

Fișa tehnică - Termometru indicator Wika A52

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Termometru bimetalic pentru aplicații industriale Wika A52	WIK A Alexander Wiegand SE & Co.
2	Condiții de lucru:	- Scale range in °C 0-120 - Scale spacing in °C 1	
3	Parametri constructivi:	- Carcasa din aluminiu - Conectare pe spate Filet G1/2	
4	Dotări minime:	Lipse sc	
5	Caracteristici funcționale:	- Domeniu de măsurare 10-110°C - Nominal size 100mm - Toleranța 5%	
6	Teste și certificări puse la dispoziția Beneficiarului:	Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	Certificat de conformitate	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipse sc	
12	Condiții privind conformitatea cu standarde relevante:	EN 13190	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 12 luni	



Bimetal thermometer For industrial applications Models A52, R52

WIKA data sheet TM 52.01



for further approvals
see page 6

Applications

- A wide range of applications in machine building, vessel, piping and apparatus construction
- Heating technology

Special features

- Scale ranges from -30 ... +500 °C
- Large choice of nominal sizes from 25 ... 160 mm
- Case and stem from stainless steel
- 5 different connection designs



Fig. left: model A52.100, back mount
Fig. right: model R52.100, lower mount

Description

The model A52, R52 bimetal thermometers are the entry-level model among process thermometers. The target markets of this thermometer are air-conditioning and machine building.

Model 52 is manufactured in accordance with EN 13190 and already offers a stainless steel case and accuracy class 1 for nominal sizes > 60 mm.

Especially noteworthy is the large number of stem lengths and nominal sizes. This enables the individual adaptation to the target applications.

Specifications

Measuring element

Bimetal coil

Nominal size in mm

25, 33, 40, 50, 63, 80, 100, 160

Connection designs

S Standard (male threaded connection)

1 Plain stem (without thread)

2 Male nut ¹⁾

3 Union nut ¹⁾

4 Compression fitting (sliding on stem) ¹⁾

other connection designs on request

Model overview

Model	NS	Design
A52.025	25	Back mount (axial)
A52.033	33	
A52.040	40	
A52.050	50	
A52.063	63	
A52.080	80	
A52.100	100	
A52.160	160	
R52.063	63	Lower mount (radial)
R52.080	80	
R52.100	100	
R52.160	160	

Unit (scale range)

°C

Option: °F, °C/°F (dual scale)

Accuracy class

NS 25, 33: ±5 % of scale range

NS 40, 50: 2 per EN 13190

NS 63, 80, 100, 160: 1 per EN 13190

Working range

Continuous loading: Measuring range per EN 13190

Short time (24 h max.): Scale range per EN 13190

Case, bezel ring, stem, process connection and spacer

Stainless steel

Elbow behind the case

Aluminium, only with lower mount version

Dial

Aluminium, white, black lettering

Pointer

NS 25, 33, 40: Aluminium, black

NS 50, 63, 80, 100, 160: Aluminium, black, adjustable pointer

Window

Instrument glass

NS 33: polycarbonate

Permissible operating pressure at the stem

NS 25, 33, 40, 50: max. 6 bar, static

NS 63, 80, 100, 160: max. 25 bar, static

Ingress protection

NS 25, 33, 40: IP54 per IEC/EN 60529

NS 50, 63, 80, 100, 160: IP43 per IEC/EN 60529

1) Not for NS 25, 33, 40, 50

Scale ranges, measuring ranges ²⁾, error limit (EN 13190)
Scale graduation per WIKA standard

Scale range in °C	Measuring range in °C	Scale spacing in °C		Error limit ± °C	
		up to NS 63	from NS 80	up to NS 50	from NS 63
-30 ... +50	-20 ... +40	1	1	2	1
-20 ... +60	-10 ... +50	1	1	2	1
0 ... 60	10 ... 50	1	1	2	1
0 ... 80	10 ... 70	1	1	2	1
0 ... 100	10 ... 90	2	1	2	1
0 ... 120	10 ... 110	2	1	4	2
0 ... 160	20 ... 140	2	2	4	2
0 ... 200 ³⁾	20 ... 180	5	2	4	2
0 ... 250 ³⁾	30 ... 220	5	2	5	2.5
0 ... 300 ⁴⁾	30 ... 270	5	2	-	5
0 ... 400 ⁴⁾	50 ... 350	5	5	-	5
0 ... 500 ⁴⁾	50 ... 450	5	5	-	5

²⁾ The limits of the measuring range are indicated on the dial by two triangular marks.
Only within this range is the stated error limit valid per EN 13190.
³⁾ Not for NS 33
⁴⁾ Not for NS 25 to NS 50

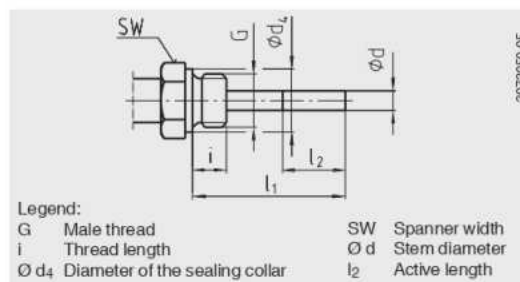
other scale ranges on request

Connection designs

Standard design (male thread connection)

Standard insertion length $l_1 = 63, 100, 160, 200, 250$ mm

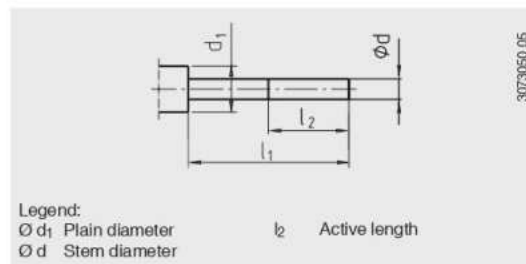
Nominal size	Process connection		Dimensions in mm		
	G	i	SW	Ø d ₄	Ø d
25, 33	M8 x 1.25	8	12	-	4
	G ½ B	8	12	-	4
	G ¼ B	8	17	-	4
40, 50	M8 x 1.25	8	12	-	4
	G ½ B	8	17	-	4
	G ¼ B	8	17	-	4
	G ½ B	12	22	-	4
63, 80, 100, 160	G ¼ B	12	19	18	6 or 8
	G ½ B	14	27	26	6 or 8
	M18 x 1.5	12	24	23	6 or 8
	½ NPT	19	22	-	6 or 8



Design 1, plain stem (without thread)

Standard insertion length $l_1 = 45, 63, 100, 140, 160, 200, 240, 290$ mm

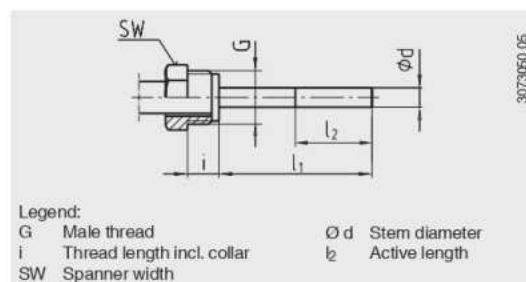
Nominal size	Dimensions in mm	
NS	d_1	$\varnothing d$
25, 33	8	4
40, 50	12	4
63, 80, 100, 160	18	6 or 8



Design 2, male nut

Standard insertion length $l_1 = 80, 140, 180, 230$ mm

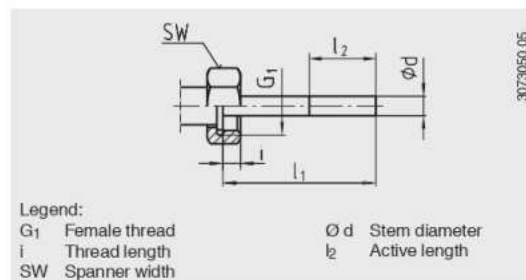
Nominal size	Process connection		Dimensions in mm	
NS	G	i	SW	$\varnothing d$
63, 80, 100, 160	G ½ B	20	27	6 or 8
	M18 x 1.5	17	22	6 or 8



Design 3, union nut

Standard insertion length $l_1 = 89, 126, 186, 226, 276$ mm

Nominal size	Process connection		Dimensions in mm	
NS	G	i	SW	$\varnothing d$
63, 80, 100, 160	G ½	8.5	27	6 or 8
	G ¾	9.5	32	6 or 8

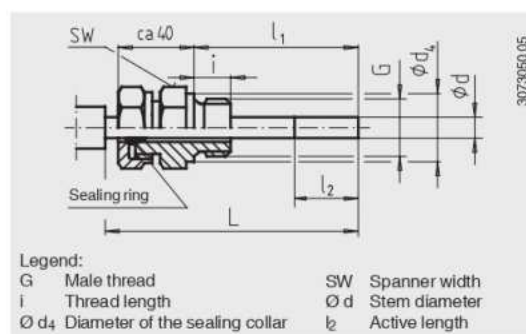


Design 4, compression fitting (sliding on stem)

Insertion length $l_1 =$ variable

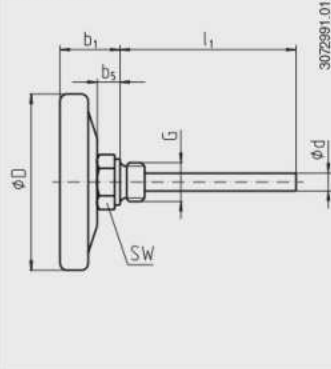
Length $L = l_1 + 40$ mm

Nominal size	Process connection		Dimensions in mm		
NS	G	i	SW	$\varnothing d_4$	$\varnothing d$
63, 80, 100, 160	G ¼ B	8	22	18	6 or 8
	G ½ B	14	27	26	6 or 8
	M18 x 1.5	12	24	23	6 or 8
	½ NPT	19	22	-	6 or 8
	G ¾ B	16	32	32	6 or 8
	¾ NPT	20	30	-	6 or 8

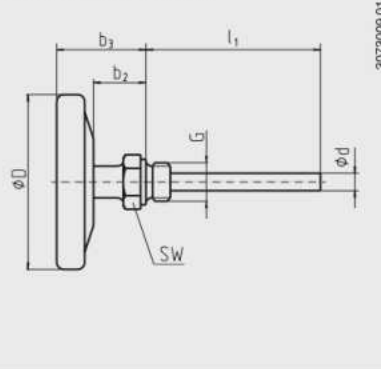


Dimensions in mm

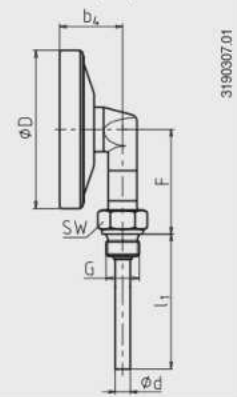
Back mount (BM)
(up to 250 °C)



Back mount with spacer
(from 300 °C or on request)



Lower mount (LM)



NS	Dimensions in mm							Weight in kg		
	b ₁	b ₂	b ₃	b ₄	b ₅	Ø D	F	R	RD	U
25	16	-	-	-	6	25	-	0.035	-	-
33	16	-	-	-	6	33	-	0.040	-	-
40	21	-	-	-	8	40	-	0.050	-	-
50	21	-	-	-	8	50	-	0.060	-	-
63	29	30 ¹⁾	46	34	13	63	47	0.160	0.200	0.220
80	30	30 ¹⁾	47	36	13	80	56	0.200	0.240	0.270
100	35	30 ¹⁾	52	40	13	100	66	0.250	0.290	0.330
160	39	30 ¹⁾	57	42,5	13	160	96	0.450	0.490	0.560

1) from 300 °C or on request
R Back mount (BM)
RD Back mount with spacer
U Lower mount (LM)

Thermowell

In principle, the operation of a mechanical thermometer without a thermowell with low process-side loading (low pressure, low viscosity and low flow velocities) is possible.

However, in order to enable exchanging the thermometer during operation (e.g. instrument replacement or calibration) and to ensure a better protection of the instrument and also the plant and the environment, it is advisable to use a thermowell from the extensive WIKA thermowell portfolio.

For further information on the calculation of the thermowell, see Technical information IN 00.15.

Approvals

Logo	Description	Country
	GOST (option) Metrology, measurement technology	Russia
	KazInMetr (option) Metrology, measurement technology	Kazakhstan
-	MTSCHS (option) Permission for commissioning	Kazakhstan
	BelGIM (option) Metrology, measurement technology	Belarus
	UkrSEPRO (option) Metrology, measurement technology	Ukraine
	Uzstandard (option) Metrology, measurement technology	Uzbekistan
-	CRN (option) Safety (e.g. electr. safety, overpressure, ...)	Canada

Certificates (option)

2.2 test report

Approvals and certificates, see website

Ordering information

Model / Connection design / Scale range / Process connection / Stem diameter, material / Insertion length / Options

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The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.

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WIKA data sheet TM 52.01 - 02/2019

Page 6 of 6



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www.wika.de

Fișa tehnică - Diafragmă

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Diafragma de măsurare gaze este un element de control utilizat pentru măsurarea precisă a debitului de gaze în conducte industriale, bazată pe diferența de presiune creată de restricția de curgere. Fabricată din materiale rezistente, cu design conform standardelor internaționale pentru siguranță și precizie. Include camere de montaj și secțiuni de conducte specializate, care asigură condițiile necesare pentru măsurarea corectă.	MATTECH, S.R.O.
2	Condiții de lucru:	Temperatura de operare: -40°C ... +60°C Presiune de lucru: până la 1,5 MPa Mediu: gaze naturale Condiții ambientale: industriale, inclusiv medii cu risc de explozie, cu protecție adecvată	
3	Parametri constructivi:	• Materiale: oțel inoxidabil AISI 316 • Design conform ISO 5167 • Dimensiuni adaptate pentru diametre de conductă variabile • Suprafață finisată și tratată pentru rezistență la coroziune și uzură • Camere de montaj (carcase) și secțiuni de conducte proiectate pentru asigurarea profilului optim al curgerii gazului, conform normelor pentru măsurarea debitului cu diafragmă • Camerele și secțiunile sunt echipate cu racorduri pentru senzori și instrumente de măsură adiționale	
4	Dotări minime:	• Flanșe pentru montaj • Garnituri și accesorii pentru montaj • Camere de montaj dimensionate pentru reducerea turbulențelor și asigurarea unei zone stabile de măsurare	
5	Caracteristici funcționale:	• Măsurare precisă a debitului prin diferența de presiune generată pe diafragmă • Compatibilitate cu sisteme de măsurare automate • Ușor de montat și demontat pentru întreținere	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate material • Raport de calibrare și testare la livrare	
7	Marcare și identificare:	Marcaj pe corp cu cod produs, dimensiuni și data fabricației	
8	Mod de ofertare:	Oferta include diafragma conform specificațiilor tehnice și standardelor cerute, împreună cu camerele și secțiunile de conducte necesare montajului	

9	Documentația care va fi prezentată la ofertare:	Fișe tehnice	
10	Documentație care va însoți produsul:	• Certificat de calitate și conformitate materială • Raport de testare și calibrare	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Măsurare precisă cu abatere minimă de $\pm 1\%$ sau conform standardului aplicabil	
12	Condiții privind conformitatea cu standarde relevante:	Conform cu ISO 5167	
13	Condiții de livrare:	Livrare în kit complet: diafragmă, camere, secțiuni de conducte și accesorii de montaj	
14	Condiții de garanție și postgaranție:	Garanție de 24 luni pentru defecte de fabricație	



| Meter Tube with Centric Orifice Plate

Meter tube is a complete set consisting of a centric orifice plate and straight lengths of piping on its inlet and outlet side. Meter tube is a construction of three sections: inlet, in which the fluid flow is straightened, measuring one (orifice plate) and outlet.

Straight lengths of the meter tube comply with all shape conditions and geometric accuracy defined by ISO 5167 standard, related to piping sections adjoining to the orifice plate. This setting ensures entrance of stabilized fluid flow into primary element and accurate measurement of flow mass. Conception of meter tubes also minimizes eventual non-conformities of the orifice plate fittings and their subsequent operation. Division of the meter tube to particular sections also enables easier maintenance control or subsequent meter verification.

Differential pressure tapping is chamber and integrated directly in the flange bodies, between which a disc of the orifice plate is placed and sealed. The disc is thoroughly centred between the flanges by a simple design placement. The meter tube set contains stainless distance bolts placed in the flanges that are gripping the disc. These distance bolts significantly facilitate dismantling and subsequent assembly of the disc. Pressure tapping is led out of the flanges. Upon agreement with the customer, outlets of differential pressure are always customized to various options of primary element attachment to the measuring circuit.

The meter tube with centric orifice plate is manufactured in nominal diameters ranging from DN 50 up to DN 1,000. Standard meter tube with centric orifice plate in nominal diameters ranging from DN 50 up to DN 150 is manufactured with straight lengths of the piping 10D "downstream" and 5D "upstream" the orifice plate. 2D section "downstream" the orifice plate is separated by a flanged joint and it is detachable for the purpose of its comfortable accessibility during its inspections. Process connection of meter tube is placed on both ends with preparation for its welding as a standard. On agreement with customers it can be manufactured as a flanged one, too.

The meter tube with centric orifice plate in nominal diameters DN 200 and higher is manufactured as a standard with straight lengths of piping 2D "downstream" the orifice plate and 2D "upstream" it. 2D section "downstream" the orifice plate is ended with a flange and it can be supplemented with a counter-flange including supply of fasteners and seals, 2D section "upstream" the orifice plate is ended by preparation for its welding. Upon agreement with customers ending of 2D section "upstream" the orifice plate can be manufactured as a flange. The meter tube can also be equipped with 8D section with metrological verification supplementing inlet section "downstream" the orifice plate to total length of 10D.

Carbon, stainless or refractory alloyed steel are the most used steels for the production of meter tubes. The disc of the centric orifice plate is made of stainless steel as a standard. Upon agreement the meter tube can be manufactured of the plastic material, too.

The meter tube with centric orifice plate is manufactured either as a working meter or, as a specified meter with metrological verification complying with the technical particulars and conditions of pattern approval.

Upon agreement the meter tube with centric orifice plate can be manufactures with extended straight sections of piping, or, in DN ranges different than stated above. The meter tube with centric orifice plate can be incorporated both in vertical and horizontal piping



Fișa tehnică - Amortizor de zgomot Pietro Fiorentini LDB/176

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Amortizor de zgomot Pietro Fiorentini LDB/176	Pietro Fiorentini S.p.A.
2	Condiții de lucru:	• Max. inlet pressure - Up to 100 bar • Ambient temperature -20°C +60°C • Inlet gas temperature -20°C + 60°C	
3	Parametri constructivi:	• Body Material Carbon steel • Screws Carbon steel	
4	Dotări minime:	Lipsesc	
5	Caracteristici funcționale:	• Reducere zgomotului regulatorului pîna la 15 dBA	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Certificat de conformitate • Certificat 3.1	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipsesc	
12	Condiții privind conformitatea cu standarde relevante:	• EN12516 • PED 2014/68/EU	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	



LDB/176 silencer

Whenever certain noise limit is desired, an additional silencer allows to considerably reduce the noise level (dBA).

ASX 176 pressure regulator can be supplied with an **incorporated silencer** in either the standard version or version with incorporated slam shut or monitor regulator.

The high efficiency noise absorption takes place at the point where the noise is generated, thus preventing its propagation.

With the built-in silencer, the C_g valve coefficient is 10% lower than the corresponding version without.

Given the modular arrangement of the regulator, the silencer may be retrofitted to both standard ASX 176 version as well as those with incorporated slam shut or monitor, **without any need to modify the main piping**.

Pressure reduction and control operate in the same manner as in the standard version.

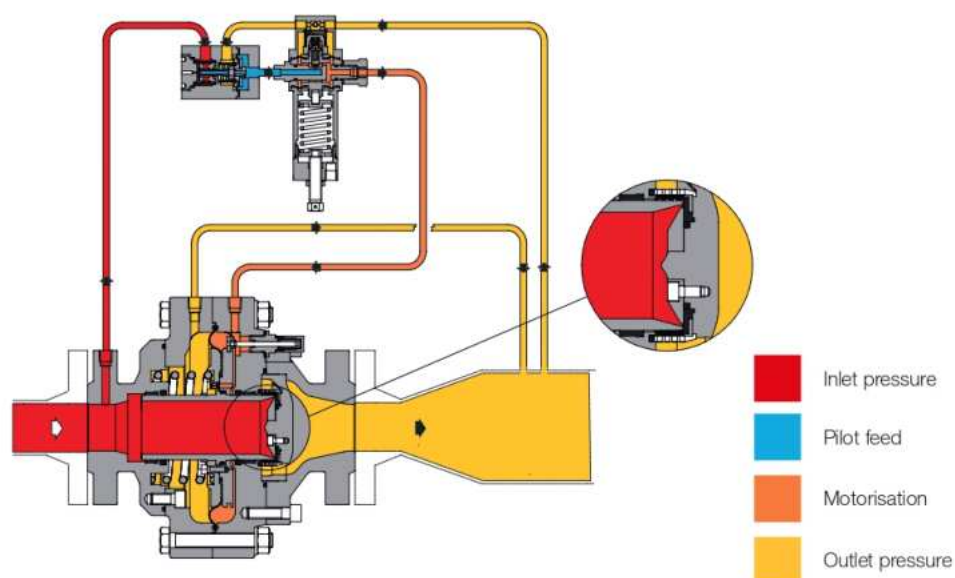


Figure 7 ASX 176 with LDB/176 silencer

The charts below represent the silencer effectiveness based on some common reference conditions for 2", 4" and 6". For actual calculations at specific desired conditions please refer to the online sizing tool or contact your closest Pietro Fiorentini representative.

- - - Pd 0.4 MPa | 4 barg NO Silencer — Pd 0.4 MPa | 4 barg LDB/176 - - - Pd 2 MPa | 20 barg NO SILENCER — Pd 2 MPa | 20 barg LDB/176
 - - - Pd 4 MPa | 40 barg NO Silencer — Pd 4 MPa | 40 barg LDB/176 Recommended noise limit (85 dBA at 1 mt | 3 feet)

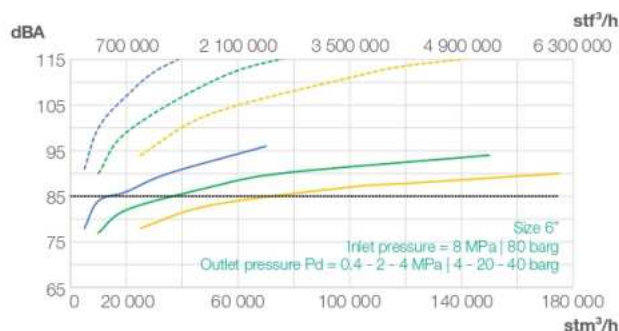
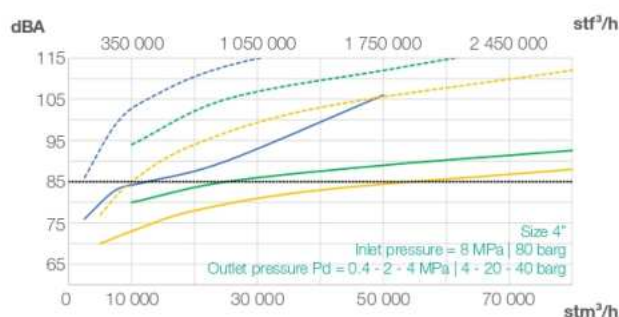
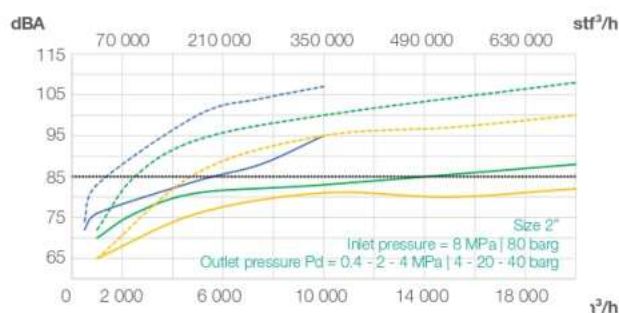


Chart 1 ASX 176's silencer efficiency charts

Fișa tehnică - Senzor de incendiu SENSE-WARE

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Detectoarele de flacără SENSE-WARE IR3-109/1CZ	SENSE-WARE
2	Condiții de lucru:	• Tensiune alimentare 12-24 V • Temperatură de funcționare [°C]. - 40...70	
3	Parametri constructivi:	• Dimensiuni 125 x 80 x 57 mm • Carcasă Poliester armat cu sticlă (GRP)	
4	Dotări minime:	Lipsesc	
5	Caracteristici funcționale:	• Timp de pornire <10 sec • Conul de vizibilitate 90° minimum • Leșiri de releu: -releu de alarmă Deconectat în timpul funcționării normale, fără alarmă, SPDT, 30 Vcc - 2 A, 60 W max. -releu de defect Conectat în timpul funcționării normale, fără defecțiune, SPDT, 30 Vdc - 2 A, 60 W max. • Leșire current 0-20 mA	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat Atex	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipsesc	
12	Condiții privind conformitatea cu standarde relevante:	• EN54-10: 2002/A1: 2005	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	



SENSE-WARE

THE FLAME DETECTOR
COMPANY



Model IR3-109/1

Triple Infrared Flame Detector

- Three Infrared Sensors
- Corrosion proof
GRP housing
- Non-Incendive for Zone 2
- Weather Resistant
- Relay & 4-20 mA Outputs
- Automatic & Manual
Self Test
- 5 Year Warranty
- ATEX, IECEx &
FM3611 Approved
- EN54-10 & FM3260
Approved
- Suitable for Zone 2 &
Safe Areas
- Low Power

The Sense-WARE Triple IR3 Flame Detector is designed to give optimum performance for Zone 2 and Safe Area flame detection. Designed to detect all types of hydrocarbon fires and immune to false alarms, the Model IR3-109/1 offers a cost effective solution for Zone 2 and Safe Area industrial and commercial applications.



The Retroreflective ring around the window allows for easy testing with a Sense-Ware Test Lamp. The Pressure Compensating Element (PCE), prevents water ingress damaging the electronics.

Sense-WARE Flame Detectors offer fast performance, with a 5 year warranty making them the Best in Class.

Typical Applications

- Aircraft Hangars • Atriums • Biogas • Car, Train Bus, Tram and Train Parkings • CNG Filling • Conveyor Belts
- Diesel Engine Rooms • Electric Power Transformers
- Engine Test Cells • Gas Cabinets • Gasoline/Gas Engine Rooms • Service & Charging Stations
- Hydraulics e.g. Extruders • Chemical, Fuel & Solvent Storage • Hydrocarbon Storage and Processing
- Laboratories • Loading / Unloading Terminals
- Monitoring of Machinery • Chemical Storage • Oil and Gas Pipe Line and Pumping Stations • Powder Coating & Paint Booths • Recycling and Waste Processing Plants • Wind Turbines

Specifications

Spectral Range
2.7 - 5.0 Microns

Maximum Range
35 Meters (115 ft)
0.09 m² (1 Sq.Ft.) Heptane pan fire

Typical Response
<10 Seconds

Field of View
90° x 90°

Input Power
10-28 VDC

Current (Normal)
25 mA @ 24 VDC
(40 mA peak during Self-Test)

Current (Alarm)
35 mA @ 24 VDC

Start Up Time
<10 Seconds

Analogue Signal - Sink
0-20 mA

Power Fault
0 mA

Optical Fault
2 mA

Normal Operation
4 mA

Alarm
20 mA

Relays
Alarm & Fault SPDT

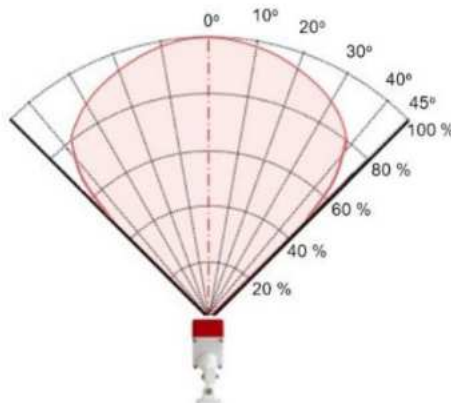
Relay Contact Rating
30 VDC / 2 A / 60 W

Latching (default) / Non Latching
DIL Switch selectable

Normal Operation
Green LED

Alarm Indication
Red LED

Fault Indication
Yellow LED



Automatic Self-Test
Once per Hour

Manual Self-Test
Available (see Manual)

Cable gland (pre-mounted)
1 x M20

Cable diameter
5.5-13 mm / 20-60 AWG

Housing
GRP

Temperature Range
-25 °C to +70 °C Hazardous Area
-40 °C to +70 °C Safe Area

Humidity
0-95 % Non Condensing

Ingress Protection
IP65

Pressure Compensation
PCE

Weight
465 g

Dimensions
125 x 80 x 57 mm

Warranty
5 Years

SENSE-WARE
THE FLAME DETECTOR
COMPANY



Model IR3-109/1

Approvals

EN54-10
Performance, Class 1

ATEX, IEC Hazardous Area
II 3G Ex nA IIC T4 Gc,
II 3D EX tc IIIC T71 °C Dc

FM3260
Performance (see Manual)

FM3611 Hazardous Area
Non-Incendive: Class I, II, III,
Div 2, Groups A,B,C,D,F,G
(see Manual)

Accessories

I.S. Test Lamp
TC-940/1Z

Non EX Test Lamp
TC-169/1

Swivel Mount
SM21

Specifications may be subject to change

www.sense-ware.com

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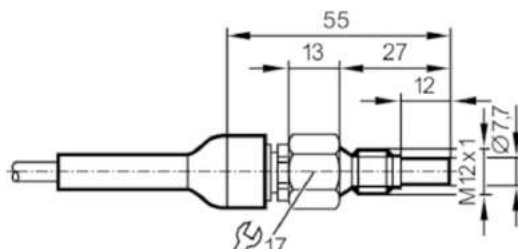
Fișa tehnică - Senzor de curgere IFM SF121A

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Senzor de curgere IFM SF121A	ifm electronic s.r.l
2	Condiții de lucru:	• Tensiune de lucru 18-36 V • Temperatura mediului [°C] -20+70	
3	Parametri constructivi:	• conectare pe filet M12 x 1 filet exterior • Materiale inox	
4	Dotări minime:	Lipsesc	
5	Caracteristici funcționale:	• Domeniu reglare [cm/s] 200...2000 • Sensibilitatea cea mai mare [cm/s] 200...800 • Timp răspuns [s] 1...10	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificare DMT 03 ATEX E091; IECEx BVS 06.0007	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat Atex	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipsesc	
12	Condiții privind conformitatea cu standarde relevante:	Lipsesc	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

SF121A

Senzor de curgere pentru conectarea la unitate de evaluare

SFM12ABB/2G /6M



Caracteristicile produsului		
Lungimea tijei L	[mm]	12
Conectarea la proces		conectare pe filet M12 x 1 filet exterior
Aplica#ie		
Mediu		Lichide; Gaze
Temperatura mediului	[°C]	-20...70
Rezisten#ă la presiune	30 bar	3 MPa
Lichide		
Temperatura mediului	[°C]	-20...70
Gaze		
Temperatura mediului	[°C]	-20...70
Date electrice		
Conectare la electronica de evaluare		VS2000 Exi (PTB 01 ATEX 2075)
Domeniu de măsură/programare		
Lungimea tijei L	[mm]	12
Lichide		
Domeniu reglare	[cm/s]	3...300
Sensibilitatea cea mai mare	[cm/s]	3...60
Gaze		
Domeniu reglare	[cm/s]	200...2000
Sensibilitatea cea mai mare	[cm/s]	200...800
Precizia / Devieri		
Gradient temperatură	[K/min]	15
Timp de raspuns		
Timp răspuns	[s]	1...10
Lichide		
Timp răspuns	[s]	1...10
Gaze		
Timp răspuns	[s]	1...10

SF121A



Senzor de curgere pentru conectarea la unitate de evaluare

SFM12ABB/2G /6M

Condițiile mediului		
Temperatură de ambianță	[°C]	-20...70
Protecție		IP 67
Teste / certificări		
Certificare		DMT 03 ATEX E091; IECEx BVS 06.0007
Marcaj ATEX		Ex II 2G Ex ia IIC T4 Gb
Rezistență la șoc	DIN IEC 68-2-27	40 g (11 ms)
Rezistență la vibrații	DIN IEC 68-2-6	10 g (55...2000 Hz)
MTTF	[ani]	8648
Clasificare de siguranță		
Capacitanța internă Max.	[nF]	1,2
Inductanța internă Max.	[μH]	6
Clasa de temperatură		T4
Date mecanice		
Greutate	[g]	346
Capsulă		cilindric
Materiale		inox (1.4404 / 316L)
Materiale în contact cu mediul		inox (1.4404 / 316L)
Conectarea la proces		conectare pe filet M12 x 1 filet exterior
Diametru sonda	[mm]	7,7
Lungime de instalare EL	[mm]	27
Observații		
Observații	Acreditarea 94/9/EC (ATEX) cuprinde doar condițiile atmosferice aflate în plajele (0.8...1.1 bar). Pentru presiuni în afara acestor game, trebuie evaluate și aprobate de către utilizator. Respectați instrucțiunile de utilizare și certificatul de testare model.	
Unitate de ambalare		1 buc.

SF121A



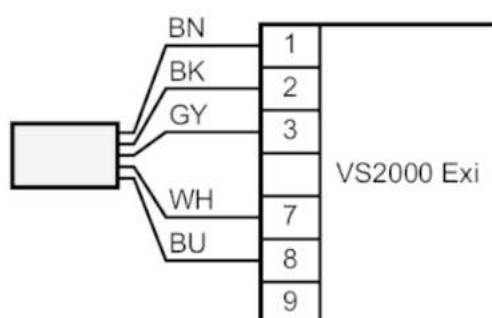
Senzor de curgere pentru conectarea la unitate de evaluare

SFM12ABB/2G /6M

Conectare electrică

Cablu: 6 m, TPE-S; Lungimea maxima a cablului: 100 m; 5 x 0,34 mm²

Racord



Culorile conecticii :

BN = maro
BU = albastru
BK = negru
WH = alb
GY = gri

Fișa tehnică - Indicator de nivel Wika FLM-SA

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Traductor de nivel magnetostrictiv Wika FLM-SA	WIK A Alexander Wiegand SE & Co.
2	Condiții de lucru:	• Tensiune de lucru 10-30 V • Temperatura mediului [°C]-40 +85	
3	Parametri constructivi:	• Tub de ghidaj din inox Ø 12 mm 3.000 mm • Conectare filet G 1/2 ... G 2"	
4	Dotări minime:	Lipsesc	
5	Caracteristici funcționale:	• Semnal de iesire 4 ... 20 mA, HART® rev. 6	
6	Teste și certificări puse la dispoziția Beneficiarului:		
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Protecția IP68	
12	Condiții privind conformitatea cu standarde relevante:	Lipsesc	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

Magnetostrictive level transmitter

High-resolution measurement principle

Models FLM-S, FLM-T, FLM-P

WIKA data sheet LM 20.01



for further approvals
see page 3



Applications

- High-accuracy level detection for almost all liquid media
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

Special features

- Process- and procedure-specific solutions possible
- Operating limits:
 - Operating temperature: $T = -90 \dots +450 \text{ }^{\circ}\text{C}$ [$-130 \dots +842 \text{ }^{\circ}\text{F}$]
 - Operating pressure: $P = \text{vacuum to } 100 \text{ bar}$ [$1,450.4 \text{ psi}$]
 - Limit density: $\rho \geq 400 \text{ kg/m}^3$ [25.0 lbs/ft^3]
- Resolution $< 0.1 \text{ mm}$
- Wide variety of different electrical connections, process connections and materials
- Explosion-protected versions



Level transmitter with flange connection, model FLM-T

Description

The model FLM-S, FLM-T and FLM-P level transmitters are used for the high-accuracy, continuous level detection of liquids and are based on determining the position of a magnetic float according to the magnetostrictive measurement principle.

WIKA data sheet LM 20.01 · 07/2021

Page 1 of 11

Data sheets showing similar products:
Reed level transmitter, for the process industry, model FLR; see data sheet LM 20.02



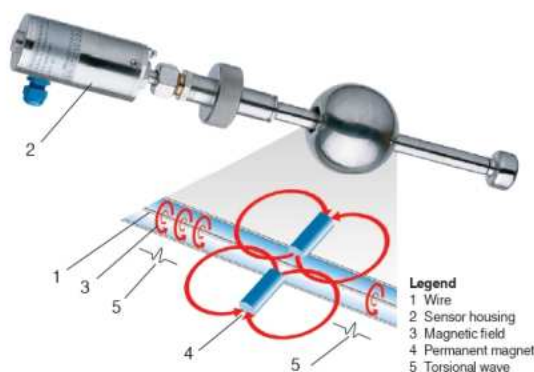
Further special features

- Large range of application due to the simple, proven functional principle
- Process connection, guide tube and float from stainless steel 1.4571, 1.4435, 1.4539 or plastic
- For harsh operating conditions, long service life
- Continuous detection of levels, independent of physical and chemical changes of the media such as: Foaming, conductivity, dielectric, pressure, vacuum, temperature, vapours, condensation, bubble formation, boiling effects, density change
- Signal transmission over long distances
- Simple installation and commissioning, onetime calibration only, no recalibration necessary
- Level displayed proportional to volume or height
- Parallel measurement of interface layer and overall level possible via HART® interface

Options

- Customer-specific solutions
- Process connection, guide tube and float from special steel, titanium, Hastelloy (others on request)
- In combination with limit switch, stepless setting of the limit values over the entire measuring range

Illustration of the principle



Design and operating principle

- The measuring process is triggered by a current impulse. This current produces a circular magnetic field (3) along a wire (1) made of magnetostrictive material fixed in the guide tube.
- At the point being measured (liquid level) there is a float with permanent magnets (4) acting as a position transducer.
- The superposition of these two magnetic fields triggers a mechanical torsional wave (5) in the wire.
- This is converted into an electrical signal at the end of the wire in the sensor housing by a piezoceramic converter.
- The measured propagation delay enables the origination point of the mechanical wave, and thus the float position, to be determined with high accuracy.

Model overview

Level transmitter	Description	Materials				
		Stainless steel			Titanium 3.7035 (grade 2)	PP
		1.4571 (316Ti)	1.4404 (316L)	1.4435 (316L)		
FLM-S (FFG-P)	Standard version	x	x	-	x	-
FLM-T (FFG-T)	High-temperature version	x	x	-	x	-
FLM-P (FFG-TP)	Plastic version	-	-	-	-	x

Temperature range (process)

- Model FLM-S -60 ... +185 °C [-76 ... +365 °F]
- Model FLM-T -90 ... +450 °C [-130 ... +842 °F]
- Model FLM-P -10 ... +100 °C [14 ... 212 °F]

Approvals

Logo	Description	Country
 	EU declaration of conformity ■ EMC directive EN 61326 emission (group 1, class B) and immunity (industrial application) ■ RoHS directive ■ ATEX directive (option) Hazardous areas Model FLM-Sxl (FFG-P...) - Ex i II 1/2G Ex ia IIC T3 ... T6 Model FLM-TAl (FFG-T...) - Ex i II 1/2G Ex ia IIC T6 ... T4 Ga/Gb II 1D Ex ia IIIC T160 °C Da Model FLM-SxD (FFG-P...) - Ex d II 1/2G Ex d IIB T3 ... T6 Ga/Gb	European Union
	IECEx (option) Hazardous areas - Ex i II 1/2G Ex ia IIC T6 ... T4 Ga/Gb II 1D Ex ia IIIC T160 °C Da	International
	FM (only model FLM-S) Hazardous areas - XP Cl I Div 1 Gp B, C, D, T* - DIP Cl II, III Div 1 Gp E, F, G, T*; IP67	USA
	EAC ■ EMC directive ■ Hazardous areas	Eurasian Economic Community
	GOST Metrology, measurement technology	Russia
	KazInMetr Metrology, measurement technology	Kazakhstan
	BelGIM Metrology, measurement technology	Belarus
	UkrSEPRO Metrology, measurement technology	Ukraine
	Uzstandard Metrology, measurement technology	Uzbekistan

Manufacturer's information and certificates

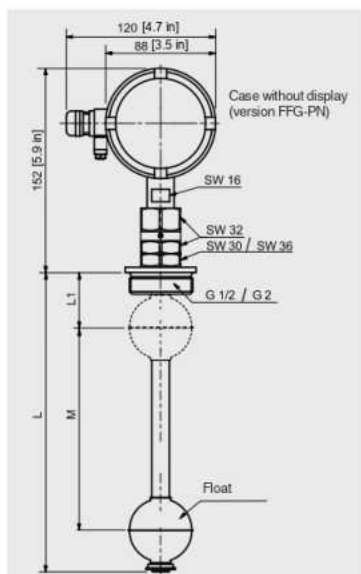
Logo	Description
	SIL Functional safety ■ SIL 2 for model FLM-T (FFG-T) ■ SIL 2, SIL 3 for model FLM-S (FFG-P)

Approvals and certificates, see website

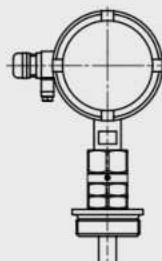
Standard version, explosion-protected version, model FLM-S

II 1/2G Ex ia IIC T3 ... T6 or II 1/2G Ex d IIB T3 ... T6 Ga/Gb

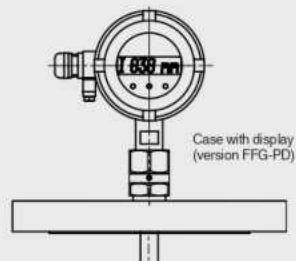
Process connection, guide tube and float from stainless steel 1.4571



Mounting thread



Flange

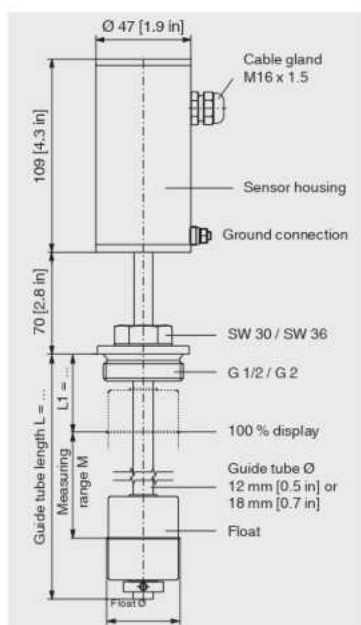


	Mounting thread	Flange
Electrical connection	Sensor housing, material stainless steel 1.4404 (316L)	
Display	■ Version FLM-SA (FFG-PN) without display ■ Version FLM-SB (FFG-PD) with window and display ■ LCD matrix (only version FFG-PD)	
Process connection	Mounting thread downwards ■ G 1/2 ... G 2" ■ 1/2 NPT ... 2 NPT	Mounting flange ■ DIN DN 50 ... DN 200, PN 6 ... PN 100 ■ ANSI 2" ... 8", class 150 ... 600
Max. guide tube length L		
Guide tube Ø 14 mm [0.6 in]	3,500 mm [137.8 in]	
Guide tube Ø 18 mm [0.7 in]	5,800 mm [228.3 in]	
Float	Material: Stainless steel 1.4571 (option: Titanium) Float diameter from 44 ... 120 mm [1.7 ... 4.7 in] Float selection depending on guide tube Ø and process conditions (→ see page 9 / 10) Attention: With Ex approval no floats from titanium may be used.	
Max. operating pressure	40 bar [580.2 psi] (100 bar [1,450.4 psi] with float from titanium) → See table on page 9 / 10	
Temperature range		
Medium (standard)	-60 ... +185 °C [-76 ... +365 °F]	
Ambient temperature		
Version without display	-40 ... +85 °C [-40 ... +185 °F]	
Version with display	-20 ... +70 °C [-4 ... +158 °F]	
	Ex i version	T3/T4/T5: -20 ... +70 °C [-4 ... +158 °F] T6: -20 ... +60 °C [-4 ... +140 °F]
	Ex d version	T3/T4/T5: -20 ... +70 °C [-4 ... +158 °F] T6: -20 ... +60 °C [-4 ... +140 °F]
Output signal	4 ... 20 mA, HART® rev. 7	
Supply voltage	DC 15 ... 30 V	

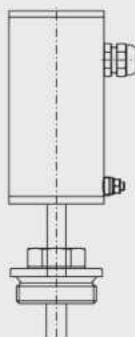
	Mounting thread	Flange
Measurement accuracy	< ±0.5 mm	
Resolution	< 0.1 mm	
Temperature coefficient		
4 ... 20 mA output signal	0.2 % F.S. / 10 K	
HART® output signal	0.05 % F.S. / 10 K	
Load	max. 900 Ω at 30 V	
Mounting position	Vertical ±30°	
Ingress protection	IP66/IP68 per IEC/EN 60529	

High-temperature version, model FLM-T

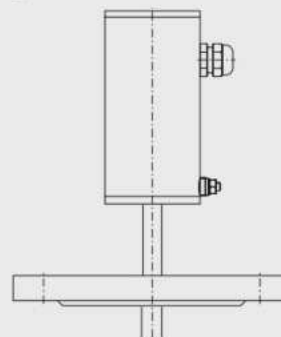
Process connection, guide tube and float from stainless steel 1.4571



Mounting thread



Flange

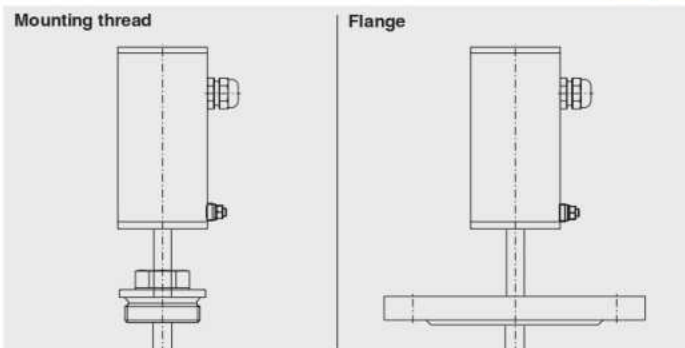
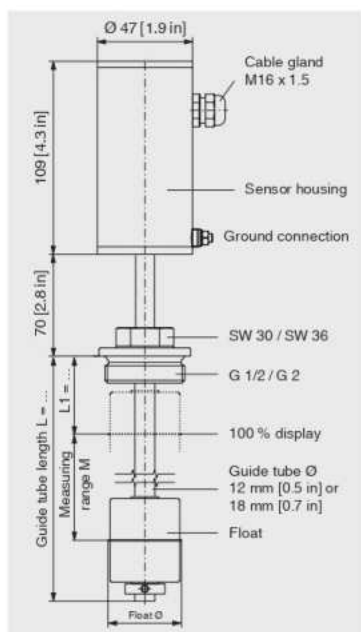


	Mounting thread	Flange
Electrical connection	Sensor housing, material stainless steel 1.4301	
Process connection	Mounting thread downwards ■ G 1/2 ... G 2" ■ 1/2 NPT ... 2 NPT	Mounting flange ■ DIN DN 50 ... DN 200, PN 6 ... PN 100 ■ ANSI 2" ... 8", class 150 ... 600
Max. guide tube length L		
Guide tube Ø 12 mm [0.5 in]	3,000 mm [118.1 in]	
Guide tube Ø 18 mm [0.7 in]	6,000 mm [236.2 in]	
Float	Material: Stainless steel 1.4571 (option: Titanium) Float diameter from 44 ... 120 mm [1.7 ... 4.7 in] Float selection depending on guide tube Ø and process conditions (→ see page 9 / 10)	
Max. operating pressure	40 bar [580.2 psi] (100 bar [1,450.4 psi] with float from titanium) → see table on page 9 and 10	
Temperature range		
Medium (standard)		
High-temperature version	-45 ... +450 °C [-49 ... +842 °F]	
Low-temperature version	-90 ... +125 °C [-130 ... +257 °F]	
Ambient temperature	-40 ... +85 °C [-40 ... +185 °F]	
Output signal	4 ... 20 mA, HART® rev. 6	
Supply voltage	DC 10 ... 30 V	
Measurement accuracy	< ±0.5 mm	
Resolution	< 0.1 mm	
Load	max. 900 Ω at 30 V	
Mounting position	Vertical ±30°	
Ingress protection	IP68 per IEC/EN 60529	

