange, PN 16, carbon steel, DN 1200 to 2000 (48 to 96 in)



(A) DN 1200 (48 in)
(B) DN 1600 (64 in)
(C) DN 1800 (72 in)
(D) DN 2000 (80 in)
(E) DN 1400 (56 in)

Figure 20: Flowmeter sensor with carbon steel flange, nominal diameter DN 1200 to 2000 (48 to 80 in), pressure Rating PN 16

ASME flange, CL 150 and CL300, carbon steel, DN 1200 to 1500



ASME flange, CL 150 and CL300, stainless steel, DN 1200 to 1500

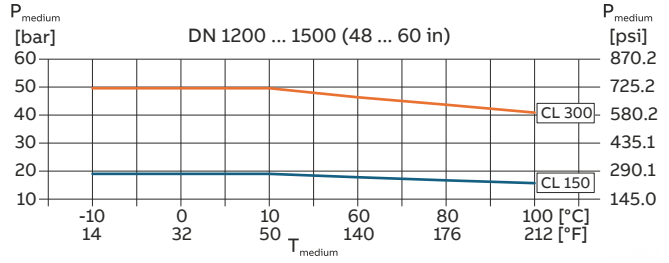
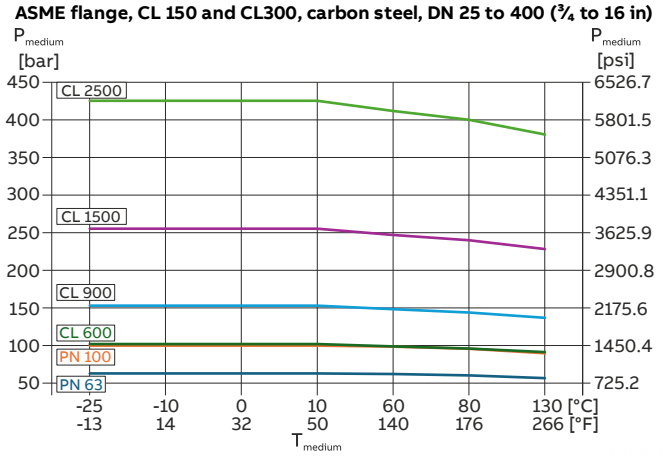


Figure 21: Flowmeter sensor with carbon steel flange and stainless steel flange, nominal diameter DN 1200 to 1500 (48 to 60 in), pressure Rating CL 150 and CL 300

Devices in high pressure design, DN 25 to 400 (¾ to 16 in), pressure rating PN 63 to 100 (CL 600 to 2500)

ASME flange, CL 150 and CL300, carbon steel, DN 25 to 400 (¾ to 16 in)



ASME flange, CL 150 and CL300, stainless steel, DN 25 to 400 (¾ to 16 in)

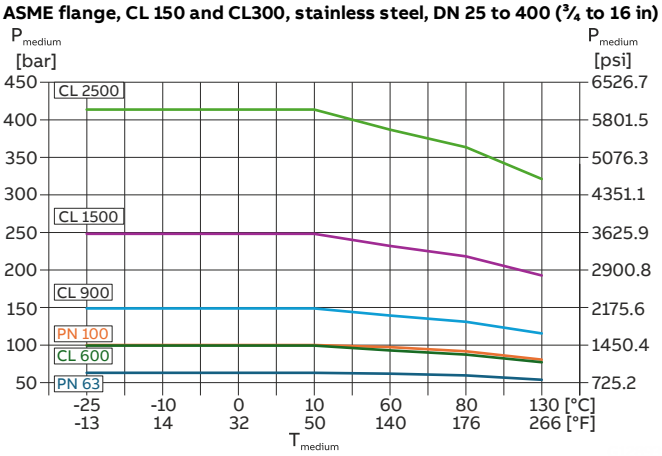


Figure 22: Flowmeter sensor with carbon steel flange and stainless steel flange, nominal diameter DN 25 to 400 (¾ to 16 in), high pressure design

… Flowmeter sensor

Installation conditions

General

The following points must be observed during installation:

- The flow direction must correspond to the marking, if present
- The maximum torque for all flange screws must be complied with
- Secure flange screws and nuts against pipe vibration.
- The devices must be installed without mechanical tension (torsion, bending)
- Install flange devices / wafer-type devices with plane parallel counterflanges and use appropriate gaskets only
- Use gaskets made from a material that is compatible with the measuring medium and measuring medium temperature.
- Gaskets must not extend into the flow area, since possible turbulence could influence the accuracy of the device
- The piping may not exert any inadmissible forces or torques on the device.
- Make sure that the temperature limits are not up-scaled during operation of the device.
- Vacuum shocks in the piping should be avoided to prevent damage to the liners (PTFE liner). Vacuum shocks can destroy the device.
- Do not remove the sealing plugs in the cable glands until you are ready to install the electrical cable
- Make sure the gaskets for the housing cover are seated correctly. Carefully seal the cover. Tighten the cover fittings
- The transmitter with a remote mount design must be installed at a largely vibration-free location
- Do not expose the transmitter and sensor to direct sunlight. Provide appropriate sun protection as necessary If necessary, provide a suited means of sun protection.
- When installing the transmitter in a control cabinet, make sure adequate cooling is provided

Brackets

NOTE

Potential damage to device!
Improperly placed support structures can result in a deformed housing and damage to the inner solenoids. Place the support structures at the edge of the transmitter housing (see arrows in **Figure 23**).

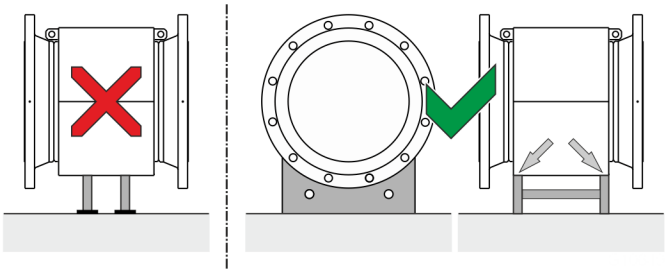


Figure 23: Support for nominal diameters greater than DN 400

Devices with nominal diameters larger than DN 400 must be mounted on a sufficiently strong foundation with support.

Gaskets

The following points must be observed when installing gaskets:

- To achieve the best results, make sure that the gaskets and meter tube fit concentrically.
- To make sure that the flow profile is not distorted, the gaskets may not intrude in the piping cross-section.
- The use of graphite with the flange or process connection gaskets is prohibited. This is because, in some instances, an electrically conductive coating may form on the inside of the meter tube.
- For Non RTJ flange type sensors used in high pressure installations (PN63, CL600 and up), ensure using an appropriate gasket.

Flow direction

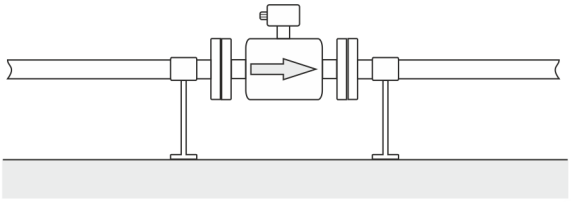


Figure 24: Flow direction

The device measures the flow rate in both flow directions. Forward flow is the factory setting, as shown in Figure 24.

Electrode axis

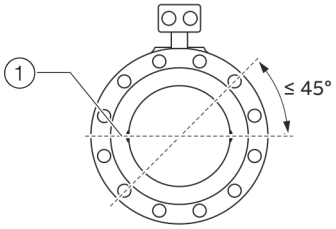


Figure 25: Orientation of the electrode axis

The electrode axis (1) should be horizontal if at all possible or no more than 45° from horizontal.

Mounting position

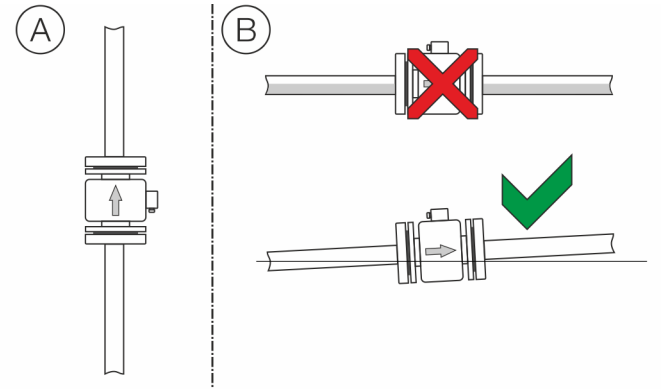
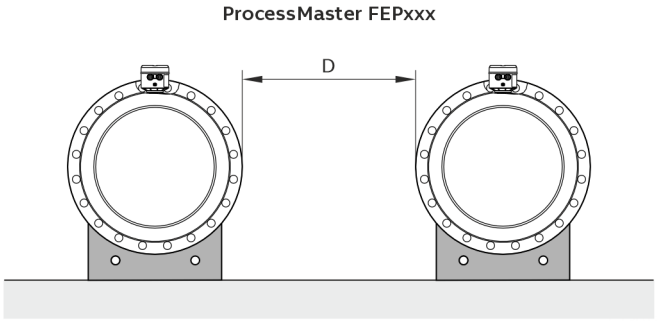


Figure 26: Mounting position

(A) Vertical installation for measuring abrasive materials, preferably with flow in upward direction.
(B) For a horizontal installation, the meter tube must always be completely filled with the measuring medium. Provide for a slight incline of the connection for degassing.

Minimum spacing of the devices



Spacing D: ≥ 1.0 m (3.3 ft) for Design Level 'A'

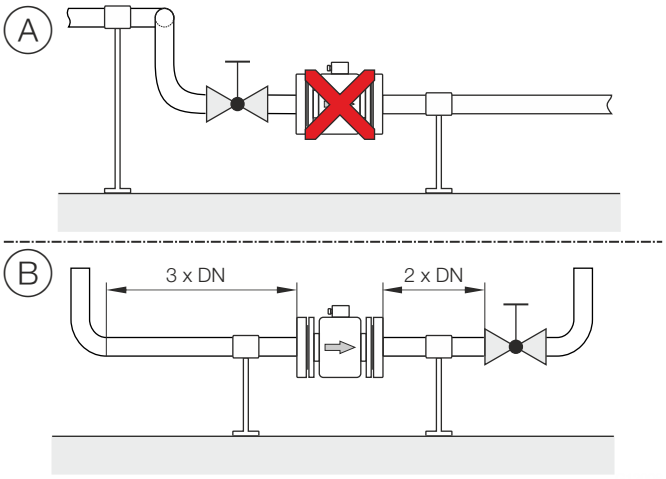
Figure 27: Minimum spacing of the devices

- In order to prevent the devices from interfering with each other, a minimum distance as presented in **Figure 27** must be maintained between the devices.
- The sensor must not be operated in the vicinity of powerful electromagnetic fields, e.g., motors, pumps, transformers, etc. A minimum spacing of approx. 1 m (3.28 ft) must be maintained.
- For installation on or to steel parts (e.g. steel brackets), a minimum spacing of 100 mm (3.94 in) must be maintained (based on IEC801-2 and IECTC77B).

… Flowmeter sensor

… Installation conditions

Inlet and outlet sections



① Double elbow ② Turn-off device

Figure 28: Inlet and outlet section, turn-off devices

The measuring principle is independent of the flow profile as long as standing eddies do not extend into the measured value formation, such as may for example occur after double elbows, in the event of tangential inflow, or where half-open gate valves are located upstream of the sensor. In such cases, measures must be put in place to normalize the flow profile.

Ⓐ Do not install fittings, manifolds, valves, etc., right before the flowmeter sensor.

Ⓑ Inlet / outlet sections: length of the straight piping upstream and downstream on the sensor.
Experience has shown that, in most installations, straight inlet sections 3 × DN long and straight outlet sections 2 × DN long are sufficient (DN = nominal diameter of the flowmeter sensor).
For test stands, the reference conditions of 10 × DN straight inlet and 5 × DN straight outlet must be provided, in accordance with EN 29104 / ISO 9104.
Valves or other turn-off devices should be installed in the outlet section.
Valve flaps must be installed so that the valve damper plate does not extend into the flowmeter sensor.
Butterfly valves should not be installed upstream the flowmeter.

Free inlet or outlet

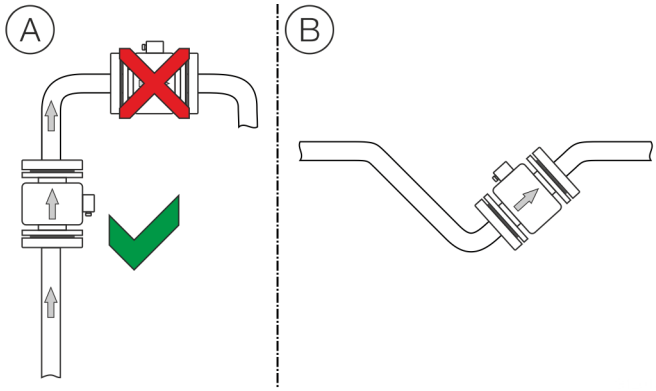


Figure 29: Free inflow and outflow

Ⓐ For a free outflow, do not install flowmeter at the highest point of the piping or on its outflow side, since the measuring tube may run empty, creating air bubbles.

Ⓑ For free inflow/outflow, provide an invert to make sure that the piping is always full

Mounting with heavily contaminated measuring media

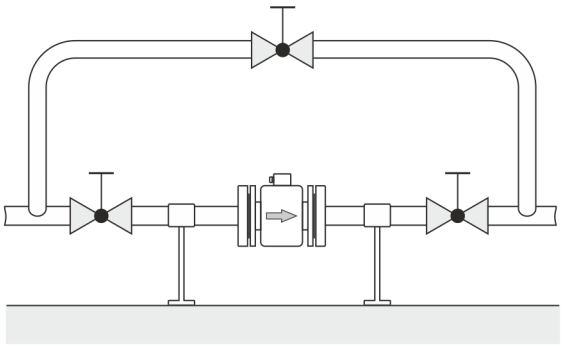


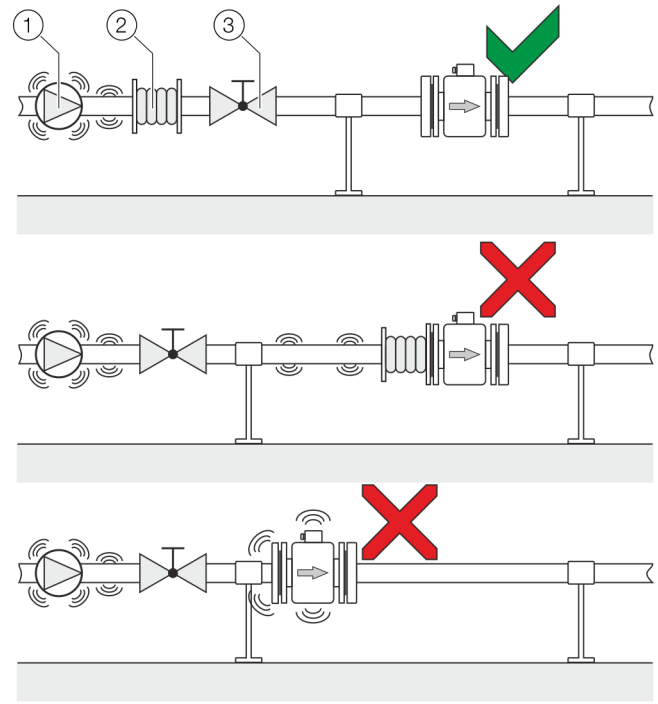
Figure 30: Bypass line

For strongly contaminated measuring media, a bypass line in accordance with the figure is recommended so that operation of the system can continue to run without interruption during mechanical cleaning.

Grounding

The flowmeter sensor must be connected to ground potential. For technical reasons, this potential must be identical to the potential of the measuring medium. For plastic or insulated lined pipelines, the measuring medium is grounded by installing grounding rings. When there are stray potentials present in the pipeline, a grounding ring is recommended on both ends of the flowmeter sensor.

Mounting with pipe vibration



1 Pump
2 Damping device
3 Shut-off device

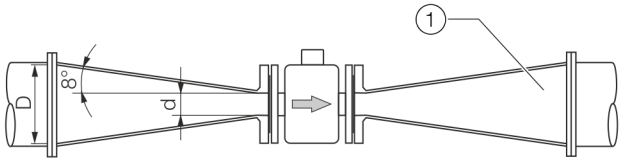
Figure 31: Vibration damping

Strong vibrations in the pipeline must be damped using flexible damping devices.

The damping devices must be installed beyond the supported flowmeter section and outside of the section between the shut-off devices.

Do not connect flexible damping devices directly to the flowmeter sensor.

Installation in piping with larger nominal diameter



1 Reducer

Figure 32: Using reducers

Determine the resulting pressure loss when using reducers:

1. Determine diameter ratios d/D.
2. Determine the flow velocity based on the flow rate nomogram (Figure 33).
3. Read the pressure loss on the Y-axis in Figure 33.

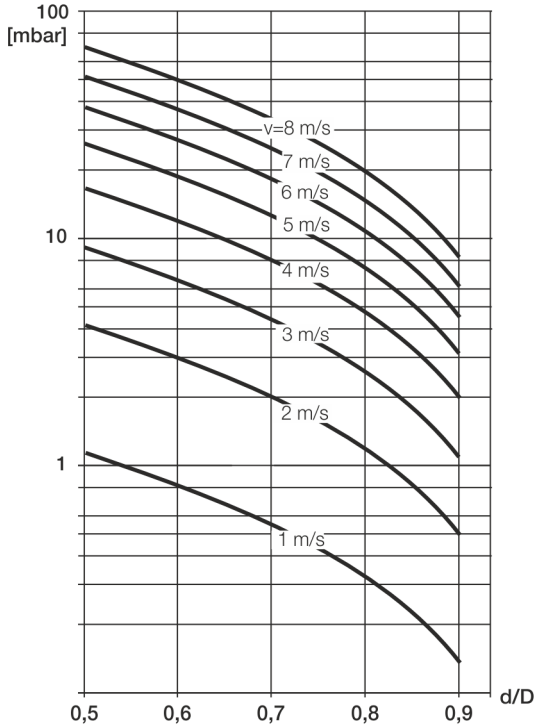


Figure 33: Flow rate nomogram for flange transition piece at α/2 = 8°

High pressure sensors (PN63, Cl600 and up)

With sensors, designed for higher pressure rating, the inner diameter of the sensor might be different from the attached pipe – see dimensions table.

… Flowmeter sensor

Dimensions

Flange DN 3 to 100 (1/10 to 4"), aluminum sensor housing (shell housing)

All specified dimensions and weights are in mm (in) or kg (lb). The stated weights are approximate; the maximum weight is always stated.

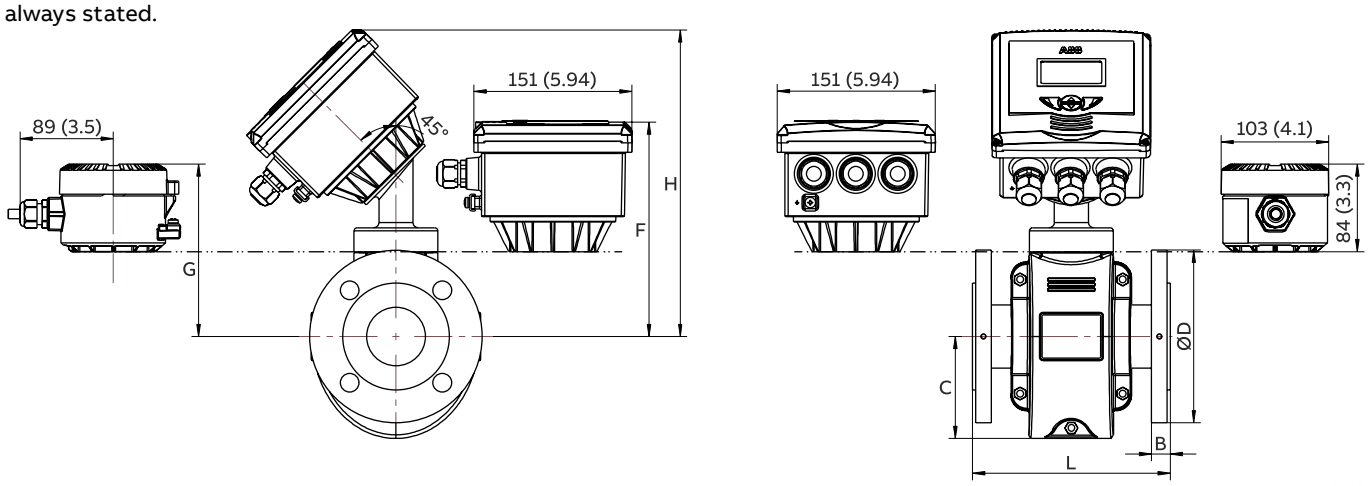


Figure 34: Flange DN 3 to 100 (1/10 to 4"), aluminum sensor housing (shell housing)

Dimensions - Flange device DN 3 to 40, aluminum sensor housing (shell housing)

Nominal diameter	Process connection	D	B	L[2), 3)]	C	F	H	G	Weight
DN 3 … 8[4)] (1/8 … 5/16"[5)]) DN 10 (3/8"[5)])	EN 1092-1[6)], PN 10 to 40[1)]	90 (3.54)	19 (0.75)	200 (7.84)	82 (3.23)	194 (7.64)	282 (11.1)	154 (6.06)	8 (17.6)
	ASME B16.5, CL 150	90 (3.54)	14.2 (0.56)						
	ASME B16.5, CL 300	95 (3.74)	17.3 (0.68)						
DN 15 (½")	EN 1092-1[6)], PN 10 to 40[1)]	95 (3.74)	19 (0.75)	200 (7.84)	82 (3.23)	194 (7.64)	282 (11.1)	154 (6.06)	8 (17.6)
	ASME B16.5, CL 150	90 (3.54)	14.2 (0.56)						
	ASME B16.5, CL 300	95.2 (3.75)	17.3 (0.68)						
DN 20 (¾")	EN 1092-1[6)], PN 10 to 40[1)]	105 (4.13)	21 (0.83)	200 (7.84)	82 (3.23)	194 (7.64)	282 (11.1)	154 (6.06)	8 (17.6)
	ASME B16.5, CL 150	98.6 (3.88)	15.7 (0.62)						
	ASME B16.5, CL 300	117.3 (4.62)	18.7 (0.74)						
DN 25 (1")	EN 1092-1[6)], PN 10 to 40[1)]	115 (4.53)	21 (0.83)	200 (7.84)	82 (3.23)	194 (7.64)	282 (11.1)	154 (6.06)	8 (17.6)
	ASME B16.5, CL 150	108 (4.25)	17.2 (0.68)						
	ASME B16.5, CL 300	124 (4.88)	20.5 (0.81)						
DN 32 (1 ¼")	EN 1092-1[6)], PN 10 to 40[1)]	140 (5.51)	21 (0.83)	200 (7.84)	92 (3.62)	201 (7.91)	289 (11.37)	161 (6.34)	9 (19.8)
	ASME B16.5, CL 150	117.3 (4.62)	18.7 (0.74)						
	ASME B16.5, CL 300	133.4 (5.25)	22.1 (0.87)						
DN 40 (1 ½")	EN 1092-1[6)], PN 10 to 40[1)]	150 (5.91)	21 (0.83)	200 (7.84)	92 (3.62)	201 (7.91)	289 (11.37)	161 (6.34)	10 (22.0)
	ASME B16.5, CL 150	127 (5.00)	20.5 (0.81)						
	ASME B16.5, CL 300	155.4 (6.12)	23.6 (0.93)						

Tolerance for L: +0 / -3 mm (+0 / -0.018 in)

Dimensions - Flange device DN 50 to 100, aluminum sensor housing (shell housing

Nominal diameter	Process connection	D	B	L[2), 3)]	C	F	H	G	Weight
DN 50 (2″)	EN 1092-1[6)], PN 10 to 40[1)]	165 (6.50)	23 (0.91)	200 (7.87)	97.5 (3.84)	207 (8.15)	295 (11.61)	167 (6.57)	11 (24.3)
	ASME B16.5, CL 150	152.4 (6.00)	22.1 (0.87)						
	ASME B16.5, CL 300	165.1 (6.50)	25.4 (1.0)						
DN 65 (2 ½″)	EN 1092-1[6)], PN 16[1)]	185 (7.28)	22 (0.87)	200 (7.87)	108.5 (4.25)	218 (8.58)	306 (12.04)	178 (7.0)	12 (26.5)
	EN 1092-1[6)], PN 40[1)]	185 (7.28)	26 (1.02)						
	ASME B16.5, CL 150	177.8 (7.00)	25.4 (1.0)						
	ASME B16.5, CL 300	190.5 (7.50)	28.4 (1.12)						14 (30.9)
DN 80 (3″)	EN 1092-1[6)], PN 10 … 40[1)]	200 (7.87)	28 (1.10)	200 (7.87)	108.5 (4.27)	218 (8.58)	306 (12.04)	178 (7.0)	16 (35.3)
	ASME B16.5, CL 150	190.5 (7.50)	26.9 (1.06)						
	ASME B16.5, CL 300	210 (8.27)	31.4 (1.24)						18 (39.7)
DN 100 (4″)	EN 1092-1[6)] PN 16[1)]	220 (8.66)	24 (0.94)	250 (9.84)	122.5 (4.82)	240 (9.45)	328 (12.91)	200 (7.87)	18 (39.7)
	EN 1092-1[6)] PN 25 … 40[1)]	235 (9.25)	28 (1.10)						22 (48.5)
	ASME B16.5 CL 150	228.6 (9.00)	27.4 (1.08)						20 (44.1)
	ASME B16.5 CL 300	254 (10.0)	35.8 (1.41)						29 (63.9)

Tolerance for L: +0 / -3 mm (+0 / -0,018 in)

1) Other pressure ratings on request.
2) If a grounding ring is fitted (attached to one side of the flange), dimension L increases as follows: by 3 mm (0.118 in) for DN 3 to 100, and by 5 mm (0.197 in) for DN 125.
3) If protection plates are fitted (attached to both sides of the flange), dimension L increases as follows: by 6 mm (0.236 in) for DN 3 to 100, and by 10 mm (0.394 in) for DN 125.
4) Connection flange DN 10.
5) Connection flange ½ in.
6) For DN 65, PN 10 and PN 16 are same, please order PN 16.
   For DN 65, PN 25 and PN 40 are same, please order PN 40.