High-temperature version, explosion-protected version, model FLM-TAI

II 1/2G Ex ia IIC T6 ... T2 Ga/Gb, II 1/2G Ex ia IIC T6 ... T4 Ga/Gb or II 1D Ex ia IIC T160 °C Da

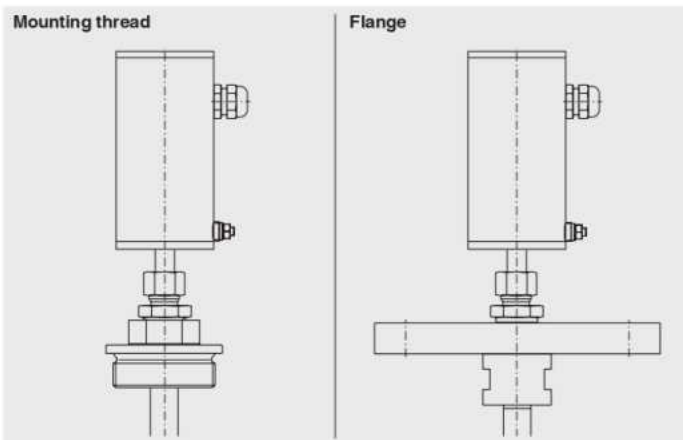
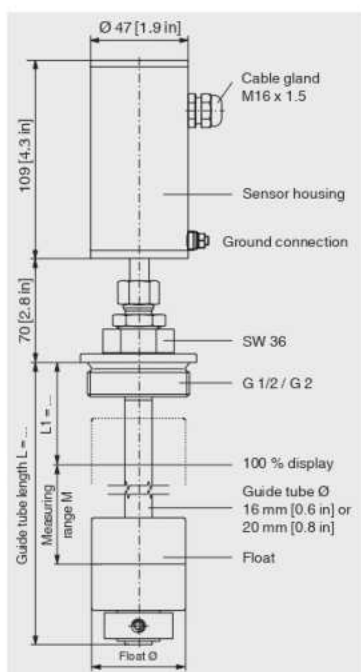
Process connection, guide tube and float from stainless steel 1.4571



	Mounting thread	Flange
Electrical connection	Sensor housing, material stainless steel 1.4301	
Process connection	Mounting thread downwards ■ G 1/2 ... G 2" ■ 1/2 NPT ... 2 NPT	Mounting flange ■ DIN DN 50 ... DN 200, PN 6 ... PN 100 ■ ANSI 2" ... 8", class 150 ... 600
Max. guide tube length L		
Guide tube Ø 12 mm [0.5 in]	3,000 mm [118.1 in]	
Float	Material: Stainless steel 1.4571 (option: Titanium) Float diameter from 44 ... 120 mm [1.7 ... 4.7 in] Float selection depending on guide tube Ø and process conditions (→ see page 9 / 10)	
Max. operating pressure	40 bar [580.2 psi] (100 bar [1,450.4 psi] with float from titanium) → see table on page 9 and 10	
Temperature range		
Category 1G (sensor completely in zone 0)	Max. process temperature	-20 ... +60 °C [-4 ... +140 °F] (T4 ... T1)
	Max. ambient temperature	-20 ... +60 °C [-4 ... +140 °F] (T4 ... T1)
Category 1/2G (sensor head installed in zone 1, sensor tube installed in zone 0)	Max. process temperature	-20 ... +60 °C [-4 ... +140 °F] (T4 ... T1)
	Max. ambient temperature	-40 ... +85 °C [-40 ... +185 °F] (T4 ... T1)
Category 2G (sensor completely in zone 1)	Max. process temperature	-40 ... +450 °C [-40 ... +842 °F] (T1)
	Max. ambient temperature	-40 ... +85 °C [-40 ... +185 °F] (T4 ... T1)
Output signal	4 ... 20 mA, HART® rev. 6	
Supply voltage	DC 10 ... 30 V	
Measurement accuracy	< ±0.5 mm	
Resolution	< 0.1 mm	
Load	max. 900 Ω at 30 V	
Electrical input data	$U_i \leq 30 \text{ V} / I_i \leq 100 \text{ mA}, 200 \text{ mA} / P_i \leq 1 \text{ W} / C_i \leq 10 \text{ nF} / L_i \leq 20 \text{ μH}$	
Mounting position	Vertical ±30°	
Ingress protection	IP68 per IEC/EN 60529	

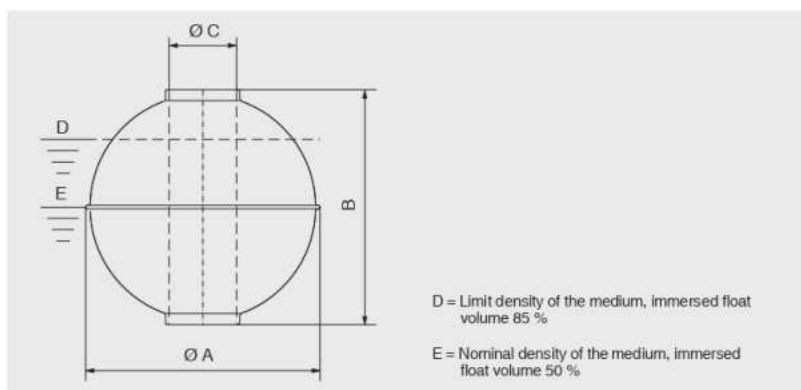
Plastic version, model FLM-P

Process connection, guide tube and float from PVC, polypropylene or PVDF



	Mounting thread	Flange
Electrical connection	Sensor housing, material stainless steel 1.4305	
Process connection	Mounting thread downwards ■ G 1/2 ... G 2" ■ 1/2 NPT ... 2 NPT	Mounting flange ■ DIN DN 50 ... DN 200, PN 6 ... PN 100 ■ ANSI 2" ... 8", class 150 ... 600
Max. guide tube length L		
Guide tube Ø 16 mm [0.6 in]	3,000 mm [118.1 in]	
Guide tube Ø 20 mm [0.8 in]	5,000 mm [196.9 in]	
Float	Material: Polypropylene, PVDF or PVC Float diameter of 55 mm [2.2 in] or 80 mm [3.1 in] Float selection depending on guide tube Ø and process conditions (→ see page 9 / 10)	
Max. operating pressure	3 bar [43.5 psi]	
Temperature range		
Medium		
Polypropylene	-10 ... +80 °C [14 ... 176 °F]	
PVDF	-10 ... +100 °C [14 ... 212 °F]	
Ambient temperature	-40 ... +85 °C [-40 ... +185 °F]	
Output signal	4 ... 20 mA, HART® rev. 6	
Supply voltage	DC 10 ... 30 V	
Measurement accuracy	< ±0.5 mm	
Resolution	< 0.1 mm	
Load	max. 900 Ω at 30 V	
Mounting position	Vertical ±30°	
Ingress protection	IP68 per IEC/EN 60529	

Spherical float

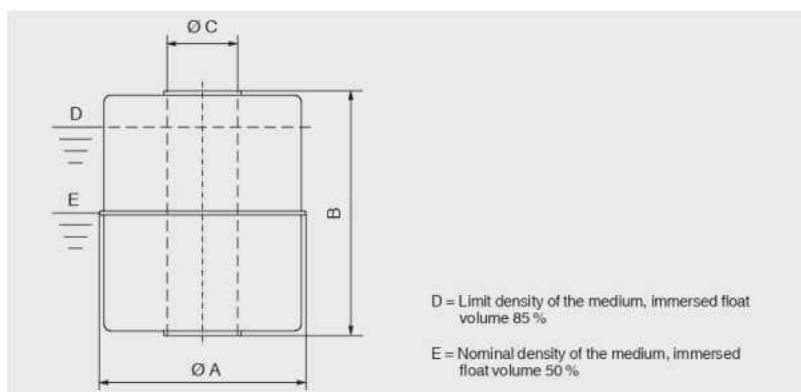


Material	Version	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m ³
Stainless steel 1.4571 (316Ti)	V52A	14	52	52	15	40	250	720
	V62A	14	62	61	15	32	250	597
	V83A	14	83	81	15	25	250	430
	V80A	18	80	76	23	25	250	660
	V98A	18	98	96	23	25	250	597
	V105A	18	105	103	23	25	250	533
	V120A	18	120	117	23	25	250	389
	V120/38A	18	120	116	38	25	250	537
Titanium 3.7035 (grade 2)	T52A	14	52	52	15	25	250	570
	T62A	14	62	62	15	25	250	505
	T83A	14	83	81	15	25	250	350
	T80A	18	80	76	23	25	250	665
	T98A	18	98	96	23	25	250	495
	T105A	18	105	103	23	25	250	369
	T120A	18	120	117	23	25	250	329

Special floats for higher temperature and pressure ranges are available on request.

Note: The optimum float will be selected after a feasibility test carried out by WIKA.

Cylindrical float



Material	Version	Suits guide tube $\varnothing$ in mm	$\varnothing A$ in mm	B in mm	$\varnothing C$ in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m ³
Stainless steel 1.4571 (316Ti)	V44A	14	44	52	15	16	250	818
	V44A	14	44	52	15	25	200	800
Titanium 3.7035 (grade 2)	T44A	14	44	52	15	16	250	550
PVC	P55A	16	55	54	22	3	60	798
	P80A	20	80	79	25	3	60	573
Polypropylene	PP55A	16	55	54	22	3	80	595
	PP80A	20	80	79	25	3	80	431
PVDF	PF55A	16	55	69	22	3	100	821
	PF80A	20	80	79	25	3	100	681

Special floats for higher temperature and pressure ranges are available on request.

Note: The optimum float will be selected after a feasibility test carried out by WIKA.

Accessories

Description	Order number
 Display module, model DIH50 5-digit display, 20-segment bar graph, without separate power supply, with additional HART® functionality. Automatic adjustment of measuring range and span. Secondary-master functionality: Setting the measuring range and unit of the connected transmitter using HART® standard commands possible. Optional: Explosion protection per ATEX	On request

Ordering information

Model / Version / Electrical connection / Process connection / Guide tube diameter / Guide tube length (insertion length) L / 100 % mark L1 / Measuring range M (span 0 ... 100 %) / Process specifications (operating temperature and pressure, limit density) / Options

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 The specifications given in this document represent the state of engineering at the time of publishing.
 We reserve the right to make modifications to the specifications and materials.

07/2021 EN

WIKA data sheet LM 20.01 - 07/2021

Page 11 of 11



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Fișa tehnică – Centrala termica Baxi Luna Duotec MP+ 1.110

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Cazanul Baxi Luna Duotec MP+ 1.110 este un cazan termic destinat utilizării în sisteme de încălzire.	Baxi
2	Condiții de lucru:	• Funcționare la o presiune maximă de lucru: 3 bar. • Temperatura maximă de funcționare: 90°C. • Alimentare cu gaz natural sau GPL conform tipului de model specificat. • Temperatura ambientală recomandată pentru amplasare: 5-35°C.	
3	Parametri constructivi:	• Tip: cazan combinat, în condensare. • Putere termică nominală: conform modelului). • Alimentare electrică: 230 V, 50 Hz. • Material schimbător de căldură: oțel inoxidabil / aluminiu pentru eficiență ridicată.	
4	Dotări minime:	Kit pentru montaj și racorduri incluse.	
5	Caracteristici funcționale:	• Funcționare automată în regim de încălzire. • Mod condensatie pentru eficiență sporită (până la 109% randament). • Compatibilitate cu termostate externe. • Mod de funcționare silențios.	
6	Teste și certificări puse la dispoziția Beneficiarului:	Certificat de conformitate	
7	Marcare și identificare:	Placă de identificare cu cod de produs, seria fabricației și date tehnice	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Fișă tehnică completă a produsului. • Certificat de conformitate	
11	Specificații de performanță și condiții privind siguranța în exploatare:	• Randament termic minim garantat: 90-109% în regim condensare. • Sistem automat de oprire în caz de defecțiuni (flacăra, presiune)	
12	Condiții privind conformitatea cu standarde relevante:	• EN 483 • EN 15502	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

BAXI

LUNA DUO-TEC

MP+ 1.90 - 1.110

it	CALDAIA MURALE A GAS A CONDENSAZIONE
----	---

<i>Manuale per l'uso destinato all'utente e all'installatore</i>
--

en	CONDENSING GAS WALL-HUNG BOILERS
----	---

Instructions manual for users and fitters

de(AT)	KONDENSATIONS-WANDGASHEIZKESSEL
--------	--

Gebrauchsanleitung für den Benutzer und Installateur
--

es	CALDERA MURAL DE GAS A CONDENSACIÓN
----	--

Manual de uso destinado al usuario y al instalador
--



Dear Customer,
Our company is confident our new product will meet all your requirements. Buying one of our products guarantees all your expectations: good performance combined with simple and rational use.
Please do not put this booklet away without reading it first: it contains useful information for the correct and efficient use of your product.

Our company declares that these products are marked CE in compliance with the essential requirements of the following Directives:	
- Gas Directive 2009/142/EC	
- Efficiency Directive 92/42/EEC	
- Electromagnetic Compatibility Directive 2014/30/EU	
- Low Voltage Directive 2014/35/EU	
- Ecodesign directive 2009/125/EC	
- Energy labelling directive 2010/30/EU (for boilers with Power<70kW)	
- Ecodesign regulation (EU) No 813/2013	
- Energy labelling regulation (EU) No 811/2013 (for boilers with Power<70kW)	



Our company, constantly striving to improve the products, reserves the right to modify the details given in this documentation at any time and without notice. These Instructions are only meant to provide consumers with use information and under no circumstance should they be construed as a contract with a third party.

The appliance can be used by children aged 8 or over and by people with reduced physical, sensory or mental faculties, or who do not have the required experience or knowledge, provided they are supervised or have received instructions on using the appliance safely and understanding its intrinsic hazards. Children must not play with the appliance. The cleaning and maintenance operations reserved to the user must not be performed by unsupervised children.

CONTENT

DESCRIPTION OF SYMBOLS	27
SAFETY WARNINGS	27
GENERAL PRECAUTIONS	28
ENERGY-SAVING TIPS	28
1. COMMISSIONING THE BOILER	29
1.1 ADJUSTING THE CH AND DHW FLOW TEMPERATURE	29
1.2 OPERATING MODES	29
2. PROLONGED SHUTDOWN. ANTI-FREEZE PROTECTION	30
3. GAS CONVERSION	30
4. FAULTS	30
5. BOILER INFORMATION MENU	31
6. FILLING THE SYSTEM	31
7. ROUTINE MAINTENANCE INSTRUCTIONS	31
8. SWITCHING OFF THE BOILER	31
INSTRUCTIONS PRIOR TO INSTALLATION	32
9. INSTALLING THE BOILER	32
9.1 BOILER PUMP	32
10. INSTALLING THE DUCTS	33
10.1 CONCENTRIC DUCTS	33
10.2 SEPARATE DUCTS	33
10.3 CASCADE FLUES	34
11. ELECTRICAL CONNECTIONS	34
11.1 CONNECTING THE ROOM THERMOSTAT	35
11.2 ACCESSORIES NOT INCLUDED IN THE SUPPLY	35
SETTING PARAMETERS USING THE REMOTE CONTROL	36
12. INITIAL IGNITION - SPECIAL FUNCTIONS	38
12.1 SYSTEM GAS EXTRACTION FUNCTION	38
12.2 CALIBRATION FUNCTION	38
12.3 CHIMNEY SWEEPER	38
13. FAULTS THAT CANNOT BE RESET BY THE USER	38
14. PARAMETERS SETTING	39
15. GAS VALVE CALIBRATION	40
15.1 GAS CONVERSION	41
16. ADJUSTMENT AND SAFETY DEVICES	42
17. PUMP CAPACITY/ HEAD	42
18. ANNUAL SERVICING	43
18.1 CLEANING THE CONDESATE TRAP	43
18.2 CLEANING THE HEAT EXCHANGER FUMES SIDE	43
18.3 CHECKING THE BURNER	44
18.4 COMBUSTION PARAMETERS	44
19. THERMAL FUSE REPLACEMENT OF HEAT EXCHANGER	45
20. DISMANTLING, DISPOSAL AND RECYCLING	45
21. TECHNICAL SPECIFICATIONS	46
22. TECHNICAL PARAMETERS	47
23. PRODUCT FICHE	48

DESCRIPTION OF SYMBOLS



WARNING

Risk of damage to or malfunction of the appliance. Pay special attention to the warnings concerning danger to people.



DANGER OF BURNS

Wait for the appliance to cool down before working on the parts exposed to heat.



DANGER - HIGH VOLTAGE

Live components - electrocution hazard.



DANGER OF FREEZING

Possible formation of ice due to low temperatures.



IMPORTANT INFORMATION

Information to read with particular care as it is useful for the correct operation of the boiler.



GENERIC PROHIBITION

It is forbidden to do/use the things indicated alongside the symbol.

SAFETY WARNINGS

SMELL OF GAS

- Switch off the boiler.
- Do not activate any electrical device (such as switching on the light).
- Put out any naked flames and open the windows.
- Call an Authorised Service Centre.

SMELL OF COMBUSTION FUMES

- Switch off the boiler.
- Open all the doors and windows to ventilate the room.
- Call an Authorised Service Centre.

FLAMMABLE MATERIAL

Do not use and/or store highly flammable material (thinners, paper, etc.) near the boiler.

SERVICING AND CLEANING THE BOILER

Switch off the boiler before working on it.



The appliance is not intended to be used by persons with reduced physical, sensory or mental capacities, or who lack experience or knowledge, unless, through the mediation of a person responsible for their safety, they have had the benefit of supervision or of instructions on the use of the appliance.

User & Installer (en)

	BAXI a leading European manufacturer of hi-tech boilers and heating systems, has developed CSQ-certified quality management (ISO 9001), environmental (ISO 14001) and health and safety (OHSAS 18001) systems. This means that BAXI S.p.A. includes among its objectives the safeguarding of the environment, the reliability and quality of its products, and the health and safety of its employees. Through its organisation, the company is constantly committed to implementing and improving these aspects in favour of customer satisfaction.	
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GENERAL PRECAUTIONS

This boiler has been designed to heat water to a temperature lower than boiling point at atmospheric pressure. It must be connected to a central heating system and to a domestic hot water supply system according to its performance and power output. Before having the boiler installed by a qualified service engineer, make sure the following operations are performed:

- Make sure that the boiler is adjusted to use the type of gas delivered by the gas supply. To do this, check the markings on the packaging and the data label on the appliance.
- Make sure that the flue terminal draft is appropriate, that the terminal is not obstructed and that no exhaust gases from other appliances are expelled through the same flue duct, unless the latter has been specially designed to collect exhaust gas from more than one appliance, in compliance with current laws and regulations.
- Make sure that, if the boiler is connected to existing flue ducts, these have been thoroughly cleaned as residual products of combustion may detach from the walls during operation and obstruct the flow of fumes.
- To ensure correct operation and maintain the warranty, observe the following precautions:

1. DHW circuit

1.1 If the water is harder than 20 °F (1 °F = 10 mg calcium carbonate per litre of water), install a polyphosphate dispenser or an equivalent treatment system, compliant with current regulations.

1.2 Thoroughly flush the system after installation of the appliance and before use.

1.3 The materials used for the DHW circuit comply with Directive 98/83/EC.

2. Heating circuit

2.1 New system: Before installing the boiler, the system must be cleaned and flushed to eliminate residual thread-cutting swarf, solder and any solvents, using suitable off-the-shelf non-acid and non-alkaline products that do not damage metal, plastic and rubber parts. To protect the system from scale, use inhibitors such as SENTINEL X100 and FERNOX protector for heating circuits. Use these products in strict compliance with the manufacturers' instructions.

2.2 Existing system: Before installing the boiler, drain the system and clean it to remove sludge and contaminants, using suitable proprietary products. Recommended cleaning products are: SENTINEL X300 or X400 and FERNOX regenerator for heating circuits. Use these products in strict compliance with the manufacturers' instructions. Remember that the presence of foreign bodies in the heating system can adversely affect boiler operation (e.g. overheating and excessive noise of the heat exchanger).

Initial lighting of the boiler must be carried out by an authorised Service Engineer who must first ensure that:

- The rated data correspond to the supply (electricity, water and gas) data.
- That the installation complies with current regulations.
- The appliance is correctly connected to the power supply and earthed.



The appliance must be installed in a ventilated boiler room pursuant to current regulations (appliances with heating capacity > 40 kW).



Failure to observe the above will render the warranty null and void. The names of the Authorised Service Centres are indicated in the attached sheet. Prior to commissioning, remove the protective plastic coating from the boiler. Do not use any tools or abrasive detergents to do this as you may damage the painted surfaces.



Do not leave any packaging (plastic bags, polystyrene, etc.) within the reach of children as they are a potential source of danger.

ENERGY-SAVING TIPS

Adjustment in the heating mode

Adjust the boiler flow temperature depending on the kind of system. For systems with radiators, set a maximum heating water flow temperature of approximately 60°C, and increase this value if the required room temperature is not reached. For systems with radiant floor panels, do not exceed the temperature indicated by the system designer. Use the External Sensor and/or Control Panel to automatically adjust the flow temperature to atmospheric conditions or the indoor temperature. This ensures that no more heat than that effectively necessary is produced. Adjust the room temperature without overheating the rooms. Every extra degree centigrade means consuming approximately 6% more. Also room ambient temperature depending on how the rooms are used. For example, the bedroom or the least used rooms can be heated to a lower temperature. Use the programmable timer and set the night-time room temperature at approximately 5°C lower than that during the day. There is no appreciable saving to be achieved by setting it any lower. Only in case of a prolonged absence, such as a holiday, should the temperature setpoint be lowered. Do not cover radiators as this prevents the air from circulating correctly. Do not leave the windows partially open to ventilate the rooms but open them completely for a short period.

Domestic hot water

Setting the domestic hot water at the required temperature without mixing it with cold water saves a lot of money. Additional heating wastes energy and creates additional scale.

1. COMMISSIONING THE BOILER

To light the boiler correctly, proceed as follows:

- Check that the system pressure is correct (section 6);
- Power the boiler;
- Open the gas tap (yellow, positioned under the boiler);
- Select the required heating mode (section 1.2).



During initial ignition, the burner may not ignite (causing the boiler to shut down) until any air in the gas pipes is vented. In this case, repeat the ignition procedure until gas reaches the burner. To reset boiler operation, press **⏻/R** for at least 2 seconds.

Key to BUTTONS

	DHW temperature adjustment (+ to increase the temperature and – to decrease it)
	Heating water temperature adjustment (+ to increase the temperature and – to decrease it)
	Boiler operating information
	Operating mode: DHW – DHW & Heating – Heating Only
	Off – Reset – Exit menu/functions



Key to SYMBOLS

	Off: heating and DHW disabled (only boiler anti-freeze protection is active)		Burner lit
	Fault preventing the burner from lighting		DHW operating mode enabled
	Boiler/system water pressure low		Heating mode enabled
	Technical Service Centre call-in		Programming menu
	Manually resettable fault (⏻/R)		Boiler information menu
	Fault in progress		Set unit of measurement (SI/US)

1.1 ADJUSTING THE CH AND DHW FLOW TEMPERATURE

Press **←** and **→** respectively to adjust the CH and DHW flow temperature (if an external storage boiler is fitted). When the burner is lit, the display shows the symbol .

HEATING: while the boiler is operating in the heating mode, the display shows the flashing symbol and the heating delivery temperature (°C).

When connected to an External Sensor, **←** and **→** indirectly adjust the room temperature (factory setting 20°C).

DHW: connect an external storage boiler to produce domestic hot water. While the boiler is operating in the DHW mode, the display shows the flashing symbol and the heating flow temperature (°C).

1.2 OPERATING MODES

SYMBOL DISPLAYED	OPERATING MODE
	DHW
	DHW & HEATING
	HEATING ONLY

To enable the appliance in **DHW - Heating** or **Heating only** press **A/M** repeatedly and choose one of the three available modes.

To disable the boiler operating modes whilst keeping the anti-freeze function enabled, press **⏻/R**. Just the symbol appears on the display (with the boiler not blocked).

USER Section (en)

2. PROLONGED SHUTDOWN. ANTI-FREEZE PROTECTION

Do not drain the whole system as filling up with water again could cause unnecessary and harmful scale to build up inside the boiler and the heating elements. If the boiler is not used during winter and is therefore exposed to the danger of frost, add some specific anti-freeze to the water in the system (e.g.: propylene glycol coupled with corrosion and scale inhibitors). The electronic boiler management system includes a "frost protection" function for the heating system which, when delivery temperature falls below 5°C, lights the burner until a delivery temperature of 30°C is reached.



The function is operative if: the boiler is electrically powered, there is gas, system pressure is normal and the boiler is not blocked.

3. GAS CONVERSION

The boilers can operate both on natural gas (G20) and LPG (G31). All gas conversions must be made by the AUTHORISED TECHNICAL SERVICE CENTRE.

4. FAULTS

The faults shown on the display are identified with the symbol **E** and a number (fault code). For a complete list of faults, see the following table.

If **R** appears on the display the fault must be RESET by the user.

To RESET the boiler, press **(ON)**. If faults are displayed frequently, call the Authorised Service Engineer.



E	Description of fault	E	Description of fault
10	External probe sensor	125	No circulation safety trip (control performed via a temperature sensor)
20	NTC flow sensor	128	No flame
28	NTC fumes sensor	130	Fumes NTC tripped due to overtemperature
40	NTC flow sensor	133	Ignition failure (4 attempts)
50	NTC DHW sensor (only for heating-only model with storage boiler)	151	Boiler board internal fault
52	Solar DHW sensor (if connected to a solar plant)	152	Generic parameter setting error
73	Solar manifold sensor (if connected to a solar plant)	153	Hardware reset button pressed more than 10 seconds
83	Communication problem between boiler board and control unit. Probable short circuit on wiring.	160	Fan fault
84	Address conflict between control units (internal fault)	321	NTC domestic hot water sensor faulty
98	Accessory not detected or recognized (*)	343	Generic parameter setting error of solar plant (if connected to a solar plant)
109	Air in boiler circuit (temporary fault)	384	Abnormal light (parasite flame – internal fault)
110	Safety thermostat/thermal fuse/exchanger flange thermostat (**) tripped due to over temperature (pump probably blocked or air in heating circuit)	385	Input voltage too low
111	Safety thermostat tripped due to overtemperature.	386	Fan speed threshold not reached
117	Pressure in hydraulic circuit too high	430	No circulation safety trip (control performed via a pressure sensor)
118	Pressure in hydraulic circuit too low	432	No functional hearth or safety thermostat tripped due to over temperature (E110)

(*) After powering up the boiler (or after a Reset for lockout), the error appears on the display once the self-check is completed. The fault code is displayed permanently if the accessory is not recognized.

(**) See Section "ADJUSTMENT AND SAFETY DEVICES".



In the event of a fault, the display backlighting indicates the error code. 5 reset attempts can be performed after which the boiler shuts down. Wait 15 minutes before attempting to reset the boiler again.

5. BOILER INFORMATION MENU

Press **(FIR)** to display the information indicated in the following table. Press **(QIR)** to exit.

i	Description	i	Description
00	SW Diagnostic Code	12	Ion current
01	Heating flow temperature	13	Burner working hours
02	Outdoor temperature (if the outdoor sensor is fitted)	14	Zone 1 heating mode
03	External storage tank temperature (fitted models)	15	Zone 2 heating mode
04	DHW temperature (fitted models)	16	DHW circuit operating mode
05	Water pressure in heating system	17	Boiler operating mode
06	Heating return temperature	18	Solar plant operating mode
07	Flue sensor temperature	19	Manufacturer information
08	Not used	20	Manufacturer information
09	Solar collector temperature	21	Gas energy consumption in HEATING
10	Zone 1 heating flow temperature	22	Gas energy consumption in DHW
11	Zone 2 heating flow temperature	23	Gas energy consumption in HEATING + DHW



Items 21, 22 and 23 are displayed alternatively with the gas energy consumption value expressed in millions, thousands and units of kWh. e.g.: 121 / 033 / 145 / 827 corresponds to a gas energy consumption in HEATING of 33.145.827 kWh.

6. FILLING THE SYSTEM

Periodically check that the pressure displayed on the pressure gauge is **1 - 1.5 bar**, with the system cold. If it is lower, turn the system filling tap installed by the installer. Open the tap very slowly in order to vent the air.



The boiler is fitted with a hydraulic pressure gauge which prevents the boiler from working if there is no water.



If pressure drops occur frequently, have the boiler checked by the **AUTHORISED TECHNICAL SERVICE CENTRE**.

7. ROUTINE MAINTENANCE INSTRUCTIONS

To keep the boiler efficient and safe, have it checked by the Authorised Service Centre at the end of every operating period. Careful servicing ensures economical operation of the system.

8. SWITCHING OFF THE BOILER

To turn off the boiler, disconnect the electric power supply using the two-pole switch. In the "Off" operating mode **(b)** the boiler stays off but the electrical circuits remain powered and the anti-freeze function remains active.

INSTRUCTIONS PRIOR TO INSTALLATION

The following notes and instructions are addressed to installers to allow them to carry out trouble-free installation. Instructions for igniting and using the boiler are contained in the 'Instructions for Users' section. The installation must satisfy the requirements of standards and local by-laws and technical regulations.

Moreover, the installation technician must be qualified to install heating appliances. Additionally, bear in mind the following:

- When installing the unit in environments with temperatures lower than 0°C, take the necessary precautions to avoid the formation of ice in the siphon and in the condensation drain.
- The boiler can be used with any kind of convector plate, radiator or thermoconvector. Design the system sections as usual, though, bearing in mind the available capacity-head at the plate (see annex "SECTION" E at the end of this manual).
- Initial ignition of the boiler must be carried out by the Authorised Service Centre (as indicated on the attached sheet).

Failure to observe the above will render the warranty null and void.



When supplied, the boiler is not fitted with the following components: **EXPANSION VESSEL - SYSTEM FILLING TAP - HYDRAULIC SEPARATOR**. These must be mounted by the installer.



Do not leave any packaging (plastic bags, polystyrene, etc.) within the reach of children as they are a potential source of danger.

9. INSTALLING THE BOILER



After fixing the boiler on the wall, replace the cap at the bottom of the siphon with the one in the pack, reusing the ring nut and referring to the figure. Fill the siphon and check it for any leaks.



Take special care when filling the heating system. In particular, open any thermostat valves in the system, ensure the water enters slowly in order to prevent the formation of air inside the primary circuit until operating pressure is reached. Lastly, vent any radiators in the system. BAXI declines all liability for damage deriving from the presence of air bubbles in the primary exchanger due to the incorrect or imprecise observance of the above.



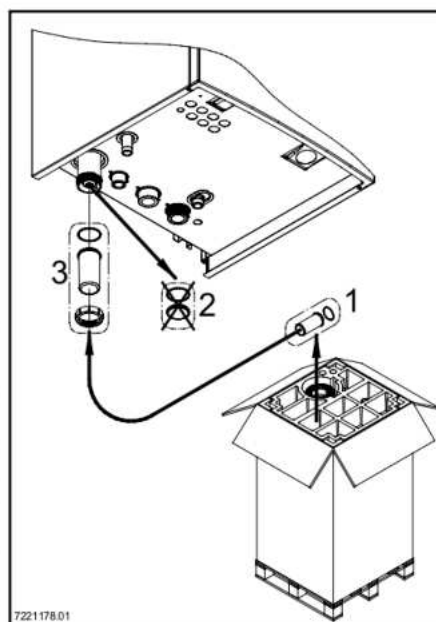
Tighten the boiler water connections with care (maximum tightening torque 30 Nm).



Before starting up the boiler, fill the water siphon to prevent the fumes from diffusing in the room.

The template outline is shown in annex "SECTION" C at the end of this manual.

After deciding the exact location of the boiler, fix the template to the wall. Connect the system to the gas and water inlets present on the lower bar of the template. Make sure the rear part of the boiler (back) is as parallel as possible to the wall (otherwise, shim the lower part). Fit two G1-1/2" taps (flow and return) on the central heating circuit; these taps make it possible to carry out important operations on the system without draining it completely. On the Italian market, the system must comply with Raccolta R safety provisions (limit thermostat, safety pressure switch, fuel cut-off valve, etc.). Fit a hydraulic separator, sized according to maximum boiler and system pressure, downline from the hydraulic connectors of the boiler. If you are either installing the boiler on an existing system or replacing one, as well as the above, fit a settling tank under the boiler on the system return line in order to collect any deposits and scale circulating in the system after flushing. After fixing the boiler to the template, connect the flue and air ducts, supplied as accessories, as described in the following sections. Connect the siphon to a drain trap, making sure the slope is continuous. Avoid horizontal stretches. The boiler is electronically fitted out for connection to an external storage boiler.



Do not lift the boiler exerting pressure on the plastic parts like the siphon and the flue turret.

9.1 BOILER PUMP

The boiler pump (13 - "SECTION" A) is modulating and circulates the water between the boiler and the hydraulic separator (for hydraulic performance see the charts in annex "SECTION" E). The water in the system is circulated by the relative pumps (see section 11.2.3).

Check that the flow of the water circulating in the boiler is not less than the value indicated in the following table:

Model	Minimum flow rate (l/h)	Operating flow rate (l/h) with BAXI hydraulic separator
1.90	2000	4200
1.110	2250	4600

10. INSTALLING THE DUCTS

The boiler is easy and flexible to install thanks to the extensive range of available accessories, as described below. The boiler has been designed for connection to a vertical or horizontal coaxial flue-air duct. The boiler can also be used with separate ducts using the accessory splitting kit.

WARNINGS

C13, C33 The terminals for separate flues must be fitted inside a 50 cm square. Detailed instructions are provided with the individual accessories.

C53 Do not fit the flue and air duct terminals on opposite walls of the building.

C63 The maximum pressure drop ΔP of the ducts must not exceed the values indicated in table 1A. The ducts must be certified for this specific use and for a temperature in excess of 100°C. The flue terminal must be certified to EN 1856-1.

C43, C83 The flue terminal or flue duct must be suitable for the purpose.



For optimal installation, the accessories supplied by the manufacturer should be used.

TABLE 1A

If the flue and air ducts installed are not supplied by BAXI S.p.A., make sure they are certified for the type of use and have a maximum pressure drop as indicated in the table to the side.

	ΔP (Pa)
1.90 MP	200
1.110 MP	200



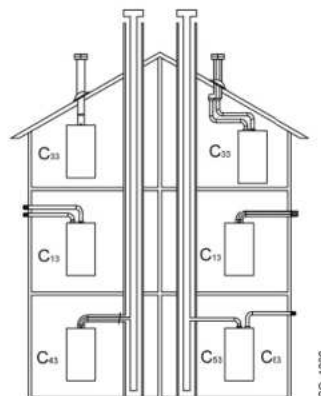
To optimise operating safety, make sure the flue ducts are firmly fixed to the wall with suitable brackets. The brackets must be positioned over the joints at a distance of approximately 1 metre from one another.



Make sure there is a minimum downward slope of 5 cm per metre of duct towards the boiler.



SOME OUTLET DUCT INSTALLATION EXAMPLES AND THEIR RELATIVE MAXIMUM LENGTHS ARE SHOWN IN ANNEX "SECTION" D AT THE END OF THIS MANUAL.



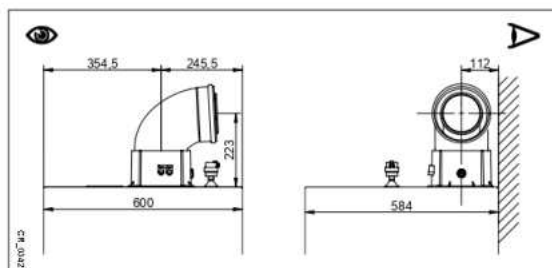
CG_1638

10.1 CONCENTRIC DUCTS

This type of duct is used to discharge exhaust fumes and draw combustion air both outside the building and if a LAS flue is fitted. The 90° coaxial bend allows the boiler to be connected to a flue-air duct in any direction as it can be rotated by 360°. It can also be used as a supplementary curve combined with a coaxial duct or a 45° curve.

If fumes are discharged outside the building, the flue-air duct must protrude at least 18 mm from the wall to allow an aluminium weathering surround to be fitted and sealed to avoid water infiltrations.

- A 90° bend reduces the total duct length by 1 metre.
- A 45° bend reduces the total duct length by 0.5 metres.
- The first 90° bend is not included when calculating the maximum available length.

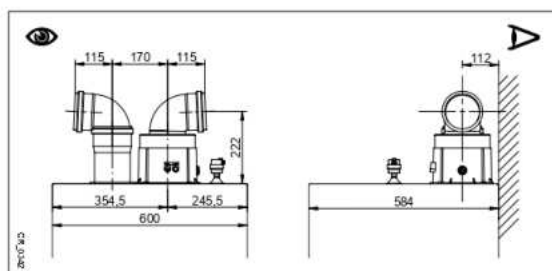


10.2 SEPARATE DUCTS

This type of installation makes it possible to discharge exhaust fumes both outside the building and into single flue ducts. Comburent air can be drawn in at a different location from that of the flue terminal. The accessory splitting kit comprises a flue duct adaptor Ø 110 mm (B) and an air duct adaptor Ø 110 mm (A). For the air duct adaptor, fit the screws and seals previously removed from the cap.

The 90° bend is used to connect the boiler to the inlet and outlet ducts, adapting them to various requirements. It can also be used as a supplementary curve combined with a duct or a 45° bend.

- A 90° bend reduces the total duct length by 0.5 metres.
- A 45° bend reduces the total duct length by 0.25 metres.
- The first 90° bend is not included when calculating the maximum available length.



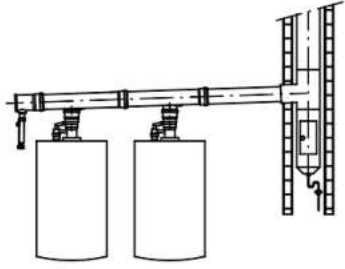
INSTALLER Section (en)

10.3 CASCADE FLUES

This type of duct evacuates the products of combustion of more than one boiler in a cascade connection through a shared fumes collector. The collector may only be used to connect the boilers to the flue duct. Available diameters are: Ø125 mm - Ø160 mm and Ø200 mm. A range of accessories is available on request.

TABLE 1B

BOILER MODEL	MAXIMUM NUMBER OF BOILERS IN CASCADE CONNECTION		PARAMETER P60 Revs/min (rpm) at minimum Power	
	Ø160 mm (250 kW Max)	Ø200 mm (500 kW Max)	G20	G31
1.90	2	5	1450	1650
1.110	2	4	1500	1500




In this outlet typology, a fumes clapet valve (no-return valve), Ø 110/110 mm, must be fitted to each boiler. Change the parameter P60 as shown in table 1B following the procedure described in chapter 14.



The flue header size must be calculated by a qualified technician during the system design stage, as required by current regulations.

11. ELECTRICAL CONNECTIONS

This machine is only electrically safe if it is correctly connected to an efficient earth system in compliance with current safety regulations. Connect the boiler to a 230V single-phase earthed power supply using the supplied three-pin cable, observing correct Live-Neutral polarity.

Use a double-pole switch with a contact separation of at least 3 mm.

When replacing the power supply cable, fit a harmonised "HAR H05 VV-F" 3x0,75 mm² cable with a maximum diameter of 8 mm. To access the terminal block, remove the front boiler panel (fixed with two screws at the bottom), turn the control box downwards and access terminal blocks M1, M2, M3, used for the electrical connections, after removing the protective cover. The 3.15 A fast-blowing fuses are incorporated in the power supply terminal block (to check and/or replace the fuse, pull out the black fuse carrier).

SEE WIRING DIAGRAM IN ANNEX "SECTION" B AT THE END OF THIS MANUAL



Make sure that the overall rated power input of the accessories connected to the appliance is less than 2A. If it is higher, install a relay between the accessories and the electronic board.



The connections in terminal blocks M1- M3 are high voltage (230 V). Before making connections, make sure the appliance is disconnected from the power supply. Respect the input polarity on terminal block M1: L (LINE) - N (NEUTRAL).

TERMINAL BLOCK M1

(L) = Live (brown)

(N) = Neutral (light blue).

⊕ = Earth (yellow-green).

(1) (2) = contact for Room Thermostat.



Put back the jumper on terminals 1-2 of boiler terminal block M1 if the room thermostat is not used or if the Remote Control, supplied as an accessory, is not installed.

TERMINAL BLOCK M2

Terminals 1 (back-lighting) - 2 (earth) - 3 (+12V): connection to the Remote Control (low voltage) supplied as an accessory.

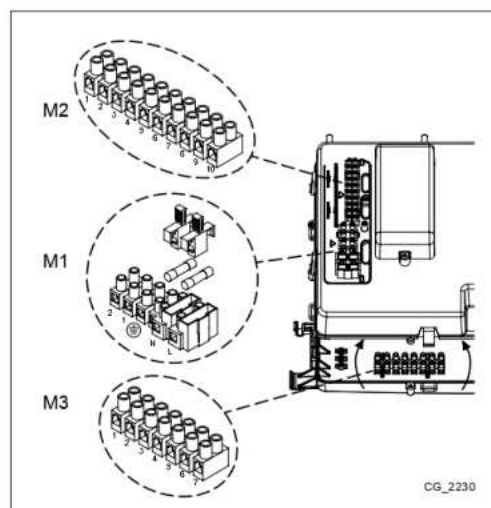
Terminals 4 - 5 (common): External Probe connection (supplied as an accessory)

Terminals 6 - 5 (common): 2nd Auxiliary Probe (probes for solar plant, cascade system, zone system, etc.).

Terminals 7 - 5 (common): 1st Auxiliary Probe (probes for solar plant, cascade system, zone system, etc.).

Terminals 9-10: storage boiler sensor connection.

Terminal 8: not used.



TERMINAL BLOCK M3

Terminals 1 - 3: not used.

Terminal 4 - 5: storage boiler pump connection.

Terminal 6 - 7: system heating pump connection (external downline from hydraulic separator).



If the appliance is connected to an underfloor system, install a limit thermostat to prevent the latter from overheating.



Use the relative cable grommets at the bottom of the boiler to thread the cables through to the terminal blocks.



A 250Vac/250Vac relay with a minimum current rating of 16A and able to withstand a starting current of above 100A is required to connect the external pumps.

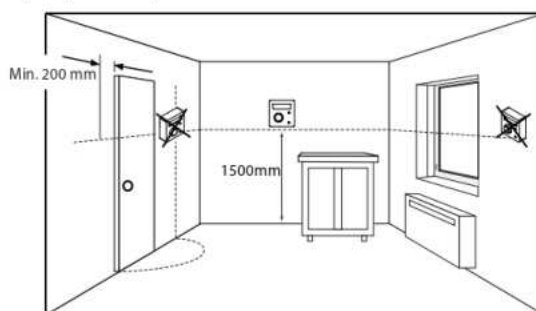
11.1 CONNECTING THE ROOM THERMOSTAT



The connections in terminal block M1 are high voltage (230 V). Before making connections, make sure the appliance is disconnected from the power supply. Respect polarity L (LIVE) - N (NEUTRAL).

To connect the Room Thermostat to the boiler, proceed as described below:

- Switch off the boiler;
- Access the terminal block M1;
- Remove the jumper from the ends of contacts 1-2 and connect the wires of the volt free Room Thermostat;
- Switch on the boiler and make sure the Room Thermostat works correctly.



11.2 ACCESSORIES NOT INCLUDED IN THE SUPPLY

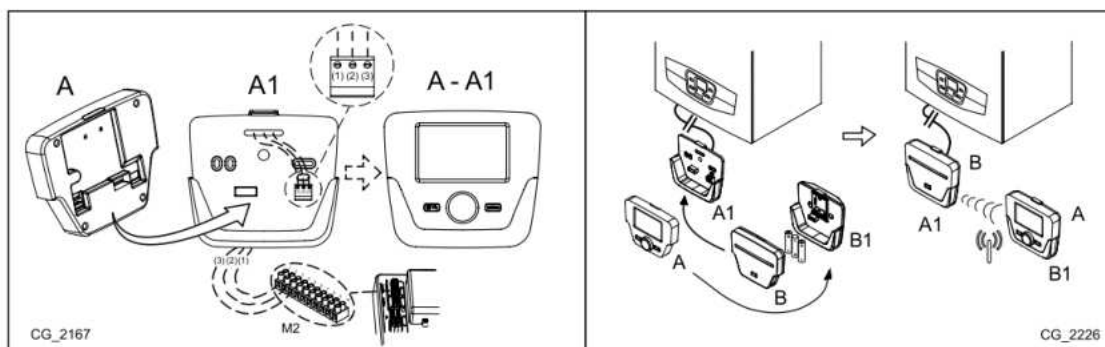
11.2.1 REMOTE CONTROL



The wire (1) from the boiler terminal block M2 powers the display backlighting (12 V). It is not necessary to connect this wire to make the Remote Control work.

To operate the boiler with the Remote Control mounted on the wall, purchase accessory A supplied with the base A1. Also see the mounting and operation instructions supplied with the kit A. Proceed as follows:

- Switch off the boiler.
- Pass the three wires from the boiler terminal block M2 through the hole in the base A1 to apply to the wall.
- Connect wires 1-2-3 of the boiler terminal block M2 to terminals (1)-(2)-(3) of the base terminal block A1 respectively.
- Fix the base A1 to the wall using the expansion grips and screws supplied with the accessory.
- Apply the Control Panel A to the base fixed to the wall, taking care not to apply excessive force.
- Power the boiler making sure that the Remote Control lights up.



A	Control Panel	A1	Base for wall-mounted Control Panel
B	Led interface accessory	B1	Base for Led interface accessory
(1)	Display backlighting +12V	(2)	Earth connection
		(3)	Power input/Signal +12V



Use the Remote Control to set the programmable timer for heating and DHW. See the instructions supplied with the accessory.

SETTING PARAMETERS USING THE REMOTE CONTROL

SYMBOLS FOR REMOTE CONTROL			
	Turn knob B		Display shows
	Press knob B		Press button A and knob B together
	Press button A or C		Press buttons A and C together

KEY TO FIGURE MENU

1	Enduser	3	Engineer
2	Commissioning	4	OEM

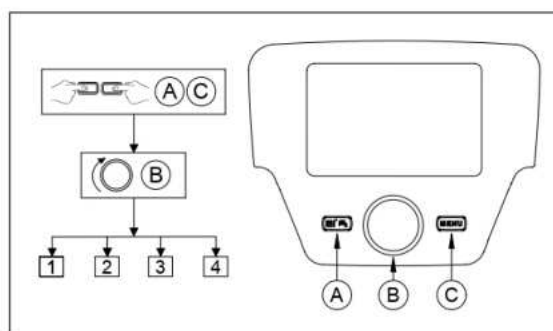


ALL MODIFIED PARAMETERS SHOULD BE NOTED DOWN IN THE TABLE AT THE END OF THIS MANUAL.

The following procedure is used to access the four boiler programming menus:

- from the main menu **C**.
- **A** and **C** (hold down for approx. 6 seconds) **B** menu 1-2-3-4 (see figure to side and key).
- **C** to go back one menu at a time to the main menu.

When the Control Panel is wall-mounted enable the room sensor and flow temperature modulation as follows:



A) ROOM SENSOR

- Access menu 2.
- **B** **Operator unit** **B** to confirm.
- **B** programme row 40 (Used as) **B**.
- **B** (anti-clockwise) **Room unit 1** **B** to confirm (the room sensor is now active).
- **C** to return to the previous menu then **B** **Configuration** **B**.
- **B** programme row 5977 (Function input H5) then **B** to confirm.
- **B** **None** **B** to confirm.



For correct operation of the environment unit during the reduced time band it is necessary to set the parameter 5977 = "none".

B) FLOW TEMPERATURE MODULATION

To set flow temperature modulation, disable parameter 742 (HC1). Proceed as follows:

- Access menu 2.
- **B** **Temps / mode CH1** **B** to confirm **B** 742 (Flow temp setpoint room stat) **B** to confirm.
- **B** (anti-clockwise) **---** then **B** to confirm.



If, when turning the knob B on the main menu, the display visualises the boiler flow temperature instead of the ambient temperature, parameter 742 has not been set correctly.

After every system configuration (e.g.: solar combination, connection an external storage boiler, etc.) perform the following procedure to update the boiler board to the new configuration:

- Access menu 2 as indicated at the beginning of this section.
- **B** **Configuration** **B** programme row 6200 then **B**.
- **B** **Yes** then **B** to confirm.

ZONE SYSTEM WITH INSTALLATION OF THE REMOTE CONTROL

The electrical connection and the adjustments required to manage a system divided into zones with use of the Remote Control differs according on the accessories connected to the boiler. To install and configure, see the instructions of the **Expansion Module** supplied as an accessory.

ADJUSTING THE TEMPERATURE OF THE HIGH TEMPERATURE HEATING SYSTEM

To avoid frequent starting and stopping, raise the minimum temperature setpoint of the boiler in the heating mode by setting parameters 740, to not less than 45°C, using the procedure described in point B.

TEMPERATURE ADJUSTMENT ON LOW TEMPERATURE HEATING SYSTEM

For a low temperature system (such as underfloor heating), reduce the maximum CH temperature setpoint on the boiler by setting parameter 741 (point B) to a value not greater than 45°C.

11.2.2 EXTERNAL SENSOR

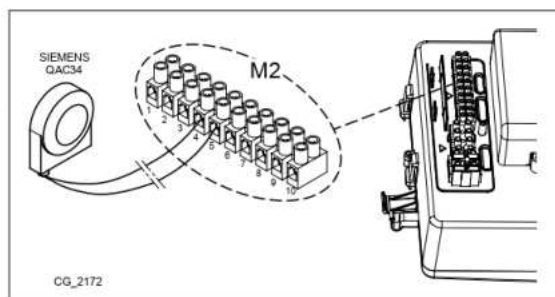
To connect this accessory, see figure to side (terminals 4-5) and the instructions supplied with the sensor.

With the External Sensor connected,   on the boiler control panel move the set climate curve **Kt** in parallel (see annex "SECTION" E and parameter P03 in the table in section 14). To increase room temperature press +, to decrease press -.

SETTING THE "Kt" CLIMATE CURVE

To set the required kt climate curve, proceed as follows:

- Access the menu as described in section 14.
- Select parameter **P03**.
- Select the climate curve from among those available, see the curve chart in annex "SECTION" E at the end of this manual (the preset curve is 1.5).



KEY TO CURVE CHART Kt - "SECTION" E

	Flow temp		Outside temp
---	-----------	---	--------------

11.2.3 HEATING SYSTEM PUMP

Install the system pump downline from the hydraulic separator. Choose the pump according to the required system capacity/head characteristics (see annex "SECTION" F).



A 250Vac/250Vac relay with a minimum current rating of 16A and able to withstand a starting current of above 100A is required to connect the external pumps.

11.2.4 EXTERNAL STORAGE BOILER

The boiler can be electrically connected to an external storage boiler. A diagram of the hydraulic connection of the external storage boiler is shown in annex "SECTION" F. Connect the storage boiler pump to terminals 4-5 of the M3 terminal block (see annex "SECTION" B). Install the storage boiler downline from the hydraulic separator. Use the sensor supplied as an accessory and connect it to terminals 9-10 of terminal block M2 (see annex "SECTION" B). Make sure that the exchange capacity of the storage boiler coil is appropriate for the power of the boiler.



A 250Vac/250Vac relay with a minimum current rating of 16A and able to withstand a starting current of above 100A is required to connect the external pumps.

EXTERNAL SYSTEM MANAGEMENT MODULES

The boiler can independently manage up to three heating circuits by using external accessories such as room units, remote controls and external modules (AGU 2.550 and AVS 75). The boiler electronics also comprises a wide range of functions for personalising and managing various system types. To assure correct system operation, a number (from 1 to 3) must be assigned to each accessory in order to allow the boiler board to recognise it. Consequently, carefully read the instructions provided with the accessories.

11.2.5 MIXED ZONES ("SECTION" F)

A mixed zone can be managed using the **AVS75** external module, supplied as an accessory. This accessory can manage: a zone pump, a mixing valve, a temperature sensor, a limit thermostat and a room thermostat. To connect the components and adjust the system read the manual provided with the accessory.

11.2.6 BOILERS IN A CASCADE CONNECTION ("SECTION" F)

The **AVS75** external unit, supplied as an accessory, is used to manage a heating system with up to 16 boilers connected in a cascade arrangement and a possible separate storage boiler providing domestic hot water. This accessory, connected to one of the cascade boilers, can directly control the circuit components up to a maximum of 3 independent relay outlets, 2 temperature sensors, 1 high voltage limit thermostat connector and one 1 control input (e.g.: room thermostat). The system also requires an **OCI 345** interface on each boiler comprising in the cascade arrangement. To adjust boiler parameters see section "PARAMETER SETTINGS". To connect the components and adjust the system read the manual provided with the accessory.

11.2.7 SOLAR PLANT ("SECTION" F)

Use the **AGU 2.550** external unit, supplied as an accessory, to manage a solar plant. To connect the plant, see the instructions supplied with the accessory.



THE HYDRAULIC DIAGRAMS OF THE CASES DESCRIBED CAN BE CONSULTED IN ANNEX "SECTION" F AT THE END OF THIS MANUAL

12. INITIAL IGNITION - SPECIAL FUNCTIONS

When the boiler is powered up, the code "311" appears on the display and the boiler is ready for "initial ignition". Follow the procedure "GAS EXTRACTION FUNCTION" as described in the section below and enable programme 312. After this operation, the boiler is ready to ignite the burner.



During this phase it is recommended to keep the pressure in the system at a value between 1 and 1.5 bar.

12.1 SYSTEM GAS EXTRACTION FUNCTION

This function is used to facilitate the elimination of the air inside the heating circuit when the boiler is first installed or after maintenance when the water is drained from the primary circuit.

To enable the system gas extraction function press buttons **(IP)** **(M-)** together for 6 seconds. When the function is active, **On** appears on the display for a few seconds, followed by programme row 312.

The electronic board will activate a pump on/off cycle lasting 10 minutes. The function will automatically stop at the end of the cycle. To manually exit this function, press the above buttons together for 6 seconds once again.

12.2 CALIBRATION FUNCTION

To calibrate the gas valve, proceed as follows:

- Press buttons **(M+)** and **(IP)** together for at least 6 seconds. When the function is enabled, the displays shows "On" for a few seconds followed by programme row "304" alternated with the % of boiler power.
- Press **(M+)** to gradually adjust power (sensitivity 1%).
- To exit press both buttons together for at least 6 seconds, as described in point one



Press **(OR)** to display the instantaneous flow temperature for 15 seconds.

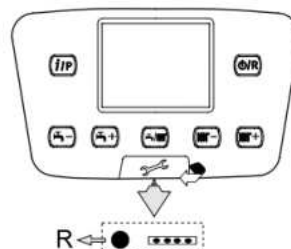
12.3 CHIMNEY SWEEPER

When this function is enabled, the boiler generates maximum heating power. To enable the function, proceed as follows:

- press **(M-)** **(OR)** together for 6 seconds. The display shows "303" alternated with the power output of the boiler.
- Press **(M-)** and **(M+)** to adjust boiler power 1=minimum, 2=maximum DHW, 3=maximum heating.
- To interrupt the function repeat the procedure described in point one.

13. FAULTS THAT CANNOT BE RESET BY THE USER

In case of **FAULTS** that cannot be reset by pressing **(OR)** (such as E151 or exceeding 5 manual RESET attempts by the user) RESET the board by pressing the black button (**R**) located under the rubber cap (symbol ) of the front control panel (figure to side).



14.PARAMETERS SETTING

To programme the parameters of the boiler electronic board, proceed as follows:

- Press together and hold them down for 6 seconds until programme row "P02" appears on the display alternated with the set value (°C);
- Press and hold down for 6 seconds until "On" appears on the display. Release the button and "P01" appears on the display;
- Press to scroll the list of parameters;
- Press , the value of the selected begins flashing, press to change the value;
- press to confirm the value or press to exit without saving.



Further information concerning the parameters listed in the following table are supplied together with the required accessories.

(a)	(b)	ZONE 1 HEATING PARAMETERS (main zone)		Factory setting	Minimum	Maximum
P01	700	*Operating mode (0=Frost Protection, 1=Timed, 3=T.comfort)	-	3	0	3
P02	712	*Reduced ambient temperature	°C	16	4	35
P03	720	**Kt curve slope	-	1,5	0,1	4
P04	721	**Kt curve drift	-	0	-4,5	4,5
P05	726	**Kt curve adaptation (0=off)	-	1	0	1
P06	740	Flow temperature setpoint (minimum value)	°C	25	8	80
P07	741	Flow temperature setpoint (maximum value)	°C	80	25	80
P08	742	*Enable modulating temperature if set = "---"	°C	80	25	80
P09	750	*Room influence ("---" = disabled)	%	50	1	100
P10	834	*Opening/Closing speed of mix valve	S	30	30	873
ZONE2 HEATING PARAMETERS (with accessory Expansion Unit)						
P11	1000	*Operating mode (0= Frost Protection, 1=Timed, 3=T.comfort)	°C	3	0	3
P12	1010	*Comfort room temperature	°C	20	4	35
P13	1012	*Reduced room temperature	°C	16	4	35
P14	1020	**Kt curve slope	-	1,5	0,1	4
P15	1021	**Kt curve drift	-	0	-4,5	4,5
P16	1026	**Kt curve adaptation (0=off)	-	1	0	1
P17	1040	Flow temperature setpoint (minimum value)	°C	25	8	80
P18	1041	Flow temperature setpoint (maximum value)	°C	80	25	80
P19	1042	*Enable modulating temperature if set = "---" (flow temp. setpoint if P63=0)	°C	80	25	80
P20	1050	*Room influence ("---" = disabled)	%	50	1	100
P21	1134	*Opening/Closing speed of mix valve	s	30	30	873
DHW PARAMETERS						
P22	1620	Operating mode in DHW (with Remote Control) 0=always enabled, 1=according to hourly heating programme, 2= according to hourly DHW programme.	-	2	0	2
P23	1640	Anti-legionella function Disabled 0=disabled, 1=periodic (depending on P24)	-	0	0	1
P24	1641	Periodic anti-legionella function enable (only if P23 =1) 1=daily, 2..6=intervals of 2..6 days, 7=once a week	-	7	1	7
P25	1663	Circulation temperature setpoint (additional DHW pump)	°C	45	8	80
P26	5470	Preheating time for DHW circuit (1=10' - 144=1440')	min	0	0	144
BOILER PARAMETERS						
P27	2243	Minimum boiler off time	min	3	0	20
P28	2217	Frost Protection setpoint	°C	5	-20	20
P29	2250	Pump post-circulation time	min	3	0	240
P30	2441	Max. fan speed (heating)	rpm	xxx	0	8000
P31	2455	Minimum boiler off differential	°C	5	0	20
P32	2720	Not used (Do NOT change this parameter)	-	0	0	1
P33	2721	Not used (Do NOT change this parameter)	-	1	1	2
SOLAR PLANT PARAMETERS (with accessory Expansion Unit)						
P34	3810	Temperature - on differential	°C	8	0	40
P35	3811	Temperature - off differential	°C	4	0	40
P36	3830	Pump start function ("---" = disabled)	min	---	5	60
P37	3850	Solar panel manifold overheating protection ("---" = disabled)	°C	---	30	350
P38	5050	DHW boiler tank charging temperature max	°C	65	8	95
P39	5051	Maximum temperature of storage tank	°C	90	8	95

INSTALLER Section (en)

CONFIGURATION

P40	5700	Not used (Do NOT change this parameter)	-	---	---	---
P41	5710	Zone 1 heating circuit (1=enabled)	-	1	0	1
P42	5715	Zone 2 heating circuit (1=enabled)	-	0	0	1
P43	5730	DHW sensor (1=Tank sensor, 2=Thermostat, 3=instantaneous sensor)	-	1	1	3
P44	5890	Not used (Do NOT change this parameter)	-	33	0	43
P45	5931	*BX2 sensor input (first auxiliary sensor – section 11)	-	0	0	19
P46	5932	*BX3 sensor input (second auxiliary sensor – section 11)	-	0	0	19
P47	5977	*Input H5 (multifunction input – 18=Room thermostat)	-	18	0	32
P48	6020	*Configuration of accessory Expansion Unit	-	0	0	7
P49	6024	Input EX21 module 1 (configuration of HC Safety Thermostat)	-	0	0	1
P50	6046	Input H2 module 1 (multifunction input)	-	0	0	58
P51	6097	Sensor type collector (1= NTC, 2= Pt 1000)	-	2	1	2
P52	6110	Building time constant (depending on the insulations of the building)	h	15	0	50
P53	6220	Software version	-	---	0	99
P54	6600	LPB device address (BUS connection)	-		1	16
P55	6601	LPB segment address (BUS connection)	-		0	14
P56	6640	Clock time source	-		0	3

MAINTENANCE

P57	7045	Time after maintenance	month	xxx	0	240
P58	6704	View/Hide secondary fault internal code (0=no)	-	1	0	1

BURNER CONTROL

P59	9512	Required ignition speed	rpm	xxx	0	8000
P60	9524	Required minimum operating speed (low speed)	rpm	xxx	0	8000
P61	9529	Required maximum operating speed (high speed)	rpm	xxx	0	8000

BOILER CONTROL PANEL PARAMETERS

P62	-	Unit of measurement (1=bar, °C – 2=PSI, °F)	-	1	1	2
P63	-	Control panel operation: (1=central, 0=local)	-	1	0	1
P64	-	Software version	-	xx	0	999

* see "Accessories not included in supply"

xx: the value depends on the software version xxx: the value depends on the type of boiler

(a): parameters read on the front boiler panel (fixed control panel) (b): parameters read on the Remote Control

15. GAS VALVE CALIBRATION

To calibrate the gas valve, enable the calibration function as described in section 12.2 and carry out the following operations:

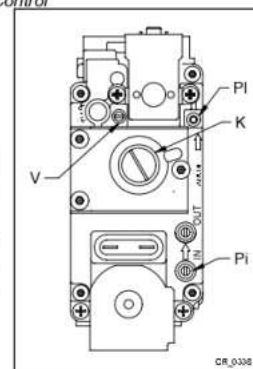
1) Calibrating MAXIMUM heat output.

Check that the CO₂/O₂ measured on the flue duct, with the boiler operating at maximum heat capacity, matches that indicated in table 1C. If it does not, turn the adjustment screw (V) on the gas valve. Turn the screw clockwise to decrease the level of CO₂ and anti-clockwise to increase it.

2) Calibrating REDUCED heat output

Check that the CO₂/O₂ measured on the flue duct, with the boiler operating at minimum heat capacity, matches that indicated in table 1C. If it does not, remove the threaded brass cap on the gas valve and turn the adjustment screw (K). Turn the screw clockwise to increase the level of CO₂ and anticlockwise to decrease it.

V	Gas flow adjustment screw	K	OFFSET adjustment screw
PI	Pressure signal sealed chamber	Pi	Gas supply pressure tap



For each CO₂/O₂ value found at the maximum thermal capacity, there is a range of CO₂/O₂ values at the minimum thermal capacity shown in the same line of the table.

The nominal calibration values of the gas valve for each type of gas used are shown in bold.

The CO₂/O₂ values are with the cover closed.

The maximum permitted CO value must be lower than 250 ppm.

TABLE 1C

G20 (1.90)				G31 (1.90)			
CO ₂ (%)		O ₂ (%)		CO ₂ (%)		O ₂ (%)	
P max	P min	P max	P min	P max	P min	P max	P min
9.5	8.8-9.2	3.9	4.5-5.2	10.5	10-10.4	4.9	5.1-5.7
9.4	8.7-9.1	4.1	4.7-5.4	10.4	9.9-10.3	5.1	5.2-5.8
9.3	8.6-9	4.3	4.8-5.6	10.3	9.8-10.2	5.2	5.4-6
9.2	8.5-8.9	4.5	5-5.7	10.2	9.7-10.1	5.4	5.5-6.1
9.1	8.4-8.8	4.7	5.2-5.9	10.1	9.6-10	5.5	5.7-6.3
9	8.3-8.7	4.8	5.4-6.1	10	9.5-9.9	5.7	5.8-6.4
8.9	8.2-8.6	5	5.6-6.3	9.9	9.4-9.8	5.8	6-6.6
8.8	8.1-8.5	5.2	5.7-6.5	9.8	9.3-9.7	6.0	6.1-6.7
8.7	8-8.4	5.4	5.9-6.6	9.7	9.2-9.6	6.1	6.3-6.9
8.6	7.9-8.3	5.6	6.1-6.8	9.6	9.1-9.5	6.3	6.4-7.1
8.5	7.8-8.2	5.7	6.3-7	9.5	9-9.4	6.4	6.6-7.2

G20 (1.110)			
CO ₂ (%)		O ₂ (%)	
P max	P min	P max	P min
9,7	9,2÷9,6	3,6	3,8÷4,5
9,6	9,1÷9,5	3,8	3,9÷4,7
9,5	9÷9,4	3,9	4,1÷4,8
9,4	8,9÷9,3	4,1	4,3÷5
9,3	8,8÷9,2	4,3	4,5÷5,2
9,2	8,7÷9,1	4,5	4,7÷5,4
9,1	8,6÷9	4,7	4,8÷5,6
9	8,5÷8,9	4,8	5÷5,7
8,9	8,4÷8,8	5	5,2÷5,9
8,8	8,3÷8,7	5,2	5,4÷6,1
8,7	8,2÷8,6	5,4	5,6÷6,3

G31 (1.110)			
CO ₂ (%)		O ₂ (%)	
P max	P min	P max	P min
10,5	9,8÷10,2	4,9	5,4÷6
10,4	9,7÷10,1	5,1	5,5÷6,1
10,3	9,6÷10	5,2	5,7÷6,3
10,2	9,5÷9,9	5,4	5,8÷6,4
10,1	9,4÷9,8	5,5	6÷6,6
10	9,3÷9,7	5,7	6,1÷6,7
9,9	9,2÷9,6	5,8	6,3÷6,9
9,8	9,1÷9,5	6,0	6,4÷7,1
9,7	9÷9,4	6,1	6,6÷7,2
9,6	8,9÷9,3	6,3	6,7÷7,4
9,5	8,8÷9,2	6,4	6,9÷7,5

15.1 GAS CONVERSION



When converting from natural gas to propane (LPG), before calibrating the gas valve as described above, replace the venturi assembly (B) as indicated in the figure. To achieve this, dismount the gas pipe (threaded nut G1") and remove the three screws securing the flange. Afterwards, make sure there are no gas leaks. Modify the parameters (fan rpm) as indicated in table 2 following the procedure described in section 14.

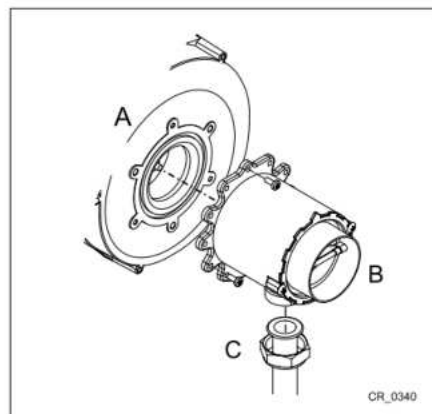


TABLE 2

		PARAMETERS - rpm						VENTURI Ø (mm)	GAS NOZZLES Ø (mm)	
		P60*		P30 – P61*		P59*				
		Min. power		Max. power		Ignition power				
Boiler model	G20	G31	G20	G31	G20	G31	G20 - G31	G20	G31	
1.90	1250	1500	6500	6200	2400	2400	34	5.6 (n°2)	4.5 (n°2)	
1.110	1300	1300	6900	6700	2500	3000	38	6.4 (n°2)	5.0 (n°2)	

* value read on the boiler front panel display to multiply **x 10** (e.g.: 150 corresponds to 1500 rpm)



To simplify calibration of the gas valve, set the "calibration function" directly on the boiler control panel as described in section 12.2.



For cascade ducts, change the parameter P60 increasing the number of fan revolutions by 200 (see table 1B in chapter 10.3).

INSTALLER Section (en)

16. ADJUSTMENT AND SAFETY DEVICES

The boiler has been designed in full compliance with European reference standards and in particular is equipped with the following:

- **Limit thermostat**

Thanks to a sensor placed on the CH flow line, this thermostat interrupts the flow of gas to the burner if the water in the primary circuit overheats. Under such conditions the boiler is blocked and only after the fault has been eliminated can it be ignited again by pressing **(ON)**.

- **Exchanger flange thermostat (260°C)**

This device is located on the exchanger flange and interrupts the flow of gas to the burner if the front insulation yields and overheats the exchanger or the flange gasket develops a fault. Press the reset button on the thermostat, eliminate the fault and then press the reset button on the boiler control panel.

- **Thermal fuse**

This device is located at the rear of the exchanger and interrupts the flow of gas to the burner if the rear insulation yields and overheats the exchanger. If this device cuts in, dismount the exchanger and replace the thermal fuse (see paragraph "THERMAL FUSE REPLACEMENT OF HEAT EXCHANGER").



It is forbidden to disable this safety device.

- **NTC flue sensor**

This device is positioned on the fumes duct. The electronic board stops gas from flowing to the burner in case of over heating. Press **(ON)** to re-establish normal operating conditions.



The above reset operation is only possible if the temperature is less than 90°C.



It is forbidden to disable this safety device

- **Flame ionisation detector**

The flame sensing electrode guarantees safety of operation in case of gas failure or incomplete ignition of the main burner. In these conditions, the boiler blocks. Press **(ON)** to re-establish normal operating conditions.

- **Hydraulic pressure switch**

This device allows the main burner to be ignited only if system pressure is higher than 0.5 bars.

- **Pump post-circulation**

The electronically-controlled pump post-circulation function lasts 3 minutes and is enabled, in the heating mode, if the ambient thermostat causes the main burner to go out.

- **Antifreeze device**

The electronic boiler management system includes an "antifreeze" function for the heating and DHW systems which, when flow temperature falls below 5°C, operates the burner until a flow temperature of 30°C is reached. This function is enabled when the boiler is switched on, the gas supply is open and the system is correctly pressurised.

- **Pump anti-block function**

If no heat demand is received in the heating and/or DHW modes for 24 consecutive hours, the pumps will automatically start and operate for 10 seconds.

- **Hydraulic safety valve (heating circuit)**

This device is set to 4 bar and is used for the heating circuit. Connect the safety valve to a drain trap. Do not use it to drain the heating circuit.

- **Heating pump pre-circulation**

In case of a heat demand in the heating mode, the appliance can pre-circulate the pump before the burner is ignited. This pre-circulation phase last from a few seconds to a few minutes, depending on the operating temperature and installation conditions.

The functions performed by the adjustment and safety devices are only operative if the boiler is switched on.

17. PUMP CAPACITY/ HEAD

The hydraulic pump is modulating and circulates the water between the boiler and the hydraulic separator.

KEY TO PUMP CHARTS - "SECTION" E

Q	RATE OF FLOW
H	HEAD



THE PUMP FLOW / HEAD CHARTS CAN BE CONSULTED IN ANNEX "SECTION" E AT THE END OF THE MANUAL.

18.ANNUAL SERVICING

The service must be performed only by qualified and competent staff in accordance with the Gas safety, Installation and use regulations. In UK this person need to be approved by the Health and Safety Executive. To optimise boiler efficiency, carry out the following at the annual service:

- Check the appearance and airtightness of the gaskets of the gas and combustion circuits. Replace any worn seals with new original spares;
- Check the state and correct position of the ignition and flame-sensing electrodes;
- Check the state of the burner and make sure it is firmly fixed;
- Check for any impurities inside the combustion chamber. Use a vacuum cleaner to do this;
- Check the gas valve is correctly calibrated;
- Check the pressure of the heating system;
- Check the pressure of the expansion vessel (system);
- Check the fan works correctly;
- Make sure the flue and air ducts are unobstructed;
- Check for any blockages inside the siphon.



Before commencing any maintenance operations, make sure the boiler is disconnected from the power supply. After servicing, reset the original operating parameters of the boiler if they were changed.

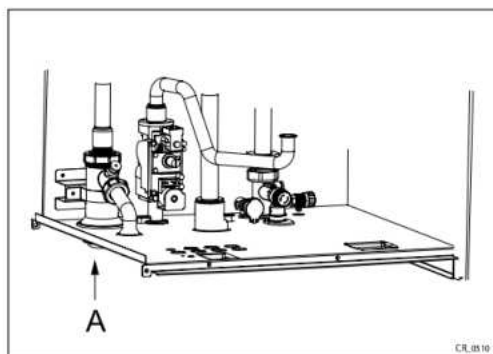
18.1 CLEANING THE CONDESATE TRAP

Unscrew the lower section of the water condense trap "A".

- Clean the bottom of the trap by flushing it out with water.
- Fill the lower section with water until about 10 mm below the upper edge.
- Fasten the lower section onto the condense trap again.



Do not operate the boiler with empty condense trap to avoid risk of poisoning through the gas combustions.



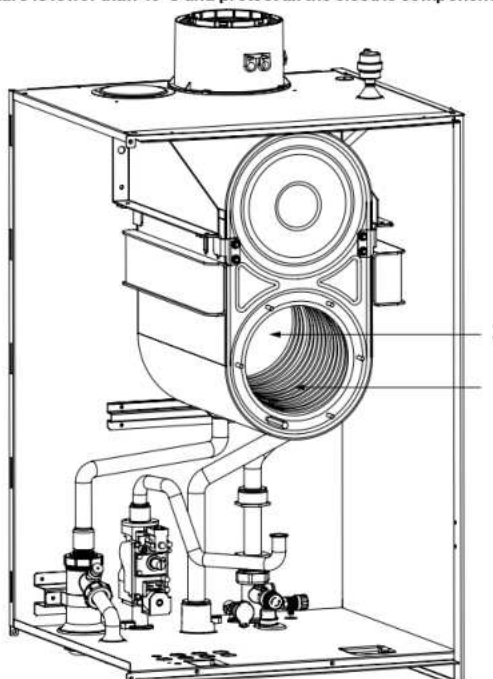
18.2 CLEANING THE HEAT EXCHANGER FUMES SIDE



Before starting to clean the heat exchanger, wait until the temperature is lower than 40°C and protect all the electric components against splashes of water.

Proceed as follows to clean the heat exchanger:

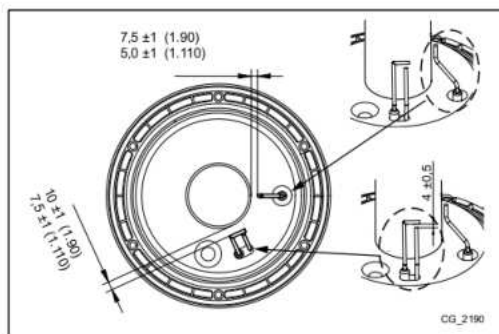
- Disconnect the boiler from the mains power supply.
- Close the gas inlet valve.
- Remove the front cover from the boiler.
- Lower the electrical box, ensuring it is protected against contact with water.
- Disconnect the cables of the ignition electrode, the flame sensing electrode, and the heat exchanger flange thermostat.
- Remove the fan-mixer-burner-flange assembly, unscrewing the 6 nuts M6 and the connector under the mixer.
- Protect the rear insulating panel (2) against water with a waterproof film, available in the cleaning kit.
- Accurately suck up the residue inside the combustion chamber and remove any scale, using a brush with plastic bristles available in the cleaning kit.
- Sprinkle the surfaces to be cleaned (1) generously with the appropriate liquid BX-HT Cleaner or similar using the appropriate spray bottle and wait 10 minutes (other products may be used, after consulting the authorised technical assistance service). Brush without rinsing and apply BX-HT Cleaner again. Let 10 more minutes pass, then brush again. If the result is not satisfactory, repeat the operation.
- When cleaning is finished, rinse with water.
- Replace the gasket of the burner support flange.
- To reassemble, proceed in the inverse order, tightening the 6 nuts of the flange with a torque of 5.5 Nm.



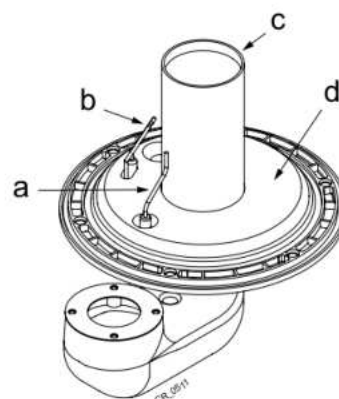
18.3 CHECKING THE BURNER

The burner needs no cleaning.

- Check the burner surface for damage, replace the burner if necessary.
- Check the positioning of the flame detection probe.
- Verify that the distance of the ignition electrode is within tolerance as shown in the figure.
- Check that the insulation of the burner flange it is not damaged otherwise replace it.



a	Flame detection probe
b	Ignition electrode
c	Burner
d	Burner surface insulation



18.4 COMBUSTION PARAMETERS

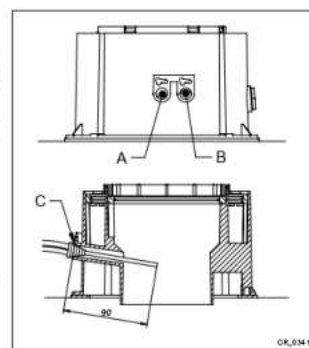
To measure combustion efficiency and the toxicity of the products of combustion, the boiler is fitted with two dedicated test points. One connection point is connected to the flue gas discharge circuit (A), and allows monitoring of the quality of the combustion products and the combustion efficiency. The other is connected to the combustion air intake circuit (B), allowing checking of any recycling of the combustion products in case of coaxial pipelines. The following parameters can be measured at the connection point on the flue gas circuit:

- temperature of the combustion products;
- oxygen **O2** or carbon dioxide **CO2** concentration;
- carbon monoxide **CO** concentration.

The temperature of the comburent air must be measured on the test point located on the air intake flue (B) by inserting the measurement sensor by about 9 cm (C).

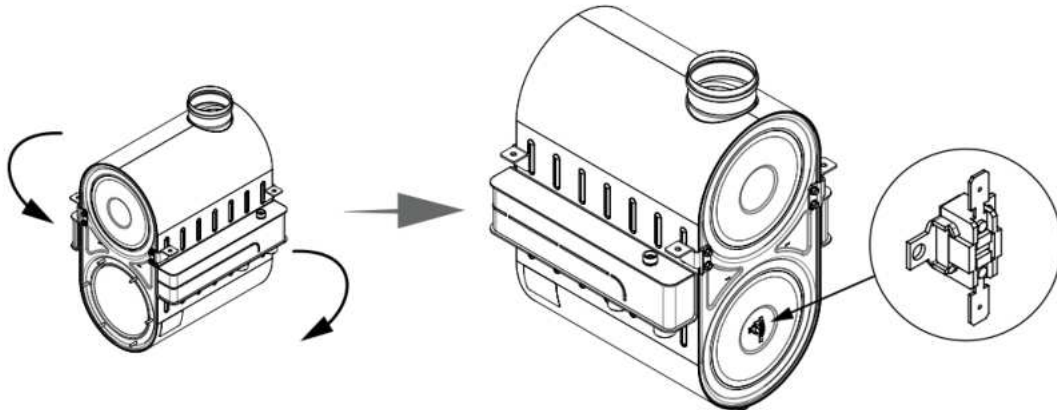


To enable the "CHIMNEY SWEEPER" consult section 12.3.



19.THERMAL FUSE REPLACEMENT OF HEAT EXCHANGER

The thermal fuse is positioned on the rear of the heat exchanger as shown in the figure, is electrically connected in series with the safety thermostat. Its function is to protect the exchanger from overheating in case of insulation failure. When this occurs the device appears on the display the anomaly **E110**. If the cause is due to the rupture of the isolation it is necessary to remove the heat exchanger and replace the rear isolation and the thermal fuse.



20.DISMANTLING, DISPOSAL AND RECYCLING



Only qualified technicians are authorised to service the device and system.

Before dismantling the appliance, make sure to have cut out the power supply, closed the gas inlet valve and secured all the boiler and system connections.

Dispose of the appliance correctly according to the laws and regulations in force. The appliance and accessories cannot be discarded along with normal household waste.

More than 90% of the materials that make up the appliance are recyclable.

21. TECHNICAL SPECIFICATIONS

Model: LUNA DUO-TEC MP+		1.90	1.110
Cat.		IIzH3P	
Gas used	-	G20 - G31	
Rated heat input	kW	87,4	104,9
Reduced heat input (G20)	kW	9,7	11,7
Reduced heat input (G31)	kW	12,5	11,7
Rated heat power 80/60 °C	kW	85,0	102,0
Rated heat power 50/30 °C	kW	91,8	110,2
Reduced heat output 80/60 °C (G20)	kW	9,4	11,4
Reduced heat output 80/60 °C (G31)	kW	12,2	11,4
Reduced heat output 50/30 °C (G20)	kW	10,2	12,3
Reduced heat output 50/30 °C (G31)	kW	13,1	12,3
Rated efficiency 50/30 °C	%	105,5	105,1
Max. pressure of water in heating circuit	bar	4	
Min. pressure of water in heating circuit	bar	0,5	
Capacity of boiler circuit (volume of water)	l	9	10
Temperature range in heating circuit	°C	25-80	
Fumes typology	-	C13 - C33 - C43 - C53 - C63 - C83 - C93 - B23	
Coaxial flue duct diameter	mm	110/160	
Diameter of separate outlets	mm	110/110	
Max. mass flow rate of fumes (G20)	kg/s	0,040	0,047
Min. mass flow rate of fumes (G20)	kg/s	0,005	0,005
Max. temperature of fumes	°C	70	
Natural gas supply pressure 2H	mbar	20	
Propane gas supply pressure 3P	mbar	37	
Power supply voltage	V	230	
Power supply frequency	Hz	50	
Rated power supply	W	275	320
Net weight	kg	83	93
Dimensions - height	mm	952	
- width	mm	600	
- depth	mm	584	
Protection-limit against humidity (EN 60529)	-	IPX5D	
CE Certificate Nr. 0085CM0128			

CONSUMPTION AT HEAT INPUT Qmax and Qmin

Qmax (G20) - 2H	m³/h	9,25	11,10
Qmin (G20) - 2H	m³/h	1,03	1,24
Qmax (G31) - 3P	kg/h	6,60	7,92
Qmin (G31) - 3P	kg/h	0,97	0,91

22. TECHNICAL PARAMETERS

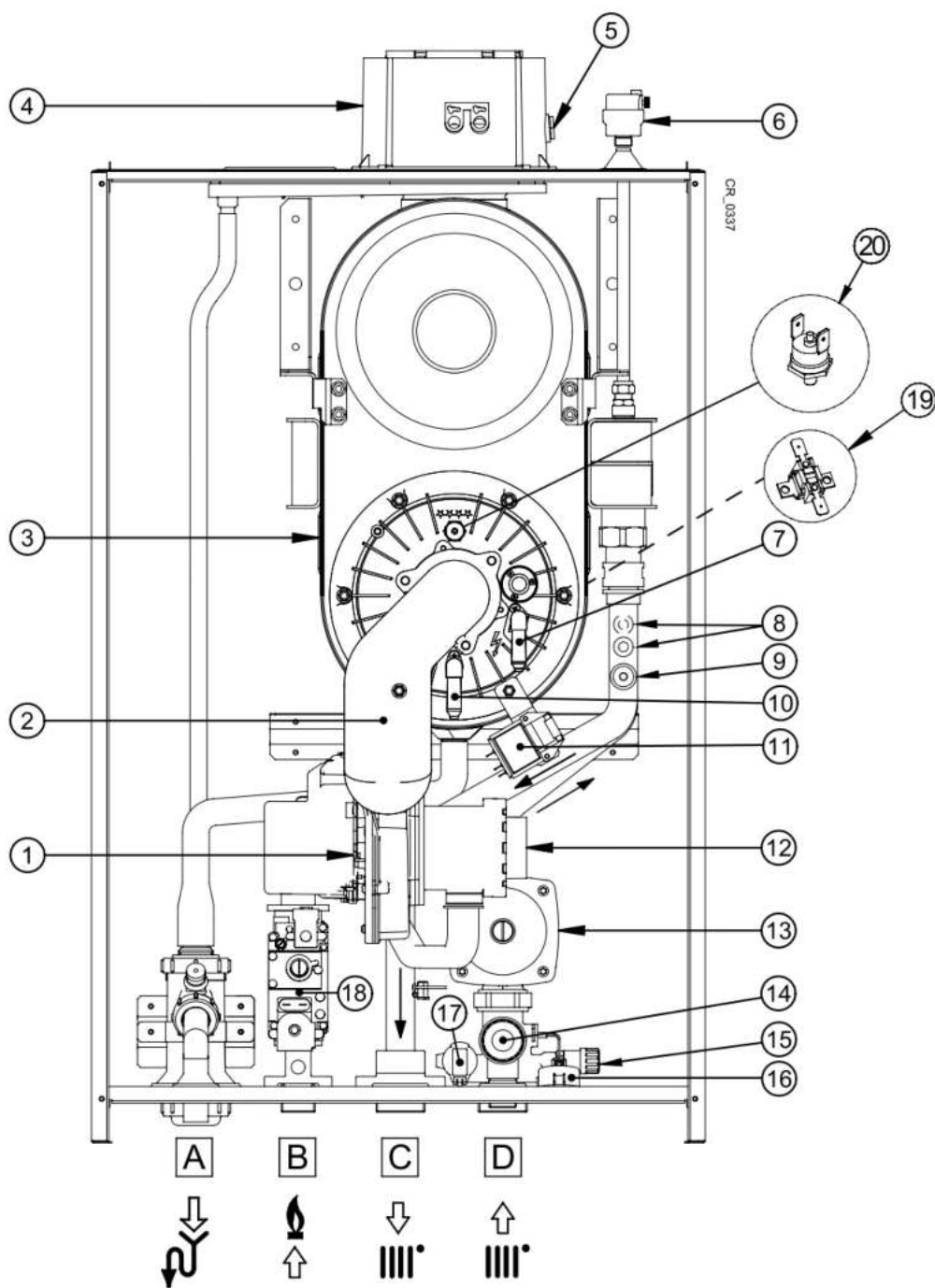
BAXI LUNA DUO-TEC MP+			1.90	1.110
Condensing boiler			Yes	Yes
Low-temperature boiler ⁽¹⁾			No	No
B1 boiler			No	No
Cogeneration space heater			No	No
Combination heater			No	No
Rated heat output	P_{rated}	kW	85	102
Useful heat output at rated heat output and high temperature regime ⁽²⁾	P_4	kW	85.0	102.0
Useful heat output at 30% of rated heat output and low temperature regime ⁽¹⁾	P_1	kW	28.2	33.8
Seasonal space heating energy efficiency	η_s	%		
Useful efficiency at rated heat output and high temperature regime ⁽²⁾	η_4	%	87.7	87.6
Useful efficiency at 30% of rated heat output and low temperature regime ⁽¹⁾	η_1	%	96.8	96.8
Auxiliary electricity consumption				
Full load	e_{lmax}	kW	0.130	0.165
Part load	e_{lmin}	kW	0.017	0.018
Standby mode	P_{SB}	kW	0.003	0.003
Other items				
Standby heat loss	P_{stby}	kW	0.089	0.097
Ignition burner power consumption	P_{ign}	kW	0.000	0.000
Annual energy consumption	Q_{HE}	GJ		
Sound power level, indoors	L_{WA}	dB	63	63
Emissions of nitrogen oxides	NO_x	mg/kWh	31	22
Domestic hot water parameters				
Declared load profile				
Daily electricity consumption	Q_{elec}	kWh		
Annual electricity consumption	AEC	kWh		
Water heating energy efficiency	η_{wh}	%		
Daily fuel consumption	Q_{fuel}	kWh		
Annual fuel consumption	AFC	GJ		
(1) Low temperature means for condensing boilers 30°C, for low temperature boilers 37°C and for other heaters 50°C return temperature (at heater inlet).				
(2) High temperature regime means 60°C return temperature at heater inlet and 80°C feed temperature at heater outlet.				