… Flowmeter sensor

… Dimensions

Flange DN 125 to 400 (6 to 16 in), aluminum sensor housing (shell housing)

All specified dimensions and weights are in mm (in) or kg (lb). The stated weights are approximate; the maximum weight is always stated.

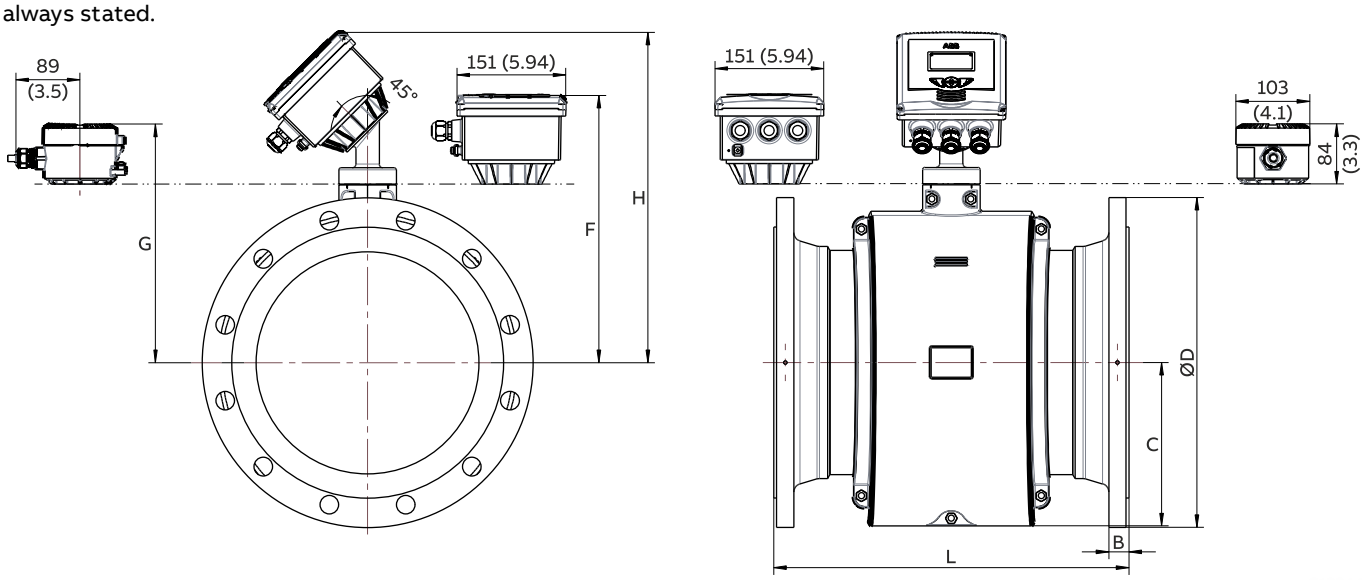


Figure 35: Flange DN 125 to 400 (6 to 16 in)

Dimensions – Flange device DN 125 to 300, aluminum sensor housing (shell housing)

Nominal diameter	Process connection	D	B	L[2), 3)]	C	F	H	G	Weight
DN 125 (5″)	EN 1092-1[6)] PN 16[1)]	250 (9,84)	25 (0,98)	250 (9,84)	130 (5,12)	250 (9.84)	338 (13.3)	210 (8.27)	20.5 (45)
	EN 1092-1[6)] PN 25 … 40[1)]	270 (10,63)	29 (1,14)						27.5 (60.5)
	ASME B16.5 CL 150	254 (10,0)	27,9 (1,10)						20.5 (45)
	ASME B16.5 CL 300	279,4 (11,0)	39,1 (1,54)	450 (17,72)					33.5 (74)
DN 150 (6″)	EN 1092-1 PN 16[1)]	285 (11,22)	25 (0,98)	300 (11,81)	146 (5,75)	297 (11.69)	388 (15.15)	257 (10.12)	31.5 (69.5)
	EN 1092-1 PN 25 … 40[1)]	300 (11,81)	31 (1,22)						37.5 (82.5)
	ASME B16.5 CL 150	279,4 (11,0)	29,4 (1,16)						31.5 (69.5)
	ASME B16.5 CL 300	317,5 (12,5)	40,5 (1,59)						45.5 (100)
DN 200 (8″)	EN 1092-1, PN 10 … 16[1)]	340 (13,39)	28 (1,10)	350 (13,78)	170,5 (6,71)	337 (13.27)	425 (16.73)	297 (11.69)	41.5 (90.5)
	EN 1092-1, PN 25[1)]	360 (14,17)	34 (1,34)						53.5 (118)
	EN 1092-1, PN 40[1)]	375 (14,76)	38 (1,50)						63.5 (151)
	ASME B16.5, CL 150	345 (13,58)	33,6 (1,32)						48.5 (107)
	ASME B16.5, CL 300	380 (14,96)	46,1 (1,81)						70.5 (155.5)
DN 250 (10″)	EN 1092-1, PN 10[1)]	395 (15,55)	30 (1,18)	450 (17,72)	198 (7,80)	352 (13.86)	440 (17.32)	312 (12.28)	59.5 (131)
	EN 1092-1, PN 16[1)]	405 (15,94)	30 (1,18)						63.5 (140)
	EN 1092-1, PN 25[1)]	425 (16,73)	36 (1,42)						82.5 (182)
	EN 1092-1, PN 40[1)]	450 (17,72)	42 (1,65)						93.5 (206)
	ASME B16.5, CL 150	405 (15,94)	35,2 (1,39)						68.5 (151)
	ASME B16.5, CL 300	445 (17,52)	52,8 (2,08)						103.5 (228)

Tolerance for L: +0 / -3 mm (+0 / -0,018 in)

Dimensions - Flange device DN 350 to 400, aluminum sensor housing (shell housing)

Nominal diameter	Process connection	D	B	L[2), 3)]	C	F	H	G	Weight
DN 300 (12″)	EN 1092-1, PN 10[1)]	445 (17,52)	31 (1,22)	500 (19,68)	228 (8,98)	375 (14.76)	463 (18.22)	335 (13.19)	72,5 (160)
	EN 1092-1, PN 16[1)]	460 (18,11)	33 (1,30)						78,5 (173)
	EN 1092-1, PN 25[1)]	485 (19,09)	39 (1,54)						98,5 (217)
	EN 1092-1, PN 40[1)]	515 (20,28)	47 (1,85)	600 (23,62)					138,5 (305)
	ASME B16.5, CL 150	485 (19,09)	36,8 (1,45)	500 (19,68)					103,5 (228)
	ASME B16.5, CL 300	520 (20,47)	55,8 (2,20)						148,5 (327)
DN 350 (14″)	EN 1092-1, PN 10[1)]	505 (19,88)	31 (1,22)	550 (21,65)	267 (10,51)	390 (15.35)	478 (18.81)	350 (13.78)	93,5 (206)
	EN 1092-1, PN 16[1)]	520 (20,47)	35 (1,38)						108,5 (239)
	EN 1092-1, PN 25[1)]	555 (21,85)	43 (1,69)						143,5 (316)
	ASME B16.5, CL 150	535 (21,06)	40,1 (1,58)						128,5 (283)
	ASME B16.5, CL 300	585 (23,03)	58,8 (2,31)						196,5 (433)
DN 400 (16″)	EN 1092-1 PN 10[1)]	565 (22,24)	31 (1,22)	600 (23,62)	267 (10,51)	432 (17.0)	520 (20.46)	392 (15.39)	101,5 (224)
	EN 1092-1 PN 16[1)]	580 (22,83)	37 (1,46)						124,5 (274)
	EN 1092-1 PN 25[1)]	620 (24,41)	45 (1,77)						168,5 (371)
	ASME B16.5 CL 150	595 (23,43)	41,6 (1,64)						173,5 (382)
	ASME B16.5 CL 300	650 (25,59)	62,2 (2,45)						262,5 (579)

Tolerance for L: DN 150 to 200: +0 / −3 mm (+0 / −0,018 in), DN 250 to 400: +0 / −5 mm (+0 / −0,197 in)

1) Other pressure ratings on request.

2) If a grounding ring is fitted is fitted (attached to one side of the flange) dimension L increases by 5 mm (0.197 in).

3) If protection plates are fitted (attached to both sides of the flange) dimension L increases by 10 mm (0.394 in).

… Flowmeter sensor

… Dimensions

Flange DN 450 to 600 (18 to 24 in), steel sensor housing

All specified dimensions and weights are in mm (in) or kg (lb). The stated weights are approximate; the maximum weight is always stated.

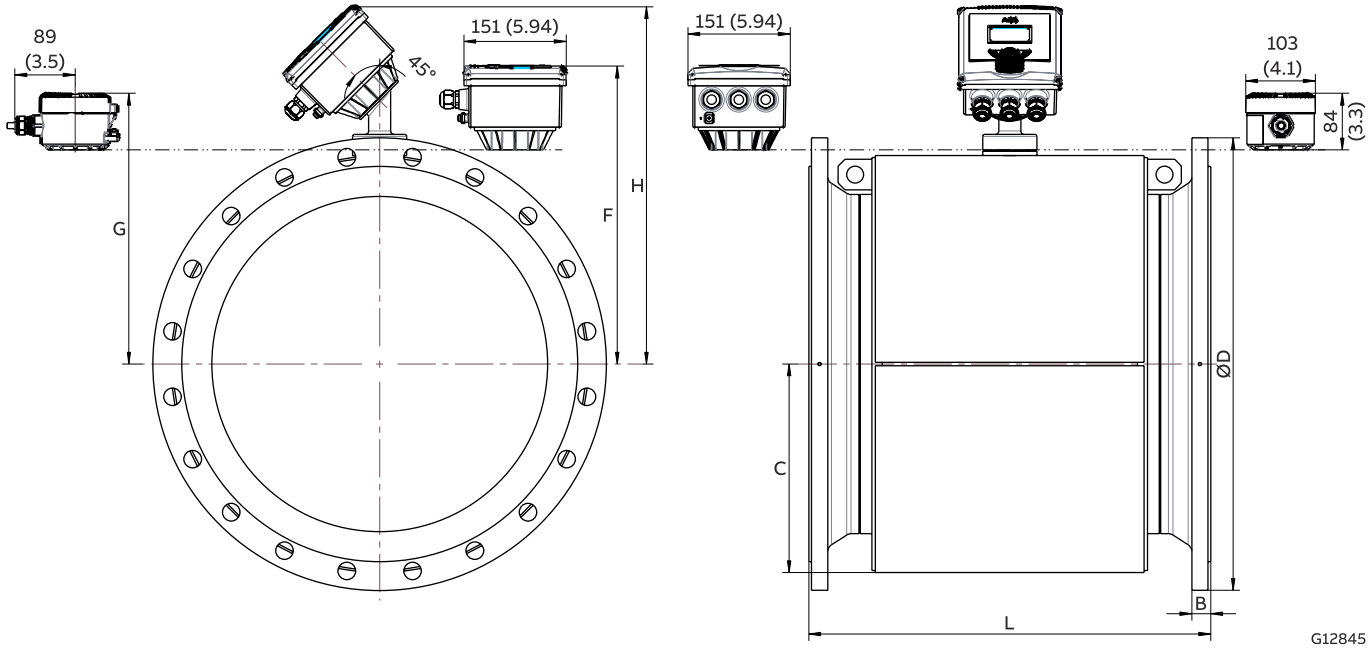


Figure 36: Flange DN 450 to 600 (18 to 24 in), steel sensor housing

Dimensions - Flange device, steel sensor housing

Nominal diameter	Process connection	D	B	L[2) 3)]	C	F	H	G	Weight
DN 450 (18″)	ASME B16.5, CL 150	635 (25.0)	44.6 (1.76)	686 (27.01)	310 (12.20)	350 (13.78)	438 (17.24)	400 (15.75)	258.5 (570)
DN 500 (20″)	EN 1092-1, PN 10[1)]	670 (26.38)	33 (1.30)	650 (25.59)	310 (12.20)	350 (13.78)	438 (17.24)	400 (15.75)	188.5 (416)
	EN 1092-1, PN 16[1)]	715 (28.15)	39 (1.54)						238.5 (526)
	ASME B16.5, CL 150	698.5 (27.50)	47.9 (1.89)	762 (30.0)					298.5 (658)
DN 600 (24″)	EN 1092-1, PN 10[1)]	780 (30.71)	33 (1.30)	780 (30.71)	361 (14.21)	401 (15.79)	489 (19.25)	451 (17.76)	338.5 (746)
	EN 1092-1, PN 16[1)]	840 (33.07)	41 (1.61)						316.5 (698)
	ASME B16.5, CL 150	812.8 (32.0)	52.8 (2.08)	914 (35.98)					423.5 (934)

Tolerance for L: DN 450, DN 500: +0 / −5 mm (+0 / −0.197 in); DN 600: +0 / −10 mm (+0 / −0.394 in)

1) Other pressure ratings on request.