INSTALLER Section (en)

23.PRODUCT FICHE

BAXI LUNA DUO-TEC MP+		1.90	1.110
Space heating - Temperature application		Medium	Medium
Water heating - Declared load profile			
Seasonal space heating energy efficiency class			
Water heating energy efficiency class			
Rated heat output (<i>Prated</i> or <i>Psup</i>)	kW	85	102
Space heating - Annual energy consumption	GJ		
Water heating - Annual energy consumption	kWh ⁽¹⁾ GJ ⁽²⁾		
Seasonal space heating energy efficiency	%		
Water heating energy efficiency	%		
Sound power level L _{WA} indoors	dB	63	63
(1) Electricity (2) Fuel			

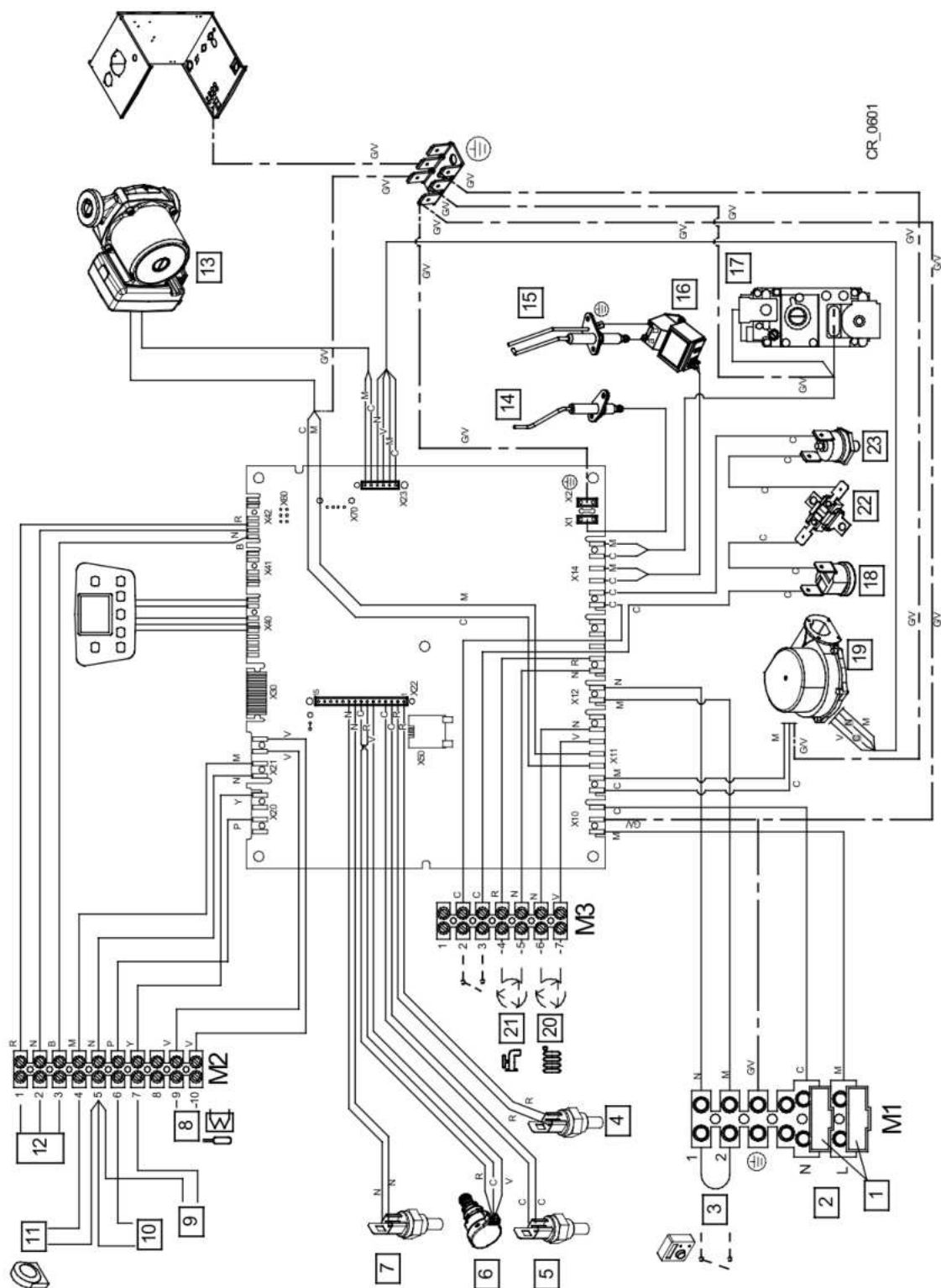
SECTION A



	it	en
1	Ventilatore	Fan
2	Collettore miscela aria-gas	Air/gas blend manifold
3	Scambiatore primario	Primary exchanger
4	Raccordo scarico fumi coassiale	Coaxial flue connector
5	Sonda fumi	Flue sensor
6	Valvola di sfogo aria automatica	Automatic air vent
7	Elettrodo di accensione	Ignition electrode
8	Sonda NTC riscaldamento (mandata e ritorno)	NTC water heating sensor (flow and return)
9	Termostato di sicurezza (sovratemperature)	Safety overflow temperature thermostat
10	Elettrodo di rivelazione di fiamma	Flame detection electrode
11	Accenditore	Spark generator
12	Venturi	Venturi
13	Pompa	Pump
14	Valvola di sicurezza idraulica	Hydraulic Safety valve
15	Rubinetto di scarico caldaia	Boiler drain tap
16	Manometro	Pressure gauge
17	Sensore di pressione idraulico	Hydraulic Pressure Sensor
18	Valvola gas	Gas valve
19	Termofusibile	Thermal fuse
20	Termostato flangia scambiatore	Exchanger flange thermostat
A	Attacco sifone scarico condensa	Trap condensate drain
B	Attacco ingresso GAS	Gas inlet connection
C	Attacco mandata acqua riscaldamento	Heating flow connection
D	Attacco ritorno acqua riscaldamento	Heating return connection

	de	es
1	Ventilator	Ventilador
2	Sammelrohr Luft-/Gasgemisch	Colector de mezcla aire-gas
3	Primär-Tauscher	Intercambiador primario
4	Koaxiale Abgasleitung	Racord conexión humos coaxial
5	Abgasfühler	Sonda de humos
6	Automatisches Entlüftungsventil	Válvula de purga aire automática
7	Zündungselektrode	Electrodo de encendido
8	NTC-Fühler Heizung (Vor- und Rücklauf)	Sonda NTC calefacción (ida y retorno)
9	Sicherheitsthermostat (Übertemperatur)	Termostato de seguridad (sobretemperaturas)
10	Flammenüberwachungselektrode	Electrodo de detección de llama
11	Zünder	Encendedor
12	Venturi	Venturi
13	Pumpe	Bomba
14	Hydraulisches Sicherheitsventil	Válvula de seguridad hidráulica
15	Entleerungshahn Heizkessel	Grifo de descarga caldera
16	Druckmesser	Manómetro
17	Hydraulikdruckfühler	Sensor de presión hidráulico
18	Gasventil	Válvula del gas
19	Thermosicherung	Fusible térmico
20	Thermostat des Wärmetauscherflansches	Termostato brida intercambiador
A	Anschluss Kondenswasser-Auslasssiphon	Conexión desagüe condensados
B	Eingangsanschluss GAS	Conexión entrada de gas
C	Anschluss Heizwasservorlauf	Conexión ida agua Calefacción
D	Anschluss Heizwasserrücklauf	Conexión retorno agua Calefacción

SECTION B

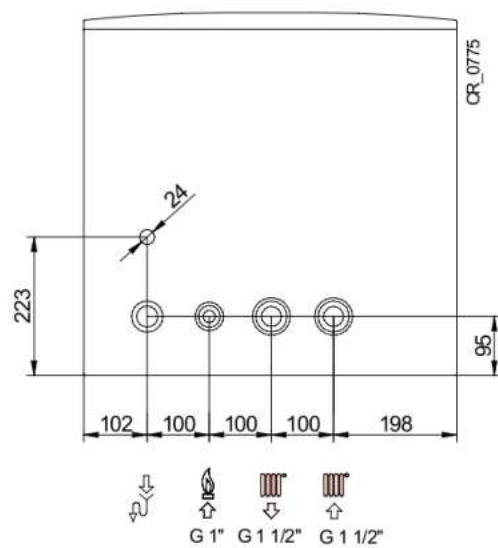
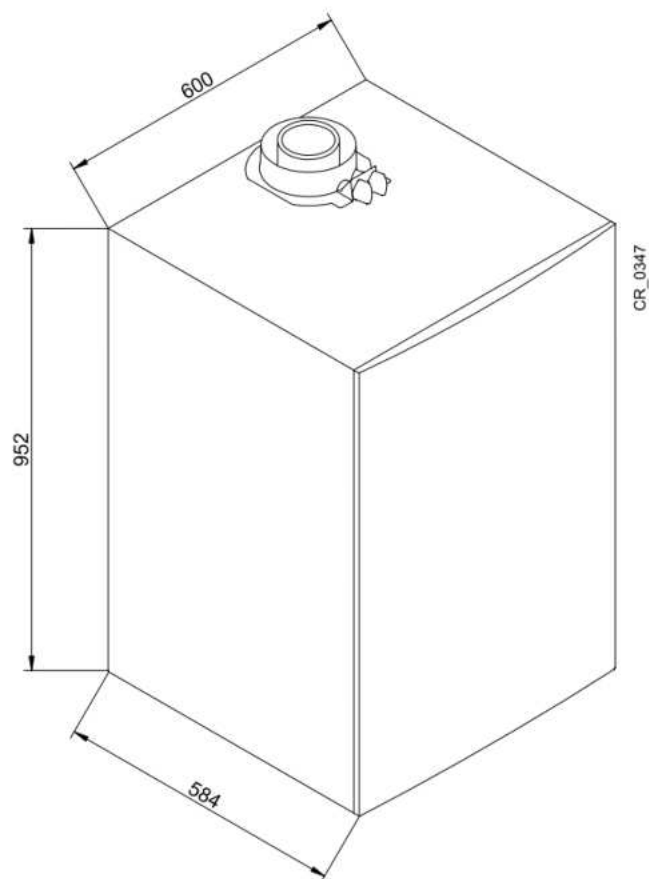


CR_0601

	it	en	de	es
1	Fusibili	Fuses	Schmelzsicherungen	Fusibles
2	Alimentazione elettrica 230 V	230 V Power Supply	Stromversorgung 230 V	Alimentación eléctrica 230 V
3	Termostato Ambiente (TA)	Room Thermostat (RT)	Raumthermostat (RT)	Termostato Ambiente (TA)
4	Sonda mandata riscaldamento	Heating flow sensor	Vorlauffühler Heizung	Sonda impulsión calefacción
5	Sonda ritorno riscaldamento	Heating return sensor	Rücklauffühler Heizung	Sonda retorno calefacción
6	Sensore di pressione	Water pressure sensor	Drucksensor	Sensor de presión
7	Sonda fumi	Fumes sensor	Abgasfühler	Sonda de humos
8	Sonda bollitore sanitario	DHW tank sensor	Fühler Warmwasserspeicher	Sonda calentador ACS
9	Sonda ausiliaria 1	Auxiliary Sensor 1	Hilfsfühler 1	Sonda auxiliar 1
10	Sonda ausiliaria 2	Auxiliary Sensor 2	Hilfsfühler 2	Sonda auxiliar 2
11	Sonda esterna	Outdoor sensor	Außentemperaturfühler	Sonda exterior
12	Controllo Remoto	Remote Control	FERNBEDIENUNG	Control Remoto
13	Pompa	Pump	Pumpe	Bomba
14	Elettrodo di rivelazione fiamma	Flame sensor electrode	Flammenüberwachungselektrode	Electrodo de detección de llama
15	Elettrodo di accensione	Ignition electrode	Zündungselektrode	Electrodo de encendido
16	Accenditore	Igniter	Zünder	Encendedor
17	Valvola gas	Gas valve	Gasventil	Válvula del gas
18	Termostato di sicurezza	Safety Thermostat	Sicherheitsthermostat	Termostato de seguridad
19	Ventilatore	Fan	Ventilator	Ventilador
20	Pompa circuito di riscaldamento	Heating circuit pump	Pumpe Heizkreislauf	Bomba circuito de calefacción
21	Pompa bollitore sanitario	DHW boiler tank pump	Pumpe Warmwasserspeicher	Bomba calentador ACS
22	Termofusibile	Thermal fuse	Thermosicherung	Fusible térmico
23	Termostato flangia scambiatore	Exchanger flange thermostat	Thermostat des Wärmetauscherflansches	Termostato brida intercambiador
C	Celeste	Blue	Hellblau	Celeste
M	Marrone	Brown	Braun	Marrón
N	Nero	Black	Schwarz	Negro
R	Rosso	Red	Rot	Rojo
GN	Giallo/Verde	Yellow/Green	Grüngelb	Amarillo/Verde
V	Verde	Green	Grün	Verde
B	Bianco	White	Weiß	Blanco
G	Grigio	Grey	Grau	Gris
Y	Giallo	Yellow	Gelb	Amarillo
P	Viola	Violet	Violett	Violeta

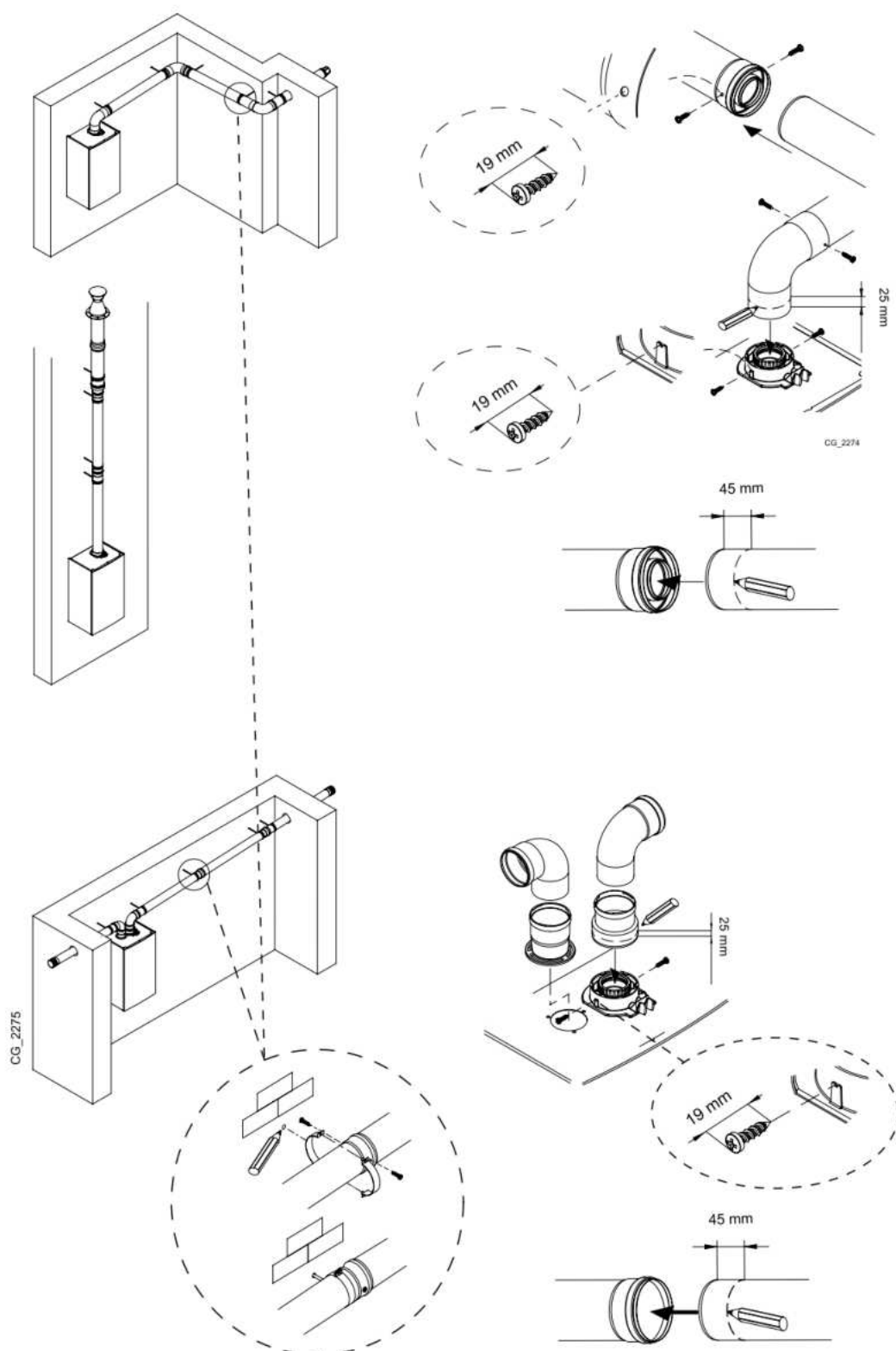
SECTION B

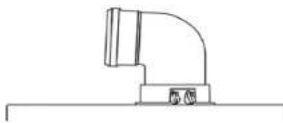
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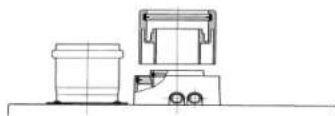
SECTION C

SECTION D

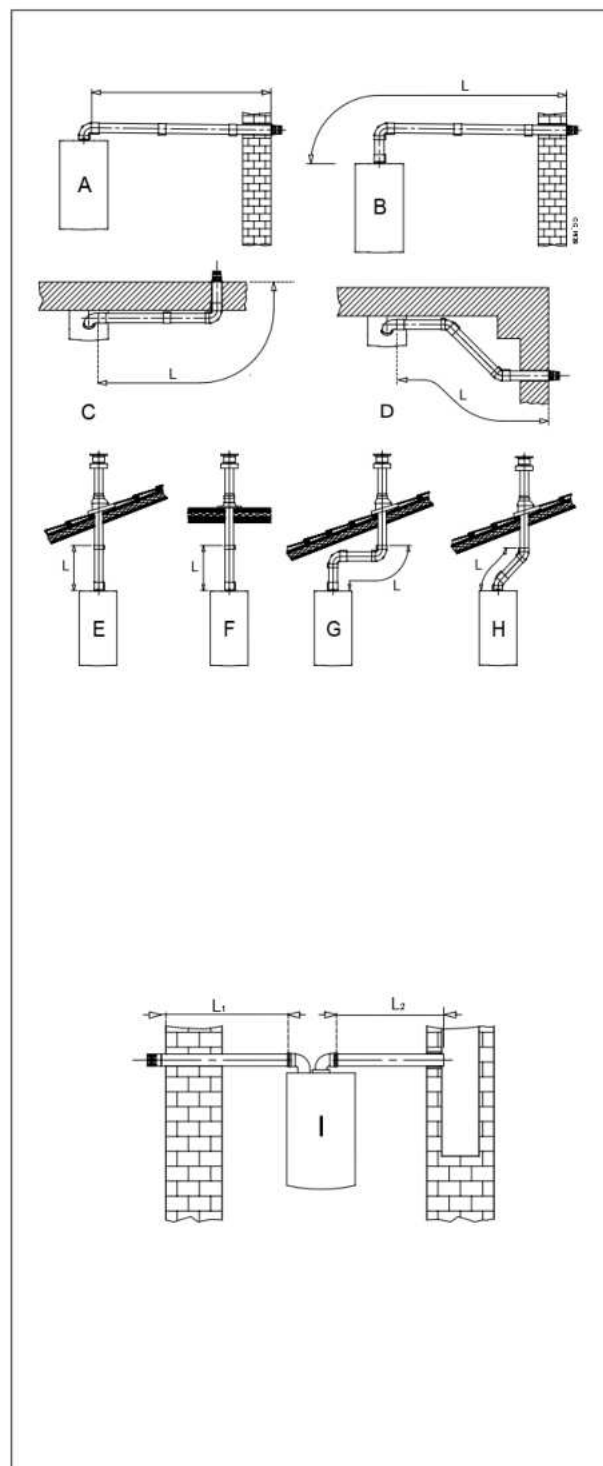




A B	$L_{max} = 10 \text{ m} - \varnothing 110/160 \text{ mm}$
C D	$L_{max} = 9 \text{ m} - \varnothing 110/160 \text{ mm}$
E F	$L_{max} = 10 \text{ m} - \varnothing 110/160 \text{ mm}$
G	$L_{max} = 8 \text{ m} - \varnothing 110/160 \text{ mm}$
H	$L_{max} = 9 \text{ m} - \varnothing 110/160 \text{ mm}$



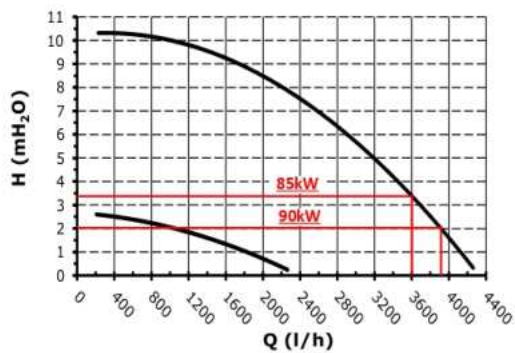
I	$(L_1 + L_2)_{max} = 27 \text{ m} - \varnothing 110 \text{ mm}$ $L_1_{max} = 7 \text{ m}$
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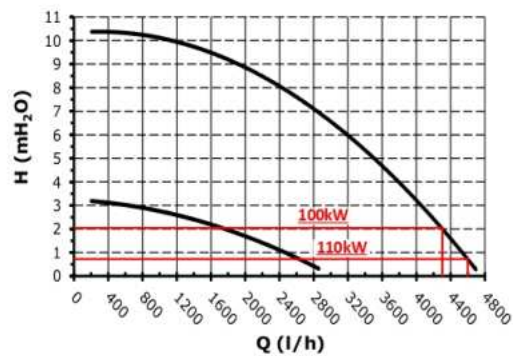
SECTION D



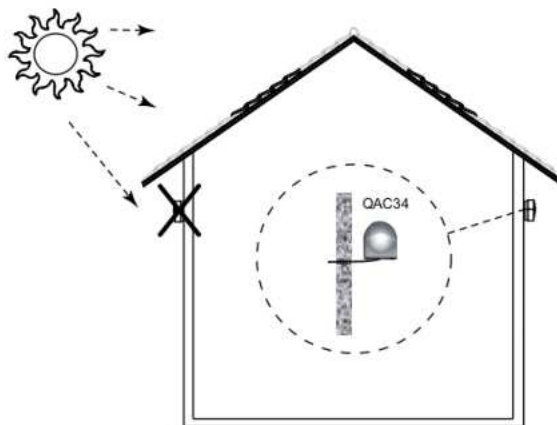
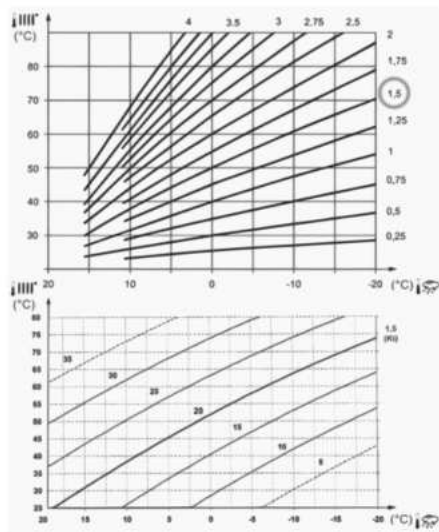
MP+ 90

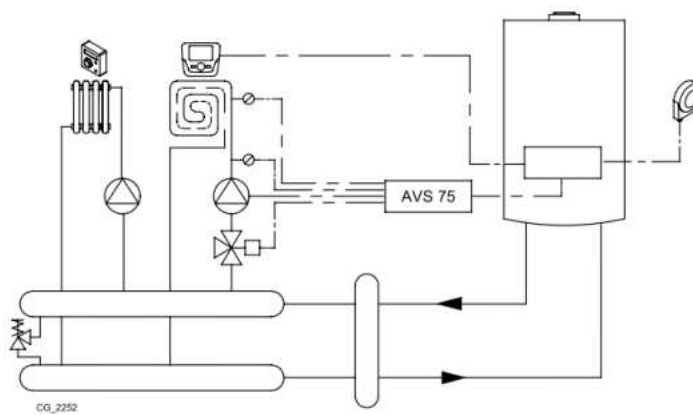
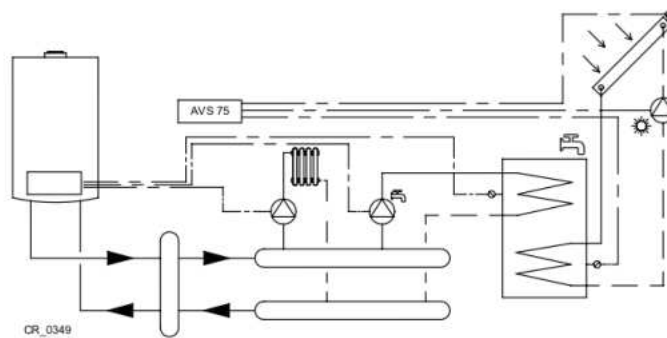
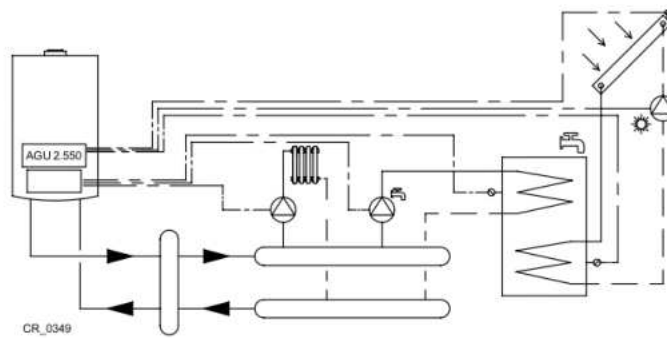
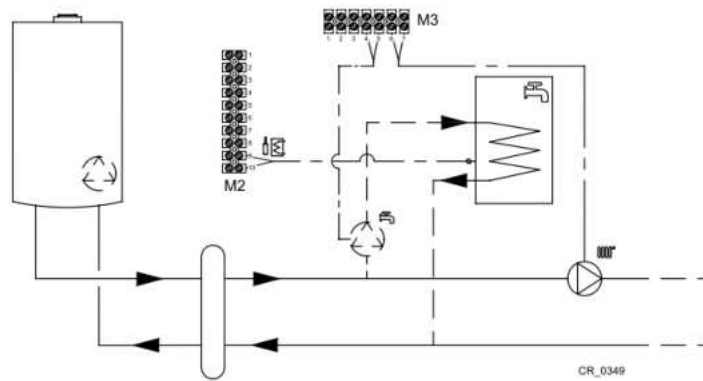


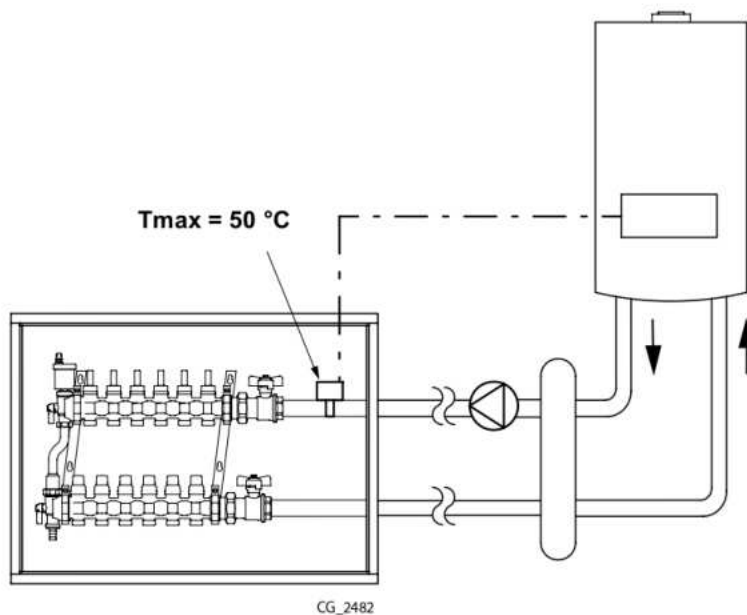
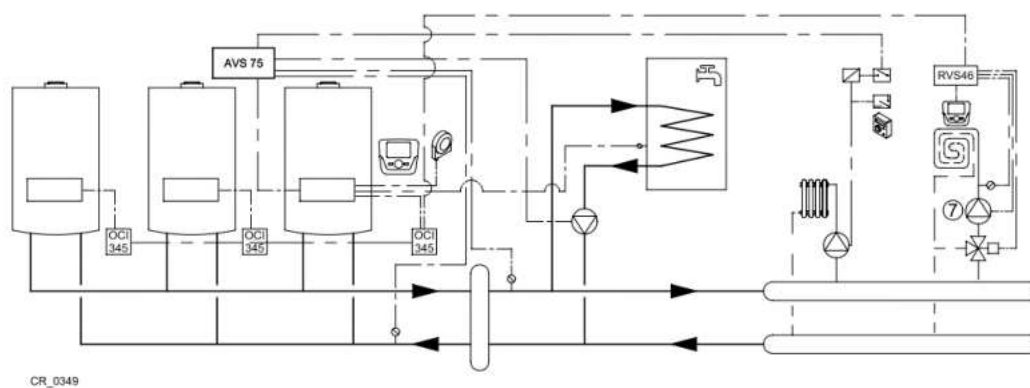
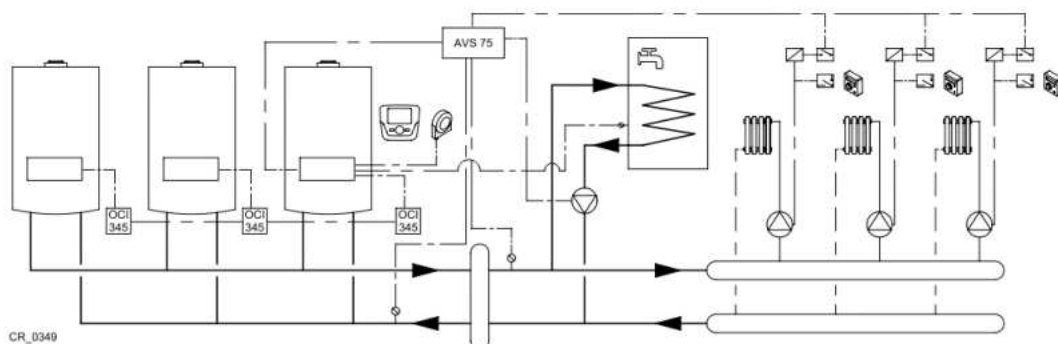
MP+ 110



SECTION E







BAXI

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Fișa tehnică - Reducție

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Reductiile din oțel sunt elemente de instalații folosite pentru schimbarea diametrului țevelor în sisteme industriale și civile, fabricate din oțel carbon sau inox, conform standardelor internaționale.	UPRUCT CTR SA
2	Condiții de lucru:	• Temperatura de operare: -40°C ... +300°C • Presiune de lucru: până la 25 MPa • Medii: gaze	
3	Parametri constructivi:	• Material: oțel carbon • Dimensiuni conforme cu standardele EN 10253. • Suprafață finisată prin sablare.	
4	Dotări minime:	• Etichetare clară cu dimensiuni, material și cod de producător Certificat de calitate și conformitate	
5	Caracteristici funcționale:	• Asigură o schimbare netedă a diametrului conductei fără pierderi mari de presiune • Rezistență mecanică și chimică adaptată condițiilor de exploatare	
6	Teste și certificări puse la dispoziția Beneficiarului:	Certificat de conformitate	
7	Marcare și identificare:	Marcaj laser sau imprimat pe corpul reductiei cu specificațiile produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Certificat de conformitate	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipsesc	
12	Condiții privind conformitatea cu standarde relevante:	EN 10253	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 12 luni	

Fișa tehnică - Traducator de temperatura Rosemount 3144P

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Traducator de temperatura Rosemount 3144P	Emerson
2	Condiții de lucru:	• Tensiune de alimentare 12-42 V • Temperatura mediului [°C]-20 +85	
3	Parametri constructivi:	• Domeniu de măsurare -50 +200°C • Conectare filet G 1/2"	
4	Dotări minime:	Pochet termometric	
5	Caracteristici funcționale:	• Semnal de iesire 4 ... 20 mA, HART®	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate • Certificat de calibrare	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat ATEX	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Protecția IP68	
12	Condiții privind conformitatea cu standarde relevante:	Lipsește	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

Rosemount™ 3144P Temperature Transmitter

with Rosemount X-well™ Technology



With the Rosemount 3144P Temperature Transmitter, you gain greater visibility into your temperature processes so you can:

- Improve safety
- Comply with regulations
- Make the most of your limited resources
- Reach your production and quality targets

By leveraging Rosemount X-well™ Technology, advanced diagnostic capabilities, and the unparalleled reliability and accuracy of the transmitter, you can:

- Minimize off-spec product
- Reduce maintenance and downtime
- Improve the usage of your limited resources
- Meet regulatory demands

ROSEMOUNT™



Features and benefits

Complete Point Solutions™ for accurately measuring process temperature in monitoring applications without the requirement of a thermowell or process penetration



- Simplify temperature measurement point specification, installation, and maintenance and eliminate possible leak points.
- Calculate a repeatable and accurate process temperature measurement with an in-transmitter thermal conductivity algorithm.
- Measure pipe surface and ambient temperature and use the thermal conductivity properties of the installation and process piping in order to provide an accurate process measurement.

Access information when you need it with asset tags

Newly shipped devices include a unique QR code asset tag, which enables you to access serialized information directly from the device. With this capability, you can:

- Access device drawings, diagrams, technical documentation, and troubleshooting information in your MyEmerson account.
- Improve mean time to repair and maintenance efficiency.
- Ensure confidence that you have located the correct device.
- Eliminate the time-consuming process of locating and transcribing nameplates to view asset information.

Contents

Features and benefits.....	2
Ordering information.....	5
How to order Rosemount X-well™ Technology.....	12
Specifications.....	13
Product certifications.....	25
Dimensional drawings.....	26

Deliver unmatched field reliability and innovative process measurement solutions

- Superior accuracy and stability
- Dual and single sensor capability with universal sensor inputs (RTD, thermocouple, mV, ohms)
- Comprehensive sensor and process diagnostics offering
- Safety Integrity Level (SIL)3 capable: IEC 61508 certified by an accredited third party agency for use in safety instrumented systems up to SIL3 (minimum requirement of single use [1oo1] for SIL2 and redundant use [1oo2] for SIL3)
- Dual-compartment housing
- Large LCD display
- 4–20 mA HART® with selectable revisions (5 and 7)
- FOUNDATION™ Fieldbus, compliant to ITK 6.0 and NE107 standards



Improve efficiency with best-in-class product specifications and capabilities

- Reduce maintenance and improve performance with industry leading accuracy and stability.
- Improve measurement accuracy by 75 percent with transmitter-sensor matching.
- Ensure process health with system alerts and user-friendly device dashboards.
- Easily check device status and values on local LCD display with large percent range graph.
- Achieve high reliability and installation ease with the industry's most rugged dual compartment design.

Optimize measurement reliability with diagnostics designed for any protocol on any host system



- Thermocouple degradation diagnostic monitors the health of a thermocouple loop, enabling preventative maintenance.
- Minimum and maximum temperature tracking tracks and records temperature extremes of the process sensors and the ambient environment.
- Sensor drift alert detects sensor drift and alerts the user.
- The Hot Backup™ feature provides temperature measurement redundancy.

Explore the benefits of a Complete Point Solution™ from Emerson

- An Assemble To Sensor option enables Emerson to provide a complete point temperature solution, delivering an installation-ready transmitter and sensor assembly.
- Emerson offers a selection of RTDs, thermocouples, and thermowells that bring superior durability and Rosemount reliability to temperature sensing, complementing the Rosemount transmitter portfolio.



Experience global consistency and local support from numerous worldwide Emerson manufacturing sites



- World-class manufacturing provides globally consistent products from every factory and the capacity to fulfill the needs of any project, large or small.
- Experienced instrumentation consultants help select the right product for any temperature application and advise on best installation practices.
- An extensive global network of Emerson service and support personnel can be on-site when and where they are needed.
- Make wireless installation and configuration easy with the Emerson Wireless Gateway.

Looking for a wireless temperature solution? For wireless applications that require superior performance and unmatched reliability, consider the [Rosemount 648 Wireless Temperature Transmitter](#).

Ordering information



The industry-leading Rosemount 3144P Temperature Transmitter delivers unmatched field reliability and innovative process measurement solutions and diagnostics.

Transmitter features include:

- Temperature measurement assembly with Rosemount X-well™ Technology (option code **PT**)
- Dual and single sensor input capabilities
- Transmitter-sensor matching (option code **C2**)
- Integral transient protector (option code **T1**)
- IEC 61508 Safety Certificate of Compliance (option code **QT**)
- Advanced sensor and process diagnostics (option codes **D01** and **DA1**)
- Large, easy to read LCD display (option code **M5**)
- Assemble to Sensor option (option code **XA**)

[CONFIGURE >](#)

[VIEW PRODUCT >](#)

Online product configurator

Many products are configurable online using our product configurator.

Select the **Configure** button or visit [Emerson.com](https://www.emerson.com) to start. With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

Model codes

Model codes contain the details related to each product. Exact model codes will vary. An example of a typical model code is shown in [Figure 1](#).

Figure 1: Model code example

3144P D1 A 1 NA	M5 DA1 Q4
1	2

1. Required model components ⁽¹⁾

2. Additional options ⁽²⁾

⁽¹⁾ Choices available on most.

⁽²⁾ Variety of features and functions that may be added to products.

Specifications and options

Specification and selection of product materials, options, and/or components must be made by the purchaser of the equipment. See *Material selection* for more information.

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery times. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model

Code	Description	
3144P	Temperature transmitter	★

Housing style

Code	Description	Material	Conduit entry size	
D1	Field mount housing, dual-compartment housing	Aluminum	½-14-inch NPT	★
D2	Field mount housing, dual-compartment housing	Aluminum	M20 x 1.5 (CM20)	★
D3	Field mount housing, dual-compartment housing	Aluminum	PG 13.5 (PG11)	★
D4	Field mount housing, dual-compartment housing	Aluminum	JIS G ½	★
D5	Field mount housing, dual-compartment housing	Stainless steel	½-14-inch NPT	★
D6	Field mount housing, dual-compartment housing	Stainless steel	M20 x 1.5 (CM20)	★
D7	Field mount housing, dual-compartment housing	Stainless steel	PG 13.5 (PG11)	★
D8	Field mount housing, dual-compartment housing	Stainless steel	JIS G ½	★
D9	Field mount housing, dual-compartment housing	Aluminum, ultra low copper	½-14-inch NPT	
D0	Field mount housing, dual-compartment housing	Aluminum, ultra low copper	M20 x 1.5 (CM20)	

Transmitter output

Code	Description	
A	4-20 mA with digital signal based on HART® Protocol	★
F	FOUNDATION™ Fieldbus digital signal (includes three analog input function block and backup link active scheduler)	★

Measurement configuration

Code	Description	
1	Single-sensor input	★
2	Dual-sensor input	★

Product certification

Code	Description	
NA	No approval	★
E5	USA explosion-proof, dust ignition-proof, and non-incendive	★
I5 ⁽¹⁾	USA Intrinsically Safe (IS) and non-incendive (includes standard IS and FISCO for Fieldbus units)	★
K5 ⁽¹⁾	USA IS, non-incendive, and explosion-proof combination (includes standard IS and FISCO for Fieldbus units)	★
KB ⁽¹⁾	USA and Canada IS, explosion-proof, and non-incendive combination (includes standard IS and FISCO for Fieldbus units)	★
I6 ⁽¹⁾	Canada IS/FISCO, and Division 2 (includes standard IS and FISCO for Fieldbus units)	★
K6 ⁽¹⁾	Canada IS, FISCO Division 2, and explosion-proof combination (includes standard IS, FISCO for Fieldbus units)	★
E1	ATEX flameproof approval	★
N1	ATEX type n approval	★
I1 ⁽¹⁾	ATEX intrinsic safety approval (includes standard IS and FISCO for Fieldbus units)	★
K1 ⁽¹⁾	ATEX IS, flameproof, dust ignition-proof and type n combination (includes standard IS and FISCO for Fieldbus units)	★
ND	ATEX dust ignition-proof approval	★
KA ⁽¹⁾	ATEX/Canada intrinsic safety, explosion-proof combination (includes standard IS and FISCO for Fieldbus units)	★
E7	IECEX flameproof approval	★
N7	IECEX Type 'n' approval	★
I7 ⁽¹⁾⁽²⁾	IECEX intrinsic safety	★
K7 ⁽¹⁾⁽²⁾	IECEX intrinsic safety, flameproof, dust ignition-proof and type n combination	★
E2 ⁽²⁾	Brazil flameproof	★
I2 ⁽²⁾	Brazil intrinsic safety	★
E4 ⁽²⁾	Japan flameproof approval	★
E3 ⁽²⁾	China flameproof approval	★
I3 ⁽¹⁾⁽²⁾	China intrinsic safety	★
N3	China type n	★
KM	Technical Regulations Customs Union (EAC) flameproof, intrinsic safety	★
IM	Technical Regulations Customs Union (EAC) intrinsic safety	★
EM	Technical Regulations Customs Union (EAC) flameproof	★
IP	Korean Intrinsic Safety	★
EP	Korean Flameproof	★
KP	Korean Intrinsic Safety, Flameproof	★

(1) When IS approval is ordered on a FOUNDATION™ Fieldbus, both standard IS and FISCO IS approvals apply. The device label is marked appropriately.

(2) Consult factory for availability when ordering with HART® or FOUNDATION Fieldbus models.

Additional options

Plantweb™ control functionality

Code	Description	
A01	FOUNDATION™ Fieldbus advanced control function block suite	★

Plantweb™ advanced diagnostic functionality

Code	Description	
D01	FOUNDATION™ Fieldbus sensor and process diagnostic suite: thermocouple diagnostic, minimum/maximum tracking	★
DA1	HART® sensor and process diagnostic suite: thermocouple diagnostic, minimum/maximum tracking	★

Enhanced performance

Code	Description	
PT ⁽¹⁾	Temperature measurement assembly with Rosemount X-well™ Technology	★
P8 ⁽²⁾	Enhanced transmitter accuracy	★

(1) Not available with FOUNDATION™ Fieldbus models.

(2) Enhanced accuracy only applies to RTDs; however, you can order the option with any sensor type.

Mounting bracket

Code	Description	
B4	U mounting bracket for 2-inch pipe mounting - all stainless steel (SST)	★
B5	L mounting bracket for 2-inch pipe or panel mounting - all SST	★
BH	L mounting bracket for 2-inch pipe or panel mounting - 316 SST	★

Display

Code	Description	
M5	LCD display	★

External ground

Code	Description	
G1	External ground lug assembly	★

Transient protector

Code	Description	
T1	Integral transient protector	★

Software configuration

Not available with FOUNDATION™ Fieldbus models.

Code	Description	
C1	Custom configuration of date, descriptor, and message (requires Rosemount 3144P Configuration Data Sheet with order)	★

Line filter

Code	Description	
F5	50 Hz line voltage filter	★

Alarm level configuration

Not available with FOUNDATION™ Fieldbus models.

Code	Description	
A1	NAMUR alarm and saturation levels, high alarm	★
CN	NAMUR alarm and saturation levels, low alarm	★

Low alarm

Code	Description	
C8	Low alarm (standard Rosemount alarm and saturation values)	★

Sensor trim

Code	Description	
C2	Transmitter-sensor matching – trim to PT100 RTD calibration schedule (Callendar-Van Dusen constants)	★

Five-point calibration

Code	Description	
C4	5-point calibration (requires the Q4 option code to generate a calibration certificate)	★

Calibration certification

Code	Description	
Q4	Calibration certificate (3-point calibration)	★
QG	Calibration certificate and GOST verification certificate	★
QP	Calibration certificate and tamper evident seal	★

Dual-input custom configuration (only with measurement type option code 2)

Code	Description	
U1	Hot Backup™	★

Code	Description	
U2 ⁽¹⁾	Average temperature with Hot Backup and sensor drift alert – Warning mode	★
U3 ⁽¹⁾	Average temperature with Hot Backup and sensor drift alert – Alarm mode	★
U5	Differential temperature	★
U6	Average temperature	★
U7	First good temperature	★
U4	Two independent sensors	

(1) Not available with FOUNDATION™ Fieldbus models.

Custody transfer

Not available with FOUNDATION™ Fieldbus models.

Code	Description	
D3	Custody transfer approval (Canada)	
D4	MID custody transfer (Europe)	

Quality certification for safety

Code	Description	
QS	Prior-use certificate of Failure Mode, Effects, and Diagnostics Analysis (FMEDA) data (HART® only)	★
QT	Safety-certified to IEC 61508 with certificate of FMEDA data (HART only)	★

Shipboard certification

Code	Description	
SBS	American Bureau of Shipping (ABS) Type Approval	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyd's Register (LR) Type Approval	★

Cold temperature

Code	Description	
BR6	-76 °F (-60 °C) cold temperature operation	★

Conduit electrical connector

Available with intrinsically safe approvals only. For FM Intrinsically Safe or non-incendive approval (option code I5), install in accordance with Rosemount drawing 03151-1009 to maintain 4X rating.

Code	Description	
GE	M12, 4-pin, male connector (eurofast®)	★
GM	A size mini, 4-pin, male connector (minifast®)	★

HART® revision configuration

Code	Description	
HR7	Configured for HART Revision 7	★

Assemble to option

Code	Description	
XA	Sensor specified separately and assembled to transmitter	★

Extended product warranty

Code	Description	
WR3	Three-year limited warranty	★
WR5	Five-year limited warranty	★

How to order Rosemount X-well™ Technology

Rosemount X-well Technology is for temperature monitoring applications and is not intended for control or safety applications. It is available in the Rosemount 3144P in a factory assembled direct mount configuration with a Rosemount 0085 Pipe Clamp Sensor. It cannot be used in a remote mount configuration. Rosemount X-well Technology will only work as specified with factory supplied and assembled Rosemount 0085 Sensor silver tipped single element sensor with an 3.15-inch (80 mm) extension length. It will not work as specified if used with other sensors.

Table 1: 3144P X-well Technology option code requirements

Code	Description
PT	Temperature measurement assembled with Rosemount X-well Technology
A	4–20 mA with digital signal based on HART® protocol
XA	Sensor specified separately and assembled to transmitter
C1	Custom configuration of date, descriptor, message, and wireless parameters (requires Rosemount 3144P Configuration Data Sheet with order)
HR7	Configured for HART Revision 7

Table 2: 0085 Pipe Clamp Sensor option code requirements for use with X-well Technology

Code	Description
N	No connection head
3	Sensor connection
P1	Sensor type
J	Extension type
0080	Extension length
XA	Assemble sensor to specific temperature transmitter

X-well assemblies are available in most 0085 Pipe Clamp Sensor diameter sizes.

Typical model numbers of the assembly:

- 3144P D 1A 1 NA M5 PT C1 HR7 XA
- 0085 N 3 P1 J 0080 U 0169 N XA

Specifications

HART[®] and FOUNDATION[™] Fieldbus

Functional specifications

Inputs

User-selectable. See [Table 3](#) for sensor options.

Output

Two-wire device with either 4–20 mA/HART[®], linear with temperature or input, or completely digital output with FOUNDATION[™] Fieldbus Communication (ITK 6.0.1 compliant).

Isolation

Input/output isolation specified to 500 Vdc (500 Vrms 707 V peak) at 50/60 Hz.

Humidity limits

0–99 percent relative humidity, non-condensing

Update time

Approximately 0.5 seconds for a single sensor (one second for dual sensors).

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations, including materials of construction that can be expected to perform well in a wide range of applications.

The product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration, or materials of construction selected.

Conformance to specification ($\pm 3\sigma$ [Sigma])

Technology leadership, advanced manufacturing techniques, and statistical process control ensure specification conformance to at least $\pm 3\sigma$.

Conduit connections

The standard field mount housing has ½–14-inch NPT conduit entries. Additional conduit entry types are available, including PG13.5 (PG11), M20 3 1.5 (CM20), or JIS G ½.

When any of these additional entry types are ordered, adapters are placed in the standard field housing so these alternative conduit types fit correctly.

Materials of construction

Enclosure	Low-copper aluminum or CF-8M (cast version of 316 stainless steel)
Paint	Polyurethane
O-rings	Buna N

Mounting specifications

Transmitters may be attached directly to the sensor. Optional mounting brackets (codes B4 and B5) allow for remote mounting. See [Figure 6](#).

Transmitter weight

Aluminum	3.1 lb. (1.4 kg)
Stainless steel	7.8 lb. (3.5 kg)

Enclosure ratings

Type 4X
IP66 and IP68

Stability

RTDs	±0.1 percent of reading or 0.1 °C (0.18 °F), whichever is greater, for two years for RTDs.
Thermocouples	±0.1 percent of reading or 0.1 °C (0.18 °F), whichever is greater, for one year for thermocouples.

Five-year stability

RTDs	±0.25 percent of reading or 0.25 °C, whichever is greater, for five years.
Thermocouples	±0.5 percent of reading or 0.5 °C, whichever is greater, for five years.

Vibration effect

Tested to the following with no effect on performance per IEC 60770-1, 1999:

Frequency	Vibration
10 to 60 Hz	0.01 in. (0.21 mm) displacement
60 to 2000 Hz	3 g peak acceleration

Self calibration

The analog-to-digital measurement circuitry automatically self-calibrates for each temperature update by comparing the dynamic measurement to extremely stable and accurate internal reference elements.

Radio frequency interference (RFI) effect

Worst case RFI effect is equivalent to the transmitter's nominal accuracy specification, when tested in accordance with IEC 61000-4-3, 30 V/m (HART®)/20 V/m (HART thermocouple (T/C)) /10 V/m (FOUNDATION™ Fieldbus), 80 to 1000 MHz, with unshielded cable.

Electromagnetic compatibility (EMC)

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation <1 percent span during EMC disturbance.

Note

During surge event, device may exceed maximum EMC deviation limit; however, device will self-recover and return to normal operation within specified start-up time.

External ground screw assembly

To order the external ground screw assembly, specify code G1. However, some approvals include the ground screw assembly in the transmitter shipment; in these cases, it is not necessary to order code G1. The following table identifies which approval options include the external ground screw assembly.

Approval type	External ground screw assembly included? ⁽¹⁾
E5, I1, I2, I5, I6, I7, K5, K6, KB, NA	No—order option code G1
E1, E2, E3, E4, E7, K1, K7, KA, N1, N7, ND, NF	Yes

⁽¹⁾ The parts contained with the G1 option are included with the integral protector option code T1. When ordering T1, the G1 option code does not need to be ordered separately.

Hardware tag

- No charge
- Two lines of 28 characters (56 characters total)
- Tags are stainless steel
- Permanently attached to transmitter
- Character height is 1/16 in. (2 mm)
- A wire-on tag is available upon request. Five lines of 12 characters (60 characters total)

Software tag

- HART® transmitter can store up to eight characters in HART 5 mode and 32 characters in HART 7 mode. FOUNDATION™ Fieldbus transmitters can store up to 32 characters.
- Can be ordered with different software and hardware tags.
- If no software tag characters are specified, the first eight characters of the hardware tag are the default.