2) If a grounding ring is fitted (attached to one side of the flange) dimension L increases by 5 mm (0.197 in).

3) If protection plates are fitted (attached to both sides of the flange) dimension L increases by 10 mm (0.394 in).

Flange DN 700 to 2000 (28 to 80 in), steel sensor housing, ABB Standard Lay Length (1,3 × DN)

All specified dimensions and weights are in mm (in) or kg (lb). The stated weights are approximate; the maximum weight is always stated.

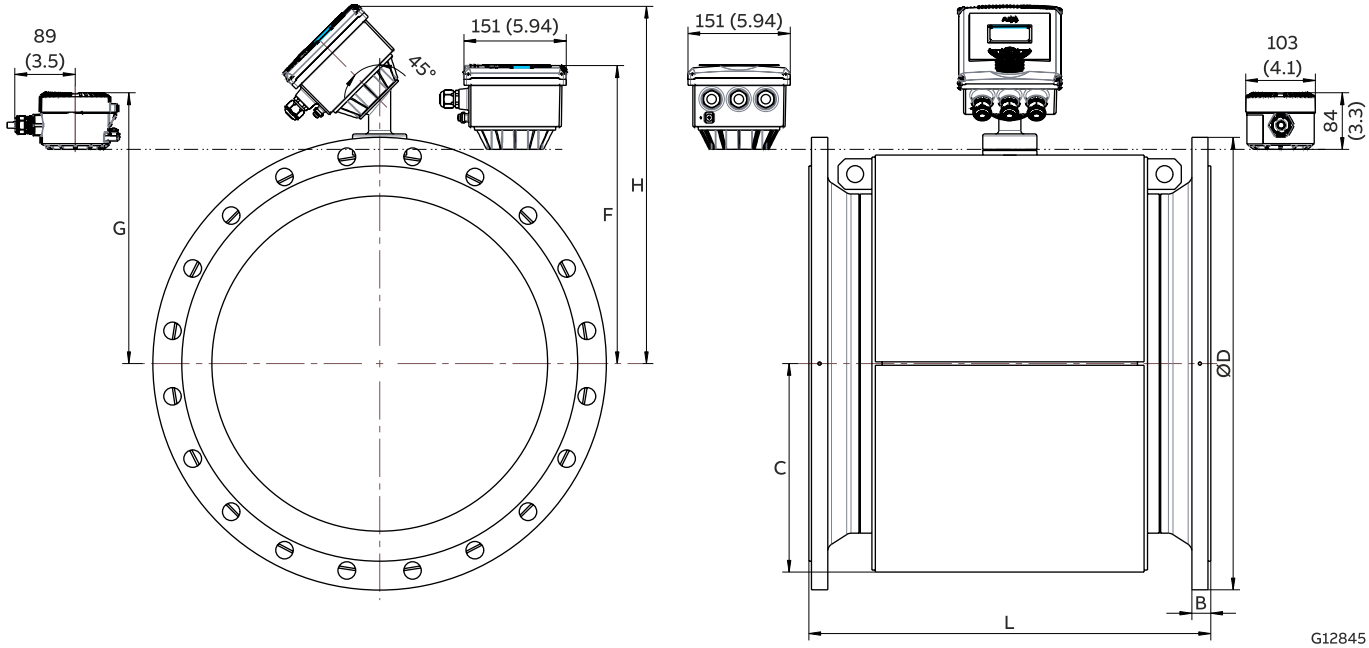


Figure 37: Flange DN 700 to 2000 (28 to 80 in), steel sensor housing, ABB Standard Lay Length (1,3 × DN)

Dimensions - Flange device, steel sensor housing – ABB standard lay length (1,3xDN)

Nominal diameter	Process connection	D	B	L[2) 3)]	C	F	H	G	Weight
DN 700 (28″)	EN 1092-1, PN 10[1)]	895 (35.24)	35 (1.38)						318.5 (702)
	EN 1092-1, PN 16[1)]	910 (35.83)	36 (1.42)	910 (35.83)	405 (15.94)	528 (20.80)	616 (24.26)	488 (19.20)	438.5 (967)
	ASME B16.47, CL 150	836.7 (32.94)	49.5 (1.95)						348.5 (768)
DN 750 (30″)	ASME B16.47, CL 150	888 (34.96)	44.5 (1.75)	990 (38.98)	431 (16.97)	554 (21.8)	642 (25.26)	514 (20.2)	474.5 (1046)
DN 800 (32″)	EN 1092-1, PN 10[1)]	1015 (39.96)	37 (1.46)						418.5 (923)
	EN 1092-1, PN 16[1)]	1025 (40.35)	43 (1.69)	1040 (40.94)	455 (17.91)	578 (22.8)	666 (26.26)	538 (21.2)	488.5 (1077)
	ASME B16.47, CL 150	942 (37.09)	51 (2.01)						498.5 (1099)
DN 900 (36″)	EN 1092-1, PN 10[1)]	1115 (43.90)	39 (1.54)						503.5 (1110)
	EN 1092-1, PN 16[1)]	1125 (44.29)	45 (1.77)	1170 (46.06)	505 (19.88)	629 (24.8)	717 (28.26)	589 (23.2)	588.5 (1297)
	ASME B16.47, CL 150	1157.1 (41.62)	57.3 (2.26)						678.5 (1496)
		1068 (45.98)							
DN 1000 (40″)	EN 1092-1, PN 10[1)]	1230 (48.43)	39 (1.54)						688.5 (1517)
	EN 1092-1, PN 16[1)]	1255 (49.41)	47 (1.85)	1300 (51.18)	555 (21.85)	685 (26.97)	773 (30.43)	645 (25.39)	848.5 (1870)
	ASME B16.47, CL 150	1174.8 (46.25)	60.6 (2.39)						878.5 (1937)

Tolerance for L: DN 700 to 2000 +0 / −10 mm (+0 / −0.394 in)

… Flowmeter sensor

… Dimensions

Dimensions - Flange device, steel sensor housing - ABB standard lay length (1,3xDN)

Nominal diameter	Process connection	D	B	L[2) 3)]	C	F	H	G	Weight
DN 1050 (42″)	ASME B16.47, CL 150	1067 (42.01)	58.7 (2.31)	1365 (53.74)	607 (23.90)	733 (28.9)	821 (32.36)	693 (27.3)	930.5 (2051)
DN 1100 (44″)	ASME B16.47, CL 150	1118 (44.02)	60.5 (2.38)	1430 (56.30)	607 (23.90)	733 (28.9)	821 (32.36)	693 (27.3)	960.5 (2117)
		1403 (55.24)							
DN 1200 (48″)	EN 1092-1, PN 10[1)]	1455 (57.28)	43 (1.69)						928.5 (2047)
	EN 1092-1, PN 16[1)]	1485 (58.46)	53 (2.09)						1118.5 (2466)
DN 1400 (56″)	EN 1092-1 PN 10[1)]	1675 (65.94)	47 (1.85)	1820 (71.65)	755 (29.72)	879 (34.6)	967 (38.06)	839 (33.0)	1208.5 (2664)
	EN 1092-1 PN 16[1)]	1685 (66.34)	57 (2.24)						1758.5 (3877)
DN 1500 (60″)	ASME B16.47, CL 150	1676 (65.98)	76.2 (3.00)	1950 (76.77)	807 (31.77)	989 (38.9)	1077 (42.36)	949 (37.4)	1950.5 (4300)
DN 1600 (64″)	EN 1092-1 PN 10[1)]	1915 (75.39)	51 (2.01)	2080 (81.89)	865 (34.06)	990 (40.0)	1078 (43.46)	950 (37.4)	1628.5 (3590)
	EN 1092-1 PN 16[1)]	1930 (75.98)	63 (2.48)						2148.5 (4737)
		2032 (80.00)	—	2145 (84.45)	915 (36.02)	1040 (40.9)	1128 (44.36)	1000 (39.4)	
DN 1800 (72″)	EN 1092-1 PN 10[1)]	2115 (83.27)	55 (2.17)	2340 (92.13)	980 (38.58)	1105 (43.5)	1193 (46.96)	1065 (41.9)	2228.5 (4913)
	EN 1092-1 PN 16[1)]	2130 (83.86)	67 (2.64)						2898.5 (6390)
DN 2000 (80″)	EN 1092-1 PN 10[1)]	2325 (91.54)	59 (2.32)	2600 (102.36)	1090 (42.91)	1215 (47.8)	1303 (51.26)	1175 (46.3)	1878.5 (4141)
	EN 1092-1 PN 16[1)]	2345 (92.32)	71 (2.80)						2648.5 (5839)

Tolerance for L: DN 700 to 2000 +0 / −10 mm (+0 / −0.394 in)

1) Other pressure ratings on request.

2) If a grounding ring is fitted (attached to one side of the flange) dimension L increases by 5 mm (0.197 in).

3) If protection plates are fitted (attached to both sides of the flange) dimension L increases by 10 mm (0.394 in).

Flange DN 700 to 2000 (28 to 80 in), steel sensor housing, optional Lay Length (1,0 × DN)

All specified dimensions and weights are in mm (in) or kg (lb). The stated weights are approximate; the maximum weight is always stated.

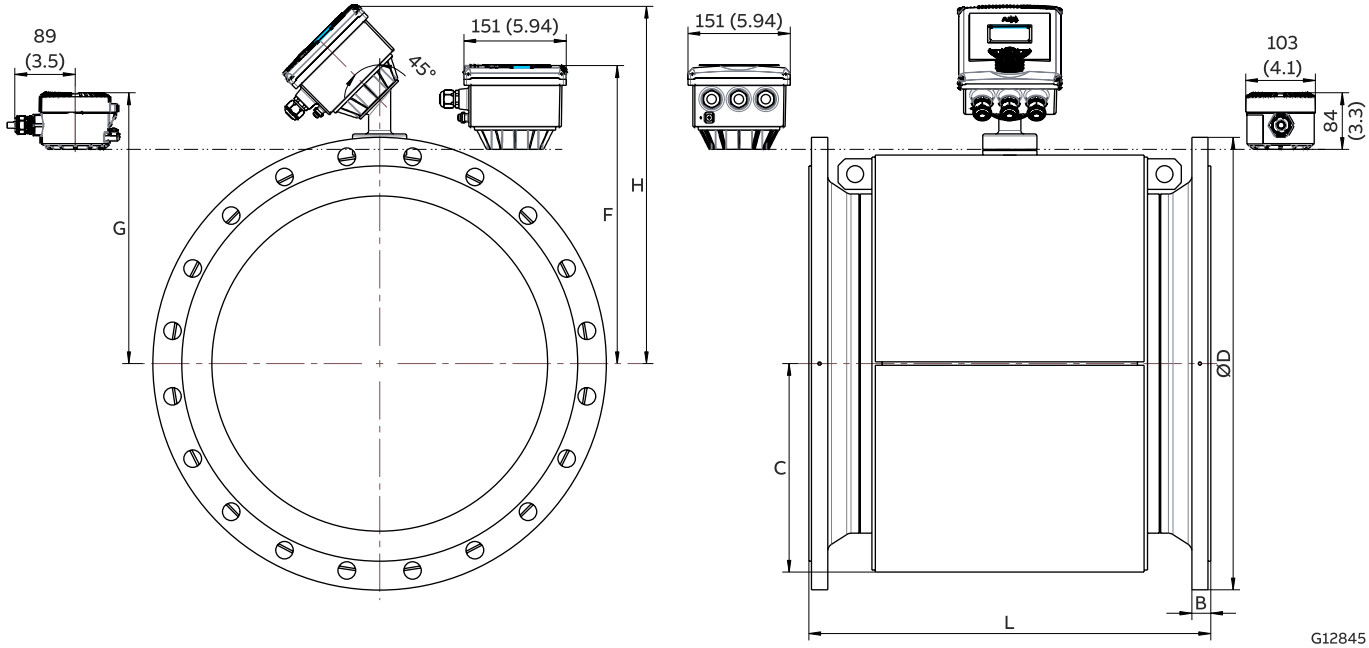


Figure 38: Flange DN 700 to 2000 (28 to 80 in), steel sensor housing, optional Lay Length (1,0 × DN)

Dimensions – Flange device, steel sensor housing, optional lay length (1,0 × DN)

Nominal diameter	Process connection	D	B	L[2) 3)]	C	F	H	G	Weight
DN 700 (28″)	EN 1092-1, PN 10[1)]	895 (35.24)	35 (1.38)						318.5 (702)
	EN 1092-1, PN 16[1)]	910 (35.83)	36 (1.42)			528 (20.8)	616 (24.26)	488 (19.2)	438.5 (967)
	ASME B16.47, CL 150	836.7 (32.94)	49.5 (1.95)						348.5 (768)
DN 750 (30″)	ASME B16.47, CL 150	888 (34.96)	44.5 (1.75)	830 (32,68)	431 (16.97)	528 (20.8)	616 (24.26)	488 (19.2)	474.5 (1046)
DN 800 (32″)	EN 1092-1, PN 10[1)]	1015 (39.96)	37 (1.46)						373 (822)
	EN 1092-1, PN 16[1)]	1025 (40.35)	43 (1.69)	800 (31.45)	455 (17.91)	554 (21.8)	642 (25.26)	514 (20.2)	447 (985)
	ASME B16.47, CL 150	942 (37.09)	51 (2.01)						498.5 (1099)
DN 900 (36″)	EN 1092-1, PN 10[1)]	1115 (43.90)	39 (1.54)						420 (926)
	EN 1092-1, PN 16[1)]	1125 (44.29)	45 (1.77)	900 (35.43)	505 (19.88)	629 (24.8)	717 (28.26)	589 (23.2)	510 (1124)
	ASME B16.47, CL 150	1157.1 (41.62)	57.3 (2.26)						678.5 (1495)
DN 1000 (40″)	EN 1092-1, PN 10[1)]	1230 (48.43)	39 (1.54)						580 (1279)
	EN 1092-1, PN 16[1)]	1255 (49.41)	47 (1.85)	1000 (39.40)	555 (21.85)				780 (1719)
	ASME B16.47, CL 150	1174.8 (46.25)	60.6 (2.39)						878.5 (1937)
DN 1050 (42″)	ASME B16.47, CL 150	1067 (42.01)	58.7 (2.31)	1365 (53.74)	607 (23.90)	733 (28.9)	821 (32.36)	693 (27.3)	930.5 (2051)
DN 1100 (44″)	ASME B16.47, CL 150	1118 (44.02)	60.5 (2.38)	1430 (56.30)	607 (23.90)	733 (28.9)	821 (32.36)	693 (27.3)	960.5 (2117)
DN 1200 (48″)	EN 1092-1, PN 10[1)]	1455 (57.28)	43 (1.69)	1560 (61.42)	660 (25.98)	784 (30.9)	872 (34.36)	744 (29.30)	928.5 (2047)
	EN 1092-1, PN 16[1)]	1485 (58.46)	53 (2.09)						1118.5 (2466)
DN 1400 (56″)	EN 1092-1 PN 10[1)]	1675 (65.94)	47 (1.85)	1820 (71.65)	755 (29.72)	879 (34.6)	967 (38.06)	839 (33.0)	1208.5 (2664)
	EN 1092-1 PN 16[1)]	1685 (66.34)	57 (2.24)						1758.5 (3877)
DN 1500 (60″)	ASME B16.47, CL 150	1676 (65.98)	76.2 (3.00)	1950 (76.77)	807 (31.77)	989 (38.9)	1077 (42.36)	949 (37.4)	1950.5 (4300)
DN 1600 (64″)	EN 1092-1 PN 10[1)]	1915 (75.39)	51 (2.01)	2080 (81.89)	865 (34.06)	990 (40.0)	1078 (43.46)	950 (37.4)	1628.5 (3590)
	EN 1092-1 PN 16[1)]	1930 (75.98)	63 (2.48)						2148.5 (4737)
DN 1800 (72″)	EN 1092-1 PN 10[1)]	2115 (83.27)	55 (2.17)	2340 (92.13)	980 (38.58)	1105 (43.5)	1193 (46.96)	1065 (41.9)	2228.5 (4913)
	EN 1092-1 PN 16[1)]	2130 (83.86)	67 (2.64)						2898.5 (6390)
DN 2000 (80″)	EN 1092-1 PN 10[1)]	2325 (91.54)	59 (2.32)	2600 (102.36)	1090 (42.91)	1215 (47.8)	1303 (51.26)	1175 (46.3)	1878.5 (4141)
	EN 1092-1 PN 16[1)]	2345 (92.32)	71 (2.80)						2648.5 (5839)

Tolerance for L: DN 700 to 2000 +0 / −10 mm (+0 / −0.394 in)

… Flowmeter sensor

… Dimensions

Dimensions – Flange device, steel sensor housing, Optional lay length (1,0xDN)

Nominal diameter	Process connection	D	B	L[2) 3)]	C	F	H	G	Weight
DN 1200 (48″)	EN 1092-1, PN 10[1)]	1455 (57.28)	43 (1.69)	1560 (61.42)	660 (25.98)				928.5 (2047)
	EN 1092-1, PN 16[1)]	1485 (58.46)	53 (2.09)						1118.5 (2466)
	AWWA C207 CLASS B					784 (30.9)	872 (34.36)	744 (29.30)	746 (1644.7)
	AWWA C207 CLASS D	1511 (59.49)	53.0 (2.09)	1200 (47.24)	856 (33.70)				886 (1953.4)
	AWWA C207 CLASS E								1389 (3062.3)
DN 1350 (54″)	AWWA C207 CLASS B	1683 (66.26)							942 (2076.8)
	AWWA C207 CLASS D	1684 (66.30)	—	1350 (53.15)	754 (29.33)	879 (34.6)	967 (38.06)	839 (33.0)	1026 (2262)
	AWWA C207 CLASS E	1685 (66.34)							1834 (4043.4)
DN 1400 (56″)	EN 1092-1 PN 10[1)]	1675 (65.94)	47 (1.85)	1820 (71.65)	755 (29.72)	879 (34.6)	967 (38.06)	839 (33.0)	1208.5 (2664)
	EN 1092-1 PN 16[1)]	1685 (66.34)	57 (2.24)						1758.5 (3877)
DN 1500 (60″)	ASME B16.47, CL 150	1676 (65.98)	76.2 (3.00)	1950 (76.77)	807 (31.77)				1950.5 (4300)
	AWWA C207 CLASS B					989 (38.9)	1077 (42.36)	949 (37.4)	1290 (2844.1)
	AWWA C207 CLASS D	1854 (72.99)	76.2 (3.00)	1524 (60.00)	996 (39.21)				1569 (3459.2)
	AWWA C207 CLASS E								2497 (5505.1)
DN 1600 (64″)	EN 1092-1 PN 10[1)]	1915 (75.39)	51 (2.01)	2080 (81.89)	865 (34.06)	990 (40.0)	1078 (43.46)	950 (37.4)	1628.5 (3590)
	EN 1092-1 PN 16[1)]	1930 (75.98)	63 (2.48)						2148.5 (4737)
DN 1650 (66″)	AWWA C207 CLASS B	2032 (80.00)							1497 (3300.4)
	AWWA C207 CLASS D	2033 (80.04)	—	1650 (64.96)	915 (36.02)	1040 (40.9)	1128 (44.36)	1000 (39.4)	1763 (3886.9)
	AWWA C207 CLASS E	2032 (80.00)							3044 (6711.1)
DN 1800 (72″)	EN 1092-1 PN 10[1)]	2115 (83.27)	55 (2.17)	2340 (92.13)	980 (38.58)				2228.5 (4913)
	EN 1092-1 PN 16[1)]	2130 (83.86)	67 (2.64)						2898.5 (6390)
	AWWA C207 CLASS B	2197 (86.50)				1105 (43.5)	1193 (46.96)	1065 (41.9)	1833 (4041.2)
	AWWA C207 CLASS D	2197 (86.50)	—	1800 (70.87)	980 (38.58)				2147 (4733.5)
	AWWA C207 CLASS E	2197 (86.50)							3842 (8470.5)
DN 2000 (80″)	EN 1092-1 PN 10[1)]	2325 (91.54)	59 (2.32)	2600 (102.36)	1090 (42.91)	1215 (47.8)	1303 (51.26)	1175 (46.3)	1878.5 (4141)
	EN 1092-1 PN 16[1)]	2345 (92.32)	71 (2.80)						2648.5 (5839)

Tolerance for L: DN 700 to 2000 +0 / −10 mm (+0 / −0.394 in)

1) Other pressure ratings on request.

2) If a grounding ring is fitted (attached to one side of the flange) dimension L increases by 5 mm (0.197 in).

3) If protection plates are fitted (attached to both sides of the flange) dimension L increases by 10 mm (0.394 in).

Transmitter

Features

- 4 to 20 mA current output
- Current output in the event of an alarm can be configured to 21 to 22.6 mA (NAMUR NE43)
- Measuring range: Can be configured between 0.02 to 2 x Q_{max}DN
- Operating mode for flow measurement can be configured
- Programmable digital output. Can be configured as frequency output, pulse output or binary output.
- Damping: 0.04 to 100 s configurable (1 τ)
- Low flow cut-off: 0 to 20 % for current and pulse output
- Empty pipe detection*
- Simulation of current and binary output (manual process execution)

* Requirements for Empty Pipe detector function:
- The conductivity of the fluid must be ≥ 20 µS/cm
- Nominal diameter must be ≥ DN 10

LCD indicator (option)
- High-contrast LCD indicator
- Display of the current flow rate as well as the total flow rate
- Application-specific visualizations which the user can select. Two operator pages can be configured to display multiple values in parallel.
- Plain text fault diagnostics
- Menu-guided parameterization with four buttons
- 'Easy Set-up' function for fast commissioning
- Parameterization of the device through Foil-keypad or HART®

Isolation of outputs
The digital output terminals 41 / 42 and 51 / 52 have a common ground.
The current output and the digital outputs are electrically isolated from each other.

IP rating

In accordance with EN 60529: IP 66 / IP 67

Vibration

In accordance with EN 60068-2-6
- In the 10 to 58 Hz range, maximum deflection 0.15 mm (0.006 in.)*
- In the range from 58 to 150 Hz, maximum acceleration 2 g*

* Peak load

Temperature data

Ambient temperature range
−20 to 60 °C (−4 to 140 °F)

Note
When operating below −20 °C (−4 °F), the LCD display can no longer be read. Full functionality is assured at temperatures above −20 °C (−4 °F).

Storage temperature range
−40 to 70 °C (−22 to 158 °F)

Housing

Integral mount design	
Housing	Polycarbonate, light grey
Cable gland*	Polyamide, M20 × 1.5 or ½ in NPT
Remote mount design	
Housing	Polycarbonate, light grey
Cable gland*	Polyamide, M20 × 1.5 or ½ in NPT

* Cable gland with M 20 × 1.5 or NPT thread, to be selected via the order number.