Transmitter accuracy

Table 3: Transmitter accuracy

Sensor options	Sensor reference	Input ranges		Minimum span ⁽¹⁾		Digital accuracy ⁽²⁾		Enhanced accuracy ⁽³⁾	Digital/ analog (D/A) accuracy (4)(5)
2-, 3-, 4-wire RTDs		°C	°F	°C	°F	°C	°F	°C	
Pt 100 (α = 0.00385)	IEC 751	-200 to +850	-328 to +1562	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Rosemount X-well™ Pt 100 (α = 0.00385)	IEC 751	-50 to +300	-58 to +572	10	18	± 0.29	± 0.52	N/A	± 0.02% of span
Pt 200 (α = 0.00385)	IEC 751	-200 to +850	-328 to +1562	10	18	± 0.22	± 0.40	± 0.176	± 0.02% of span
Pt 500 (α = 0.00385)	IEC 751	-200 to +850	-328 to +1562	10	18	± 0.14	± 0.25	± 0.112	± 0.02% of span
Pt 1000 (α = 0.00385)	IEC 751	-200 to +300	-328 to +1193	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Pt 100 (α = 0.003916)	JIS 1604	-200 to +645	-328 to +1193	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Pt 200 (α = 0.003916)	JIS 1604	-200 to +645	-94 to +572	10	± 0.22	± 0.40	± 0.40	± 0.176	± 0.02% of span

Table 3: Transmitter accuracy (continued)

Sensor options	Sensor reference	Input ranges		Minimum span ⁽¹⁾		Digital accuracy ⁽²⁾		Enhanced accuracy ⁽³⁾	Digital/analog (D/A) accuracy ⁽⁴⁾⁽⁵⁾
Ni 120	Edison curve no. 7	-70 to +300	-58 to +482	10	18	± 0.08	± 0.14	± 0.064	± 0.02% of span
Cu 10	Edison copper winding no. 15	-50 to +250	-328 to +1022	10	18	± 1.00	± 1.80	± 0.8	± 0.02% of span
Pt 50 (α=0.00391)	GOST 6651-94	-200 to +550	-328 to +1022	10	18	± 0.20	± 0.36	± 0.16	± 0.02% of span
Pt 100 (α=0.00391)	GOST 6651-94	-200 to +550	-328 to +1022	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Cu 50 (α=0.00426)	GOST 6651-94	-50 to +200	-58 to +392	10	18	± 0.34	± 0.61	± 0.272	± 0.02% of span
Cu 50 (α=0.00428)	GOST 6651-94	-185 to +200	-301 to +392	10	18	± 0.34	± 0.61	± 0.272	± 0.02% of span
Cu 100 (α=0.00426)	GOST 6651-94	-50 to +200	-58 to +392	10	18	± 0.17	± 0.31	± 0.136	± 0.02% of span
Cu 100 (α=0.00428)	GOST 6651-94	-185 to +200	-301 to +392	10	18	± 0.17	± 0.31	± 0.136	± 0.02% of span
Thermocouples⁽⁶⁾									
Type B ⁽⁷⁾	NIST monograph 175, IEC 584	100 to +1820	212 to +3308	25	45	± 0.75	± 1.35	N/A	± 0.02% of span
Type E	NIST monograph 175, IEC 584	-200 to +1000	-328 to +1832	25	45	± 0.20	± 0.36	N/A	± 0.02% of span
Type J	NIST monograph 175, IEC 584	-180 to +760	-292 to +1400	25	45	± 0.25	± 0.45	N/A	± 0.02% of span
Type K ⁽⁸⁾	NIST monograph 175, IEC 584	-180 to +1372	-292 to +2501	25	45	± 0.25	± 0.45	N/A	± 0.02% of span
Type N	NIST monograph 175, IEC 584	-200 to +1300	-328 to +2372	25	45	± 0.40	± 0.72	N/A	± 0.02% of span
Type R	NIST monograph 175, IEC 584	0 to +1768	+32 to +3214	25	45	± 0.60	± 1.08	N/A	± 0.02% of span
Type S	NIST monograph 175, IEC 584	0 to +1768	+32 to +3214	25	45	± 0.50	± 0.90	N/A	± 0.02% of span
Type T	NIST monograph 175, IEC 584	-200 to +400	-328 to +752	25	45	± 0.25	± 0.45	N/A	± 0.02% of span
DIN Type L	DIN 43710	-200 to +900	-328 to +1652	25	45	± 0.35	± 0.63	N/A	± 0.02% of span
DIN Type U	DIN 43710	-200 to +600	-328 to +1112	25	45	± 0.35	± 0.63	N/A	± 0.02% of span
Type W5Re/W26Re	ASTM E 988-96	0 to +2000	32 to +3632	25	45	± 0.70	± 1.26	N/A	± 0.02% of span

Table 3: Transmitter accuracy (continued)

Sensor options	Sensor reference	Input ranges		Minimum span ⁽¹⁾		Digital accuracy ⁽²⁾		Enhanced accuracy ⁽³⁾	Digital/analog (D/A) accuracy ⁽⁴⁾⁽⁵⁾
GOST Type L	GOST R 8.585-2001	-200 to +800	-392 to +1472	25	45	± 0.25	± 0.45	N/A	± 0.02% of span
Other input types									
Millivolt input		-10 to 100 mV		3 mV		± 0.015 mV		N/A	± 0.02% of span
2-, 3-, 4-wire Ohm Input		0 to 2000 ohms		20 ohm		± 0.35 ohm		N/A	± 0.02% of span

(1) No minimum or maximum span restrictions within the input ranges. Recommended minimum span will hold noise within accuracy specification with damping at zero seconds.

(2) Digital accuracy: Field Communicator can access digital output.

(3) Enhanced accuracy can be ordered using the P8 model code.

(4) Total analog accuracy is the sum of digital and D/A accuracies.

(5) Applies to HART® 4-20 mA devices.

(6) Total digital accuracy for thermocouple measurement: sum of digital accuracy +0.45 °F (0.25 °C) (cold junction accuracy)

(7) Digital accuracy for NIST Type B is ±5.4 °F (±3 °C) from 212 to 572 °F (100 to 300 °C).

(8) Digital accuracy for NIST Type K is ±0.9 °F (±0.5 °C) from -292 to -130 °F (-180 to -90 °C).

Reference accuracy example (HART® protocol only)

When using a Pt 100 ($\alpha = 0.00385$) sensor input with a 0 to 100 °C span: Digital accuracy would be ±0.10 °C, digital/analog (D/A) accuracy would be ±0.02% of +100 °C or ±0.02 °C, Total = ±0.12 °C.

Differential capability exists between any two sensor types (dual-sensor option)

For all differential configurations, the input range is X to Y where:

- X = Sensor 1 minimum – Sensor 2 maximum
- Y = Sensor 1 maximum – Sensor 2 minimum

Digital accuracy for differential configurations (dual-sensor option, HART® protocol only)

- Sensor types are similar (for example, both RTDs or both thermocouples [T/Cs]): Digital accuracy = 1.5 times worst case accuracy of either sensor type
- Sensor types are dissimilar (for example, one RTD, one T/C): Digital accuracy = Sensor 1 accuracy + Sensor 2 accuracy

Ambient temperature effect

Transmitters may be installed in locations where the ambient temperature is between -40 and +185 °F (-40 and +85 °C). To maintain excellent accuracy performance, each transmitter is individually characterized over this ambient temperature range at the factory.

Table 4: Ambient temperature effect on digital accuracy

Sensor options	Sensor reference	Effect per 1.8 °F (1 °C) change in ambient ⁽¹⁾⁽²⁾	Input temperature (T)	D/A effect ⁽³⁾
2-, 3-, or 4-wire RTDs				
Pt 100 ($\alpha = 0.00385$)	IEC 751	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Rosemount X-well™ Pt 100 ($\alpha = 0.00385$)	IEC 751	0.0104 °F (0.0058 °C)	Entire sensor input range	0.001% of span
Pt 200 ($\alpha = 0.00385$)	IEC 751	0.00414 °F (0.0023 °C)	Entire sensor input range	0.001% of span

Table 4: Ambient temperature effect on digital accuracy (continued)

Sensor options	Sensor reference	Effect per 1.8 °F (1 °C) change in ambient ⁽¹⁾⁽²⁾	Input temperature (T)	D/A effect ⁽³⁾
Pt 500 ($\alpha = 0.00385$)	IEC 751	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Pt 1000 ($\alpha = 0.00385$)	IEC 751	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Pt 100 ($\alpha = 0.003916$)	JIS 1604	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Pt 200 ($\alpha = 0.003916$)	JIS 1604	0.00414 °F (0.0023 °C)	Entire sensor input range	0.001% of span
Ni 120	Edison curve no. 7	0.0018 °F (0.0010 °C)	Entire sensor input range	0.001% of span
Cu 10	Edison copper winding no. 15	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Pt 50 ($\alpha = 0.00391$)	GOST 6651-94	0.0054 °F (0.003 °C)	Entire sensor input range	0.001% of span
Pt 100 ($\alpha = 0.00391$)	GOST 6651-94	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Cu 50 ($\alpha = 0.00426$)	GOST 6651-94	0.0054 °F (0.003 °C)	Entire sensor input range	0.001% of span
Cu 50 ($\alpha = 0.00428$)	GOST 6651-94	0.0054 °F (0.003 °C)	Entire sensor input range	0.001% of span
Cu 100 ($\alpha = 0.00426$)	GOST 6651-94	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Cu 100 ($\alpha = 0.00428$)	GOST 6651-94	0.0027 °F (0.0015 °C)	Entire sensor input range	0.001% of span
Thermocouples				
Type B	NIST monograph 175, IEC 584	0.014 °C 0.029 °C – 0.0021% of (T – 300) 0.046 °C – 0.0086% of (T – 100)	- T ≥ +1832 °F (+1000 °C) +573 °F (+300 °C) ≤ T < +1832 °F (+1000 °C) +212 °F (+100 °C) ≤ T < +573 °F (+300 °C)	0.001% of span
Type E	NIST monograph 175, IEC 584	0.004 °C + 0.00043% of T	N/A	0.001% of span
Type J	NIST monograph 175, IEC 584	0.004 °C + 0.00029% of T 0.004 °C + 0.0020% of abs. val. T	T ≥ +32 °F (0 °C) T < +32 °F (0 °C)	0.001% of span
Type K	NIST monograph 175, IEC 584	0.005 °C + 0.00054% of T 0.005 °C + 0.0020% of abs. val. T	- T ≥ +32 °F (0 °C) - T < +32 °F (0 °C)	0.001% of span
Type N	NIST monograph 175, IEC 584	0.005 °C + 0.00036% of T	All	0.001% of span
Type R	NIST monograph 175, IEC 584	0.015 °C 0.021 °C – 0.0032% of T	T ≥ +392 °F (200 °C) T < +392 °F (200 °C)	0.001% of span
Type S	NIST monograph 175, IEC 584	0.015 °C 0.021 °C – 0.0032% of T	T ≥ +392 °F (200 °C) T < +392 °F (200 °C)	0.001% of span

Table 4: Ambient temperature effect on digital accuracy (continued)

Sensor options	Sensor reference	Effect per 1.8 °F (1 °C) change in ambient ⁽¹⁾⁽²⁾	Input temperature (T)	D/A effect ⁽³⁾
Type T	NIST monograph 175, IEC 584	0.005 °C 0.005 °C + 0.0036% of abs. val. T	- T ≥ +32 °F (0 °C) - T < +32 °F (0 °C)	0.001% of span
DIN Type L	DIN 43710	0.0054 °C + 0.00029% of R 0.0054 °C + 0.0025% of abs. val. T	- T ≥ +32 °F (0 °C) - T < +32 °F (0 °C)	0.001% of span
DIN Type U	DIN 43710	0.0064 °C 0.0064 °C + 0.0043% of abs. val. T	- T ≥ +32 °F (0 °C) - T < +32 °F (0 °C)	0.001% of span
Type W5Re/W26Re	ASTM E 988-96	0.016 °C 0.023 °C + 0.0036% of T	T ≥ +392 °F (200 °C) T < +392 °F (200 °C)	0.001% of span
GOST Type L	GOST R 8.585-2001	0.005 > 0 °C 0.005 - 0.003% < 0 °C	N/A	0.001% of span
Other input types				
Millivolt Input		0.00025 mV	Entire sensor input range	0.001% of span
2-, 3-, 4-wire Ohm Input		0.007 Ω	Entire sensor input range	0.001% of span

(1) Change in ambient is in reference to the calibration temperature of the transmitter (+68 °F [+20 °C]).

(2) Ambient temperature effect specification valid over minimum temperature span of 50 °F (28 °C).

(3) Applies to HART®/4-20 mA devices.

Process temperature effects

Table 5: Ambient and process temperature difference effect on digital accuracy

Sensor option	Sensor reference	Effects per 1.0 °C (1.8 °F) difference in ambient and process temperature ⁽¹⁾	Input temperature (T)
Rosemount X-well™ Pt 100 (α = 0.00385)	IEC 751	± 0.018 °F (0.01 °C)	Entire sensor input range

(1) Valid under steady state process and ambient conditions.

Temperature effects example

When using a Pt 100 (α = 0.00385) sensor input with a 0 to 100 °C span at +86 °F (+30 °C) ambient temperature, the following statements would be true:

Digital temp effects

$$0.0015 \text{ } ^\circ\text{C}/^\circ\text{C} \times (30 - 20 \text{ } ^\circ\text{C}) = 0.015 \text{ } ^\circ\text{C}$$

Digital/analog (D/A) effects (HART®/4-20 mA only)

- [0.001%/°C of span] × 100 °C × |(30 - 20 °C)| = °C DA effect
- [0.001%/°C × 100] × |(30 - 20)| = 0.01 °C

Worst case error

$$\text{Digital} + \text{D/A} + \text{Digital temp effects} + \text{D/A effects} = 0.10 \text{ } ^\circ\text{C} + 0.02 \text{ } ^\circ\text{C} + 0.015 \text{ } ^\circ\text{C} + 0.01 \text{ } ^\circ\text{C} = 0.145 \text{ } ^\circ\text{C}$$

Total probable error

$$\sqrt{0.10^2 + 0.02^2 + 0.015^2 + 0.01^2} = 0.10 \text{ } ^\circ\text{C}$$

Rosemount X-well™ temperature effects example

When using X-well Technology at +86 °F (+30 °C) ambient temperature and +212 °F (+100 °C) process temperature:

Digital ambient temperature effects:

- $0.0058 \text{ } ^\circ\text{C} \times (30 - 20) = 0.058 \text{ } ^\circ\text{C}$

Process temperature effects:

- $0.01 \text{ } ^\circ\text{C} \times (100 - 30) = 0.70 \text{ } ^\circ\text{C}$

Worst case error:

- Digital accuracy + Digital ambient temperature effects + Process temperature effects =
 $0.29 \text{ } ^\circ\text{C} + 0.058 \text{ } ^\circ\text{C} + 0.70 \text{ } ^\circ\text{C} = 1.05 \text{ } ^\circ\text{C}$

Total probable error:

- $\sqrt{0.29^2 + 0.058^2 + 0.70^2} = 0.76 \text{ } ^\circ\text{C}$

HART®/4-20 mA specifications**Power supply**

External power supply required. Transmitters operate on 12.0 to 42.4 Vdc transmitter terminal voltage (with 250 ohm load, 18.1 Vdc power supply voltage is required). Transmitter power terminals rated to 42.4 Vdc.

Wiring diagram

See [Figure 8](#).

Alarms

Custom factory configurations of alarm and saturation levels are available for valid values with option code C1. These values can also be configured in the field using a Field Communicator.

Transient protection (option code T1)

The transient protector helps to prevent damage to the transmitter from transients induced on the loop wiring by lightning, welding, heavy electrical equipment, or switch gears. The transient protection electronics are contained in an add-on assembly that attaches to the standard transmitter terminal block. The external ground lug assembly (code G1) is included with the transient protector. The transient protector has been tested per the following standard:

- Institute for Electrical and Electronics Engineers (IEEE) C62.41-1991 (IEEE 587)/location categories B3, 6 kV/3 kA peak (1.2 x 50 μS Wave 8 x 20 μS combination wave) 6 kV/0.5 kA peak (100 kHz ring wave) EFT, 4 kV peak, 2.5 kHz, 5 x 50 nS
- Loop resistance added by protector: 22 ohms maximum
- Nominal clamping voltages: 90 V (common mode), 77 V (normal mode)

Local display

Optional five-digit LCD display includes 0–100 percent bar graph.

Digits are 0.4 in. (8 mm) high. Display options include

- Engineering units
 - °F
 - °C
 - °R
 - K
 - ohms
 - millivolts
- Percent
- Milliampere

The display can also be set to alternate between:

- Engineering units/milliampere
- Sensor 1/Sensor 2
- Sensor 1/Sensor 2/Differential Temperature
- Sensor 1/Sensor 2/Average Temperature

You can reconfigure all display options (including the decimal point) in the field using a Field Communicator or AMS Device Manager.

Turn-on time

Performance within specifications is achieved less than six seconds after power is applied to the transmitter when the damping value is set to zero seconds.

Power supply effect

Less than ±0.005 percent of span per volt.

SIS safety transmitter failure values

IEC 61508 Safety Certified SIL2 and SIL3 Claim Limit

- Safety accuracy: Span ≥ 100 °C: ±2 percent of process variable span
- Span < 100 °C: ±2 °C
- Safety response time: five seconds
- Safety specifications and FMEDA report available at [Emerson.com/Rosemount/Support](https://www.emerson.com/Rosemount/Support)
- Software suitable for SIL3 applications

Temperature limits

Table 6: Temperature limits

Description	Operating limit	Storage limit
Without LCD display	–40 to 185 °F –40 to 85 °C	–76 to 250 °F –60 to 120 °C

Table 6: Temperature limits (continued)

Description	Operating limit	Storage limit
With LCD display ⁽¹⁾	-40 to 185 °F -40 to 85 °C	-76 to 185 °F -60 to 85 °C

(1) LCD display may not be readable, and LCD display updates will be slower at temperatures below -4 °F (-20 °C).

Field Communicator connections

Field Communicator connections are permanently fixed to power/signal block.

Failure mode

The Rosemount 3144P Temperature Transmitter features software and hardware failure mode detection. An independent circuit is designed to provide backup alarm output if the microprocessor hardware or software fails.

The alarm level is user-selectable using the failure mode switch. If failure occurs, the position of the hardware switch determines the direction in which the output is driven (HIGH or LOW). The switch feeds into the digital-to-analog (D/A) converter, which drives the proper alarm output even if the microprocessor fails. The values at which the transmitter drives its output in failure mode depends on whether it is configured to standard, or NAMUR-compliant (NAMUR recommendation NE 43) operation. The values for standard and NAMUR-compliant operation are as follows:

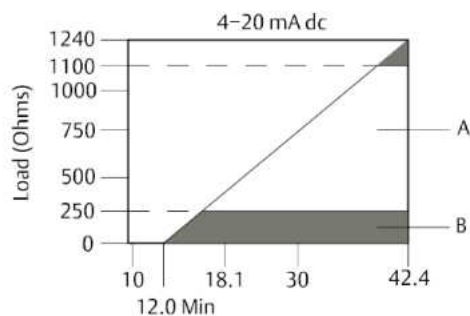
Table 7: Operation parameters

	Standard ⁽¹⁾	NAMUR-compliant ⁽¹⁾
Linear output	$3.9 \leq I \leq 20.5$	$3.8 \leq I \leq 20.5$
Fail high	$21 \leq I \leq 23$ (default)	$21.5 \leq I \leq 23$ (default)
Fail low	$I \leq 3.75$	$I \leq 3.6$

(1) Measured in milliamperes.

Load limitations

Maximum load = $40.8 \times (\text{Supply voltage} - 12.0)$ without transient protection (optional).



A. and analog operating range
B. Analog only operating range

Note

HART communication requires a loop resistance between 250 and 1100 ohms. Do not communicate with the transmitter when power is below 12 Vdc at the transmitter terminals.

FOUNDATION™ Fieldbus specifications

Power supply

Powered over FOUNDATION™ Fieldbus with standard Fieldbus power supplies. Transmitters operate on 9.0 to 32.0 Vdc, 12 mA maximum. Transmitter power terminals are rated to 42.4 Vdc.

Wiring diagram

See [Figure 9](#).

Alarm

The AI function block allows the user to configure the alarms to HIGH-HIGH, HIGH, LOW, or LOW-LOW with a variety of priority levels and hysteresis settings.

Transient protection (option code T1)

The transient protector helps to prevent damage to the transmitter from transients induced on the loop wiring by lightning, welding, heavy electrical equipment, or switch gears. The transient protection electronics are contained in an add-on assembly that attaches to the standard transmitter terminal block. The transient terminal block is not polarity insensitive. The transient protector has been tested to the following standard:

- IEEE C62.41-1991 (IEEE 587)/location categories B3, 6 kV/3 kA peak (1.2 x 50 μ S wave 8 x 20 μ S combination wave) 6 kV/0.5 kA peak (100 kHz ring wave) EFT, 4 kV peak, 2.5 kHz, 5*50 nS
- Loop resistance added by protector: 22 ohms, maximum
- Nominal clamping voltages: 90 V (common mode), 77 V (normal mode)

Diagnostics suite for FOUNDATION Fieldbus (option code D01)

The Rosemount 3144P Temperature Transmitter Diagnostics Suite for FOUNDATION Fieldbus provides advanced functionality in the form of Statistical Process Monitoring (SPM), a thermocouple diagnostic, and sensor drift alert. SPM technology calculates the mean and standard deviation of the process variable and makes them available to the user. This may be used to detect abnormal process situations.

The thermocouple diagnostic enables the transmitter to measure and monitor the resistance of thermocouple loops in order to detect drift or changing wiring connections.

Sensor drift alert allows the user to monitor the difference in measurement between two sensors installed in one process point. A change in this differential value may indicate drifting sensors.

Local display

Displays all DS_65 measurements in the transducer and function blocks including Sensor 1, Sensor 2, differential, and terminal temperatures. The display alternates up to four selected items. The meter can display up to five digits in engineering units (°F, °C, °R, K, Ω , and millivolts). Display settings are configured at the factory according to the transmitter configuration (standard or custom). These settings can be reconfigured in the field using a Field Communicator or DeltaV. In addition, the LCD display provides the ability to display DS_65 parameters from other devices.

In addition to the configuration of the meter, sensor diagnostic data is displayed. If the measurement status is **Good**, the measured value is shown. If the measurement status is **Uncertain**, the status indicating uncertain is shown in addition to the measured value. If the measurement status is **Bad**, the reason for the bad measurement is shown.

Note

When ordering a spare electronics module assembly, the LCD display transducer block will display the default parameter.

Turn-on time

Performance within specifications is achieved less than 20 seconds after power is applied to the transmitter when the damping value is set to zero seconds.

Status

The device is compliant to NAMUR NE 107, ensuring consistent, reliable, and standardized device diagnostic information.

The new standard is designed to improve the way device status and diagnostic information is communicated to operators and maintenance personnel in order to increase productivity and reduce costs.

If self-diagnostics detect a sensor burnout or a transmitter failure, the status of the measurement will be updated accordingly. The status may also send the PID output to a safe value.

FOUNDATION Fieldbus parameters

Schedule entries	25 (max)
Links	30 (max)
Virtual Communications Relationships (VCR)	20 (max)

Function blocks

- All blocks will ship with unique block names, e.g. AI_1400_XXXX.
- All blocks shall be instantiated to avoid invalid defaults.
- All Rosemount 3144P FOUNDATION Fieldbus have parameter COMPATIBILITY_REV for backward compatibility.
- Parameters will be initialized to common values for easier bench configuration.
- All default block tags are less than or equal to 16 characters in length to avoid inconvenience of apparently identical tags.
- Default block tags include underscores, "_", instead of whitespaces for easier configuration.

Resource block

- Contains physical transmitter information including available memory, manufacture identification, device type, software tag, and unique identification.
- Plantweb™ Alerts enable the full power of the Plantweb™ Insight digital architecture by diagnosing instrumentation issues, communicating the details, and recommending a solution.

Transducer block

- Contains the actual temperature measurement data, including sensor 1, sensor 2, and terminal temperature.
- Includes information about sensor type and configuration, engineering units, linearization, range, damping, and diagnostics.
- Device Revision 3 and above includes Hot Backup functionality in the transducer block.

LCD display block (when an LCD display is used)

- Configures the local display.

Analog input (AI)

- Processes the measurement and makes it available on the Fieldbus segment.
- Allows filtering, engineering unit, and alarm changes.
- All devices ship with the AI blocks scheduled, meaning no configuration is needed if the factory default channels are used.

PID block (provides control functionality)

- Performs single loop, cascade, or feedforward control in the field.

Block	Execution time
Resource	N/A
Transducer	N/A
LCD display block	N/A
Advanced diagnostics	N/A
Analog input 1, 2, 3, 4	60 milliseconds
PID 1 and 2 with autotune	90 milliseconds
Input selector	65 milliseconds
Signal characterizer	60 milliseconds
Arithmetic	60 milliseconds
Output splitter	60 milliseconds

Product certifications

Rev 2.21

For Rosemount 3144P temperature transmitter with HART protocol product certifications, see [Rosemount 3144P Temperature Transmitter With HART Protocol and Rosemount X-well Technology](#).

European Directive information

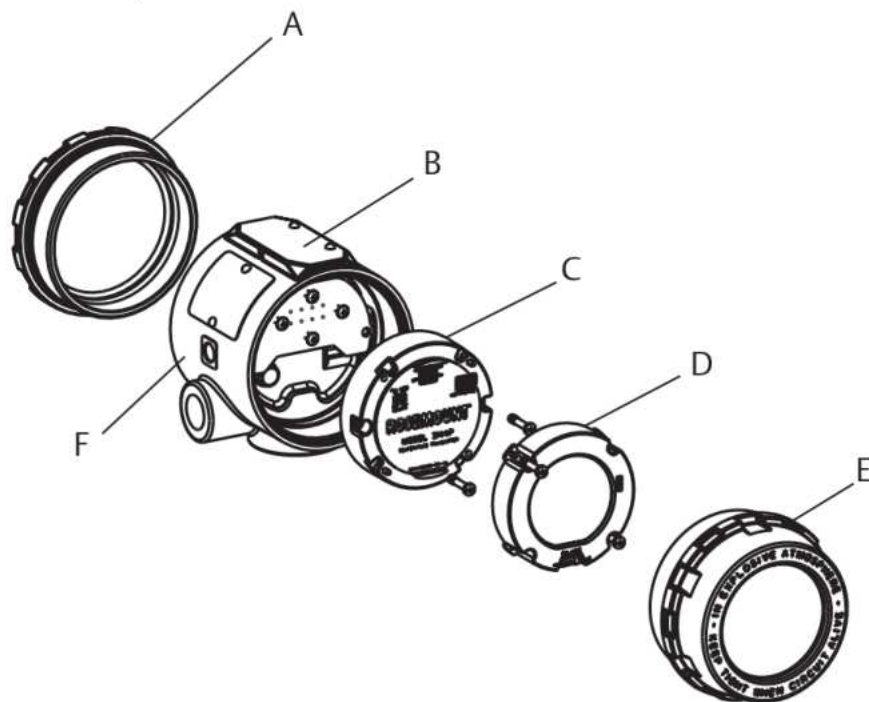
A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at www.Emerson.com.

Ordinary location certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a Nationally Recognized Test Laboratory (NRTL), as accredited by the Federal Occupational Safety and Health Administration (OSHA).

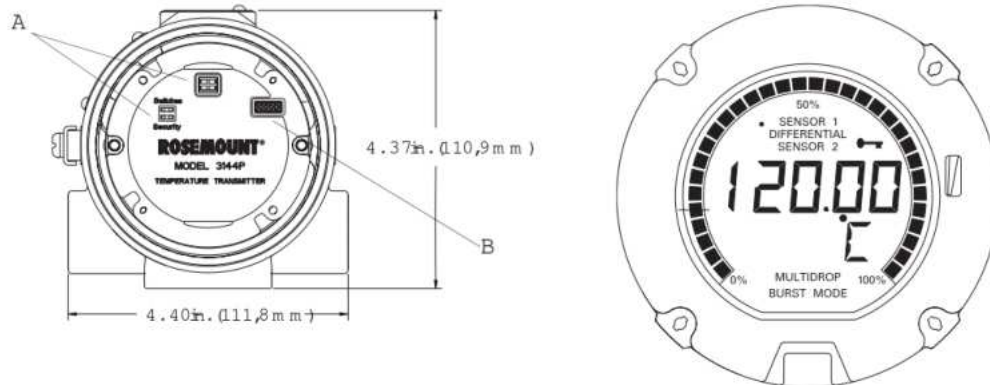
Dimensional drawings

Figure 2: Transmitter exploded view



- A. Cover with wiring diagram
- B. Name plate
- C. Electronic module
- D. LCD display
- E. Display cover
- F. Housing with permanent terminal block

Figure 3: Switch location and LCD display face plate

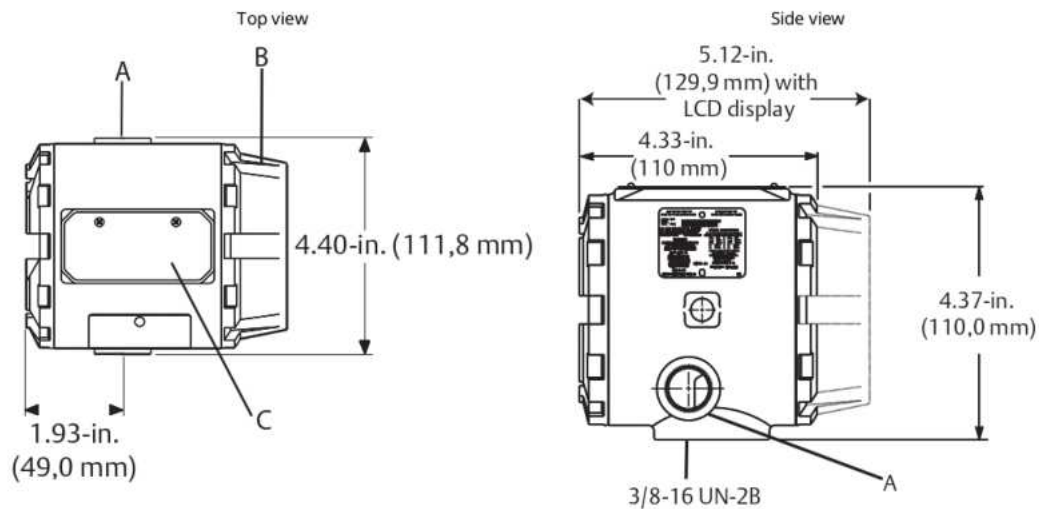
A. Switches⁽³⁾

B. LCD display connector

Note

Dimensions are in inches (millimeters).

Figure 4: Transmitter view



A. Conduit entry

B. Display cover

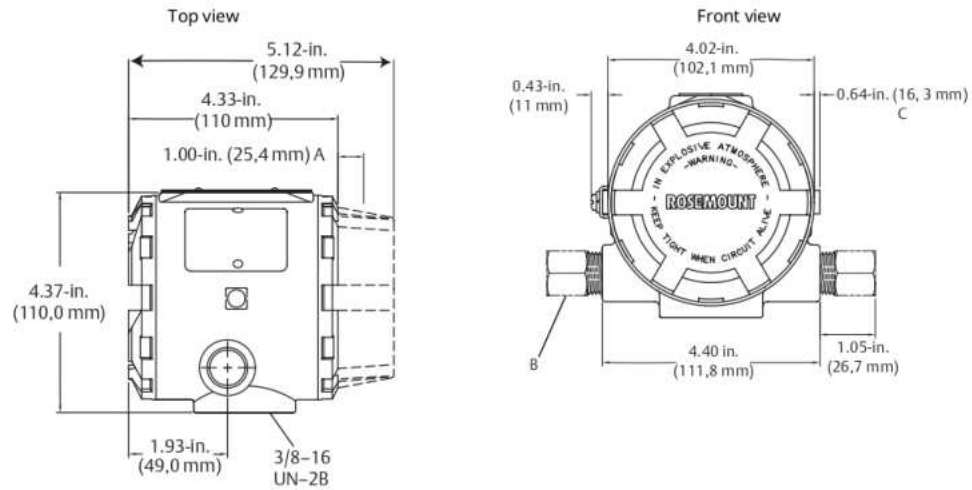
C. Name plate

(3) Alarm and write protect (HART[®]), simulate and write protect (FOUNDATION[™] Fieldbus).

Note

Dimensions are in inches (millimeters).

Figure 5: Transmitter for conduits with M20 3 1.5, PG 13.5 entries



A. Clearance required to remove cover

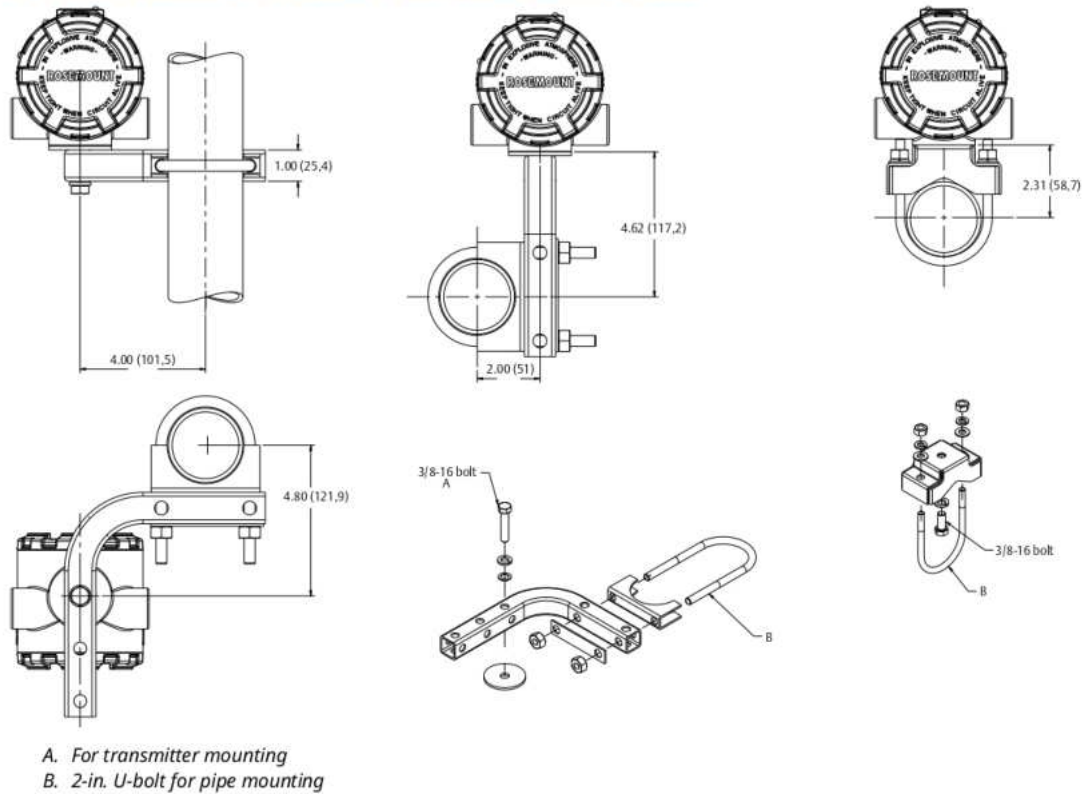
B. Adapters for M20 x 1.5, PG 13.5

C. Explosion/flameproof clamp (option code dependent)

Note

Dimensions are in inches (millimeters).

Figure 6: Pipe mounting configurations with optional mounting bracket

**Note**

Dimensions are in inches (millimeters).

Figure 7: Rosemount X-well Assembly with Universal Pipe Mount

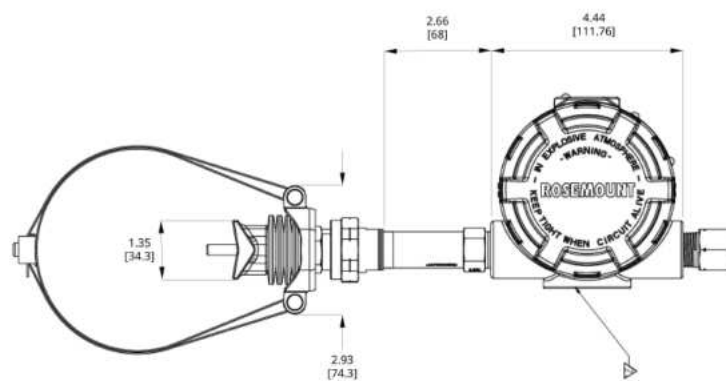
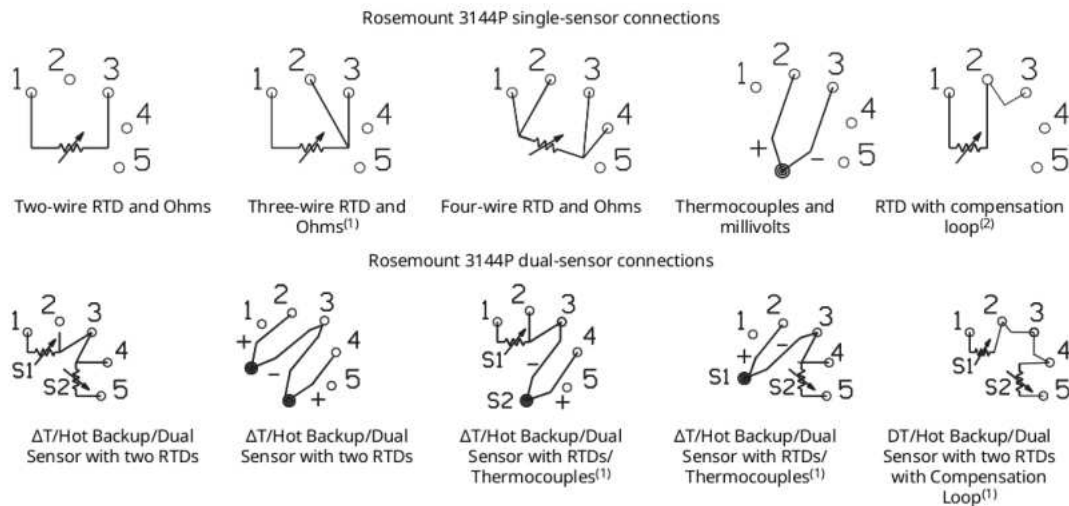


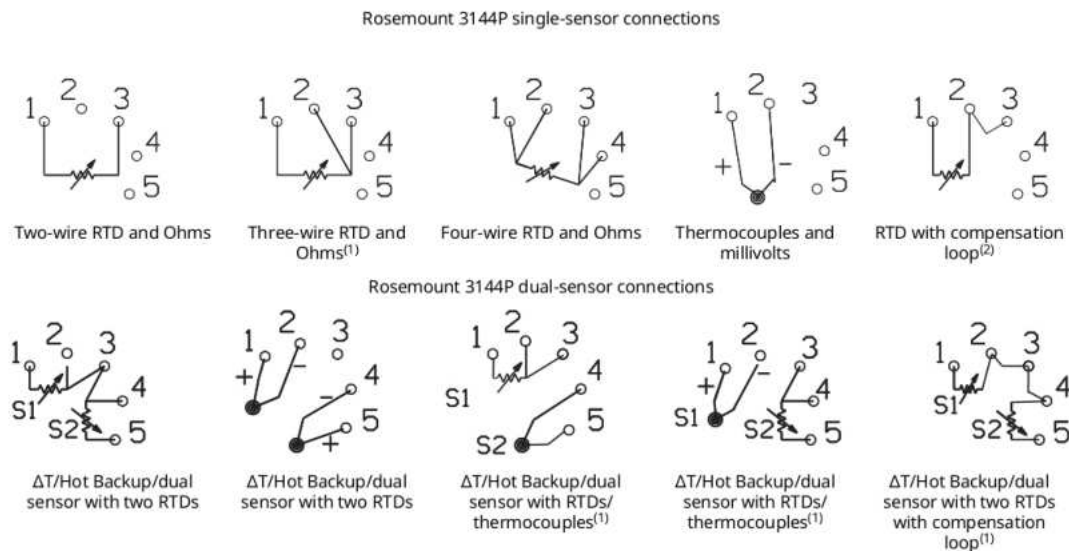
Figure 8: HART/4-20 mA



(1) Emerson provides four-wire sensors for all single-element RTDs. Use these RTDs in two-wire or three-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.

(2) Transmitter must be configured for a three-wire RTD in order to recognize an RTD with a compensation loop.

Figure 9: FOUNDATION™ Fieldbus



(1) Emerson provides four-wire sensors for all single-element RTDs. Use these RTDs in two-wire or three-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.

(2) Transmitter must be configured for a three-wire RTD in order to recognize an RTD with a compensation loop.

Transmitter standard configuration

Both standard and custom configuration settings may be changed. Unless specified, the transmitter will be shipped as follows:

Standard configuration	
4 mA value/lower range (HART®/4–20 mA) measurement point LO (FOUNDATION™ Fieldbus)	0 °C
20 mA value/upper range (HART/4–20 mA) measurement point HI (FOUNDATION Fieldbus)	100 °C
Damping	5 seconds
Output	Linear with temperature
Failure mode (HART/4–20 mA)	High
Line voltage filter	60 Hz
Software tag	See Software tag
Optional integral display	Units and mA/sensor 1 units
Single-sensor option	
Sensor type	4-wire, Pt 100 a = 0.00385 RTD
Primary variable (HART/4–20 mA) analog input (AI) 1400 (FOUNDATION Fieldbus)	Sensor 1
Secondary variable AI 1600 (FOUNDATION Fieldbus)	Terminal temperature
Tertiary variable	Not used
Quaternary variable	Not used
Dual-sensor option	
Sensor type	Two 3-wire, Pt 100 a = 0.00385 RTD
Primary variable (HART/4–20 mA) AI 1400 (FOUNDATION Fieldbus)	Sensor 1
Secondary variable AI 1500 (FOUNDATION Fieldbus)	Sensor 2
Tertiary variable AI 1600 (FOUNDATION Fieldbus)	Terminal temperature
Quaternary variable	Not used

Transmitter custom configuration

You can order the transmitter can be ordered with custom configuration. The table below lists the requirements necessary to specify a custom configuration.

Option code	Requirements/specification
C1: Factory data ⁽¹⁾	Date: day/month/year Descriptor: 16 alphanumeric character Message: 32 alphanumeric character Custom alarm levels can be specified for configuration at the factory. Rosemount X-well specific information: pipe material, pipe schedule, line size
C2: Transmitter-sensor matching	The Rosemount 3144P Temperature Transmitter is designed to accept Callendar-van Dusen constants from a calibrated RTD schedule and generate a custom curve to match any specific sensor curve. Specify a Rosemount RTD sensor model on the order with a special characterization curve (V or X8Q4 option). These constants will be programmed into the transmitter when this option is selected.
C4: Five point calibration	Will include five-point calibration at 0, 25, 50, 75, and 100 percent analog and digital output points. Use with option code Q4 to obtain a Calibration Certificate.
A1: NAMUR-compliant, high alarm	Analog output levels compliant with NAMUR. Alarm is set to fail high.
CN: NAMUR-compliant, low alarm	Analog output levels compliant with NAMUR. Alarm is set to fail low.
C8: Low alarm	Analog output levels compliant with Rosemount standard. Alarm is set to fail low.
F5: 50 Hz Line voltage filter	Calibrated to 50 Hz line voltage filter.

(1) [Configuration Data Sheet](#) required.

To custom configure the Rosemount 3144P Temperature Transmitter with the dual-sensor option transmitter for one of the applications described below, indicate the appropriate option code in the model number. If a sensor type is not specified, the transmitter will be configured for two 3-wire Pt 100 ($\alpha = 0.00385$) RTDs if any of the following option codes are selected.

Option code U1: Hot Backup	
Primary usage	Primary usage sets the transmitter to automatically use sensor 2 as the primary input if sensor 1 fails. Switching from sensor 1 to sensor 2 is accomplished without any effect on the analog signal. A digital alert will be sent in the event of a failed sensor.
Primary variable	1st good
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U2: average temperature with Hot Backup and sensor drift alert—warning mode	
Primary usage	Critical applications, such as safety interlocks and control loops. Outputs the average of two measurements and sends a digital alert if temperature difference exceeds the set maximum differential (Sensor Drift Alert - warning mode). If a sensor fails, an alert will be sent digitally, and the primary variable will be reported as the remaining good sensor value.
Primary variable	Sensor average
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U3: average temperature with Hot Backup and sensor drift alert—alarm mode	
Primary usage	Critical applications, such as safety interlocks and control loops. Outputs the average of two measurements and sets the analog output into alarm if temperature difference exceeds the set maximum differential (sensor drift alert - alarm mode). If a sensor fails, an alert will be sent digitally, and the primary variable will be reported as the remaining good sensor value.
Primary variable	Sensor average
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U4: two independent sensors	
Primary usage	Used in non-critical applications where the digital output is used to measure two separate process temperatures.
Primary variable	Sensor 1
Secondary variable	Sensor 2
Tertiary variable	Terminal temperature
Quaternary variable	Not used

Option code U5: differential temperature	
Primary usage	The differential temperature of two process temperatures is configured as the primary variable. If the temperature difference exceeds the maximum differential, the analog output will go into alarm. Primary Variable will be reported as a bad sensor value.
Primary variable	Differential temperature
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U6: average temperature	
Primary usage	When average measurement of two different process temperatures is required. If a sensor fails, the analog output will go into alarm, and the primary variable will report the measurement of the remaining good sensor.
Primary variable	Sensor average
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

For more information: [Emerson.com/global](https://emerson.com/global)

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ROSEMOUNT™



Fișa tehnică - Manometru indicator Wika 232.50

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Manometru indicator Wika 232.50	WIKA Alexander Wiegand SE & Co.
2	Condiții de lucru:	- Ambient temperature -20°C +60°C - Temperatura fluidului -20°C +100°C	
3	Parametri constructivi:	- Nominal size - 100mm - Window - Laminated safety glass - Connection - 2 x G ½, female thread - Corp din oțel inoxidabil cu rezistență ridicată la coroziune	
4	Dotări minime:	Lipsește	
5	Caracteristici funcționale:	- Domenii de măsurare a presiunii: 0 ... 6 bar, 0 ... 16 bar, 0 ... 100bar - Accuracy class 1.0	
6	Teste și certificări puse la dispoziția Beneficiarului:	Certificat de conformitate	
7	Marcare și identificare:	Cod QR pe cadran cu acces la informații specifice instrumentului	
8	Mod de ofertare:	Broșură tehnică	
9	Documentația care va fi prezentată la ofertare:	Broșură tehnică	
10	Documentație care va însoți produsul:	- Pașaport tehnic - Certificat 2.2 - Certificat 3.1	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lichidul de transmisie din camera de măsurare amortizează indicatorul în cazul unor variații rapide ale presiunii.	
12	Condiții privind conformitatea cu standarde relevante:	- EN 837-3 - ASME B40.100	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni de la punerea în funcțiune	

Bourdon tube pressure gauge, stainless steel

For the process industry, standard version

Models 232.50, 233.50, NS 63 [2 ½"], 100 [4"] and 160 [6"]

WIKA data sheet PM 02.02



For further approvals,
see page 6

Applications

- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Chemical and petrochemical industries, oil and gas industry, power engineering and also water and wastewater technology
- Machine building and general plant construction

Special features

- Excellent load cycle stability and shock resistance
- With case filling (model 233.50) for applications with high dynamic pressure loads and vibrations
- Completely from stainless steel
- Scale ranges from 0 ... 0.6 to 0 ... 1,600 bar or 0 ... 10 to 0 ... 20,000 psi
- QR code on dial links to instrument-specific information



Configurator



Standard articles



Bourdon tube pressure gauge, model 232.50, NS 100 [4"]

Description

This high-quality Bourdon tube pressure gauge has been designed especially for the process industry.

The use of high-quality stainless steel materials and the robust design are geared to applications in the chemical and process engineering industries. Thus the instrument is suitable for liquid and gaseous media, also in aggressive environments.

Scale ranges of 0 ... 0.6 to 0 ... 1,600 bar [0 ... 10 to 0 ... 20,000 psi] ensure the measuring ranges required for a wide variety of applications.

WIKA manufactures and qualifies the pressure gauge in accordance with the standards EN 837-1 and ASME B40.100. As a safety function, this instrument has a blow-out device with blow-out plug on the back of the case. In the event of a failure, overpressure can escape there.

The model 233.50 with liquid-filled case is suitable for high dynamic pressure loads and vibrations.

The QR code on the dial allows instrument-specific information such as the serial number, the order number, certificates and other product data to be retrieved from the internet easily and in the long term.