… Transmitter

Dimensions

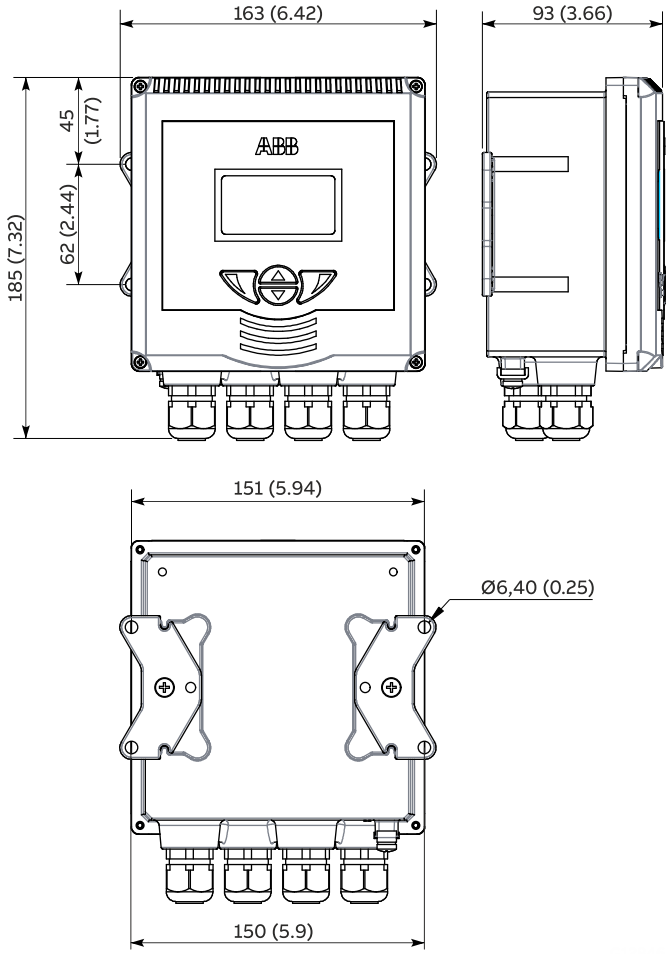


Figure 39: Mounting dimensions single-compartment housing

Transmitter orientation

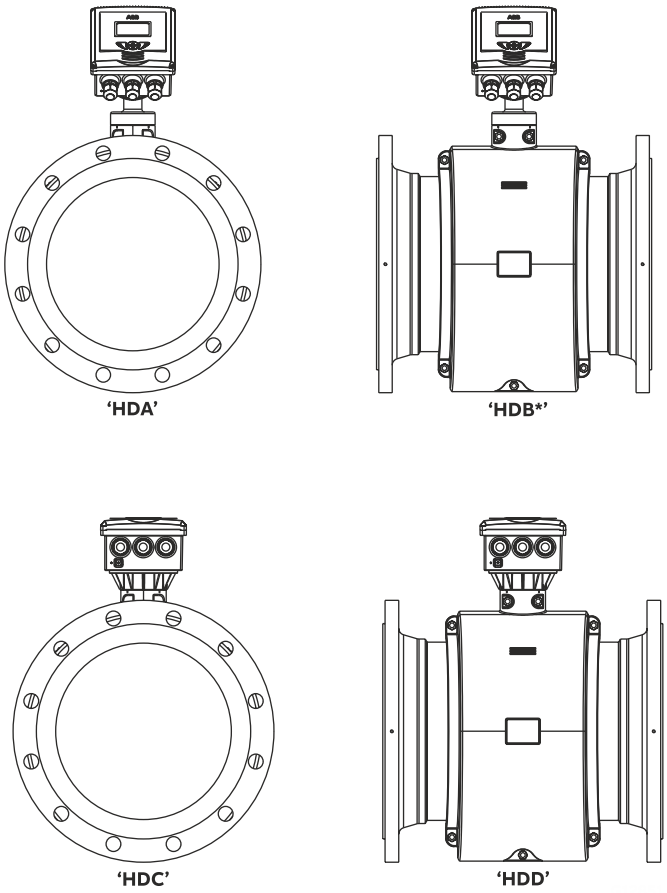


Figure 40: Transmitter orientation

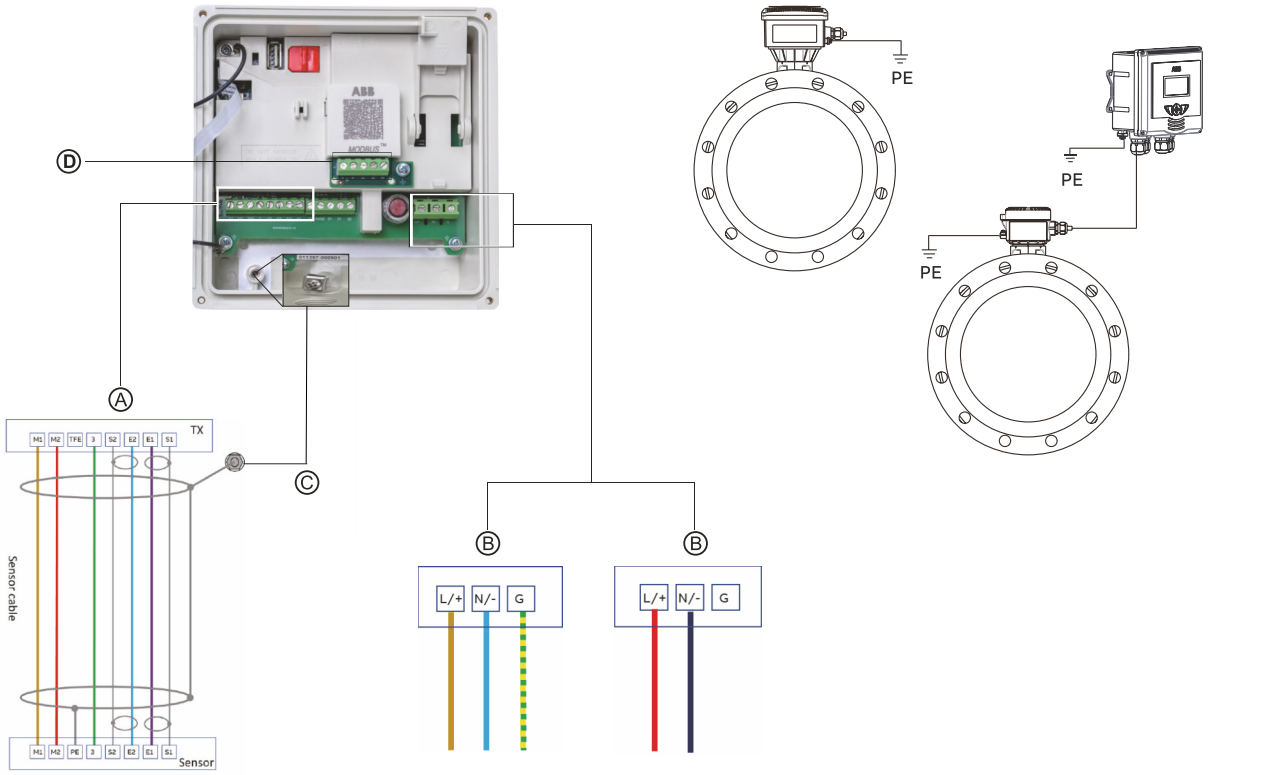
Order code	Description
HDA	Cable entries pointing in same direction as sensor axis, Transmitter housing/Display is 45° (Version A)
HDB*	Cable entries pointing 90° versus the sensor axis, Transmitter housing/Display is 45° (Version B)
HDC	Cable entries pointing in same direction as sensor axis, Transmitter housing/Display is horizontal (Version C)
HDD	Cable entries pointing 90° versus the sensor axis, Transmitter housing/Display is horizontal (Version D)

* Default type

See **Topworks housing orientation** on page 44 for details.

Electrical connections

Connection diagram



(A) Connections for sensor signal cable (remote mount design only)
(B) Connections for power supply (AC power supply/DC power supply)
(C) Grounding rod
(D) Optional MODBUS module binding post

Figure 41: Electrical connections

Note

For detailed information about grounding the transmitter and the flowmeter sensor, please refer to chapter ‘Grounding’ in the Commissioning instruction or the operating instruction.

Connections for the power supply

AC voltage	
Terminal	**Function / comments**
L/+	Phase
N/–	Neutral conductor
G	Protective earth (PE)

DC voltage	
Terminal	**Function / comments**
L/+	+
N/–	–
G	Protective earth (PE)

Optional Modbus® module binding post

Modbus	
Terminal	**Function / comments**
A/B,A1/B1	Two sets of MODBUS terminals
⏚	Protective earth (PE)

Connections for outputs

Terminal	**Function / comments**
31 / 32	**Active HART and 4 to 20 mA output** The current output is ‘active’ mode. The source to drive the 20 mA loop is in-built in the transmitter
41 / 42	**Passive digital output DO1** The output can be configured as a pulse output, frequency output or switch output on site.
51 / 52	**Passive digital output DO2** The output can be configured as a pulse output or switch output on site.

… Electrical connections

… Transmitter orientation

Connecting the signal cable

Only for remote mount design.

Terminal	Color	Function / comments
TFE	—	Not connected
3	Green	Reference potential for measurement
S2	—	Shield for E2
E2	Blue	Signal line
E1	Violet	Signal line
S1	—	Shield for E1
M1	Brown	Magnet coil
M2	Red	Magnet coil
PE	—	Shield
—	Orange/ Yellow	Not connected

Electrical data for inputs and outputs

Power supply

AC power supply	
Terminals	L / N
Operating voltage	100 to 240 V AC (−15 % / +10 %), 47 to 64 Hz
Power consumption	S_{max}: < 20 VA
Inrush current	8.8 A

DC voltage supply	
Terminals	+/−
Operating voltage	24 to 48 V DC (±10 %)
Ripple	< 5 %
Power consumption	P_{max}: < 10 W
Inrush current	5.6 A

Current / HART® output 31 / 32

Can be configured for outputting mass flow and volume flow.

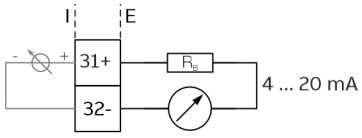
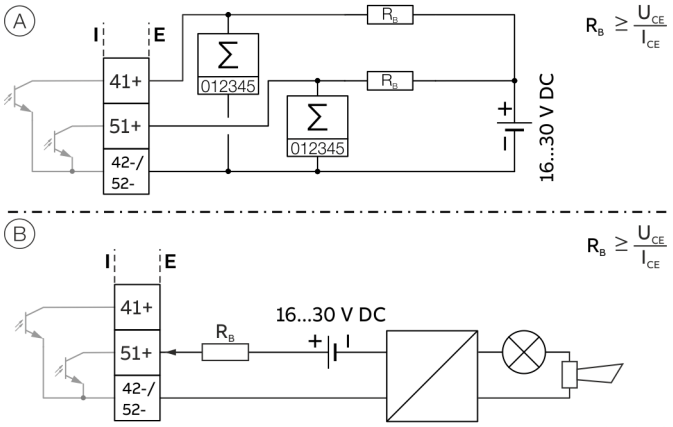


Figure 42: (I = internal, E = external, R_B = load)

For information on communication via the HART protocol, refer to **HART® Communication** on page 40.

Digital output 41 / 42, 51 / 52

Can be configured as pulse, frequency or binary output.



(A) Digital output 41 / 42, 51 / 52 passive as a pulse or frequency output

(B) Passive digital output 51 / 52 as binary output

Figure 43: (I = internal, E = external, R_B = load)

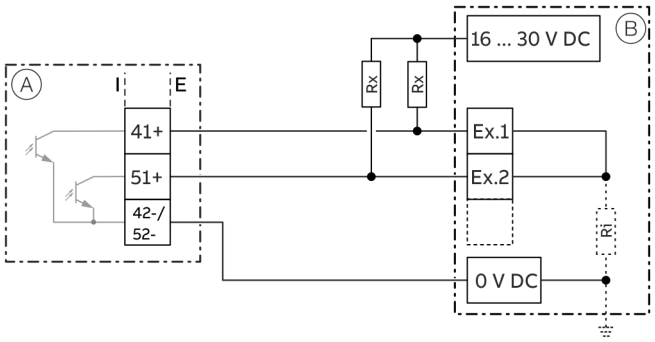
Pulse / frequency output (passive)	
Terminals	41 / 42, 51 / 52
U_{max}	30 V DC
I_{max}	25 mA
f_{max}	10.5 kHz
Pulse width	0.1 to 2000 ms

Binary output (passive)	
Terminals	41 / 42, 51 / 52
U_{max}	30 V DC
I_{max}	25 mA
Switching function	Can be configured using software.

Connection examples

Input and output functions are configured via the device software in accordance with the desired application.

Digital output 41 / 42, 51 / 52 passive on distributed control system



Ⓐ Transmitter

Ⓑ Distributed control system / Memory programmable controller

Ex. 1 Input 1

Ex. 2 Input 2

R_X Resistor for current limitation

R_i Distributed control system internal resistance

Figure 44: Digital output 41 / 42 on distributed control system (example)

The R_X resistors limit the maximum current through the optoelectronic coupler of the digital outputs in the transmitter.
The maximum permissible current is 25 mA. An R_X value of 1000 Ω / 1 W is recommended at a voltage level of 24 V DC.
The input on the distributed control system is reduced from 24 V DC to 0 V DC (falling edge) with '1' at the digital output.

Connection versions digital output 41 / 42, 51 / 52

Depending on the wiring of digital outputs DO 41 / 42 and 51 / 52, they can be used parallel or only individually. The electrical isolation between the digital outputs also depends on the wiring.

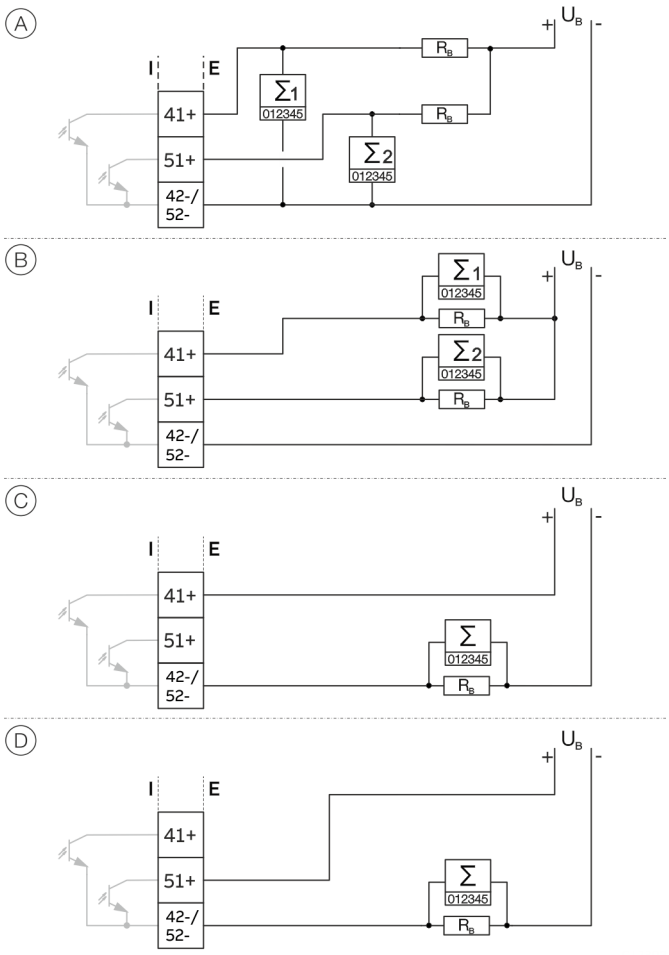


Figure 45: Connection versions digital output 41 / 42 and 51 / 52

	DO 41 / 42 and 51 / 52 can be used parallel	DO 41 / 42 and 51 / 52 electrically isolated
Ⓐ	Yes	No
Ⓑ	Yes	No
Ⓒ	No, only DO 41 / 42 can be used	No
Ⓓ	No, only DO 51 / 52 can be used	No

… Electrical connections

Digital communication

HART® Communication

The HART protocol definition is shown in the following table:

HART output	
Terminals	31 / 32
Protocol	HART 7.9
Device Type Code	0x1AA7
Device Revsion	1
Device Address Range	0 to 63 Factory settings: 0
Baud rate	1200 baud
Default Primary Variable	Volume Flow in %
Default Secondary Variable	Mass Flow in %
Default Tertiary Variable	Volume Flow Totalizer Forward
Default Quaternary Variable	Volume Flow Totalizer Reverse

Modbus® communication

The Modbus protocol settings is shown in the following table:

Modbus protocol	
Modbus Address Range	1 to 247
Baud rate	2400, 4800, 9600, 19200, 38400, 56000, 57600, 115200 baud Factory setting: 9600 baud
Parity	None, even, odd Factory setting: odd
Stop bit	One, two Factory setting: One
IEEE format	Little endian, big endian Factory setting: Little endian
Typical response time	< 100 ms
Response delay time	0 to 200 ms Factory setting: 10 ms

The function codes listed below are supported by FEX62X:

Function code	**Description**
0x02	Read Discrete Inputs
0x03	Read Holding Registers
0x04	Read Input Registers
0x06	Write Single Register
0x08	Diagnostics
0x10	Write Multiple Registers
0x11	Report Slave ID

The following table is an overview of register tables categorized by type:

Table name	**Table type**	**Data type**	**Start index**	**End index**
Unsigned Integer 8bit ReadOnly dynamic U8ROD	Single	TUSIGN8	1	32
Float 32bit ReadOnly F32RO	Single	TFLOAT	2200	2248
ReadOnly 16bit unsigned integer U16RO	Single	TUSIGN16	2100	2112
ReadWrite 32bit float F32RW	Single	TFLOAT	5000	5104
ReadWrite 32bit unsigned integer U32RW und U32RO	Single	TUSIGN32	3300	3326
ReadWrite 8bit unsigned integer U8RW	Single	TUSIGN8	4000	4175
Unsigned Integer 16bit ReadWrite U16RW	Single	TUSIGN16	3100	3236
Variant 16bit ReadOnly V16RO	Single	TUSIGN16	1100	1231
Character 8bit ReadOnly C8RO	String	TUSIGN8	2500	2759
Character 8bit ReadWrite C8RW	String	TCHAR	3400	3519
Float 64bit ReadOnly dynamic F64ROD	Single	TUSIGN8	400	432
Float 32bit ReadOnly dynamic F32ROD	Single	TDOUBLE	200	306
Unsigned Integer 8bit ReadOnly U8RO	Single	TUSIGN32	2000	2052

Ordering Information

ProcessMaster FEP621

Electromagnetic Flowmeter system, integral mount design (ABB Part No.: 3KXF246621V)

ProcessMaster FEP621	7,8	9,10	11,12,13,14	... 75,76,77
Explosion Protection Certification				
Without, Flowmeter based on CE Standard	Y0			
ATEX / IECEx (Zone 2 / 22)	A2[1)]			
cFMus Class 1 Div. 2 (Zone 2 / 22)	F2[1)]			
NEPSI (Zone 2)	S2[1)]			
Housing Type / Housing Material / Thread for Cable Glands				
Single compartment / Engineered Plastic / M20 x 1.5		V1		
Single compartment / Engineered Plastic / NPT 1/2 in		V2		
Meter size				
DN 3 (1/10 in)			0003	
DN 4 (5/32 in)			0004	
DN 6 (1/4 in)			0006	
DN 8 (5/16 in)			0008	
DN 10 (3/8 in)			0010	
DN 15 (1/2 in)			0015	
DN 20 (3/4 in)			0020	
DN 25 (1 in)			0025	
DN 32 (1-1/4 in)			0032	
DN 40 (1-1/2 in)			0040	
DN 50 (2 in)			0050	
DN 65 (2-1/2 in)			0065	
DN 80 (3 in)			0080	
DN 100 (4 in)			0100	
DN 125 (5 in)			0125	
DN 150 (6 in)			0150	
DN 200 (8 in)			0200	
DN 250 (10 in)			0250	
DN 300 (12 in)			0300	
DN 350 (14 in)			0350	
DN 400 (16 in)			0400	
DN 450 (18 in)			0450	
DN 500 (20 in)			0500	
DN 600 (24 in)			0600	
DN 700 (28 in)			0700	
DN 750 (30 in)			0750	
DN 800 (32 in)			0800	
DN 900 (36 in)			0900	
DN 1000 (40 in)			1000	
DN 1050 (42 in)			1050	
DN 1100 (44 in)			1100	
DN 1200 (48 in)			1200	
DN 1400 (54 in)			1400	
DN 1500 (60 in)			1500	
DN 1600 (66 in)			1600	
DN 1800 (72 in)			1800	
DN 2000 (80 in)			2000	

Continued on next page

… Ordering Information

… ProcessMaster FEP621

ProcessMaster FEP621	7,8	…	15,16	17,18	19	20	21	22	23	24,25	26	27,28	29	…	75,76,77
Process Connection Type															
Flanges DIN PN 10			D1												
Flanges DIN PN 16			D2												
Flanges DIN PN 25			D3												
Flanges DIN PN 40			D4												
Flanges ASME CL 150; B16.5 up to DN 600			A1												
Flanges ASME CL 300; B16.5 up to DN 600			A3												
Liner Material															
Hard rubber				R2[1,5)]											
Soft rubber				R4[1,6)]											
ETFE				E1[7)]											
PTFE				T1[8)]											
PFA				P1[9)]											
Linatex				R6[10)]											
Others				Z9											
Process Connection Material															
Carbon steel					B										
Stainless steel					C[11)]										
Others					Z										
Electrode Design															
Standard						1									
Pointed head						5[12)]									
Others						9									
Measuring Electrodes Material															
Hast. C-4 (2.4610)							D								
Titanium							F								
Tantalum							G								
Hast. B-3 (2.4600)							H								
Platinum-Iridium							J								
Stainless steel 316Ti (1.4571)							S								
Tungsten Carbide, coated							T								
Others							Z								
Grounding Electrode / Full Pipe Detection															
No grounding electrode / No full pipe detection								0							
No grounding electrode / With full pipe detection								1[13)]							
Grounding electrode / No full pipe detection								2[14)]							
Grounding electrode / With full pipe detection								3[15)]							
Others								9							
Grounding Accessories															
Without									A						
Grounding ring (1 off), mounted to flange									B[16)]						
Grounding ring (2 off), mounted to flange									C[16)]						
Grounding Ring (1off), stainless steel, loose Item									D[1)]						
Grounding Ring (2off), stainless steel, loose Item									E[1)]						
Others									Z						
Protection Class Transmitter / Protection Class Sensor															
IP 66, NEMA 4X / IP67, NEMA 4X										72					
Power Supply															
100 … 230 AC / 24 V DC, 50 Hz											F				
100 … 230 AC / 24 V DC, 60 Hz											G				
Outputs															
Current output (active), 2 Digital Outputs (passive), HART												A7			
Current output (active), 2 Digital Outputs (passive), MODBUS RTU												M1			
Design Level															
Specified by ABB													A[17)]		

Continued on next page

ProcessMaster FEP621 7,8 …	30,31	32,33,34	35,36,37	38,39,40	41,42	43,44	45,46	47,48,49	50,51,52	53,54,55	… 75,76,77
Usage Certifications											
Without	C0										
Inspection certificate 3.1 acc. EN 10204	C2										
Others	CZ										
Calibration Certifications											
ABB Standard		CMA									
3rd party witnessed calibration		CMW									
5-point calibration to ISO17025		CMD[18)]									
Other Usage Certifications											
Meter tube with PED certificate			CRP								
Standard (meter tube to SEP)			CRA[1)]								
Potable Water Approvals											
Without				CWY							
Sensor Length											
ABB Standard					J6						
1.0 × DN length (from DN 700 and up)					JH						
Other Options											
Without						K0					
With Gore-tex membrane						KG[19)]					
Documentation Language											
German							M1				
English							M5				
Chinese							M6				
Language pack Western Europe / Scandinavia							MW				
Language package Eastern Europe							ME				
Others							MZ				
Tests and Reports											
Without								CR0			
Pressure test acc. to DIN								CPD			
TSG Certificate (China)								CT1			
TSG Certificate (China) + Authority Witness								CT2			
Sensorhousing Material											
Standard									SMA		
Configuration Type											
Parameters set to factory defaults										NC1	
Parameters set customer specific										NCC	

Continued on next page

… Ordering Information

… ProcessMaster FEP621

ProcessMaster FEP621 7,8 …	56,57,58	59,60,61	62,63,64	65,66	67,68,69	70,71,72	73,74	75,76,77
Transmitter Software Function Package								
Standard	NFS							
Calibration Type								
0.2% factory calibration (+/-2mm/s)		RCB						
0,4% Factory Calibration		RCD						
0,4% Factory Calibration (+/- 1 mm/s)		RCG						
0,3% Factory Calibration (Option)		RCE						
Signal Cable								
Without			SC0					
Device Identification Plate								
Adhesive label				TC				
Others				TZ				
Temperature Range of Installation / Ambient Temperature Range								
Standard design / -20 … 60 °C (-4 … 140 °F)					TK1[20)]			
Number of Testpoints								
2 Points						TV2		
3 Points						TV3		
5 Points						TV5		
Verification Capability								
enabled							V1	
Topworks housing orientation								
Cable entries pointing in same direction as sensor axis, Tx housing/Display is 45° (Version A)								HDA
Cable entries pointing 90° versus the sensor axis, Tx housing/Display is 45° (Version B, Default)								HDB
Cable entries pointing in same direction as sensor axis, Tx housing/Display is horizontal (Version C)								HDC
Cable entries pointing 90° versus the sensor axis, Tx housing/Display is horizontal (Version D)								HDD

Notes for ProcessMaster FEP621

1) In preparation
2) Available from DN 1000 (40 in)
3) DN 15-600=ASME B16.5. Flange, > DN 600 = ASME 16.47 Serie B Flange
4) Available from 30 in onwards
5) Available from DN 25
6) Available from DN 50
7) Available from DN 25 to 1000
8) Available from DN10 to 600
9) Available from DN 3 to 200
10) Available from DN50-600
11) Material: Refer to data sheet
12) Available from DN 10 to 400
13) TFE Electrode for detection of partial filling, available from DN 300 (12 in)
14) Grounding electrodes, material same as measuring electrodes material
15) Grounding electrodes, material same as measuring electrodes material TFE Electrode for detection of partial filling, available from DN 50 (2 in)
16) Available with sensor size <= DN 600 (24 in) and PTFE liner material. For material, refer to data sheet
17) Will be specified by ABB
18) Available with 5points Calibration)
19) Not available with Ex
20) Maximum fluid temperature:
130 °C (266 °F) with PTFE, PFA, ETFE
80 °C (194 °F / 176 °F) with hard rubber
60 °C (140 °F) with soft rubber