Smart in sensing

Data sheets showing similar products:
Stainless steel, safety version; see data sheet PM 02.04
Bourdon tube pressure gauge with switch contacts; see data sheet PV 22.02
Monel version; see data sheet PM 02.33
Pressure gauge per EN 837-1 with mounted diaphragm seal; see data sheet DS 95.12

Specifications

Basic information	
Standard	■ EN 837-1 ■ ASME B40.100 For information on the "Selection, installation, handling and operation of pressure gauges", see technical information IN 00.05.
Further version	■ Oil- and grease-free for oxygen ■ Per NACE ¹⁾ MR0175 / ISO 15156, use in H₂S-containing environments in oil and gas production ■ With pre-volume deflagration flame arrester ²⁾ for mounting to zone 0 (EPL Ga); model 910.21; see data sheet AC 91.02 ■ Monel version; models 262 and 263; see data sheet PM 02.33
Nominal size (NS)	■ Ø 63 mm [2 ½"] ■ Ø 100 mm [4"] ■ Ø 160 mm [6"]
Connection location	■ Lower mount (radial) ■ Lower back mount ■ Centre back mount (only for NS 63 [2 ½"])
Window	Laminated safety glass (NS 63 [2 ½"]; Polycarbonate)
Case	
Design	Safety level "S1" per EN 837-1 With blow-out device at case circumference, 12 o'clock (NS 63 [2 ½"]) and on the back of the case (NS 100 [4"] and 160 [6"]) Scale ranges ≤ 0 ... 16 bar [≤ 0 ... 300 psi] with compensating valve to vent and reseal case
Material	■ Stainless steel 1.4301 (304) ■ Stainless steel 1.4571 (316Ti)
Ring	Bayonet ring, stainless steel
Mounting	■ Without ■ Panel mounting flange, stainless steel ■ Panel mounting flange, polished stainless steel ■ Triangular profile ring with mounting bracket, polished stainless steel ■ Surface mounting flange, stainless steel
Case filling (model 233.50)	■ Without ■ Glycerine ■ Glycerine-water mixture for NS 100 [4"] and 160 [6"] with scale range ≤ 0 ... 2.5 bar [≤ 0 ... 40 psi] or for NS 63 [2 ½"] with scale range ≤ 0 ... 4 bar [≤ 0 ... 60 psi] ■ Silicone oil
Movement	■ Stainless steel ■ Stainless steel 1.4404 (316L) ■ everlast® version

1) General information about NACE standards; see data sheet IN 00.21

2) Only for instruments with Ex approval

Measuring element	
Type of measuring element	Bourdon tube, C-type or helical type
Material	Stainless steel 1.4404 (316L)
Leak tightness	■ Helium tested, leakage rate: < 5 · 10⁻³ mbar l/s ■ Helium tested, leakage rate: < 1 · 10⁻⁶ mbar l/s

Accuracy specifications		
Accuracy class		
NS 63 [2 ½"]	■ EN 837-1	Class 1.6
	■ ASME B40.100	±2 % ±1 % ±2 % of measuring span (grade A)
NS 100 [4"], 160 [6"]	■ EN 837-1	Class 1.0
	■ ASME B40.100	±1 % of measuring span (grade 1A)
Temperature error	On deviation from the reference conditions at the measuring system: ≤ ±0.4 % per 10 °C [≤ ±0.4 % per 18 °F] of full scale value	
Reference conditions		
Ambient temperature	+20 °C [+68 °F]	

Scale ranges

bar	
0 ... 0.6 ¹⁾	0 ... 40
0 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160
0 ... 4	0 ... 250
0 ... 6	0 ... 400
0 ... 10	0 ... 600
0 ... 16	0 ... 1,000
0 ... 25	0 ... 1,600

kg/cm ²	
0 ... 0.6 ¹⁾	0 ... 40
0 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160
0 ... 4	0 ... 250
0 ... 6	0 ... 400
0 ... 10	0 ... 600
0 ... 16	0 ... 1,000
0 ... 25	0 ... 1,600

kPa	
0 ... 60 ¹⁾	0 ... 4,000
0 ... 100	0 ... 6,000
0 ... 160	0 ... 10,000
0 ... 250	0 ... 16,000
0 ... 400	0 ... 25,000
0 ... 600	0 ... 40,000
0 ... 1,000	0 ... 60,000
0 ... 1,600	0 ... 100,000
0 ... 2,500	0 ... 160,000

MPa	
0 ... 0.06 ¹⁾	0 ... 4
0 ... 0.1	0 ... 6
0 ... 0.16	0 ... 10
0 ... 0.25	0 ... 16
0 ... 0.4	0 ... 25
0 ... 0.6	0 ... 40
0 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160

psi	
0 ... 10 ¹⁾	0 ... 1,000
0 ... 15	0 ... 1,500
0 ... 30	0 ... 2,000
0 ... 60	0 ... 3,000
0 ... 100	0 ... 4,000
0 ... 160	0 ... 5,000
0 ... 200	0 ... 6,000
0 ... 300	0 ... 7,500
0 ... 400	0 ... 10,000
0 ... 600	0 ... 15,000
0 ... 800	0 ... 20,000

¹⁾ Not available for NS 63 [2 ½"]

Vacuum and compound scale ranges

bar	
-0.6 ... 0 ¹⁾	-1 ... +5
-1 ... 0	-1 ... +9
-1 ... +0.6	-1 ... +15
-1 ... +1.5	-1 ... +24
-1 ... +3	-

kPa	
-60 ... 0 ¹⁾	-100 ... +500
-100 ... 0	-100 ... +900
-100 ... +60	-100 ... +1,500
-100 ... +150	-100 ... +2,400
-100 ... +300	-

MPa	
-0.06 ... 0 ¹⁾	-0.1 ... +0.5
-0.1 ... 0	-0.1 ... +0.9
-0.1 ... +0.06	-0.1 ... +1.5
-0.1 ... +0.15	-0.1 ... +2.4
-0.1 ... +0.3	-

psi	
-30 inHg ... 0	-30 inHg ... +100
-30 inHg ... +15	-30 inHg ... +160
-30 inHg ... +30	-30 inHg ... +200
-30 inHg ... +60	-30 inHg ... +300

1) Not available for NS 63 [2 ½"]

Further details on: scale ranges	
Special scale ranges	Other scale ranges on request
Unit	■ bar ■ psi ■ kg/cm² ■ kPa ■ MPa
Increased overload safety	■ Without ■ 2 times ■ 3 times ■ 4 times ■ 5 times The possibility of selection depends on scale range and nominal size
Vacuum resistance	■ Without ■ Vacuum-resistant to -1 bar
Dial	
Scale colour	Black
Material	Aluminium
Special scale	■ Without ■ With temperature scale for refrigerant, e.g. for NH₃: R 717 Other scales or customer-specific dials, e.g. with red mark, circular arcs or circular sectors, on request
Pointer	
Instrument pointer	Aluminium, black
Mark pointer/drag pointer	■ Without ■ Red mark pointer on dial, fixed ■ Red mark pointer on window, adjustable ■ Mark pointer on bayonet ring, adjustable ■ Red drag pointer on window, adjustable
Pointer stop pin	■ Without ■ At zero point (only for NS 63 [2 ½"]) ■ At 6 o'clock (only for NS 100 [4"], 160 [6"])

Process connection	
Standard	■ EN 837-1 ■ ISO 7 ■ ANSI/B1.20.1
Size	
EN 837-1	■ G 1/8 B, male thread ■ G 1/4 B, male thread ■ G 1/2 B, male thread ■ M12 x 1.5, male thread ■ M20 x 1.5, male thread
ISO 7	■ R 1/4, male thread ■ R 1/2, male thread
ANSI/B1.20.1	■ 1/4 NPT, male thread ■ 1/2 NPT, male thread
Restrictor	■ Without ■ Ø 0.6 mm [0.024"], stainless steel ■ Ø 0.3 mm [0.012"], stainless steel
Material (wetted)	
Process connection	Stainless steel 1.4404 (316L)
Bourdon tube	Stainless steel 1.4404 (316L)

→ Other process connections on request

Operating conditions		
Medium temperature		
Unfilled instruments	-40 ... +200 °C [-40 ... +392 °F]	
Instruments with glycerine filling	-20 ... +100 °C [-4 ... +212 °F]	
Instruments with silicone oil filling	-40 ... +100 °C [-40 ... +212 °F]	
Ambient temperature		
Unfilled instruments or with silicone oil filling	-40 ... +60 °C [-40 ... +140 °F]	
Instruments with glycerine filling	-20 ... +60 °C [-4 ... +140 °F]	
Pressure limitation		
NS 63 [2 ½"]	Steady	3/4 x full scale value
	Fluctuating	2/3 x full scale value
	Short time	Full scale value
NS 100 [4"], 160 [6"]	Steady	Full scale value
	Fluctuating	0.9 x full scale value
	Short time	1.3 x full scale value
Ingress protection per IEC/EN 60529		
■ IP65		
■ IP66 (only selectable for scale ranges ≥ 0 ... 20 bar [0 ... 400 psi])		

Approvals

Logo	Description	Region
	EU declaration of conformity Pressure equipment directive PS > 200 bar, module A, pressure accessory	European Union
-	CRN Safety (e.g. electr. safety, overpressure, ...) For full scale value ≤ 1,000 bar	Canada

Optional approvals

Logo	Description	Region
	EU declaration of conformity ATEX directive Hazardous areas - Ex h Gas II 2G Ex h IIC T6 ... T1 Gb X Dust II 2D Ex h IIIC T85°C ... T450°C Db X	European Union
	EAC Hazardous areas	Eurasian Economic Community
	Ex Ukraine Hazardous areas	Ukraine
	PAC Kazakhstan Metrology, measurement technology	Kazakhstan
-	MChS Permission for commissioning	Kazakhstan
-	PAC Ukraine Metrology, measurement technology	Ukraine
	PAC Uzbekistan Metrology, measurement technology	Uzbekistan
-	PAC China Metrology, measurement technology	China
	DNV Ships, shipbuilding (e.g. offshore)	International
-	KBA ¹⁾ Automotive Hydrogen-powered motor vehicles - (EC) no. 79/2009 and (EU) no. 406/2010 Components for motor vehicles using natural gas (CNG/LNG) – UN no. R 110	International

1) Not available for all versions

Manufacturer's declaration

Logo	Description
-	Pressure Equipment Directive (PED) for maximum allowable pressure PS ≤ 200 bar
-	Suitability for oxygen applications
-	Suitability of wetted materials for drinking water in accordance with the European 4MS initiative
-	Suitability of wetted materials for contact with food in accordance with European regulation (EC) no. 1935/2004
-	Suitability of wetted materials for hydrogen
-	Wetted materials free from substances of animal origin (ADI-free and therefore TSE/BSE-free)

Certificates (option)

Certificates	
Certificates	■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy) ■ 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy) ■ PCA calibration certificate, traceable and accredited in accordance with ISO/IEC 17025 ■ Calibration certificate by a national accreditation body, traceable and accredited in accordance with ISO/IEC 17025 on request
Recommended calibration interval	1 year (dependent on conditions of use)

Patents, property rights

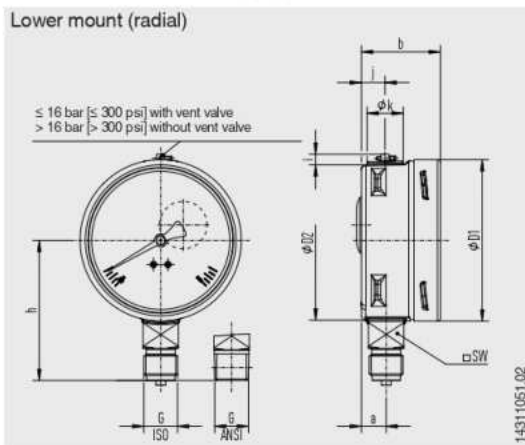
Patent number	Description
US Design D1051747S, CPC CN 01677074, DE Design 402022100171, EU Design 402022100171, IR Design DM/222416, EU 3D trademark 018659564	Design patent WIKA blue identity

The WIKA blue identity design is protected in various countries under various rights.

→ For approvals and certificates, see website

Dimensions in mm [in]

Lower mount (radial)



NS	Weight	
	Model 232.50	Model 233.50
63 [2 ½"]	approx. 0.16 kg [0.35 lbs]	approx. 0.20 kg [0.44 lbs]
100 [4"]	approx. 0.6 kg [1.32 lbs]	approx. 0.9 kg [1.98 lbs]
160 [6"]	approx. 1.1 kg [2.43 lbs]	approx. 2.0 kg [4.41 lbs]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]								
		h ±1	a	b	D1	D2	i	j	k	SW
63 [2 ½"]	G ¼ B	54 [2.13]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	G ½ B	51 [2.01]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	M12 x 1.5	54 [2.13]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	G ¼ B	80 [3.15]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	87 [3.43]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M12 x 1.5	80 [3.15]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M20 x 1.5	87 [3.43]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
160 [6"]	G ¼ B	111 [4.37]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	118 [4.65]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M12 x 1.5	111 [4.37]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M20 x 1.5	118 [4.65]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]

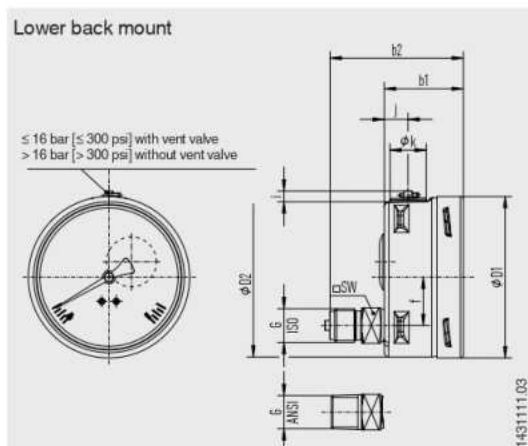
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]								
		h ±1	a	b	D1	D2	i	j	k	SW
63 [2 ½"]	R ¼	54 [2.13]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	R ¼	80 [3.15]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	86 [3.39]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
160 [6"]	R ¼	111 [4.37]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	117 [4.60]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]								
		h ±1	a	b	D1	D2	i	j	k	SW
63 [2 ½"]	¼ NPT	54 [2.13]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	½ NPT	51 [2.01]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	¼ NPT	80 [3.15]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	86 [3.39]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
160 [6"]	¼ NPT	111 [4.37]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	117 [4.60]	15.5 [0.61]	51.5 [2.03] ¹⁾	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]

1) Plus 16 mm [0.630 in] with scale range 0 ... 1,600 bar [0 ... 20,000 psi]



NS	Weight	
	Model 232.50	Model 233.50
63 [2 ½"]	approx. 0.16 kg [0.35 lbs]	approx. 0.20 kg [0.44 lbs]
100 [4"]	approx. 0.6 kg [1.32 lbs]	approx. 0.9 kg [1.98 lbs]
160 [6"]	approx. 1.1 kg [2.43 lbs]	approx. 2.0 kg [4.41 lbs]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]								
		b1	b2 ±1	D1	D2	e	i	j	k	SW
63 [2 ½"]	G ¼ B	33 [1.30]	57 [2.24]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	G ⅝ B	33 [1.30]	54 [2.13]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	M12 x 1.5	33 [1.30]	57 [2.24]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	G ¼ B	49.5 [1.95]	76 [2.99]	101 [3.98]	99 [3.90]	30 [1.181]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	49.5 [1.95]	83 [3.27]	101 [3.98]	99 [3.90]	30 [1.181]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M12 x 1.5	49.5 [1.95]	76 [2.99]	101 [3.98]	99 [3.90]	30 [1.181]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M20 x 1.5	49.5 [1.95]	83 [3.27]	101 [3.98]	99 [3.90]	30 [1.181]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
160 [6"]	G ¼ B	51.5 [2.03] ¹⁾	78 [3.07] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	51.5 [2.03] ¹⁾	85 [3.24] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M12 x 1.5	51.5 [2.03] ¹⁾	78 [3.07] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	M20 x 1.5	51.5 [2.03] ¹⁾	85 [3.24] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]

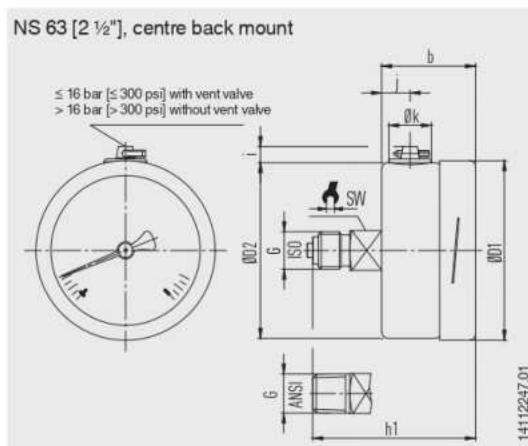
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]								
		b1	b2 ±1	D1	D2	e	i	j	k	SW
63 [2 ½"]	R ¼	33 [1.30]	57 [2.24]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	R ¼	49.5 [1.95]	76 [2.99]	101 [3.98]	99 [3.90]	30 [1.181]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	49.5 [1.95]	82 [3.23]	101 [3.98]	99 [3.90]	30 [1.181]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
160 [6"]	R ¼	51.5 [2.03] ¹⁾	78 [3.07] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	51.5 [2.03] ¹⁾	84 [3.31] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]								
		b1	b2 ±1	D1	D2	e	i	j	k	SW
63 [2 ½"]	¼ NPT	33 [1.30]	57 [2.24]	63 [2.48]	62 [2.44]	50 [1.97]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	⅝ NPT	33 [1.30]	54 [2.13]	63 [2.48]	62 [2.44]	50 [1.97]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	¼ NPT	49.5 [1.95]	76 [2.99]	101 [3.98]	99 [3.90]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	49.5 [1.95]	82 [3.23]	101 [3.98]	99 [3.90]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
160 [6"]	¼ NPT	51.5 [2.03] ¹⁾	78 [3.07] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	51.5 [2.03] ¹⁾	84 [3.31] ¹⁾	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]

1) Plus 16 mm [0.630 in] with scale ranges ≥ 0 ... 100 bar [≥ 0 ... 1,500 psi]



NS	Weight	
	Model 232.50	Model 233.50
63 [2 ½"]	approx. 0.16 kg [0.35 lbs]	approx. 0.20 kg [0.44 lbs]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]							
		h ±1	b	D1	D2	i	j	k	SW
63 [2 ½"]	G ¼ B	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	G ⅝ B	54 [2.13]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	M12 x 1.5	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]

Process connection with thread per ISO 7

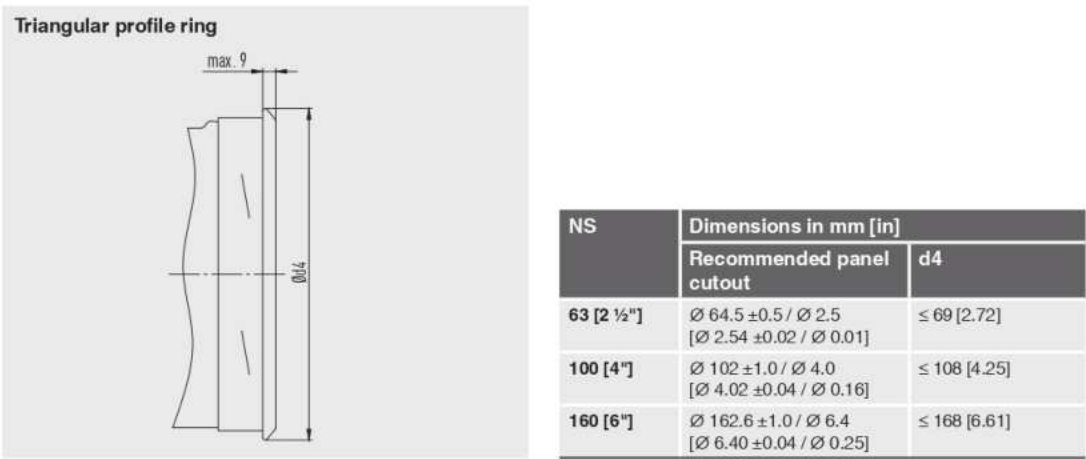
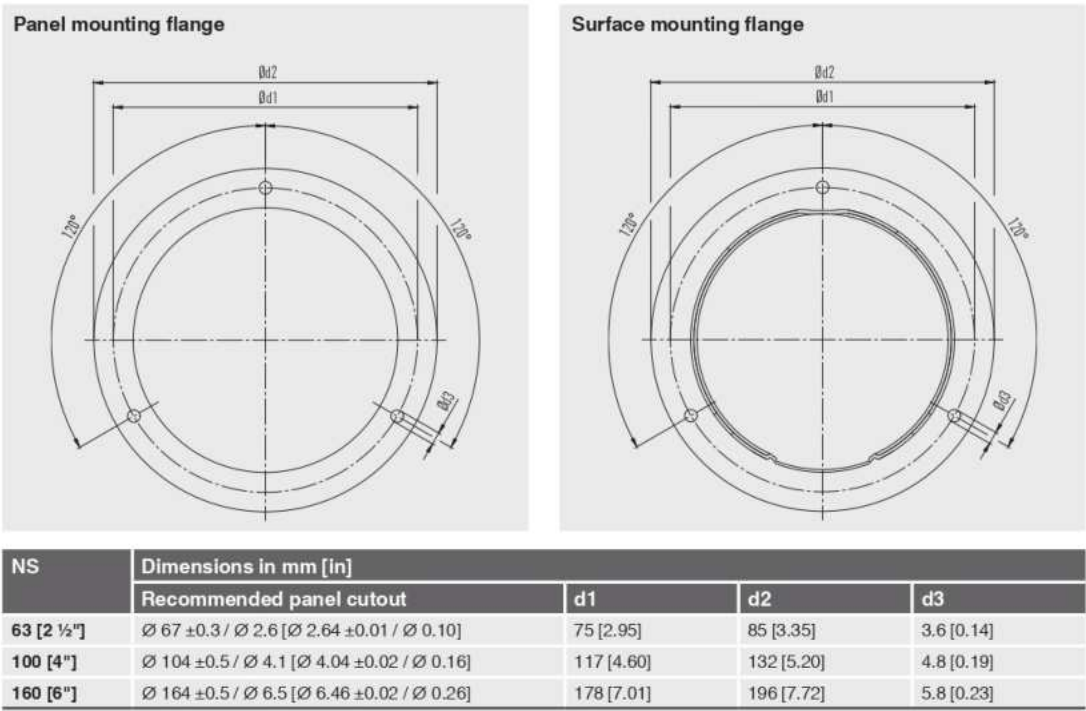
NS	G	Dimensions in mm [in]							
		h ±1	b	D1	D2	i	j	k	SW
63 [2 ½"]	R ¼	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]							
		h ±1	b	D1	D2	i	j	k	SW
63 [2 ½"]	¼ NPT	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	⅝ NPT	54 [2.13]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]

Accessories

Dimensions in mm [in]



Accessories and spare parts

Model	Description	
	910.17	Seals → See data sheet AC 09.08
	910.15	Syphons → See data sheet AC 09.06
	910.13	Overpressure protector → See data sheet AC 09.04
	IV1	Needle valve and multiport valve → See data sheet AC 09.22
	IV2	Block-and-bleed valve → See data sheet AC 09.19
	IVM	Monoflange, process and instrument version → See data sheet AC 09.17
	BV	Ball valve, process and instrument version → See data sheet AC 09.28
	IBF2, IBF3	Monoblock with flange connection → See data sheet AC 09.25

Ordering information

Model / Nominal size / Scale range / Process connection /
Connection location / Options

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We reserve the right to make modifications to the specifications and materials.
In case of a different interpretation of the translated and the English data sheet, the English wording shall prevail.



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Fișa tehnică - Traductor de presiune Rosemount 2088

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Traductor de presiune Rosemount 2088	Emerson
2	Condiții de lucru:	• Tensiune de alimentare 12-42 V • Temperatura mediului [°C]-40 +85	
3	Parametri constructivi:	• Domeniu de măsurare 0 - 275 bar • Conectare filet G 1/2" prin bloc de supape în complet	
4	Dotări minime:	Bloc de supape în complet	
5	Caracteristici funcționale:	• Semnal de ieșire 4 ... 20 mA, HART®	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate • Certificat de calibrare	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat ATEX • Certificat de calibrare	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Protecția IP68	
12	Condiții privind conformitatea cu standarde relevante:	Lipsesc	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

Rosemount™ 2088 Absolute and Gauge Pressure Transmitter



CE **HART**

- Performance of 0.065 percent with high accuracy option
- Lightweight, compact design for cost-effective installation
- Protocols available include 4–20 mA HART® and 1–5 Vdc HART Low Power
- Absolute and gauge pressure ranges up to 10,000 psi (689 bar)
- Rangeability of 50:1

ROSEMOUNT™



Product offering

Proven reliability for gauge and absolute applications



- Available protocols include 4–20 mA HART® and 1–5 Vdc HART Low Power
- Fully configurable LCD display to display process variable, percent of range, and diagnostic messages
- Lightweight, compact design enables easy installation
- Choice of stainless steel (SST) or Alloy C-276 wetted materials

Unlock the value of devices with the Emerson Wireless THUM™ Adapter



- Gain access to field intelligence and improve quality, safety, availability, operations, and maintenance costs
- Remotely manage devices and monitor health
- Enable new wireless measurement points
- Utilize existing loop power

Proven, reliable, and innovative DP Level Technologies



- Connect to virtually any process with a comprehensive offering of process connections, fill fluids, direct mount or capillary connections and materials.
- Quantify and optimize total system performance with QZ option

Contents

Product offering.....	2
Ordering information.....	4
Specifications.....	11
Product certifications.....	17
Dimensional drawings	27
Options.....	30

Instrument manifolds – quality, convenient, and easy



- Designed and engineered for optimal performance with Rosemount transmitters.
- Save installation time and money with factory assembly.
- Offers a variety of styles, materials, and configurations

Ordering information



The Rosemount 2088 Gage and Absolute Pressure Transmitter offers proven reliability for gage and absolute pressure measurement. The in-line, compact design allows the transmitter to be connected directly to the process for quick, easy, and cost effective installation. Capabilities include:

- Local Operator Interface (LOI) that has easy-to-use menus and built-in configuration buttons, so you can commission the device on the spot without complicated tools.
- Available with manifolds and remote seals.
- 4-20 mA HART® and 1-5 Vdc HART Low Power.

[CONFIGURE >](#)
[VIEW PRODUCT >](#)

Online product configurator

Many products are configurable online using our product configurator.

Select the **Configure** button or visit [Emerson.com/global](https://emerson.com/global) to start. With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

Specifications and options

Specification and selection of product materials, options, and/or components must be made by the purchaser of the equipment.

Model codes

Model codes contain the details related to each product. Exact model codes will vary; an example of a typical model code is shown in Figure 1.

Figure 1: Model code examples

3051C D 2 X 2 2 M5 B4
1 2

1. Required model components (choices available on most)
2. Additional options (variety of features and functions that may be added to products)

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery times. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model

Code	Description
2088	Pressure transmitter

Measurement type

Code	Description	
A	Absolute	★
G	Gauge	★

Pressure ranges

Code	Rosemount 2088G	Rosemount 2088A	
1	-14.7 to 30 psi (-1.01 to 2.1 bar)	0 to 30 psi (0 to 2.1 bar)	★
2	-14.7 to 150 psi (-1.01 to 10.3 bar)	0 to 150 psi (0 to 10.3 bar)	★
3	-14.7 to 800 psi (-1.01 to 55.2 bar)	0 to 800 psi (0 to 55.2 bar)	★
4	-14.7 to 4,000 psi (-1.01 to 275.8 bar)	0 to 4,000 psi (0 to 275.8 bar)	★
5	-14.7 to 10000 psi (-1.0 to 689 bar)	0 to 10000 psi (0 to 689 bar)	

Transmitter output

HART Revision 5 is the default HART output. The Rosemount 2088 with selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.

Code	Description	
S	4-20 mA dc/Digital HART Protocol	★
N	1-5 Vdc Low Power/Digital HART Protocol	★

Materials of construction

Materials of construction comply with recommendations per NACE® MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.

Code	Process connection	Isolating diaphragm	Fill fluid	
22	316L SST	316L SST	Silicone	★
33	Alloy C-276	Alloy C-276	Silicone	★
2B	316L SST	316L SST	Inert	

Process connection

Code	Description	
A	½-14 NPT female	★

Code	Description	
B ⁽¹⁾	DIN 16288 G½ male	★
D ⁽¹⁾⁽²⁾	M20 x 1.5 male	★
C ⁽²⁾⁽³⁾	RC ½ female	

(1) Not available with Low Power transmitter output code N.

(2) Not available with Alloy C-276, materials of construction code 33.

(3) Consists of a ½-14 NPT housing with a G½ adapter.

Conduit entry

Code	Description	
1	½-14 NPT	★
2 ⁽¹⁾	M20 x 1.5	★
4 ⁽¹⁾⁽²⁾	G½	

(1) Not available with Low Power transmitter output code N.

(2) Consists of a ½-14 NPT housing with a G½ adapter.

Additional options

Extended product warranty

Code	Description	
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★

Diaphragm seal assemblies

Use ½-14 NPT female process connection code A. "Assemble-to" items are specified separately and require a completed model number.

Code	Description	
S1	Assemble to one Rosemount 1199 Diaphragm Seal	★

Display and interface

Code	Description	
M4	LCD display with local operator interface	★
M5	LCD display, configured for engineering units	★

Configuration buttons

Code	Description	
D4	Analog zero and span	★
DZ	Digital zero trim	★

Mounting brackets

Code	Description	
B4	SST mounting bracket with SST bolts	★

Product certifications

Code	Description	
C6	Canada Explosion-proof, Intrinsic Safety, Division 2, and Dust-Ignitionproof	★
E2	INMETRO Flameproof	★
E4 ⁽¹⁾⁽²⁾	Japan Flameproof	★
E5	USA Explosion-proof (XP) and Dust-Ignitionproof (DIP)	★
E7	IECEx Flameproof	★
ED	ATEX Flameproof	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
I1 ⁽¹⁾	ATEX Intrinsic Safety	★
I2	INMETRO Intrinsic Safety	★
I3	China Intrinsic Safety	
I5	USA Intrinsic Safety (IS) and Nonincendive (NI)	★
I7	IECEx Intrinsic Safety	★
IM	Technical Regulation Customs Union (EAC) Intrinsic Safety	★
K1	ATEX Flameproof, Intrinsic Safety, Type n, Dust	★
K2	INMETRO Flameproof, Intrinsic Safety	★
K5	USA Explosion-proof, Dust-Ignitionproof, Intrinsic Safety, and Nonincendive	★
K6 ⁽¹⁾	Canada Explosion-Proof, Intrinsic Safety, Division 2, Dust-Ignitionproof, and ATEX Flameproof, Intrinsic Safety	★
K7	IECEx Flameproof, Intrinsic Safety, Type n, Dust	★
KB	USA Explosion-proof, Dust-Ignitionproof, Intrinsic Safety, Nonincendive, and Canada Explosion-proof, Dust-Ignitionproof, Intrinsic Safety, Division 2	★
KM	Technical Regulation Customs Union (EAC) Flameproof and Intrinsic Safety	★
KH ⁽¹⁾	ATEX Flameproof, Intrinsic Safety, and USA Explosion-Proof, Dust-Ignitionproof, Intrinsic Safety, and Nonincendive	★
N1 ⁽¹⁾	ATEX Type n	★
N3	China Type n	★
N7	IECEx Type n	★
ND ⁽¹⁾	ATEX Dust	★
NK	IECEx Dust	★

(1) Not available with Low Power transmitter output code N.

(2) Only available with conduit thread code 1.

Shipboard approvals

Code	Description	
SBS	American Bureau of Shipping (ABS) Type Approval	★

Code	Description	
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyd's Register (LR) Type Approval	★

Pressure testing

Code	Description	
P1	Hydrostatic testing	

Terminal blocks

Code	Description	
T1	Transient protection	★

Special cleaning

Code	Description	
P2	Cleaning for special service	

Calibration certificate

Code	Description	
Q4	Calibration certificate	★

Quality calibration certificate traceability certification

Code	Description	
Q8	Material traceability certification per EN 10204 3.1	★
Q15	Certificate of compliance to NACE® MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★

Positive material identification (PMI)

Code	Description	
Q76	PMI verification and certificate	★

Digital signal

Code	Description	
C4 ⁽¹⁾	NAMUR alarm and saturation levels, high alarm	★
CN ⁽¹⁾	NAMUR alarm and saturation levels, low alarm	★
C5 ⁽¹⁾⁽²⁾	Custom alarm and saturation levels, high alarm (requires C9 and Configuration Data Sheet)	★

Code	Description	
C7 ⁽¹⁾⁽²⁾	Custom alarm and saturation levels, low alarm (requires C9 and Configuration Data Sheet)	★
C8 ⁽²⁾	Low alarm (Standard Rosemount alarm and saturation levels)	★

(1) Only available with 4–20 mA HART output (output code A).

(2) Select configuration buttons (option code D4 or DZ) or local operator interface (option code M4) if local configuration buttons are required.

Conduit plug

Transmitter shipped with 316SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.

Code	Description	
DO	316 SST conduit plug	★

Configuration

Code	Description	
C9	Software configuration	★

Manifold assemblies

Use ½–14 NPT female process connection code A. “Assemble-to” items are specified separately and require a completed model number.

Code	Description	
S5	Assemble to Rosemount 306 Integral Manifold	★

Calibration accuracy

Requires transmitter output code S with either materials of construction code 22 or 23.

Code	Description	
P8	0.065% accuracy to 10:1 turndown	★

Water approval

Requires materials of construction code 22 with process connection code A.

Code	Description	
DW	NSF drinking water approval	★

Surface finish

Code	Description	
Q16	Surface finish certification for sanitary remote seals	★

Toolkit total system performance reports

Code	Description	
QZ	Remote seal system performance calculation report	★

HART revision configuration

Select configuration buttons (option code D4 or DZ) or local operator interface (option code M4) if local configuration buttons are required.

Code	Description	
HR5 ⁽¹⁾	Configured for HART Revision 5	★
HR7 ⁽²⁾	Configured for HART Revision 7	★

(1) Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.

(2) Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.

Specifications

Performance specifications

For zero-based spans, reference conditions, silicone oil fill, and 316L SST isolating diaphragm

Reference accuracy

±0.075 percent of calibrated span. Includes combined effects of linearity, hysteresis, and repeatability

±0.065 percent of calibrated span (high accuracy option – P8)

For spans less than 10:1, accuracy = $\pm \left[0.009 \left(\frac{URL}{Span} \right) \right]$ percent of span

Ambient temperature effect

Expressed as a total effect per 50 °F (28 °C)

Total effect includes zero and span effects

± (0.15 percent URL + 0.15 percent of span)

Stability

Ranges 2–5: ±0.10 percent of URL for three years

Range 1: ±0.10 percent of URL for one year

Warranty

Warranty details can be found in [Emerson Terms & Conditions of Sale](#).

For all Rosemount 2088 models:

- One-year limited warranty is standard.
- Extended three-year and five-year limited warranties available if ordered (select option WR3 or WR5 in model string respectively).

Note

Goods are warranted for 12 months from the date of initial installation or 18 months from the date of shipment by seller, whichever period expires first.

Note

Three-year and five-year warranty period begins on date of shipment by seller.

Vibration effect

Less than ±0.1 percent of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g)

Power supply effect

Less than ±0.005 percent of calibrated span per volt change in voltage at the transmitter terminals.

Electromagnetic compatibility

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation <1 % span during EMC disturbance.

Note

NAMUR NE-21 does not apply to Low-Power (Transmitter output option code N).

Note

During surge event, device may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

Mounting position effect

Zero shifts to ±2.5 inH₂O (6.22 mbar), which can be zeroed

Span: no effect

Transient protection

Tested in accordance with IEEE C62.41.2-2002, Location Category B

6 kV crest (0.5 µs – 100 kHz)

3 kA crest (8 × 20 microseconds)

6 kV crest (1.2 × 50 microseconds)

General specifications

Tested to IEC 801-3

Functional specifications

Table 1: Rosemount 2088 Range Values

Range	Minimum span	Upper (URL)	Lower (LRL)	Lower ⁽¹⁾ (LRL) (gauge)
1	0.60 psi (41.37 mbar)	30.00 psi (2.07 bar)	0 psia (0 bar)	-14.70 psig (-1.01 bar)
2	3.00 psi (206.85 mbar)	150.00 psi (10.34 bar)	0 psia (0 bar)	-14.70 psig (-1.01 bar)
3	16.00 psi (1.11 bar)	800.00 psi (55.16 bar)	0 psia (0 bar)	-14.70 psig (-1.01 bar)
4	80.00 psi (5.52 bar)	4000.00 psi (275.79 bar)	0 psia (0 bar)	-14.70 psig (-1.01 bar)
5	2000 psi (137.9 bar)	10000 psi (689.5 bar)	0 psia (0 bar)	-14.70 psig (-1.01 bar)

(1) Assumes atmospheric pressure of 14.70 psia (1.01 bar-a).

Output

Code S: 4–20 mA Code N: 1–5 Vdc, Low Power

Outputs are directly proportional to the input pressure

Selectable HART

Digital communications based on HART Revision 5 (default) or Revision 7 (option code HR7) protocol can be selected. The HART revision can be switched in the field using any HART-based configuration tool or the optional local operator interface (LOI).

Service

Liquid, gas, and vapor applications

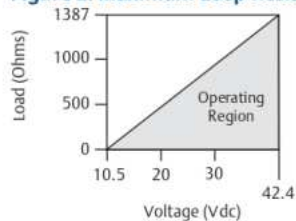
Power supply

External power supply required. Transmitter operates on 10.5–42.4 Vdc with no load (5.8–28 V for Low Power). Reverse polarity protection is standard.

Load limitations

Reverse polarity protection is standard. Maximum loop resistance is determined by the power supply voltage as described by the following equations:

Figure 2: Maximum Loop Resistance



Maximum loop resistance = $43.5 \text{ (Power supply voltage - 10.5)}$

The Field Communicator requires a minimum loop resistance of 250 Ω for communication.

Indication

Optional two-line LOI/LCD display

Zero and span adjustment requirements

Zero and span values can be set anywhere within the range limits stated in Table 1. Span must be greater than or equal to the minimum span stated in Table 1.

LOI

The LOI utilizes a two-button menu with internal and external configuration buttons. Internal buttons are always configured for LOI. External buttons can be configured for either LOI, (option code M4), analog zero and span (option code D4) or digital zero trim (option code DZ) for LOI configuration menu.

Current draw

Output code N: $\leq 3 \text{ mA}$

Overpressure limits

Range 1: 120 psig max

Ranges 2-4: two times the URL
Range 5: 15,000 psi (1034,2 bar)

Burst pressure

Ranges 1-4: 11,000 psi
Range 5: 26000 psi (1792,6 bar)

Zero elevation and suppression

Zero can be suppressed between atmosphere for gage transmitters or zero psia for absolute transmitters and upper range limit, provided the calibrated span is equal to or greater than the minimum span, and the upper range value does not exceed the upper range limit.

Dynamic performance

Total response time: 145 milliseconds Update rate: 22 times per second minimum

Temperature limits

Ambient

-40 to 185 °F (-40 to 85 °C)
With LCD display: -40 to 176 °F (-40 to 80 °C)

Note

For the output code N, LCD display may not be readable and LCD display updates will be slower at temperatures below -22 °F (-30 °C).

Storage

-50 to 230 °F (-46 to 110 °C)
With LCD display: -40 to 185 °F (-40 to 85 °C)

Note

If storage temperature is above 185 °F (85 °C), perform a sensor trim prior to installation.

Process

Silicone fill sensor: -40 to 250 °F (-40 to 121 °C)
Inert fill sensor: -22 to 250 °F (-30 to 121 °C)

Note

220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.

Note

Process temperatures above 185 °F (85 °C) require derating the ambient limits by a 1.5:1 ratio. For example, for process temperature of 195 °F (91 °C), new ambient temperature limit is equal to 170 °F (77 °C). This can be determined as follows: $(195\text{ °F} - 185\text{ °F}) \times 1.5 = 15\text{ °F}$, $185\text{ °F} - 15\text{ °F} = 170\text{ °F}$

Humidity limits

0–100 percent relative humidity

Volumetric displacement

Less than 0.0005 in³ (0.008 cm³)

Damping

Analog output response time to a step change is user-selectable from 0 to 60 seconds for one time constant. Software damping is in addition to sensor module response time.

Turn-on time

2.0 seconds, no warm-up required

Transmitter security

Activating the transmitter security function prevents changes to the transmitter configuration, including local zero and span adjustments. Security is activated by an internal switch.

Failure mode alarm

If self-diagnostics detect a sensor or microprocessor failure, the analog signal will be driven either high or low to alert the user. High or low failure mode is user-selectable with a jumper on the transmitter. The values to which the transmitter drives its output in failure mode depend on whether it is factory-configured to standard or NAMUR-compliant operation. The values for each are as follows:

Table 2: Standard Operation

Output code	Linear output	Fail high	Fail low
S	$3.9 \leq I \leq 20.8$	$I \geq 21.75 \text{ mA}$	$I \leq 3.75 \text{ mA}$
N	$0.97 \leq V \leq 5.2$	$V \geq 5.4 \text{ V}$	$V \leq 0.95 \text{ V}$

Table 3: NAMUR-Compliant Operation

Output code	Linear output	Fail high	Fail low
S	$3.8 \leq I \leq 20.5$	$I \geq 22.5 \text{ mA}$	$I \leq 3.6 \text{ mA}$

Physical specifications

Material selection

Emerson provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Electrical connections

½-14 NPT, M20 x 1.5 (CM20), or G½ female (PF ½ female) conduit entry

Note

Consists of a ½-14NPT housing with a G½ adapter.

Process connections

½-14 NPT female, DIN 16288 G½ male, RC ½ female (PT ½ female), M20 x 1.5 (CM20) male

Process-wetted parts**Isolating diaphragm**

316L SST (UNS S31603), Alloy C-276 (UNS N10276)

Process connector

316L stainless steel CF-3M (Cast version of 316L SST, material per ASTM_A743) or Alloy C-276

Non-wetted parts**Electronics housing**

Low-copper aluminum

Enclosures meet NEMA® Type 4X, IP66, and IP68 when properly installed

Paint for aluminum housing

Polyurethane

Cover O-rings

Buna-N

Fill fluid

Silicone or inert fill

Weight

Output code S (Ranges 1-4): approximately 2.44 lb (1.11 kg)

Output code N or Range 5: approximately 3 lb (1.4 kg)

Product certifications

Rev 1.18

European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at [Emerson.com/Rosemount](https://emerson.com/Rosemount).

Ordinary Location Certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

North America

E5 USA Explosion-proof (XP) and Dust-Ignitionproof (DIP)

Certificate 1V2A8.AE

Standards FM Class 3600 – 2011, FM, Class 3615 – 2006, FM Class 3616 – 2011, FM Class 3810 – 2005, ANSI/NEMA 250 – 1991

Markings XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5 ($-40^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$); Factory Sealed; Type 4X

I5 USA Safety (IS) and Nonincendive (NI)

Certificate 1015441

Standards FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 2005

Markings IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 02088-1024; NI CL 1, DIV 2, GP A, B, C, D; T4 ($-50^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$); Type 4x

C6 Canada Explosion-proof, Intrinsic Safety and Division 2, Dust-Ignitionproof

Certificate 1015441

Standards CAN/CSA C22.2 No. 0-M91 (R2001), CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987, ANSI-ISA-12.27.01-2003

Markings Explosion-proof for Class I, Division 1, Groups B, C and D; Class II, Groups E, F, and G; Class III; Intrinsically Safe Class I, Division 1 when connected in accordance with Rosemount drawing 02088-1024, Temperature Code T3C; Ex ia; Class I Division 2 Groups A, B, C and D; Type 4X; Factory Sealed; Single Seal

Europe

ED ATEX/UKEX Flameproof

ATEX Certificate	KEMA97ATEX2378X
UKEX Certificate	DEKRA 21UKEX0289X
Standards	EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-26:2015
Markings	Ⓔ II ½ G Ex db IIC T6....T4, Ga/Gb, T6 (-60 °C ≤ T _a ≤ +70 °C), T4/T5 (-60 °C ≤ T _a ≤ +80 °C)

Table 4: Process Connection Temperature

Temperature class	Process connection temperature	Ambient temperature
T6	-60 to +70 °C	-60 to +70 °C
T5	-60 to +80 °C	-60 to +80 °C
T4	-60 to +120 °C	-60 to +80 °C

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between Category 1G (process connection) and Category 2G (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance and use the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.

Conduit/Cable Entries:

Unless otherwise marked, the conduit/cable entries in the housing enclosure use a ½-14 NPT form. Only use plugs, adapters, glands, or conduit with a compatible thread form when closing these entries. Entries marked M20 are M20 x 1.5 thread form. On devices with multiple conduit entries, all entries will have the same thread form. When installing in a hazardous location, use only appropriately listed or Ex certified plugs, glands, or adapters in cable/conduit entries.

I1 ATEX Intrinsic Safety

Certificate	BAS00ATEX1166X
Standards	EN60079-0:2012 + A11:2013, EN60079-11:2012
Markings	Ⓔ II 1 G Ex ia IIC T4 Ga (-55 °C ≤ T _a ≤ +70 °C)

Table 5: Input Parameters

Parameter	HART
Voltage U _i	30 V
Current I _i	200 mA
Power P _i	0.9 W
Capacitance C _i	0.012 µF

Special Conditions for Safe Use (X):

1. The apparatus is not capable of withstanding the 500 V insulation test required by EN60079-11. This must be taken into account when installing the apparatus.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment.

N1 ATEX Type n

Certificate	BAS00ATEX3167X
Standards	EN60079-0:2012 + A11:2013, EN60079-15:2010
Markings	Ⓔ II 3 G Ex nA IIC T5 Gc (-40 °C ≤ T _a ≤ +70 °C)

Special Condition for Safe Use (X):

When fitted with a transient suppression terminal block, the equipment is not capable of withstanding the 500V insulation test that is required by EN60079-15. This must be taken into account when installing the apparatus.

ND ATEX Dust

Certificate	BAS01ATEX1427X
Standards	EN60079-0:2012 + A11:2013, EN60079-31:2009
Markings	Ⓔ II 1 D Ex t IIIC T 50 °C T ₅₀₀ 60 °C Da

Special Conditions for Safe Use (X):

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient range of the apparatus and capable of withstanding a 7J impact test.

International**E7 IECEx Flameproof**

Certificate	IECEx KEM 06.0021X
Standards	IEC 60079-0:2017, IEC 60079-1:2014, IEC 60079-26:2014
Markings	Ex d IIC T6...T4 Ga/Gb, T6 (-60 °C ≤ T _a ≤ +70 °C), T4/T5 (-60 °C ≤ T _a ≤ +80 °C)

Special Conditions for Safe Use (x):

1. This device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance and use the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.

Conduit/Cable Entries:

Unless otherwise marked, the conduit/cable entries in the housing enclosure use a ½-14 NPT form. Only use plugs, adapters, glands, or conduit with a compatible thread form when closing these entries. Entries marked M20 are M20 x 1.5 thread form. On devices with multiple conduit entries, all entries will have the same thread form. When installing in a hazardous location, use only appropriately listed or Ex certified plugs, glands, or adapters in cable/conduit entries.

I7 IECEx Intrinsic Safety

Certificate	IECEx BAS 12.0071X
Standards	IEC60079-0:2011, IEC60079-11:2011
Markings	Ex ia IIC T4 Ga (-55 °C ≤ T _a ≤ +70 °C)

Table 6: Input Parameters

Parameter	HART
Voltage U _i	30 V
Current I _i	200 mA
Power P _i	0.9 W
Capacitance C _i	0.012 µF

Special Conditions for Safe Use (X):

1. When fitted with a transient suppression terminal block, the Rosemount 2088 is incapable of passing the 500 V isolation test. This must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment.

N7 IECEx Type n

Certificate	IECEx BAS 12.0072X
Standards	IEC60079-0:2011, IEC60079-15:2010
Markings	Ex nA IIC T5 Gc (-40 °C ≤ T _a ≤ +70 °C)

Special Condition for Safe Use (X):

When fitted with a transient suppression terminal block, the Rosemount 2088 is incapable of passing the 500 V isolation test. This must be taking into account during installation.

NK IECEx Dust

Certificate	IECEx BAS12.0073X
Standards	IEC60079-0:2011, IEC60079-31:2008
Markings	Ex t IIIC T50 °C T ₅₀₀ 60 °C Da

Table 7: Input Parameter

Parameter	HART
Voltage U _i	36 V

Special Conditions For Safe Use (x):

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.

3. Cable entries and blanking plugs must be suitable for the ambient range of the apparatus and capable of withstanding a 7 J impact.