ProcessMaster FEP622

Electromagnetic Flowmeter system, remote mount design (ABB Part No.: 3KXF246622V)

ProcessMaster FEP622	7,8	9,10	11,12,13,14	... 73,74
Explosion Protection Certification				
Without, Flowmeter based on CE Standard	Y0			
ATEX / IECEx (Zone 2 / 22)	A2[1)]			
cFMus Class 1 Div. 2 (Zone 2 / 22)	F2[1)]			
NEPSI (Zone 2)	S2[1)]			
Housing Type / Housing Material / Thread for Cable Glands				
Remote / Engineered Plastic / M20 x 1.5		P1		
Remote / Engineered Plastic / NPT 1/2 in.		P2		
Meter size				
DN 3 (1/10 in.)			0003	
DN 4 (5/32 in.)			0004	
DN 6 (1/4 in.)			0006	
DN 8 (5/16 in.)			0008	
DN 10 (3/8 in.)			0010	
DN 15 (1/2 in.)			0015	
DN 20 (3/4 in.)			0020	
DN 25 (1 in.)			0025	
DN 32 (1-1/4 in.)			0032	
DN 40 (1-1/2 in.)			0040	
DN 50 (2 in.)			0050	
DN 65 (2-1/2 in.)			0065	
DN 80 (3 in.)			0080	
DN 100 (4 in.)			0100	
DN 125 (5 in.)			0125	
DN 150 (6 in.)			0150	
DN 200 (8 in.)			0200	
DN 250 (10 in.)			0250	
DN 300 (12 in.)			0300	
DN 350 (14 in.)			0350	
DN 400 (16 in.)			0400	
DN 450 (18 in.)			0450	
DN 500 (20 in.)			0500	
DN 600 (24 in.)			0600	
DN 700 (28 in)			0700	
DN 750 (30 in)			0750	
DN 800 (32 in)			0800	
DN 900 (36 in)			0900	
DN 1000 (40 in)			1000	
DN 1050 (42 in)			1050	
DN 1100 (44 in)			1100	
DN 1200 (48 in)			1200	
DN 1400 (54 in)			1400	
DN 1500 (60 in)			1500	
DN 1600 (66 in)			1600	
DN 1800 (72 in)			1800	
DN 2000 (80 in)			2000	

Continued on next page

… Ordering Information

… ProcessMaster FEP622

ProcessMaster FEP622	7,8	…	11,12,13,14	15,16	17,18	19	20	… 73,74
Process Connection Type								
Flanges DIN PN 6				D0[2)]				
Flanges DIN PN 10				D1				
Flanges DIN PN 16				D2				
Flanges DIN PN 25				D3				
Flanges DIN PN 40				D4				
Flanges ASME CL 150; B16.5 up to DN 600				A1				
Flanges ASME CL 300; B16.5 up to DN 600				A3				
Liner Material								
Hard rubber					R2[1,5)]			
Soft rubber					R4[1,6)]			
ETFE					E1[7)]			
PTFE					T1[8)]			
PFA					P1[9)]			
Linatex					R6[10)]			
Others					Z9			
Process Connection Material								
Carbon steel						B		
Stainless steel						C[11)]		
Others						Z		
Electrode Design								
Standard							1	
Pointed head							5[12)]	
Others							9	

Continued on next page

ProcessMaster FEP622	7,8	…	21	22	23	24,25	26	27,28	29	… 73,74
Measuring Electrodes Material										
Hast. C-4 (2.4610)			D							
Titanium			F							
Tantalum			G							
Hast. B-3 (2.4600)			H							
Platinum-Iridium			J							
Stainless steel 316Ti (1.4571)			S							
Tungsten Carbide, coated			T							
Others			Z							
Grounding Electrode / Full Pipe Detection										
No grounding electrode / No full pipe detection				0						
Grounding electrode / No full pipe detection				2[13)]						
Others				9						
Grounding Accessories										
Without					A					
Grounding ring (1 off), mounted to flange					B[14)]					
Grounding ring (2 off), mounted to flange					C[14)]					
Grounding Ring (1off), stainless steel, loose Item					D[1)]					
Grounding Ring (2off), stainless steel, loose Item					E[1)]					
Others					Z					
Protection Class Transmitter / Protection Class Sensor										
IP67, NEMA 4X / IP68, NEMA 6P - Cable not fitted and potted						78				
IP67, NEMA 4X / IP68, NEMA 6P - Cable fitted and potted						79				
Power Supply										
Without , 50Hz							Y[15)]			
Without , 60Hz							W[16)]			
Outputs										
Without								Y0		
Design Level										
Specified by ABB									A	

Continued on next page

… Ordering Information

… ProcessMaster FEP622

ProcessMaster FEP632	7,8	…	30,31	32,33,34	35,36,37	38,39,40	41,42	43,44	45,56	47,48,49	50,51,52	53,54,55	… 73,74
Usage Certifications													
Without			C0										
Inspection certificate 3.1 acc. EN 10204			C2										
Others			CZ										
Calibration Certifications													
ABB Standard				CMA									
3rd party witnessed calibration				CMW									
5-point calibration acc. ISO17025				CMD[17)]									
Other Usage Certifications													
Meter tube with PED certificate					CRP								
Standard (meter tube to SEP)					CRA[1)]								
Potable Water Approvals													
Without						CWY							
Sensor Length													
ABB Standard							J6						
1.0 × DN length (from DN 700 and up)							JH						
Other Options													
Without								K0					
Sensor with pre-amplifier								KP[18)]					
With Gore-tex membrane								KG					
Sensor with pre-amplifier+Gore-tex								KM[18)]					
Documentation Language													
German									M1				
English									M5				
Chinese									M6				
Language package Western Europe / Scandinavia									MW				
Language package Eastern Europe									ME				
Others									MZ				
Tests and Reports													
Without										CR0			
Pressure test acc. to DIN										CPD			
TSG Certificate (China)										CT1			
TSG Certificate (China) + Authority Witness										CT2			
Sensorhousing Material													
Standard											SMA		
Configuration Type													
Parameters set to factory defaults												NC1	
Parameters set customer specific												NCC	

Continued on next page

ProcessMaster FEP622	7,8	…	56,57,58	59,60,61	62,63,64	65,66	67,68,69	70,71,72	73,74
Transmitter Software Function Package									
Standard			NFS						
Calibration Type									
0.2% factory calibration (+/-2mm/s)				RCB					
0,4% Factory Calibration				RCD					
0,4% Factory Calibration (+/- 1 mm/s)				RCG					
0,3% Factory Calibration (Option)				RCE					
Signal Cable									
Without					SC0				
5 m (approx. 15 ft)					SC1				
10 m (approx. 30 ft)					SC2				
15 m (approx. 49 ft)					SC3				
20 m (approx. 66 ft)					SC4				
25 m (approx. 82 ft)					SC5				
30 m (approx. 98 ft)					SC6				
35 m (approx. 115 ft)					SC7				
40 m (approx. 131 ft)					SC8				
50 m (approx. 164 ft)					SCA				
60 m (approx. 197 ft)					SCB[19)]				
70 m (approx. 230 ft)					SCC[19)]				
80 m (approx. 262 ft)					SCD[19)]				
100 m (approx. 328 ft)					SCE[19)]				
125 m (approx. 410 ft)					SCF[19)]				
150 m (approx. 492 ft)					SCG[19)]				
175 m (approx. 574 ft)					SCH[19)]				
200 m (approx. 656 ft)					SCJ[19)]				
Device Identification Plate									
Adhesive label						TC			
Others						TZ			
Temperature Range of Installation / Ambient Temperature Range									
Standard design / -20 ... 60 °C (-4 ... 140 °F)							TK1[20)]		
Number of Testpoints									
2 Points								TV2	
3 Points								TV3	
5 Points								TV5	
Verification Capability									
Enabled									V1

Notes for ProcessMaster FEP622

1) In preparation
2) Available from DN 1000 (40 in)
3) DN 15-600=ASME B16.5. Flange, > DN 600 = ASME 16.47 Serie B Flange
4) Available from 30” in onwards
5) Available from DN 25
6) Available from DN 50
7) Available from DN 25 to 1000
8) Available from DN 10 to 600
9) Available from DN 3 to 200
10) Available from DN50-600
11) Material: Refer to data sheet
12) Available from DN 10 to 400
13) Grounding electrodes, material same as measuring electrodes material
14) Available with sensor size <= DN 600 (24 in) and PTFE material. For material, refer to data sheet
15) 50 Hz (to be specified in case no Tx is ordered)
16) 60 Hz (to be specified in case no Tx is ordered)
17) Available with 5 points Calibration
18) max. cable Length = 50m; GoreTex not with Ex
19) with pre-amplifier
20) Maximum fluid temperature:
    130 °C (266 °F) with PTFE, PFA, ETFE
    80 °C (194 °F / 176 °F) with hard rubber
    60 °C (140 °F) with soft rubber

… Ordering Information

ProcessMaster FET622

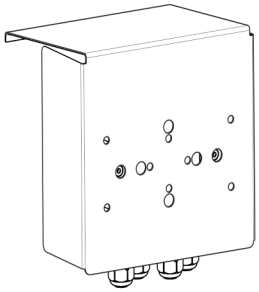
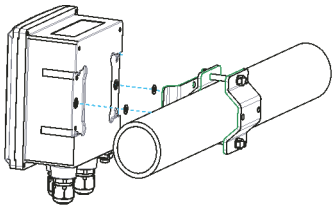
Transmitter in remote mount design (ABB Part No.: 3KXF240622V)

Remote transmitter FET622	7,8	9,10	11,12	13	14,15	16,17	18,19	20,21,22	23,24,25	26,27	28,29,30	31,32
Explosion Protection Certification												
Without, Flowmeter based on CE Standard	Y0											
ATEX / IECEx (Zone 2 / 22)	A2[1)]											
cFMus Class 1 Div. 2 (Zone 2 / 22)	F2[1)]											
NEPSI (Zone 2)	S2[1)]											
Housing Type / Housing Material / Cable Glands												
Remote / Engineered Plastic / M20 x 1.5		P1										
Remote / Engineered Plastic / NPT 1/2 in.		P2										
Protection Class Transmitter / Protection Class Sensor												
IP 66 / IP 67			72									
Power Supply												
100 … 230 AC / 24 V DC, 50 Hz				F								
100 … 230 AC / 24 V DC, 60 Hz				G								
Outputs												
Current output (active), 2 Digital Outputs (passive), HART					A7							
Current output (active), 2 Digital Outputs (passive), MODBUS RTU					M1							
Other Options												
Without						K0						
With Gore-tex membrane						KG[2)]						
Documentation Language												
German							M1					
English							M5					
Chinese							M6					
Language pack Western Europe / Scandinavia							MW					
Language package Eastern Europe							ME					
Configuration Type												
Parameters set to factory defaults								NC1				
Parameters set customer specific								NCC				
Transmitter Software Function Package												
Standard									NFS			
Device Identification Plate												
Adhesive label										TC		
Temperature Range of Installation / Ambient Temperature Range												
Standard design / -20 … 60 °C (-4 … 140 °F)											TK1	
Remote Transmitter Mounting Kit												
Without												BO
2 in Pipe Mounting Kit for Field-mount / Single compartment housing												B3

1) In preparation

2) GoreTex not with Ex

Accessories

Description	Order code
Weathershield Kit for FET622 remote Transmitter	3KXA877210L0103
	
Pipe-mount Kit for FET622 remote Transmitter	3KXA877210L0102
	
Panel-mount Kit for FET622 remote Transmitter	3KXA877210L0101
	
Service cable with USB to TTL Converter for 620 Series Transmitter	
Cable with USB to USB connector	3KXF065601U0100
Cable with USB to JST connector	3KXF065669U0100
2pcs in one Pack, 1x(USB to USB) and 1x(USB to JST)	3KXF065690U0100
Signal cable	
5 m (approx. 15 ft)	D173D031U05
10 m (approx. 30 ft)	D173D031U10
15 m (approx. 49 ft)	D173D031U15
20 m (approx. 66 ft)	D173D031U20
25 m (approx. 82 ft)	D173D031U25
30 m (approx. 98 ft)	D173D031U30
35 m (approx. 115 ft)	D173D031U35
40 m (approx. 131 ft)	D173D031U40
50 m (approx. 164 ft)	D173D031U50
80 m (approx. 262 ft)	D173D031U80
100 m (approx. 328 ft)	D173D031U1H
150 m (approx. 492 ft)	D173D031U1F
200 m (approx. 656 ft)	D173D031U2H
Potting Kit	
For on-site sensor terminal box potting	0218499

Trademarks

HART is a registered trademark of FieldComm Group, Austin, Texas, USA

Modbus is a registered trademark of Schneider Automation Inc.

LINATEX is a registered trademark of Linatex Ltd.

Hastelloy C is a trademark of Haynes International

Notes

Notes

ABB Measurement & Analytics

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