Brazil

E2 Brazil Flameproof

Certificate UL-BR 15.0728X

Standards ABNT NBR IEC60079-0:2013, ABNT NBR IEC 60079-1:2016, ABNT NBR IEC 60079-26:2016

Markings Ex db IIC T6...T4 Ga/Gb, T4/T5 ($-60\text{ °C} \leq T_a \leq +80\text{ °C}$), T6 ($-60\text{ °C} \leq T_a \leq +70\text{ °C}$)

Table 8: Process Connection Temperature

Temperature class	Process connection temperature	Ambient temperature
T6	-60 to +70 °C	-60 to +70 °C
T5	-60 to +80 °C	-60 to +80 °C
T4	-60 to +120 °C	-60 to +80 °C

Special Conditions For Safe Use (x):

1. This device contains a thin wall diaphragm less than 1mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and data sheet are to be consulted for details of the diaphragm material. Installations, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

I2 Brazil Intrinsic Safety

Certificate: UL-BR 13.0246X

Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-11:2009

Markings: Ex ia IIC T4 Ga ($-55\text{ °C} \leq T_a \leq +70\text{ °C}$)

Table 9: Input Parameters

Parameter	HART
Voltage U_i	30 V
Current I_i	200 mA
Power P_i	0.9 W
Capacitance C_i	0.012 μF

Special Conditions for Safe Use (X):

1. When fitted with a transient suppression terminal block, the Rosemount 2088 is incapable of passing the 500 V isolation test. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in Zone 0.

China

E3 China Flameproof

Certificate	GYJ20.1548X
Standards	GB3836.1-2010, GB3836.2-2010, GB3836.20-2010
Markings	Ex d IIC T6~T4 Ga/Gb,

一、产品安全使用特殊条件

证书编号后缀“X”表明产品具有安全使用特殊条件：涉及隔爆接合面的维修须联系产品制造商。

二、产品使用注意事项

1. 产品使用环境温度为：

温度组别	环境温度
T6	-60 °C ≤ T _a ≤ + 70 °C
T5	-60 °C ≤ T _a ≤ + 80 °C
T4	-60 °C ≤ T _a ≤ + 80 °C

- 产品外壳设有接地端子，用户在使用时应可靠接地。
- 安装现场应不存在对产品外壳有腐蚀作用的有害气体。
- 现场安装时，电缆引入口须选用经国家指定的防爆检验机构检验认可、具有 Ex dIIC Gb 防爆等级的电缆引入装置或堵封件，冗余电缆引入口须用堵封件有效密封。
- 用于爆炸性气体环境中，现场安装、使用和维护必须严格遵守“断电后开盖！”的警告语。
- 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
- 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB3836.15-2000“爆炸性气体环境用电气设备 第 15 部分：危险场所电气安装（煤矿除外）”、GB3836.16-2006“爆炸性气体环境用电气设备 第 16 部分：电气装置的检查和维护（煤矿除外）”和 GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”的有关规定。

I3 China Intrinsic Safety

Certificate	GYJ20.1550X
Standards	GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
Markings	Ex ia IIC T4 Ga

一、产品安全使用特殊条件

证书编号后缀“X”表明产品具有安全使用特殊条件：

- 产品外壳含有轻金属，用于 0 区时需注意防止由于冲击或摩擦产生的点燃危险。
- 当选择 T1 瞬态抑制端子时此设备不能承受 GB3836.4-2010 标准中第 6.3.12 条规定的 500V 交流有效值试验电压的介电强度试验。

二、产品使用注意事项

1. 产品使用环境温度为：

温度组别	环境温度
T4	-55 °C ≤ T _a ≤ + 70 °C

2. 本安电气参数：

最高输入电压 U_i (V)	最大输入电流 I_i (mA)	最大输入功率 P_i (W)	最大内部等效参数	
			C_i (nF)	L_i (mH)
30	200	0.9	12	0

3. 该产品必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可使用于爆炸性气体环境。其系统接线必须同时遵守本产品和所配关联设备的使用说明书要求，接线端子不得接错。
4. 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
5. 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB3836.15-2000“爆炸性气体环境用电气设备 第 15 部分：危险场所电气安装（煤矿除外）”、GB3836.16-2006“爆炸性气体环境用电气设备 第 16 部分：电气装置的检查和维修（煤矿除外）”、GB3836.18-2010“爆炸性环境 第 18 部分：本质安全系统”和 GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”的有关规定。

N3 China Type n

Certificate	GYJ20.1111X
Standards	GB3836.1-2010, GB3836.8-2014
Markings	Ex nA IIC T5 Gc (-40 °C ≤ T _a ≤ +70 °C)

一、产品安全使用特殊条件

产品防爆合格证号后缀“X”代表产品安全使用有特殊条件：产品选用瞬态保护端子板（c 中包含 T1 选项）时，不能承受 GB3836.8-2014 中规定的 500V 交流有效值试验电压的介电强度试验，安装时需考虑在内。

二、产品使用注意事项

1. 产品使用环境温度范围为：-40 °C ≤ T_a ≤ 70 °C
2. 最高输入电压：50V
3. 现场安装时，电缆引入口须选用经国家指定的防爆检验机构检验认可、具有 Ex e II C Gb 或 Ex nA II C Gc 防爆等级的电缆引入装置或堵封件，冗余电缆引入口须用堵封件有效密封。电缆引入装置或堵封件的安装使用必须遵守其使用说明书的要求并保证外壳防护等级达到 IP66 (符合 GB/T4208-2017 标准要求)以上。
4. 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
5. 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB/T3836.15-2017“爆炸性环境 第 15 部分：电气装置的设计、选型和安装”、GB/T3836.16-2017“爆炸性环境 第 16 部分：电气装置的检查与维护”、GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”的有关规定。

Korea

EP Korea Flameproof

Certificate	13-KB4BO-0020X, 19-KA4BO-0989X
Markings	Ex d IIC T6...T4 Ga/Gb, T4/T5 (-60 °C ≤ T _a ≤ +80 °C), T6 (-60 °C ≤ T _a ≤ +70 °C)

Special Condition For Safe Use (X):

1. See certificate.

Japan

E4 Japan Flameproof

Certificate CML20JPN1313X

Markings Ex db IIC T6...T4 Ga/Gb, T6 ($-60\text{ °C} \leq T_a \leq +70\text{ °C}$), T4/T5 ($-60\text{ °C} \leq T_a \leq +80\text{ °C}$)

Technical Regulations Customs Union (EAC)

EM EAC Flameproof

Certificate EAEC RU C-US.EX01.B.00176

Markings Ga/Gb Ex d IIC T4/T6 X, T4 ($-40\text{ °C} \leq T_a \leq +80\text{ °C}$), T6 ($-40\text{ °C} \leq T_a \leq +40\text{ °C}$)

Special Condition for Safe Use (X):

See certificate.

IM EAC Intrinsically Safe

Certificate: EAEC RU C-US.EX01.B.00176

Markings: 0Ex ia IIC T4 Ga X ($-55\text{ °C} \leq T_a \leq +70\text{ °C}$)

Special Condition for Safe Use (X):

See certificate.

Combinations

K1	Combination of ED, I1, ND, and N1
K2	Combination of E2 and I2
K5	Combination of E5 and I5
K6	Combination of C6, ED, and I1
K7	Combination of E7, I7, NK, and N7
KB	Combination of K5 and C6
KM	Combination of EM and IM
KH	Combination of ED, I1, and K5

Conduit plugs and adapters

IECEx Flameproof and Increased Safety

Certificate IECEx FMG 13.0032X

Standards IEC60079-0:2011, IEC60079-1:2007-04, IEC60079-7:2006-07

Markings Ex de IIC Gb

ATEX Flameproof and Increased Safety

Certificate	FM13ATEX0076X
Standards	EN60079-0:2012, EN60079-1:2007, IEC60079-7:2007
Markings	Ⓔ II 2 G Ex de IIC Gb

Table 10: Conduit Plug Thread Sizes

Thread	Identification mark
M20 × 1.5 – 6g	M20
½–14 NPT	½ NPT
G½A	G½

Table 11: Thread Adapter Thread Sizes

Male thread	Identification mark
M20 × 1.5 – 6H	M20
½–14 NPT	½–14 NPT
¾–14 NPT	¾–14 NPT
Female thread	Identification mark
M20 × 1.5 – 6H	M20
½–14 NPT	½–14 NPT
G½	G½

Special Conditions For Safe Use (X):

1. When the thread adapter or blanking plug is used with an enclosure in type of protection increased safety "e" the entry thread shall be suitably sealed in order to maintain the ingress protection rating (IP) of the enclosure.
2. The blanking plug shall not be used with an adapter.
3. Blanking Plug and Threaded Adapter shall be either NPT or Metric thread forms. G½ thread forms are only acceptable for existing (legacy) equipment installations.

Additional Certifications**SBS American Bureau of Shipping (ABS) Type Approval**

Certificate	18-HS1814314-PDA
Intended Use	Measurement of either gauge or absolute pressure for liquid, gas, and vapor.
ABS Rules	2014 Steel Vessels Rules 1–1–4/7.7, 1–1–Appendix 3, 4–8–3/1.7, 4–8–3/13.1, 4–8–3/13.3.1 & 13.3.2, 4–8–4/27.5.1

SBV Bureau Veritas (BV) Type Approval

Certificate	23156/B0 BV
Requirements	Bureau Veritas Rules for the Classification of Steel Ships
Application	Class notations: AUT–UMS, AUT–CCS, AUT–PORT and AUT–IMS; Pressure transmitter type 2088 cannot be installed on diesel engines

SDN Det Norske Veritas (DNV) Type Approval

Certificate	TAA000004F
Intended Use	DNV GL Rules for Classification – Ships and offshore units
Application	

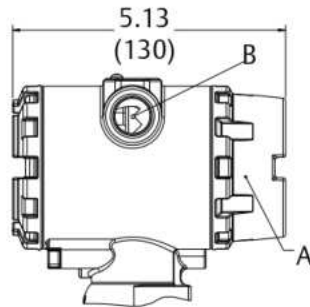
Location classes	
Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	D

SLL Lloyds Register (LR) Type Approval

Certificate	LR21173788TA
Application	Environmental categories ENV1, ENV2, ENV3, and ENV5

Dimensional drawings

Figure 3: Optional Digital Display

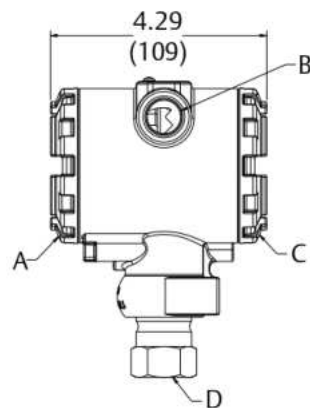


- A. Digital display cover
- B. 2½–14 NPT conduit connection

Note

Dimensions are in inches (millimeters).

Figure 4: Process Connection

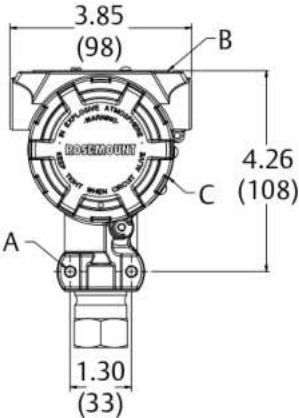


- A. Field terminals
- B. Conduit connection
- C. Transmitter electronics
- D. ½–14 NPT female connection

Note

RC ½ female (PT ½ female), and M20 female also available as options.

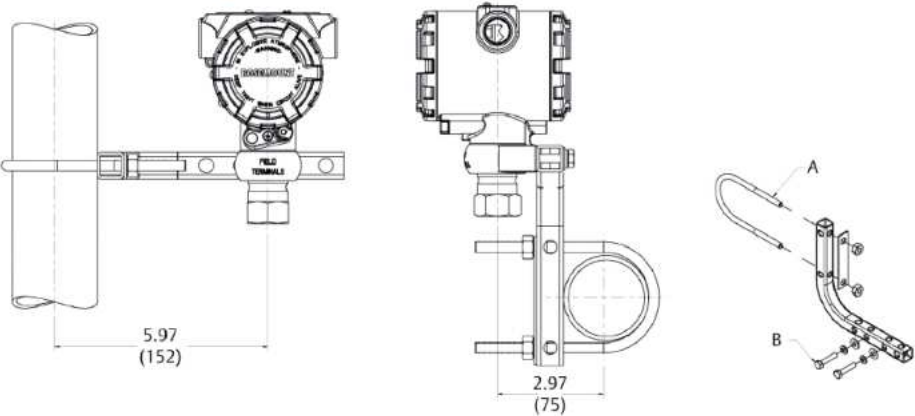
Figure 5: Nameplate and Labels



- A. Bracket mounting holes (1/4-20 UNC)
- B. Nameplate
- C. Certification label (located on side)

Note
Dimensions are in inches (millimeters).

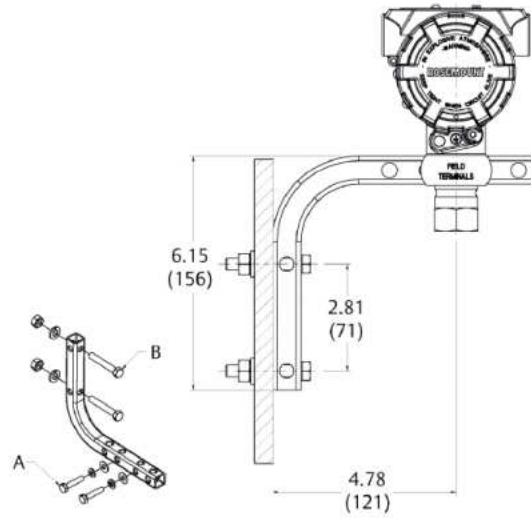
Figure 6: Optional Pipe Mounting Bracket



- A. 2-in. U-bolt for pipe mounting (clamp shown)
- B. 1 1/4 bolts for transmitter mounting

Note
Dimensions are in inches (millimeters).

Figure 7: Optional Panel Mounting Bracket



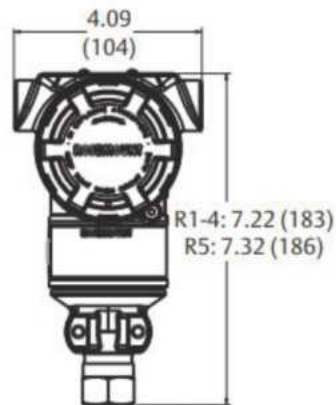
A. $\frac{1}{4}$ X $1\frac{1}{4}$ bolts for transmitter mounting

B. $\frac{5}{16}$ X $1\frac{1}{2}$ bolts for panel mounting (not supplied)

Note

Dimensions are in inches (millimeters).

Figure 8: Low Power Output (Code N) or Pressure Range 5



Dimensions are in inches (millimeters).

Options

Standard configuration

Unless otherwise specified, transmitter is shipped as follows:

Engineering units	psi (all ranges)
4 mA (1 Vdc)	0 (engineering units)
20 mA (5 Vdc)	Upper range limit
Output	Linear
Flange type	Specified model code option
Flange material	Specified model code option
O-ring material	Specified model code option
Drain/vent	Specified model code option
LCD display	Installed or none
Alarm	High
Software tag	Blank

Custom configuration

If option code C9 is ordered, the customer may specify the following data in addition to the standard configuration parameters:

- Output information
- Transmitter information
- LCD display configuration
- Hardware selectable information
- Signal selection

Refer to the Rosemount 2088 [Configuration Data Sheet](#).

Tagging (three options available)

- Standard SST hardware tag is permanently affixed on transmitter.
- Tag character height is 0.125-in. (3.18 mm), 84 characters maximum.
- Tag may be wired to the transmitter nameplate upon request, 85 characters maximum.
- For HART protocols, the tag may be stored in transmitter memory (eight characters maximum).
- Software tag is left blank unless specified.
- HART Revision 5: eight characters
- HART Revision 7: 32 characters

Optional Rosemount 306 Integral Manifold

Factory-assembled to Rosemount 2088 Transmitters. Refer to Rosemount Manifolds [Product Data Sheet](#) for additional information.

Other seals

Refer to Rosemount DP Level Transmitters and 1199 Diaphragm Seal System [Product Data Sheet](#) for additional information.

Output information

Output range points must be the same unit of measure. Available units of measure include:

Table 12: Pressure Units

Field configurable only, not available for factory calibration or custom configuration (option code C9 "Software configuration").

torr	psf	cmH ₂ O at 4 °C
atm	inH ₂ O	mH ₂ O at 4 °C
Pa	inH ₂ O at 4 °C	inHg
kPa	inH ₂ O at 60 °F	mmHg
MPa	ftH ₂ O	cmHg at 0 °C
hPa	ftH ₂ O at 4 °C	mHg at 0 °C
mbar	ftH ₂ O at 60 °F	g/cm ²
bar	mmH ₂ O	kg/m ²
psi	mmH ₂ O at 4 °C	kg/cm ²

Display and interface options

M4 Digital display with local operator interface (LOI)

- Available for 4–20 mA HART, 4–20 mA HART Low Power

M5 Digital meter

- Two-line, five-digit LCD display for 4–20 mA HART
- Two-line, five-digit LCD display for 1–5 Vdc HART Low Power
- Direct reading of digital data for higher accuracy
- Displays user-defined flow, level, volume, or pressure units
- Displays diagnostic messages for local troubleshooting
- 90-degree rotation capability for easy viewing

Configuration buttons

Rosemount 2088 offers optional internal and external configuration buttons.

- Selecting option D4 will add external analog zero and span configuration buttons

- Selecting option DZ will add an external digital zero trim configuration button
- Selecting option M4 (LOI) adds both internal and external local configuration buttons

Certain button options can also be combined as shown below:

Table 13: Button Configuration

Option codes	Internal	External
DZ	N/A	Digital zero trim
D4	N/A	Analog zero and trim
M4	LOI	LOI
M4 + DZ	LOI	Digital zero trim
M4 + D4	LOI	Analog zero and trim

Rosemount 2088 bracket option

- B4** Bracket for 2-in. pipe or panel mounting
- Bracket for mounting of transmitter on 2-in. pipe or panel
 - Stainless steel construction with stainless steel bolts

For more information: [Emerson.com/global](https://emerson.com/global)

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ROSEMOUNT™



Fișa tehnică - Traductor de presiune diferențială Rosemount 2051CD

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Traductor de presiune diferențială Rosemount 2051CD	Emerson
2	Condiții de lucru:	• Tensiune de alimentare 10.5-42 V • Temperatura mediului [°C]-40 +85	
3	Parametri constructivi:	• Conectare filet G 1/2" prin bloc de supape în complet	
4	Dotări minime:	Bloc de supape în complet	
5	Caracteristici funcționale:	• Semnal de ieseire 4 ... 20 mA, HART® • Domeniu de măsurare -20.7 to 20.7 bar	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate • Certificat de calibrare	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat ATEX • Certificat de calibrare	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Protecția IP68	
12	Condiții privind conformitatea cu standarde relevante:	Lipsește	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

Rosemount[™] 2051 Pressure Transmitter



- Rosemount[™] Coplanar[™] platform enables integration of primary elements, manifolds, and remote seal solutions
- Best-in-class performance with up to 0.05 percent high accuracy option
- IEC 62591 (*WirelessHART*[®]) enables cost effective installations
- Local Operator Interface (LOI) offers easy to use configuration capabilities at the transmitter
- Protocols available include 4–20 mA HART[®], FOUNDATION[™] Fieldbus, and PROFIBUS[®] PA
- Selectable HART Revision prepares your plant for the latest HART capabilities while ensuring seamless integration with today's systems
- SIL2/3 safety certification to IEC 61508 is available with the full 4–20 mA HART offering to simplify compliance

ROSEMOUNT[™]



Contents

Rosemount 2051 Pressure Transmitter product offering..... 2

Rosemount 2051C Coplanar Pressure Transmitter ordering information..... 4

Rosemount 2051T In-line Pressure Transmitter ordering information..... 14

Rosemount 2051G In-line Pressure Transmitter ordering information.....23

Rosemount[®] 2051CF Flow Meters.....29

Rosemount 2051L Liquid Level Transmitter.....59

Specifications.....69

Product certifications.....84

Dimensional drawings.....105

Options.....118

Rosemount 2051 Pressure Transmitter product offering



Foundation of reliable measurement

- Differential, gage, and absolute pressure measurement
- Select from an extensive offering of DP flow meters, liquid level, manifolds, and flanges
- Available with variety of protocols and materials

Best-in-class capabilities extended to IEC 62591 (*WirelessHART Protocol*)

- Cost effectively implement wireless on the industry's most proven platform
- Optimize safety with the industry's only intrinsically safe power module
- Eliminate wiring design and construction complexities to lower costs by 40-60 percent
- Quickly deploy new pressure, level, and flow measurements in 70 percent less time

Innovative, integrated DP flow meters

- Fully assembled and leak tested for out-of-the-box installation
- Reduce straight pipe requirements, lower permanent pressure loss, and achieve accurate measurement in small line sizes
- Up to two percent volumetric flow accuracy at 5:1 turndown

Proven, reliable, and innovative DP level technologies

- Connect to virtually any process with a comprehensive offering of process connections, fill fluids, direct mount or capillary connections, and materials.
- Quantify and optimize total system performance with QZ option.
- Optimize level measurement with cost efficient Tuned-System™ Assemblies

Instrument manifolds — quality, convenient, and easy

- Designed and engineered for optimal performance with Rosemount transmitters
- Save installation time and money with factory assembly
- Offers a variety of styles, materials, and configurations

Access information when you need it with asset tags

Newly shipped devices include a unique QR code asset tag that enables you to access serialized information directly from the device. With this capability, you can:

- Access device drawings, diagrams, technical documentation, and troubleshooting information in your MyEmerson account
- Improve mean time to repair and maintain efficiency
- Ensure confidence that you have located the correct device
- Eliminate the time-consuming process of locating and transcribing nameplates to view asset information

Rosemount 2051C Coplanar Pressure Transmitter ordering information

Rosemount 2051C Coplanar Pressure Transmitter



- Performance up to 0.05% of span accuracy
- Patented coplanar technology allows direct mounting to pressure, flow or level solutions for installation flexibility
- Delivered fully assembled to manifolds, diaphragm seals or primary flow elements for straightforward installation
- Local Operator Interface offers easy-to-use menus and built-in configuration buttons for streamline commissioning
- SIL 2/3 certified to IEC 61508 (via 3rd party) and prior-use certificate of FMEDA data for safety installations

[CONFIGURE >](#)

[VIEW PRODUCT >](#)

Online product configurator

Many products are configurable online using our product configurator.

Select the **Configure** button or visit [Emerson.com/global](https://emerson.com/global) to start. With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

Specifications and options

Specification and selection of product materials, options, and/or components must be made by the purchaser of the equipment.

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery times. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model

Code	Description	
2051C	Coplanar Pressure Transmitter	★

Measurement type

Code	Description	
D	Differential	★
G	Gage	★

Pressure range

Code	Differential (Rosemount 2051CD)	Gage (Rosemount 2051CG)	
1	-25 to 25 inH ₂ O (-62.2 to 62.2 mbar)	-25 to 25 inH ₂ O (-62.2 to 62.2 mbar)	★
2	-250 to 250 inH ₂ O (-623 to 623 mbar)	-250 to 250 inH ₂ O (-623 to 623 mbar)	★
3	-1000 to 1000 inH ₂ O (-2.5 to 2.5 bar)	-393 to 1000 inH ₂ O (-0.98 to 2.5 bar)	★
4	-300 to 300 psi (-20.7 to 20.7 bar)	-14.2 to 300 psi (-0.98 to 20.7 bar)	★
5	-2000 to 2000 psi (-137.9 to 137.9 bar)	-14.2 to 2000 psi (-0.98 to 137.9 bar)	★

Transmitter output

Code	Description	
A ⁽¹⁾	4-20 mA with digital signal based on HART® Protocol	★
W ⁽²⁾	PROFIBUS® PA Protocol	★
X ⁽³⁾	Wireless	★

(1) HART Revision 5 is the default HART output. The Rosemount 2051 with Selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.

(2) For local addressing and configuration, M4 (LOI) is required. Not available with product certification codes E4, EM, EP, I6, IM, KD, KL, KM, KP, KS, N3.

(3) Only available with intrinsically safe approvals.

Transmitter flange type, material, drain/vent

Code	Description	Flange material	Drain/vent	
2	Coplanar	SST	SST	★
3 ⁽¹⁾		Cast C-276	Alloy C-276	
5		Plated CS	SST	★
7 ⁽¹⁾		SST	Alloy C-276	★
8 ⁽¹⁾		Plated CS	Alloy C-276	★
0	Alternate process connection			★

(1) Materials of construction comply with recommendations per NACE® MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

Isolating diaphragm

Code	Description	
2	316L SST	★
3	Alloy C-276	★
5 ⁽¹⁾⁽²⁾	Tantalum	
7 ⁽²⁾	Gold-plated 316 SST	

(1) Available in ranges 2–5 only.

(2) Not available with output code X.

O-ring

Code	Description	
A	Glass-filled PTFE	★
B	Graphite-filled PTFE	★

Sensor fill fluid

Code	Description	
1	Silicone	★
2 ⁽¹⁾	Inert (differential and gage only)	★

(1) Not available with wireless output (code X).

Housing material

Code	Description	Conduit entry size	
A	Aluminum	½–14 NPT	★
B	Aluminum	M20 x 1.5	★
E	Aluminum, ultra low copper	½–14 NPT	★
F	Aluminum, ultra low copper	M20 x 1.5	★
J	SST	½–14 NPT	★
K	SST	M20 x 1.5	★
P ⁽¹⁾	Engineered polymer	No conduit entries	★
D ⁽²⁾	Aluminum	G½	★
M ⁽²⁾	SST	G½	

(1) Only available with output code X.

(2) Transmitter conduit entry will be ½ NPT and a ½ NPT to G½ thread adapter will be provided. This option is only available with product certifications options I1, I2, I3, I7, IA, IB, IM, KA, N1, N3, N7. Housing code D is also available with E4, and IG.

Wireless options

Requires wireless output code X and engineered polymer housing code P.

Wireless transmit rate, operating frequency, and protocol

Code	Description	
WA3	User configurable transmit rate, 2.4 GHz Wireless HART®	★

Antenna and SmartPower™

Code	Description	
WP5	Internal antenna, compatible with Green Power Module ⁽¹⁾	★

(1) IS Power Module sold separately.

Additional options**Extended product warranty**

Code	Description	
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★

Plantweb™ control functionality

Code	Description	
A01	FOUNDATION™ Fieldbus advance control function block suite	★

Alternate flange

The alternate flange option code requires the 0 code in materials of construction for alternate process connection.

Code	Description	
H2	Traditional flange, 316 SST, SST drain/vent	★
H3 ⁽¹⁾	Traditional flange, alloy C, alloy C-276 drain/vent	★
H7 ⁽¹⁾	Traditional flange, 316 SST, alloy C-276 drain/vent	★
HJ	DIN-compliant traditional flange, SST, 7/16-in. (10 mm) adapter/manifold bolting	★
FA	Level flange, SST, 2-in. (51 mm), ANSI Class 150, vertical mount	★
FB	Level flange, SST, 2-in. (51 mm), ANSI Class 300, vertical mount	★
FC	Level flange, SST, 3-in. (76 mm), ANSI Class 150, vertical mount	★
FD	Level flange, SST, 3-in. (76 mm), ANSI Class 300, vertical mount	★
FP	DIN level flange, SST, DN 50, PN 40, vertical mount	★
FQ	DIN level flange, SST, DN 80, PN 40, vertical mount	★
HK ⁽²⁾	DIN compliant traditional flange, SST, 10 mm adapter/manifold bolting	
HL	DIN compliant traditional flange, SST, 12 mm adapter/manifold bolting	

(1) Materials of construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments. Order with Q15 or Q25 to receive a NACE certificate.

(2) Not valid with optional code P9 for 4500 psi static pressure.

Manifold assembly

"Assemble-to" items are specified separately and require a completed model number.

Code	Description	
S5	Assemble to Rosemount 305 Integral Manifold	★
S6	Assemble to Rosemount 304 Manifold or Connection System	★

Integral mount primary element

Not valid with option code P9 for 4500 static pressure. "Assemble-to" items are specified separately and require a completed model number.

Code	Description	
S3	Assemble to Rosemount 405 Compact Orifice Plate	★
S4 ⁽¹⁾	Assemble to Rosemount Annubar™ or Rosemount 1195 Integral Orifice	★

(1) Transmitter flange limited to coplanar (option codes 2, 3, 5, 7, or 8) or traditional (option codes H2, H3, or H7).

Seal assemblies

"Assemble-to" items are specified separately and require a completed model number.

Code	Description	
S1 ⁽¹⁾	Assemble to one Rosemount 1199 seal	★
S2 ⁽²⁾	Assemble to two Rosemount 1199 seals	★

(1) Not valid with option code D9 for RC1/2 adapters.

(2) Not valid for option codes DF and D9 for adapters.

Mounting brackets

Code	Description	
B1	Traditional flange bracket for 2-in. pipe mounting, CS bolts	★
B2	Traditional flange bracket for panel mounting, CS bolts	★
B3	Traditional flange flat bracket for 2-in. pipe mounting, CS bolts	★
B4	Coplanar flange bracket for 2-in. pipe or panel mounting, all SST	★
B7	B1 bracket with Series 300 SST bolts	★
B8	B2 bracket with Series 300 SST bolts	★
B9	B3 bracket with Series 300 SST bolts	★
BA	SST B1 bracket with Series 300 SST bolts	★
BC	SST B3 bracket with Series 300 SST bolts	★

Product certifications

Code	Description	
E1	ATEX Flameproof	★
I1 ⁽¹⁾	ATEX Intrinsic Safety	★
IA	ATEX FISCO Intrinsic Safety; for FOUNDATION™ Fieldbus or PROFIBUS® PA Protocol only	★
N1	ATEX Type n Certification	★
K8	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E8, I1 and N1)	★
E4 ⁽²⁾	Japan Flameproof	★
E5	USA Explosion-proof, Dust Ignition-proof	★
I5 ⁽³⁾	USA Intrinsically Safe, Nonincendive	★
K5	USA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
E6	Canada Explosion-proof, Dust Ignition-proof, Division 2	★
I6	Canada Intrinsic Safety	★

C6	Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
K6	Canada Explosion-proof, Intrinsically Safe, and Division 2 (combination of E6 and I6)	★
E7	IECEX Flameproof	★
I7	IECEX Intrinsic Safety	★
N7	IECEX Type n Certification	★
K7	IECEX Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7, and E7)	★
IG	IECEX FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA Protocols only	★
E2	Brazil Flameproof	★
I2	Brazil Intrinsic Safety	★
IB	Brazil FISCO intrinsically safe; for FOUNDATION Fieldbus or PROFIBUS PA Protocols only	★
K2	Brazil Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety	★
KB	USA and Canada Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	USA, Canada, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★
KL ⁽⁴⁾	USA, Canada, IECEX, ATEX Intrinsic Safety Combination	★
KS	USA, Canada, IECEX, ATEX Explosion-proof, Intrinsically Safe, Dust, Non-Incendive, Type-N, Div. 2	★
EP	Republic of Korea Flameproof	★
IP	Republic of Korea Intrinsic Safety	★
KP	Republic of Korea Flameproof, Intrinsic Safety	★

(1) Dust approval not applicable to wireless (output code X). See *Rosemount 2051 Wireless Product Certifications* for wireless approvals.

(2) Only available with 4-20 mA HART[®] (output code A), FOUNDATION[™] Fieldbus (output code F), or PROFIBUS[®] PA (output code W). Only available with aluminum housing and G½ conduit entry size (housing material code D).

(3) Nonincendive certification not provided with wireless (output code X).

(4) Only available with wireless (output code X).

Drinking water approval

This approval is not available with Alloy C-276 isolator (code 3), tantalum isolator (code 5), all cast C-276 flanges, all plated carbon steel (CS) flanges, all DIN flanges, all level flanges, assemble-to manifolds (codes S5 and S6), assemble-to seals (codes S1 and S2), assemble-to primary elements (codes S3 and S4), surface finish certification (code Q16), and remote seal system report (code QZ).

Code	Description	
DW	NSF drinking water approval	★

Shipboard approvals

Shipboard approvals are not available with wireless output (code X).

Code	Description	
SBS	American Bureau of Shipping	★
SBV	Bureau Veritas (BV)	★

SDN	Det Norske Veritas	★
SLL	Lloyds Register (LR)	★

SST tagging

Code	Description	
Y2	316SST Nameplate, top tag, wire-on tag, and fasteners	

Bolting material

Code	Description	
L4	Austenitic 316 SST bolts	★
L5	ASTM A 193, grade B7M bolts	★
L6	Alloy K-500 bolts	★
L8	ASTM A 193 Class 2, Grade B8M bolts	★

Display and interface options

Code	Description	
M4 ⁽¹⁾	LCD display with LOI	★
M5	LCD display	★

(1) Not available with FOUNDATION™ Fieldbus (output code F) or wireless (output code X).

Hardware adjustments

Code	Description	
D4 ⁽¹⁾	Zero and span configuration buttons	★
DZ ⁽²⁾	Digital zero trim	★

(1) Only available with 4-20 mA HART® (output code A).

(2) Only available with 4-20 mA HART (output code A) and wireless (output code X).

Flange adapters

This option is not valid with alternate process connection options S3, S4, S5, or S6.

Code	Description	
DF	½-14 NPT flange adapters	★

Conduit plug

Not available with output code X. Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard CS conduit plug.

Code	Description	
DO	316 SST conduit plug	★

RC¼ RC½ process connection

This option is not available with alternate process connection, DIN flanges, and level flanges.

Code	Description	
D9	RC $\frac{1}{4}$ flange with RC $\frac{1}{2}$ flange adapter - SST	

Ground screw

The ground screw option is not available with wireless output (code X). The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.

Code	Description	
V5	External ground screw assembly	★

Performance

Available with 4–20 mA HART (output code A), wireless (output code X), FOUNDATION Fieldbus (output code F), Rosemount 2051C Ranges 2–5 or Rosemount 2051T Ranges 1–4, SST and, alloy C-276 diaphragms and silicone fill fluid. High performance option includes 0.05 percent reference accuracy, and five year stability. See Performance specifications for details.

Code	Description	
P8	High performance option	★

Transient protection

The transient protection option is not available with wireless output (code X). The T1 option is not needed with FISCO Product Certifications; transient protection is included in the FISCO product certification codes IA, IB, and IE.

Code	Description	
T1	Transient protection terminal block	★

Software configuration

The software configuration option is only available with HART 4–20 mA output (output code A) and wireless output (output code X).

Code	Description	
C1	Custom software configuration (completed Rosemount 2051 Configuration Data Sheet or Rosemount 2051 Wireless Configuration Data Sheet .)	★

Alarm limit

The option is not available with FOUNDATION™ Fieldbus (output code F) or wireless (output code X).

Code	Description	
C4	NAMUR alarm and saturation levels, high alarm	★
CN	NAMUR alarm and saturation levels, low alarm	★
CR	Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet)	★
CS	Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)	★
CT	Low alarm (standard Rosemount alarm and saturation levels)	★

Pressure testing

Code	Description	
P1 ⁽¹⁾	Hydrostatic testing with certificate	★

⁽¹⁾ Not available with pressure range 0.

Cleaning process area

This option is not valid with alternate process connection S5.

Code	Description	
P2	Cleaning for special service	
P3	Cleaning for < 1 ppm chlorine/fluorine	

Maximum static line pressure

Code	Description	
P9	4500 psig (310 bar) static pressure limit (Rosemount 2051CD Ranges 2-5 only)	★

Calibration certificate

Code	Description	
Q4	Calibration Certificate	★
QG ⁽¹⁾	Calibration Certificate and GOST Verification Certificate	★
QP	Calibration certification and tamper evident seal	★

⁽¹⁾ Contact an Emerson representative for availability.

Material traceability certification

Code	Description	
Q8	Material traceability certification per EN 10204 3.1	★

Positive material identification (PMI)

Code	Description	
Q76	PMI verification and certificate	★

Quality certification for safety

Code	Description	
QT	Safety certified to IEC 61508 with certificate of FMEDA ⁽¹⁾	★

⁽¹⁾ The quality certification for safety is only available with HART® 4-20 mA output (code A).

Surface finish

Code	Description	
Q16	Surface finish certification for sanitary remote seals	★

Toolkit total system performance reports

Code	Description	
QZ	Remote seal system performance calculation report	★

Conduit electrical connector

The conduit electrical connector option is not available with wireless output (code X).

Code	Description	
GE	M12, 4-pin, male connector (eurofast®)	★
GM	A size mini, 4-pin, male connector (minifast®)	★

NACE® Certificate

Note that NACE-compliant wetted materials are required. Materials of construction must comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult the latest standard for details. All selected materials must also conform to NACE MR0103 for sour refining environments.

Code	Description	
Q15	Certificate of Compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of Compliance to NACE MR0103 for wetted materials	★

HART revision configuration

Only available with 4–20 mA HART® (output code A).

Code	Description	
HR5 ⁽¹⁾	Configured for HART Revision 5	★
HR7 ⁽²⁾	Configured for HART Revision 7	★

(1) Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.

(2) Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.

Wireless power accessory

This option is only available with output code X.

Code	Description	
HS	Hot swap power adapter for power module replacement	

Specifications

Performance specifications

This product data sheet covers HART™, Wireless, FOUNDATION™ Fieldbus, and PROFIBUS® PA Protocols unless specified.

Conformance to specification ($\pm 3\sigma$ [sigma])

Technology leadership, advanced manufacturing techniques, and statistical process control ensure specification conformance to at least $\pm 3\sigma$.

Reference accuracy

Stated reference accuracy equations include terminal based linearity, hysteresis, and repeatability. For Wireless, FOUNDATION™ Fieldbus, and PROFIBUS® PA devices, use calibrated range in place of span.

Models	Standard	High performance option, P8	
Rosemount 2051C3			
Range 1	±0.10 percent of span For spans less than 15:1, accuracy = $\pm\left(0.025 + 0.005\left[\frac{URL}{Span}\right]\right)\%$ of span	N/A	N/A
Ranges 2–4	±0.065 percent of span For spans less than 10:1, accuracy = $\pm\left(0.025 + 0.005\left[\frac{URL}{Span}\right]\right)\%$ of span	Ranges 2–4	High accuracy option, P8 ±0.05 percent of span For spans less than 10:1 ⁽¹⁾ , accuracy = $\pm\left(0.015 + 0.005\left[\frac{URL}{Span}\right]\right)\%$ of span
Range 5	±0.075 percent of span For spans less than 10:1, accuracy= $\pm\left(0.025 + 0.005\left[\frac{URL}{Span}\right]\right)\%$ of span	Range 5	High performance option, P8 ±0.065 percent of span For spans less than 10:1, accuracy= $\pm\left(0.015 + 0.005\left[\frac{URL}{Span}\right]\right)\%$ of span
Rosemount 2051T, 2051G ⁽²⁾			
Ranges 0	±0.065 percent of span For spans from 5:1 to 20:1, accuracy = $\pm\left(0.06 + 0.012\left[\frac{URL}{Span}\right]\right)\%$ of span	N/A	N/A
Ranges 1–4	±0.065 percent of span For spans less than 10:1, accuracy = $\pm\left(0.0075\left[\frac{URL}{Span}\right]\right)\%$ of span	Ranges 1–4	High accuracy option, P8 ±0.05 percent of span For spans less than 10:1 ⁽¹⁾ , accuracy = $\pm\left(0.0075\left[\frac{URL}{Span}\right]\right)\%$ of span
Range 5 ⁽³⁾	±0.075 percent of span	N/A	N/A

Models	Standard	High performance option, P8	
Rosemount 2051L			
Ranges 2–4	±0.075 percent of span For spans less than 10:1, accuracy = $\pm \left(0.025 + 0.005 \left[\frac{URL}{Span} \right] \right) \% \text{ of span}$	N/A	N/A

(1) For protocol code F, accuracy specification is for spans less than 7:1. Not available with output code W.

(2) For Rosemount 2051C, 2051T, and 2051G with 1199 assemble to code S1, use 3051L specification.

(3) Rosemount 2051G is not available with range 5.

Flow performance

Performance assumptions include: measured pipe ID, transmitter is trimmed for optimum flow accuracy, and performance is dependent on application parameters.

Flow reference accuracy

Range 1 flow meters may experience an additional uncertainty up to 0.9%. Consult your Emerson Representative for exact specifications.

Rosemount 2051CFA Annubar Flow Meter		
Ranges 2–3		±2.00 percent of flow rate at 5:1 flow turndown
Rosemount 2051CFC_A Compact Annubar Flow Meter — Annubar option A		
Ranges 2–3	Standard	±2.60 percent of flow rate at 5:1 flow turndown
	Calibrated	±2.30 percent of flow rate at 5:1 flow turndown
Rosemount 2051CFC Compact Orifice Flow Meter — conditioning option C		
Ranges 2–3	β = 0.4	±2.25 percent of flow rate at 5:1 flow turndown
	β = 0.65	±2.45 percent of flow rate at 5:1 flow turndown
Rosemount 2051CFC Compact Orifice Flow Meter — Orifice Type Option P⁽¹⁾		
Ranges 2–3		±2.50 percent of flow rate at 5:1 flow turndown
Rosemount 2051CFP Integral Orifice Flow Meter		
Ranges 2–3	Bore < 0.160	±3.10 percent of flow rate at 5:1 flow turndown
	0.160 ≤ bore < 0.500	±2.75 percent of flow rate at 5:1 flow turndown
	0.500 ≤ bore ≤ 0.1000	±2.25 percent of flow rate at 5:1 flow turndown
	0.1000 < bore	±3.00 percent of flow rate at 5:1 flow turndown

(1) For smaller line sizes, see Rosemount Compact Orifice.

Long-term stability

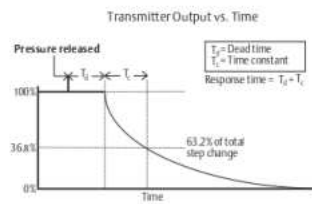
±50 °F (28 °C) temperature changes and up to 1000 psi. (6.9 MPa) line pressure.

Models	Standard	High performance option, P8
Rosemount 2051C		
Range 1 (CD)	±0.2 percent of URL for 1 year	±0.175 percent of URL for 7 years
Ranges 2–5	±0.125 percent of URL for 5 years	

Models	Standard	High performance option, P8
Rosemount 2051T, 2051G		
Ranges 1–5 ⁽¹⁾	±0.125 percent of URL for 5 years	±0.15 percent of URL for 7 years

(1) Rosemount 2051G is not available with range 5.

Dynamic performance

	4–20 mA HART [®] (1)	FOUNDATION Fieldbus and PROFIBUS PA Protocols ⁽²⁾	Typical HART Transmitter Response Time
Total response time ($T_d + T_c$):			Transmitter Output vs. Time  Pressure released 100% 63.2% of total step change 0% Time T_d = Dead time T_c = Time constant Response time = $T_d + T_c$
Rosemount 2051C			
Range 3–5:	115 ms	152 ms	
Range 1:	270 ms	307 ms	
Range 2:	130 ms	152 ms	
2051T and 2051G:	100 ms	152 ms	
2051L:	See Instrument Toolkit™		
Dead time (T_d)	60 ms (nominal ⁽³⁾)	97 ms	
Update rate ⁽⁴⁾	22 times per second		

(1) Dead time and update rate apply to all models and ranges; analog output only.

(2) Transducer block response time, analog input block execution time not included.

(3) Nominal total response time at 75 °F (24 °C) reference conditions.

(4) Does not apply to wireless (output code X). See [Wireless \(output code X\)](#) for wireless update rate.

Line pressure effect per 1000 psi (6,9 MPa)

For line pressures above 2000 psi (13,7 MPa) and ranges 4–5, see Rosemount 2051 [Reference Manual](#) for HART[®], Rosemount 2051 [Reference Manual](#) for Wireless HART[®], Rosemount 2051 [Reference Manual](#) for FOUNDATION[™] Fieldbus, and Rosemount 2051 [Reference Manual](#) PROFIBUS[®] PA.

Models	Line pressure effect	
Rosemount 2051CD, 2051CF	Zero Error⁽¹⁾	Span error
Range 1	±0.25 percent of URL/1000 psi (68,9 bar)	±0.4 percent of reading/1,000 psi (68,9 bar)
Ranges 2–3	±0.05 percent of URL/1000 psi (68,9 bar) for line pressures from 0 to 2000 psi (0 to 13,7 MPa)	±0.1 percent of reading/1,000 psi (68,9 bar)

(1) Can be calibrated out at line pressure.

Ambient temperature effect per 50 °F (28 °C)

Models	Ambient temperature effect
Rosemount 2051C, 2051CF	
Ranges 2–5	±(0.025% URL + 0.125% span) from 1:1 to 5:1 ±(0.05% URL + 0.25% span) from 5:1 to 100:1
Range 1	±(0.1% URL + 0.25% span) from 1:1 to 30:1
Rosemount 2051T, 2051G	
Range 0	± (0.3% URL + 0.15% span) from 1:1 to 20:1

Models	Ambient temperature effect
Range 2–4	$\pm(0.05\% \text{ URL} + 0.25\% \text{ span})$ from 1:1 to 30:1 $\pm(0.07\% \text{ URL} + 0.25\% \text{ span})$ from 30:1 to 100:1
Range 1	$\pm(0.05\% \text{ URL} + 0.25\% \text{ span})$ from 1:1 to 10:1 $\pm(0.10\% \text{ URL} + 0.25\% \text{ span})$ from 10:1 to 100:1
Range 5 ⁽¹⁾	$\pm(0.1\% \text{ URL} + 0.15\% \text{ span})$ from 1:1 to 5:1
Rosemount 2051L	See Instrument Toolkit™

(1) Rosemount 2051G is not available with range 5.

Mounting position effects

Models	Mounting position effects
Rosemount 2051C	Zero shifts up to $\pm 1.25 \text{ inH}_2\text{O}$ (3,1 mbar), which can be calibrated out. No span effect.
Rosemount 2051T and 2051G	Zero shifts up to $\pm 2.5 \text{ inH}_2\text{O}$ (6,2 mbar), which can be calibrated out. No span effect.
Rosemount 2051L	With liquid level diaphragm in vertical plane, zero shift of up to $1 \text{ inH}_2\text{O}$ (2,49 mbar). With diaphragm in horizontal plane, zero shift of up to $5 \text{ inH}_2\text{O}$ (12,43 mbar) plus extension length on extended units. Zero shifts can be calibrated out. No span effect.

Vibration effect

Less than ± 0.1 percent of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g).

Power supply effect

Less than ± 0.005 percent of calibrated span per volt.

Electromagnetic compatibility

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation $< 1\%$ span during EMC disturbance.

Note

NAMUR NE-21 does not apply to Wireless (Transmitter output code X).

Note

During surge event, device with 4–20mA (Transmitter output option code A) may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

Transient protection (option code T1)

Meets IEEE C62.41, category location B

- 6 kV crest (0.5 μs –100 kHz)
- 3 kA crest (8 x 20 microseconds)
- 6 kV crest (1.2 x 50 microseconds)

Functional specifications

Range and sensor limits

Table 1: Rosemount 2051CD, 2051CF, 2051CG, and 2051L

Range	Minimum span	Upper (URL)	Lower (LRL)			
			Rosemount 2051C Differential, 2051CF Flow Meters	Rosemount 2051C Gage ⁽¹⁾	Rosemount 2051L Differential	Rosemount 2051L Gage ⁽¹⁾
1	0.5 inH ₂ O (1,2 mbar)	25 inH ₂ O (62,3 mbar)	-25 inH ₂ O (-62,1 mbar)	-25 inH ₂ O (-62,1 mbar)	N/A	N/A
2	2.5 inH ₂ O (6,2 mbar)	250 inH ₂ O (0,62 bar)	-250 inH ₂ O (-0,62 bar)	-250 inH ₂ O (-0,62 bar)	-250 inH ₂ O (-0,62 bar)	-250 inH ₂ O (-0,62 bar)
3	10 inH ₂ O (24,9 mbar)	1000 inH ₂ O (2,49 bar)	-1000 inH ₂ O (-2,49 bar)	-393 inH ₂ O (-979 mbar)	-1000 inH ₂ O (-2,49 bar)	-393 inH ₂ O (-979 mbar)
4	3 psi (0,207 bar)	300 psi (20,7 bar)	-300 psi (-20,7 bar)	-14.2 psig (-979 mbar)	-300 psi (-20,7 bar)	-14.2 psig (-979 mbar)
5	20 psi (1,38 bar)	2000 psi (137,9 bar)	-2000 psi (-137,9 bar)		N/A	N/A

(1) Assumes atmospheric pressure of 14.7 psig.

Table 2: Rosemount 2051T and 2051G

Range	Minimum span	Upper (URL)	Lower (LRL) - Absolute	Lower ⁽¹⁾ (LRL) - Gage
0	0.25 psi (17,24 mbar)	5 psi (344,74 mbar)	N/A	-5 psi (-344,74 mbar)
1	0.3 psi (20,7 mbar)	30 psi (2,07 bar)	0 psia (0 bar)	-14.7 psig (-1,01 bar)
2	1.5 psi (0,103 bar)	150 psi (10,3 bar)		
3	8 psi (0,55 bar)	800 psi (55,2 bar)		
4	40 psi (2,76 bar)	4000 psi (275,8 bar)		
5 ⁽²⁾	2000 psi (137,9 bar)	10,000 psi (689,5 bar)		

(1) Assumes atmospheric pressure of 14.7 psig.

(2) Rosemount 2051G is not available with range 0 or range 5.

Service

Liquid, gas, and vapor applications

Protocols

4-20 mA HART[®] (output code A)

Power supply

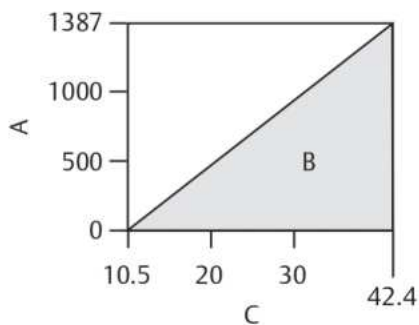
External power supply required. Standard transmitter operates on 10.5-42.4 Vdc with no load.

Load limitations

Maximum loop resistance is determined by the voltage level of the external power supply described by:

Max. loop resistance = 43.5 (power supply voltage - 10.5)

Communication requires a minimum loop resistance of 250 ohms.



- A. Load (Ω s)
 B. Operating region
 C. Voltage (Vdc)

Note

For CSA approval, power supply must not exceed 42.4 V.

Indication

Optional two line LOI/LCD display

Zero and span adjustment requirements

Zero and span values can be set anywhere within the range limits stated in [Range and sensor limits](#). Span must be greater than or equal to the minimum span stated.

Output

Two-wire 4–20 mA, user selectable for linear or square root output. Digital process variable superimposed on 4–20 mA signal, available to any host that conforms to HART Protocol.

Rosemount 2051 with Selectable HART

The Rosemount 2051 with Selectable HART comes with Selectable HART Revisions. Digital communications based on HART Revision 5 (default) or Revision 7 (option code HR7) Protocol can be selected. The HART revision can be switched in the field using any HART based configuration tool or the optional LOI.

LOI

The LOI utilizes a two-button menu with internal and external configuration buttons. Internal buttons are always configured for LOI. External buttons can be configured for either LOI, (option code M4), analog zero and span (option code D4) or digital zero trim (option code DZ). See [Rosemount 2051 with Selectable HART Reference Manual](#) for LOI configuration menu.

FOUNDATION™ Fieldbus (output code F)

Power supply

External power supply required; transmitters operate on 9.0–32.0 Vdc transmitter terminal voltage for non-I.S. applications, 9.0–30 Vdc for entity model intrinsically safe applications and 9.0–17.5 Vdc for FISCO intrinsically safe applications.

Current draw

17.5 mA for all configurations (including LCD display option)

Indication

Optional two-line LCD display

FOUNDATION Fieldbus Function block Execution times

Block	Execution time
Resource	N/A
Transducer	N/A
LCD display block	N/A
Analog input 1, 2	20 milliseconds
PID	25 milliseconds
Arithmetic	20 milliseconds
Input selection	20 milliseconds
Signal characterizer	20 milliseconds
Integrator	20 milliseconds
Output splitter	20 milliseconds
Control selector	20 milliseconds

FOUNDATION Fieldbus parameters

Schedule entries	Links	Virtual communications relationships (VCR)
7 (max.)	25 (max.)	20 (max.)

Standard function blocks**Analog input (AI) block**

The AI function block processes the measurements from the sensor and makes them available to other function blocks. The output value from the AI block is in engineering units and contains a status indicating the quality of the measurement. The AI block is widely used for scaling functionality.

Note

The channel, Set XD_Scale, Set L_Type, and sometimes Set Out_Scale are typically configured by instrument personnel. Other AI block parameters, block links, and schedule are typically configured by the control systems configuration engineer.

Backup link active scheduler (LAS)

The transmitter can function as a LAS if the current link master device fails or is removed from the segment.

PROFIBUS® PA (output code W)**Profile version**

3.02

Power supply

External power supply required; transmitters operate on 9.0–32.0 Vdc transmitter terminal voltage for non-IS applications, 9.0–30 Vdc for entity model intrinsically safe applications and 9.0–17.5 Vdc for FISCO intrinsically safe applications.

Current draw

17.5 mA for all configurations (including LCD display option)

Output update rate

Four times per second

Standard function blocks**Analog input (AI) block**

The AI function block processes the measurements from the sensor and makes them available to other function blocks. The output value from the AI block is in engineering units and contains a status indicating the quality of the measurement. The AI block is widely used for scaling functionality.

Note

The channel, Set XD_Scale, Set L_Type, and sometimes Set Out_Scale are typically configured by instrument personnel. Other AI block parameters, block links, and schedule are typically configured by the control systems configuration engineer.

Indication

Optional two-line LCD display

LOI

Optional external configuration buttons

Wireless (output code X)**Output**

IEC 62591 (Wireless HART®), 2.4 GHz DSSS

Wireless radio (internal antenna, WP5 option)

- Frequency: 2.400–2.485 GHz
- Channels: 15
- Modulation: IEEE 802.15.4 compliant DSSS
- Transmission: Maximum of 10 dBm EIRP

Local display

The optional three-line, seven-digit LCD display can display user-selectable information such as primary variable in engineering units, scaled variable, percent of range, sensor module temperature, and electronics temperature. The display updates based on the wireless update rate.

Digital zero trim

Digital zero trim (option DZ) is an offset adjustment to compensate for mounting position effects, up to 5 percent of URL.

Update rate

User selectable 1 second to 60 minutes

Wireless sensor module for in-line transmitters

The Rosemount 2051 Wireless Transmitter requires the engineered polymer housing to be selected. The standard sensor module will come with aluminum material. If SST is required, the option WSM must be selected.

Power module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride Power Module with PBT/PC enclosure. 10-year life at one minute update rate.

Note

Reference conditions are 70 °F (21 °C), and routing data for three additional network devices. Continuous exposure to ambient temperature limits of -40 to 185 °F (-40 to 85 °C) may reduce specified life by less than 20 percent.

Overpressure limits

Transmitters withstand the following limits without damage:

Rosemount 2051C, 2051CF

- Ranges 2-5: 3,626 psig (250 bar) 4,500 psig (310,3 bar) for option code P9
- Range 1: 2,000 psig (137,9 bar)

Rosemount 2051T, 2051G

- Range 0: 60 psi (4,14 bar)
- Range 1: 750 psi (51,7 bar)
- Range 2: 1,500 psi (103,4 bar)
- Range 3: 1,600 psi (110,3 bar)
- Range 4: 6,000 psi (413,7 bar)
- Range 5: 15,000 psi (1034,2 bar)⁽¹⁾

Rosemount 2051L

Limit is flange rating or sensor rating, whichever is lower (See Table 3).

Table 3: Rosemount 2051L Flange Rating

Standard	Type	CS rating	SST rating
ANSI/ASME	Class 150	285 psig	275 psig
ANSI/ASME	Class 300	740 psig	720 psig
At 100 °F (38 °C), the rating decreases with increasing temperature, per ANSI/ASME B16.5.			

⁽¹⁾ The Rosemount 2051G is not available with range 5.

Table 3: Rosemount 2051L Flange Rating (continued)

Standard	Type	CS rating	SST rating
DIN	PN 10–40	40 bar	40 bar
DIN	PN 10/16	16 bar	16 bar

At 248 °F (120 °C), the rating decreases with increasing temperature, per DIN 2401.

Static pressure limit

Rosemount 2051CD, 2051CF

- Operates within specifications between static line pressures of –14.2 and 3626 psig (0,034 and 250 bar)
- For option code P9, 4500 psig (310,3 bar)
- Range 1: 0.5 psia to 2000 psig (34 mbar and 137,9 bar)

Burst pressure limits

Rosemount 2051C, 2051CF coplanar or traditional transmitter flange

10,000 psig (689.5 bar)

Rosemount 2051T in-line

- Ranges 0–4: 11000 psi (758,4 bar)
- Range 5: 26000 psi (1792,6 bar)

Temperature limits

Ambient

–40 to 185 °F (–40 to 85 °C)

with LCD display: –40 to 175 °F (–40 to 80 °C)

Note

Rosemount 2051 LCD display may not be readable and LCD display updates may be slower at temperatures below –22 °F (–30 °C).

Note

Wireless LCD display may not be readable and LCD display updates will be slower at temperatures below –4 °F (–20 °C).

Storage

–50 to 230 °F (–46 to 110 °C)

with LCD display: –40 to 185 °F (–40 to 85 °C)

with Wireless output: –40 to 185 °F (–40 to 85 °C)

Process

At atmospheric pressures and above. See [Table 4](#).

Table 4: Process Temperature Limits

Rosemount 2051C, 2051CF	
Silicone fill sensor ⁽¹⁾	
with coplanar flange	–40 to 250 °F (–40 to 121 °C) ⁽²⁾
with traditional flange	–40 to 300 °F (–40 to 149 °C) ⁽²⁾⁽³⁾

Table 4: Process Temperature Limits (continued)

with level flange	-40 to 300 °F (-40 to 149 °C) ⁽²⁾
with Rosemount 305 Integral Manifold	-40 to 300 °F (-40 to 149 °C) ⁽²⁾
Inert fill sensor ⁽¹⁾	-40 to 185 °F (-40 to 85 °C) ⁽³⁾
Rosemount 2051T (process fill fluid)	
Silicone fill sensor ⁽¹⁾	-40 to 250 °F (-40 to 121 °C) ⁽²⁾
Inert fill sensor ⁽¹⁾	-22 to 250 °F (-30 to 121 °C) ⁽²⁾
Rosemount 2051L low side temperature limits	
Silicone fill sensor ⁽¹⁾	-40 to 250 °F (-40 to 121 °C) ⁽²⁾
Inert fill sensor ⁽¹⁾	-40 to 185 °F (-40 to 85 °C) ⁽²⁾
Rosemount 2051L high side temperature limits (process fill fluid)	
SYLTHERM™ XLT	-102 to 293 °F (-75 to 145 °C)
Silicone 704	32 to 401 °F (0 to 205 °C)
Silicone 200	-49 to 401 °F (-45 to 205 °C)
Inert	-49 to 320 °F (-45 to 160 °C)
Glycerin and water	5 to 203 °F (-15 to 95 °C)
Neobee® M-20	5 to 401 °F (-15 to 205 °C)
Propylene glycol and water	5 to 203 °F (-15 to 95 °C)

(1) Process temperatures above 185 °F (85 °C) require derating the ambient limits by a 1.5:1 ratio.

(2) 220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.

(3) 160 °F (71 °C) limit in vacuum service.

Humidity limits

0–100 percent relative humidity

Volumetric displacement

Less than 0.005 in³ (0,08 cm³)

Damping

4–20 mA HART® Protocol

Analog output response to a step input change is user-enterable from 0–60 seconds for one time constant. This software damping is in addition to sensor module response time.

FOUNDATION™ Fieldbus Protocol

Transducer block: User configurable

AI block: User configurable

PROFIBUS® PA Protocol

AI block only: User configurable

Failure mode alarm

4–20 mA HART® Protocol (output code A)

If self-diagnostics detect a sensor or microprocessor failure, the analog signal is driven either high or low to alert the user. High or low failure mode is user-selectable with a jumper on the transmitter. The values to which the transmitter drives its output in failure mode depend on whether it is factory-configured to standard or NAMUR-compliant operation. The values for each are as follows:

Table 5: Standard Operation

Output code	Linear output	Fail high	Fail low
A	$3.9 \leq I \leq 20.8$	$I \geq 21.75 \text{ mA}$	$I \leq 3.75 \text{ mA}$

Table 6: NAMUR-Compliant Operation

Output code	Linear output	Fail high	Fail low
A	$3.8 \leq I \leq 20.5$	$I \geq 22.5 \text{ mA}$	$I \leq 3.6 \text{ mA}$

Output code F and X

If self-diagnostics detect a gross transmitter failure, that information gets passed as a status along with the process variable.

Physical specifications

Material selection

Emerson provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Electrical connections

½–14 NPT, G½, and M20 x 1.5 conduit

Process connections

Rosemount 2051C

- ¼–18 NPT on 2½ in. centers
- ½–14 NPT and RC½ on 2 in. (50,8 mm), 2½ in. (54,0 mm), or 2¾ in. (57,2 mm) centers (process adapters)

Rosemount 2051T, 2051G

- ½–14 NPT female
- G½ A DIN 16288 male (available in SST for range 1–4 transmitters only)
- Autoclave type F-250-C (pressure relieved 9/16–18 gland thread; ¼ O.D. high pressure tube 60° cone; available in SST for range 5 transmitters only)

Rosemount 2051L

- High pressure side: 2-in.(50,8 mm), 3-in. (72 mm), or 4-in. (102 mm), ASME B 16.5 (ANSI) Class 150 or 300 flange; 50, 80, or 100 mm, DIN 2501 PN 40 or 10/16 flange
- Low pressure side: ¼-18 NPT on flange, ½-14 NPT on process adapter

Rosemount 2051CF

- For Rosemount 2051CFA wetted parts, see Rosemount DP Flow Meters and Primary Elements [Product Data Sheet](#) in the 485 section
- For Rosemount 2051CFC wetted parts, see Rosemount DP Flow Meters and Primary Elements [Product Data Sheet](#) in the 405 section
- For Rosemount 2051CFP wetted parts, see Rosemount DP Flow Meters and Primary Elements [Product Data Sheet](#) in the 1195 section

Rosemount 2051C process wetted parts**Drain/vent valves**

316 SST or alloy C-276

Transmitter flanges and adapters

Plated CS, SST CF-8M (cast version of 316 SST, material per ASTM-A743), or CW2M (cast version of alloy C)

Wetted O-rings

Glass-filled PTFE or graphite-filled PTFE

Process isolating diaphragms

316L SST, alloy C-276, Gold-plated 316L SST or tantalum

Rosemount 2051T process wetted parts**Process connections**

316L SST or alloy C-276

Process Isolating diaphragms

316L SST, Gold-plated 316L SST, or alloy C-276

Rosemount 2051L process wetted parts**Flanged process connection (transmitter high side)**

Process diaphragms, including process gasket surface	316L SST, alloy C-276, or Tantalum
Extension	CF-3M (cast version of 316L SST, material per ASTM-A743), or cast C-276. Fits schedule 40 and 80 pipe.
Mounting flange	Zinc-cobalt plated CS or SST

Reference process connection (transmitter low side)

Isolating diaphragms	316L SST or alloy C-276
Reference flange and adapter	CF-8M (cast version of 316 SST, material per ASTM-A743)

Non-wetted parts

Electronics housing

Low-copper aluminum or CF-8M (cast version of 316 SST) Enclosures meet NEMA Type 4X, IP66, and IP68 when properly installed.

Housing material code P: PBT/PC with NEMA 4X and IP66/67/68

Paint for aluminum housing

Polyurethane

Coplanar sensor module housing

CF-3M (cast version of 316L SST)

Bolts

ASTM A449, Type 1 (zinc-cobalt plated CS) ASTM F593G, Condition CW1 (austenitic 316 SST) ASTM A193, Grade B7M (zinc plated alloy steel) Alloy K-500

Sensor module fill fluid

Silicone or inert halocarbon

In-line series uses Fluorinert® FC-43

Process fill fluid (Rosemount 2051L only)

Syltherm XLT, Silicone 704, Silicone 200, inert, glycerin and water, Neobee® M-20, or propylene glycol and water

Cover O-rings

Buna-N

Silicone (for wireless option code X)

Power module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride power module with PBT enclosure.

Shipping weights

Table 7: Transmitter Weights without Options

Transmitter weights include the sensor module and housing only (aluminum for standard Rosemount 2051 and polymer for wireless).

Transmitter	Standard in lb. (kg)	Wireless in lb. (kg)
Rosemount 2051C	4.9 (2.2)	3.9 (1,8)
Rosemount 2051L	See Table 8	See Table 8
Rosemount 2051T	3.1 (1.4)	1.9 (0,86)
Rosemount 2051G	2.4 (1,1)	N/A

Table 8: Rosemount 2051L Weights without Options

Flange	Flush in lb. (kg)	2-in. ext. in lb. (kg)	4-in. ext. in lb. (kg)	6-in. ext. in lb. (kg)
2-in., Class 150	12.5 (5,7)	N/A	N/A	N/A
3-in., Class 150	17.5 (7,9)	19.5 (8,8)	20.5 (9,3)	21.5 (9,7)
4-in., Class 150	23.5 (10,7)	26.5 (12,0)	28.5 (12,9)	30.5 (13,8)
2-in., Class 300	17.5 (7,9)	N/A	N/A	N/A

Table 8: Rosemount 2051L Weights without Options (continued)

Flange	Flush in lb. (kg)	2-in. ext. in lb. (kg)	4-in. ext. in lb. (kg)	6-in. ext. in lb. (kg)
3-in., Class 300	22.5 (10,2)	24.5 (11,1)	25.5 (11,6)	26.5 (12,0)
4-in., Class 300	32.5 (14,7)	35.5 (16,1)	37.5 (17,0)	39.5 (17,9)
DN 50/PN 40	13.8 (6,2)	N/A	N/A	N/A
DN 80/PN 40	19.5 (8,8)	21.5 (9,7)	22.5 (10,2)	23.5 (10,6)
DN 100/PN 10/16	17.8 (8,1)	19.8 (9,0)	20.8 (9,5)	21.8 (9,9)
DN 100/PN 40	23.2 (10,5)	25.2 (11,5)	26.2 (11,9)	27.2 (12,3)

Table 9: Transmitter Option Weights

Code	Option	Add lb. (kg)
J, K, L, M	SST housing	3.9 (1,8)
M5	LCD display for aluminum housing	0.5 (0,2)
M5	LCD display for wireless output	0.1 (0,04)
B4	SST mounting bracket for coplanar flange	1.0 (0,5)
B1, B2, B3	Mounting bracket for traditional flange	2.3 (1,0)
B7, B8, B9	Mounting bracket for traditional flange	2.3 (1,0)
BA, BC	SST bracket for traditional flange	2.3 (1,0)
H2	Traditional flange	2.6 (1,2)
H3	Traditional flange	3.0 (1,4)
H4	Traditional flange	3.0 (1,4)
H7	Traditional flange	2.7 (1,2)
FC	Level flange—3-in., Class 150	12.7 (5,8)
FD	Level flange—3-in., Class 300	15.9 (7,2)
FA	Level flange—2-in., Class 150	8.0 (3,6)
FB	Level flange—2-in., Class 300	8.4 (3,3)
FP	DIN level flange, SST, DN 50, PN 40	7.8 (3,5)
FQ	DIN level flange, SST, DN 80, PN 40	12.7 (5,8)
WSM	SST sensor module	1.0 (0,45)
N/A	Power Module (701 PGNKF)	0.4 (0,18)

Fișa tehnică - Indicator de nivel magnetic Wika BNA-S

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Indicator de nivel magnetic Wika BNA-S	WIK A Alexander Wiegand SE & Co.
2	Condiții de lucru:	• Temperatura de funcționare -196 +450°C • Presiunea maximală de funcționare 100 bar • Afisaj magnetic pina la 200°C	
3	Parametri constructivi:	• Conectare prin flanșe EN 1092-1 Dn50 Pn100 • Cameră de bypass Ø 60.3 x 2.77 mm • Partea inferioară a camerei - Capac de drenaj • Material inox 316L • Plutitor cilindric	
4	Dotări minime:	Comutator magnetic, model BGU-A	
5	Caracteristici funcționale:	• Puterea de comutare a comutatoruli magnetic 230V, 1A, 60VA • Temperatura de funcționare comutatorului -50 +180°C	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat ATEX	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipsesc	
12	Condiții privind conformitatea cu standarde relevante:	• EN 13445 • II 1/2G Ex h IIB T6 ... T1 Ga/Gb	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

Bypass level indicator With magnetic display Model BNA

WIKA data sheet LM 10.01



for further approvals
see page 4

Applications

- Continuous level indication without supply voltage
- Indication of the level proportional to height
- Individual design and corrosion-resistant materials make the products suitable for a broad range of applications
- Chemical industry, petrochemical industry, oil and natural gas extraction (on- and offshore), shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

Special features

- Process- and procedure-specific production
- Operating limits:
 - Operating temperature: $T = -196 \dots +450 \text{ }^{\circ}\text{C}$
 - Operating pressure: $P = \text{Vacuum to } 400 \text{ bar}$
 - Limit density: $\rho \geq 340 \text{ kg/m}^3$
- Wide variety of different process connections and materials
- Mounting of level transmitters and magnetic switches possible as an option
- Explosion-protected versions

Description

The model BNA bypass level indicator consists of a bypass chamber which is attached to the side of a tank as a communicating vessel via at least 2 process connections (flange, threaded coupling or weld stub). Through this type of arrangement, the level in the bypass chamber corresponds to the level in the vessel. The float with a built-in permanent magnetic system, which is mounted within the bypass chamber, transmits the liquid level, contact-free, to the magnetic display mounted to the outside of the bypass chamber. In this are fitted, at 10 mm intervals, two-coloured plastic rollers or stainless steel flaps with bar magnets.

Bypass level indicator, model BNA with level sensor and magnetic switch



Through the magnetic field of the permanent magnetic system in the float, the display elements, through the wall of the bypass chamber, are turned through 180° . For an increasing level from white to red; for a falling level from red to white. Thus the bypass level indicator clearly displays the level of a vessel without supply voltage.

Further special features

- Simple, robust and solid design, long service life
- Bypass chamber and float from stainless steel 1.4571, 1.4404 or special materials
- Pressure- and gas-tight separation between measuring and display chamber
- Detecting and indicating of the fill level of aggressive, combustible, toxic, hot and highly contaminated media
- The functioning of the magnetic display is guaranteed even in the event of power failures
- Applicable for all industrial applications by using various corrosion-resistant materials
- Continuous detection of levels, independent of physical and chemical changes of the media such as: Foaming, conductivity, dielectric, pressure, vacuum, temperature, vapours, condensation, bubble formation, boiling effects
- Interface-layer level measurement from Δ density 100 kg/m³
- Special versions: Food-compliant, coatings, liquid gas, heating jacket

Design and operating principle

- In a communicating bypass chamber mounted to the side of a vessel a float moves with the level of the medium to be measured.
- The magnetic field of the radial-symmetric magnetic system positioned in the float activates the magnetic display attached to the outside of the bypass chamber as well as the switching and measuring elements.

Magnetic system

The magnetic system is assembled from a pole disc and various magnets. These can be individually adapted to the different chamber dimensions and for temperatures up to 450 °C.

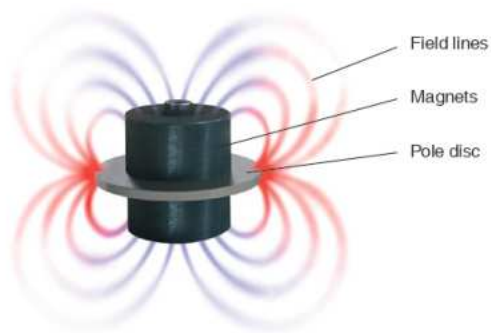
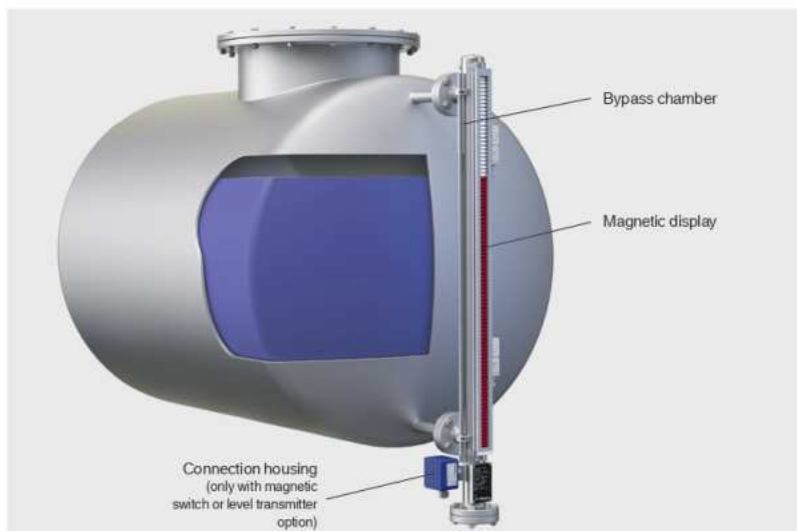


Illustration of the principle



Model overview

Model	Description	Materials	Max. operating pressure in bar	Max. operating temperature in °C
BNA-S	Standard version	- Stainless steel 1.4571 (316Ti) - Stainless steel 1.4401/1.4404 (316/316L)	100	-196 ... +450
BNA-C	Compact version	Stainless steel 1.4571 (316Ti)	40	-196 ... +200
BNA-P	Plastic version	- PP - PVDF	6	-10 ... +100
BNA-H	High-pressure version	- Stainless steel 1.4571 (316Ti) - Stainless steel 1.4401/1.4404 (316/316L)	385	-196 ... +450
BNA-SD	DUPlus version, standard	- Stainless steel 1.4571 (316Ti) - Stainless steel 1.4401/1.4404 (316/316L)	100	-196 ... +450
BNA-HD	DUPlus version, high pressure	- Stainless steel 1.4571 (316Ti) - Stainless steel 1.4401/1.4404 (316/316L)	160	-196 ... +450
BNA-L	Liquid gas/KOPlus version	- Stainless steel 1.4571 (316Ti) - Stainless steel 1.4401/1.4404 (316/316L)	63	-196 ... +450
BNA-X	Special materials	Stainless steel 6Mo 1.4547 (UNS S31254)	250	-196 ... +450
		- Stainless steel 1.4571 (316Ti) with internal coating E-CTFE - Stainless steel 1.4571 (316Ti) with internal coating PTFE	16	Depending on medium
		Titanium 3.7035	40	-10 ... +450
		Hastelloy C276 (2.4819)	160	-196 ... +450
BNA-J	Heating jacket version	- Stainless steel 1.4571 (316Ti) - Stainless steel 1.4401/1.4404 (316/316L)	64	-60 ... +450

Other materials on request

Note: Always consider the operating pressure and temperature together.

Design codes available

- AD2000
- ASME B31.3
- EN 13445
- NORSOK

CE classification

Model	PED	ATEX	CE
BNA-.00	-	-	-
BNA-.A1 BNA-.A2 BNA-.BD BNA-.GE BNA-.BC	x	-	x
BNA-.00C	-	x	x
BNA-.A1C BNA-.A2C BNA-.BDC BNA-.GEC BNA-.BCC	x	x	x

Approvals

■ Model BNA-P

Logo	Description	Country
	EU declaration of conformity Pressure equipment directive	European Union
	GOST (option) Metrology ¹⁾ , measurement technology	Russia

■ Models BNA-S, BNA-C, BNA-H

Logo	Description	Country
	EU declaration of conformity ■ Pressure equipment directive ■ ATEX directive (option) Hazardous areas - Ex h Zone 0/1, gas ²⁾ II 1/2G Ex h IIB T6 ... T1 Ga/Gb Zone 0/1, gas ²⁾ II 1/2G Ex h IIC T6 ... T1 Ga/Gb Zone 2, gas II 3/3G Ex h IIC T6 ... T1 Gc/Gc Zone 0/1, dust ²⁾ II -/2D Ex h IIIC T68 ... T360°C -/Db Zone 0/1, dust ²⁾ II -/2D Ex h IIIC T68 ... T360°C -/Db Zone 2, dust II -/3D Ex h IIIC T80 ... T440°C -/Dc	European Union
	IECEx (option) Hazardous areas - Ex h Zone 0/1, gas ²⁾ II 1/2G Ex h IIB T6 ... T1 Ga/Gb X Zone 0/1, gas ²⁾ II 1/2G Ex h IIC T6 ... T1 Ga/Gb X Zone 2, gas II 3/3G Ex h IIC T6 ... T1 Gc/Gc X Zone 0/1, dust ²⁾ II -/2D Ex h IIIC T68 ... T360°C -/Db X Zone 0/1, dust ²⁾ II -/2D Ex h IIIC T68 ... T360°C -/Db X Zone 2, dust II -/3D Ex h IIIC T80 ... T440°C -/Dc X	International
	GOST (option) Metrology ¹⁾ , measurement technology	Russia
	DNV GL (option) ■ Ships, shipbuilding (e.g. offshore) ■ Hazardous areas - Ex c Zone 0/1, gas II 1/2 G c T1 ... T6	International
	ABS (option) Ships, shipbuilding (e.g. offshore)	International

■ Models BNA-SD, BNA-HD, BNA-L

Logo	Description	Country
	EU declaration of conformity ■ Pressure equipment directive ■ ATEX directive (option) Hazardous areas - Ex h Zone 0/1, gas II 1/2 G c T1 ... T6 Zone 0/1, gas ²⁾ II 1/2G Ex h IIB T6 ... T1 Ga/Gb Zone 2, gas II 3/3G Ex h IIC T6 ... T1 Gc/Gc Zone 0/1, dust ²⁾ II -/2D Ex h IIIC T68 ... T360°C C-/Db Zone 2, dust II -/3D Ex h IIIC T80 ... T440°C -/Dc	European Union
	IECEx (option) Hazardous areas - Ex h Zone 0/1, gas G c T1 ... T6 Zone 0/1, gas ²⁾ Ex h IIB T6 ... T1 Ga/Gb Zone 2, gas Ex h IIC T6 ... T1 Gc/Gc Zone 0/1, dust ²⁾ Ex h IIIC T68 ... T360°C C-/Db Zone 2, dust Ex h IIC T80 ... T440°C -/Dc	International
	GOST (option) Metrology ¹⁾ , measurement technology	Russia

■ Models BNA-X, BNA-J

Logo	Description	Country
 	EU declaration of conformity ■ Pressure equipment directive ■ ATEX directive (option) Hazardous areas - Ex h Zone 0/1, gas II 1/2 G c T1 ... T6 - Zone 0/1, gas ²⁾ II 1/2G Ex h IIB T6 ... T1 Ga/Gb - Zone 2, gas II 3/3G Ex h IIC T6 ... T1 Gc/Gc - Zone 0/1, dust ²⁾ II -/2D Ex h IIIC T68 ... T360°C C-/Db - Zone 2, dust II -/3D Ex h IIC T80 ... T440°C -/Dc	European Union
	IECEx (option) Hazardous areas - Ex h Zone 0/1, gas G c T1 ... T6 - Zone 0/1, gas ²⁾ Ex h IIB T6 ... T1 Ga/Gb - Zone 2, gas Ex h IIC T6 ... T1 Gc/Gc - Zone 0/1, dust ²⁾ Ex h IIIC T68 ... T360°C C-/Db - Zone 2, dust Ex h IIC T80 ... T440°C -/Dc	International
	GOST (option) Metrology ¹⁾ , measurement technology	Russia
	DNV GL (option) - not for version with internal coating ■ Ships, shipbuilding (e.g. offshore) ■ Hazardous areas - Ex c Zone 0/1, gas II 1/2 G c T1 ... T6	International

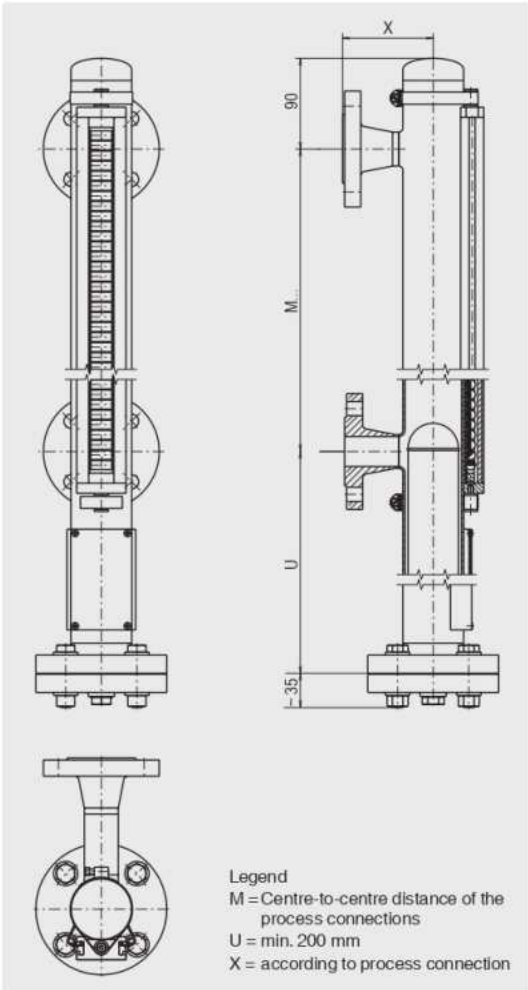
1) Only in combination with electrical components

2) With plastic cover on the display bar

Other approvals on request.

Approvals and certificates, see website

Standard version, model BNA-S
 Bypass chamber from stainless steel

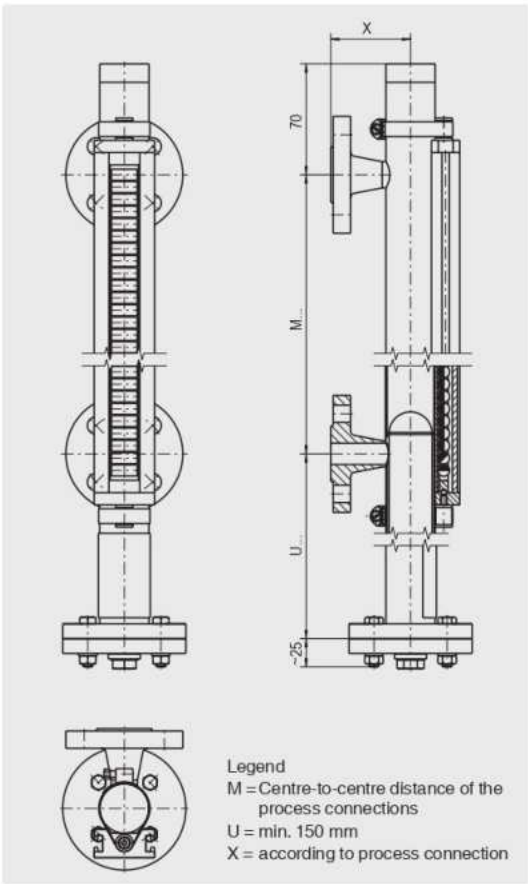


Specifications	
Bypass chamber	Ø 60.3 x 2 mm, max. 63 bar Ø 60.3 x 2.77 mm, max. 100 bar
Chamber end top	Pipe cap or flange connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	Flange connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 10 ... DN 100, PN 6 ... PN 100 ■ DIN, DN 10 ... DN 100, PN 6 ... PN 100 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 900
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Centre-to-centre distance	Min. 150 mm to max. 6,000 mm Larger distances on request
Material	■ Stainless steel 1.4571 (316Ti) ■ Stainless steel 1.4401/1.4404 (316/316L)
Max. nominal pressure	100 bar
Temperature range	-196 ... +450 °C
Float	■ Cylindrical float ■ Corrugated float
Magnetic display	Standard version: < 200 °C High-temperature version: > 200 °C

Special versions on request

Compact version, model BNA-C

Bypass chamber from stainless steel

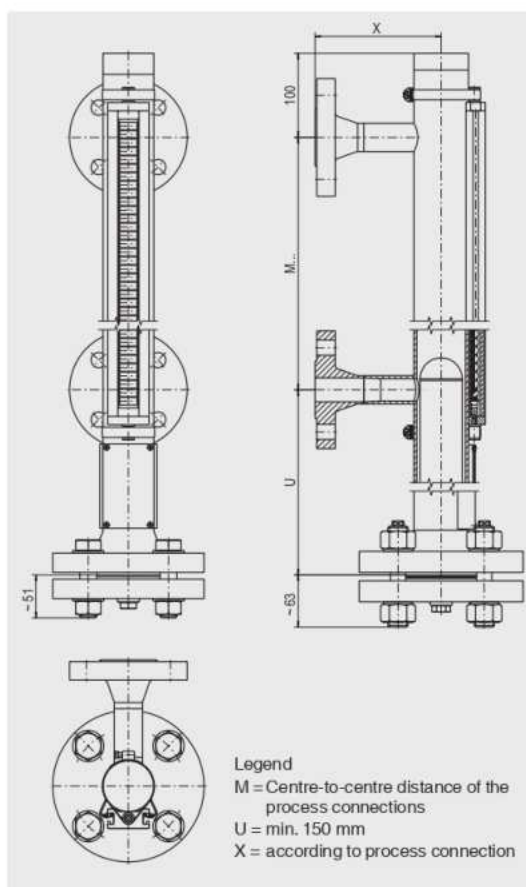


Specifications	
Bypass chamber	Ø 42.2 x 2 mm, max. 40 bar
Chamber end top	Pipe cap, flange or threaded connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	Flange connection or threaded connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 10 ... DN 50, PN 6 ... PN 40 ■ DIN, DN 10 ... DN 50, PN 6 ... PN 40 ■ Flange ANSI B 16.5, 1/2" ... 2.5", class 150 ... class 300
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Centre-to-centre distance	Min. 150 mm to max. 5,000 mm
Material	Stainless steel 1.4571 (316Ti)
Max. nominal pressure	40 bar
Temperature range	-196 ... +200 °C
Float	Cylindrical float

Special versions on request

High-pressure version, model BNA-H

Bypass chamber from stainless steel

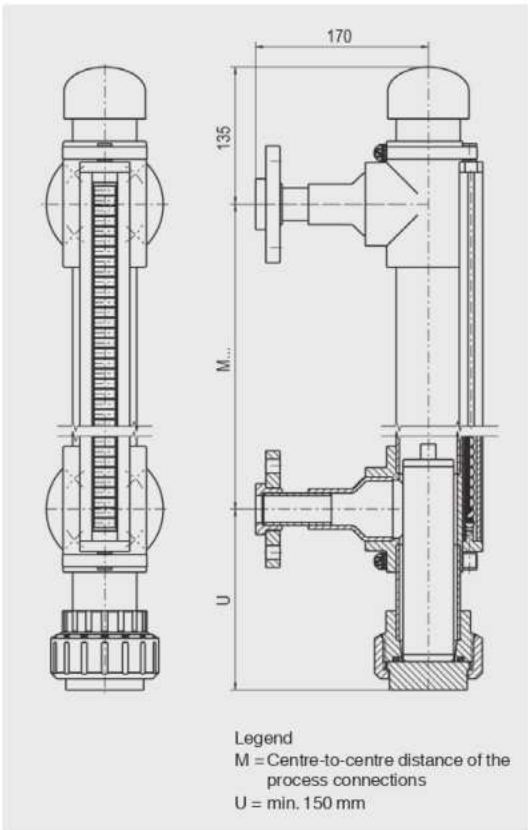


Specifications	
Bypass chamber	
Stainless steel 1.4571	Ø 60.3 x 3.91 mm, max. 160 bar Ø 76.1 x 5 mm, max. 100 bar Ø 71 x 7.5 mm, max. 250 bar Ø 76.1 x 10 mm, max. 385 bar
Stainless steel 1.4401/1.4404	Ø 60.3 x 3.91 mm, max. 160 bar Ø 60.3 x 5.54 mm, max. 250 bar Ø 73 x 7.01 mm, max. 150 bar
Chamber end top	Pipe cap or flange connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	Flange connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 10 ... DN 100, PN 63 ... PN 400 ■ DIN, DN 10 ... DN 100, PN 64 ... PN 400 ■ Flange ANSI B 16.5, 1/2" ... 4", class 600 ... class 2,500
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Centre-to-centre distance	Min. 150 mm to max. 6,000 mm Larger distances on request
Material	■ Stainless steel 1.4571 (316Ti) ■ Stainless steel 1.4401/1.4404 (316/316L)
Max. nominal pressure	385 bar
Temperature range	-196 ... +450 °C
Float	■ Cylindrical float ■ Ball-segment float ■ Foam float
Magnetic display	Standard version: < 200 °C High-temperature version: > 200 °C

Special versions on request

Plastic version, model BNA-P

Bypass chamber and float from PVDF or PP

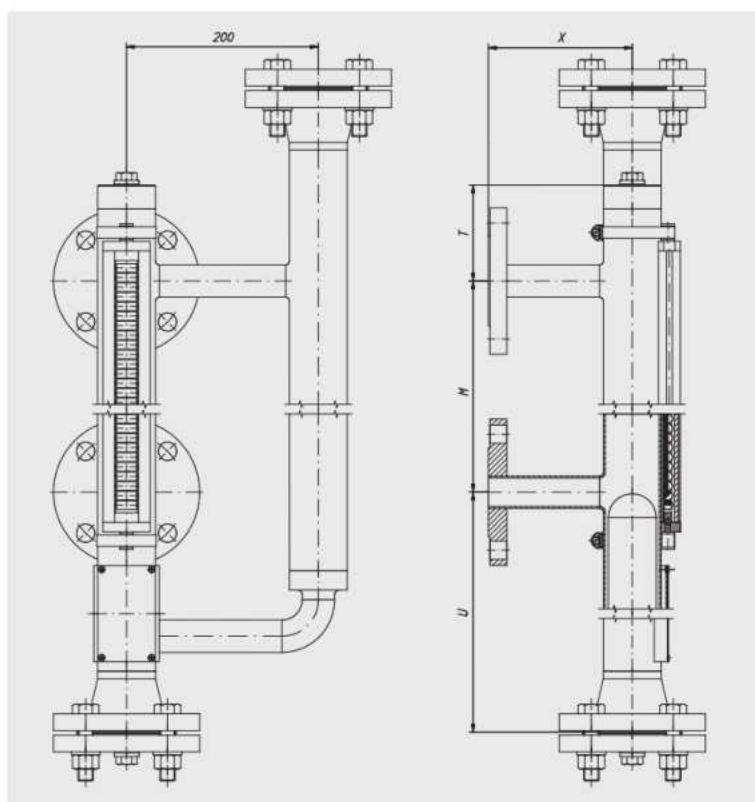


Specifications	
Bypass chamber	Ø 63 x 3 mm, max. 6 bar
Chamber end top	Pipe cap or threaded connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	Threaded connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 15 ... DN 50, PN 16 ■ DIN, DN 15 ... DN 50, PN 16 ■ Flange ANSI B 16.5, 1/2" ... 2", class 150
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Centre-to-centre distance	Min. 200 mm to max. 4,000 mm Larger distances on request
Material	■ PVDF ■ PP
Max. nominal pressure	6 bar
Temperature range	
PVDF	-10 ... +100 °C
PP	-10 ... +80 °C
Float	Plastic float

Special versions on request

DUPlus version, standard, model BNA-SD

Bypass chamber from stainless steel



Legend

M = Centre-to-centre distance of the process connections

U = min. 150 mm

X = according to process connection

T = min. 100 mm

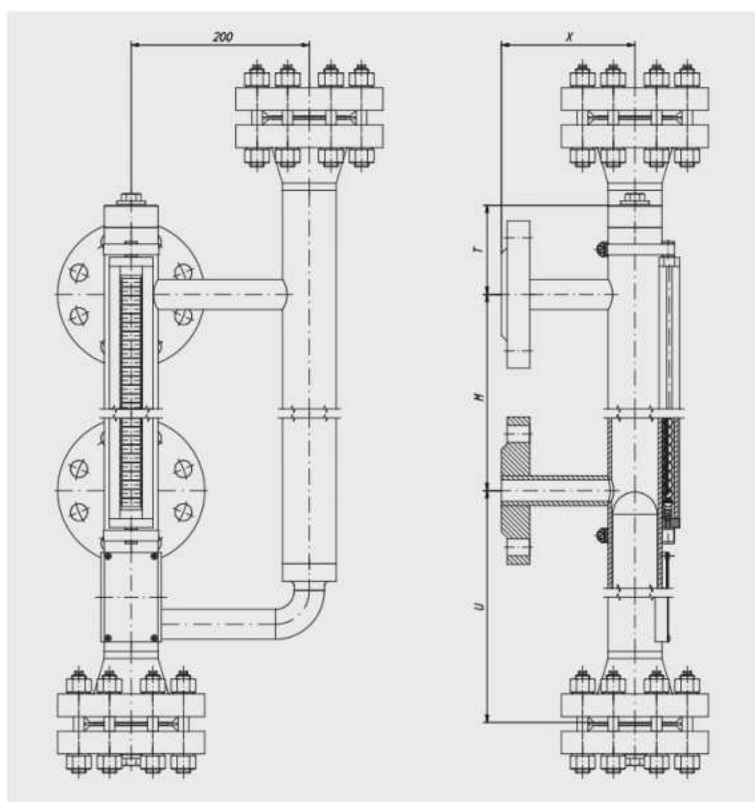
Specifications	
Bypass chamber	- Ø 60.3 x 2 mm, max. 63 bar - Ø 60.3 x 2.77 mm, max. 100 bar
Chamber end top	- Flange connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	- Pipe cap or flange connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ DIN, DN 10 ... DN 100, PN 6 ... PN 64 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 600
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT

Specifications	
External sensor connection	
Mounting flange	■ EN 1092-1, DN 50, PN 6 ... PN 64 ■ DIN, DN 50, PN 6 ... PN 64 ■ ANSI B 16.5, 2" class 150 ... class 600
Female thread	■ G 3/4 ... 2 ■ 3/4 ... 2 NPT
Centre-to-centre distance	Min. 150 mm to max. 6,000 mm Larger distances on request
Material	■ Stainless steel 1.4571 (316Ti) ■ Stainless steel 1.4401/1.4404 (316/316L)
Max. nominal pressure	100 bar
Temperature range	-196 ... +450 °C
Float	■ Cylindrical float ■ Corrugated float
Magnetic display	Standard version: < 200 °C High-temperature version: > 200 °C

Special versions on request

DUPlus version, high pressure, model BNA-HD

Bypass chamber from stainless steel



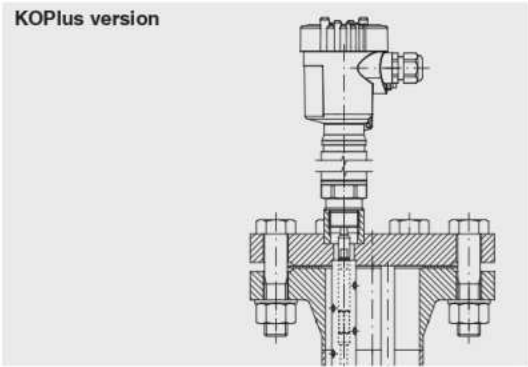
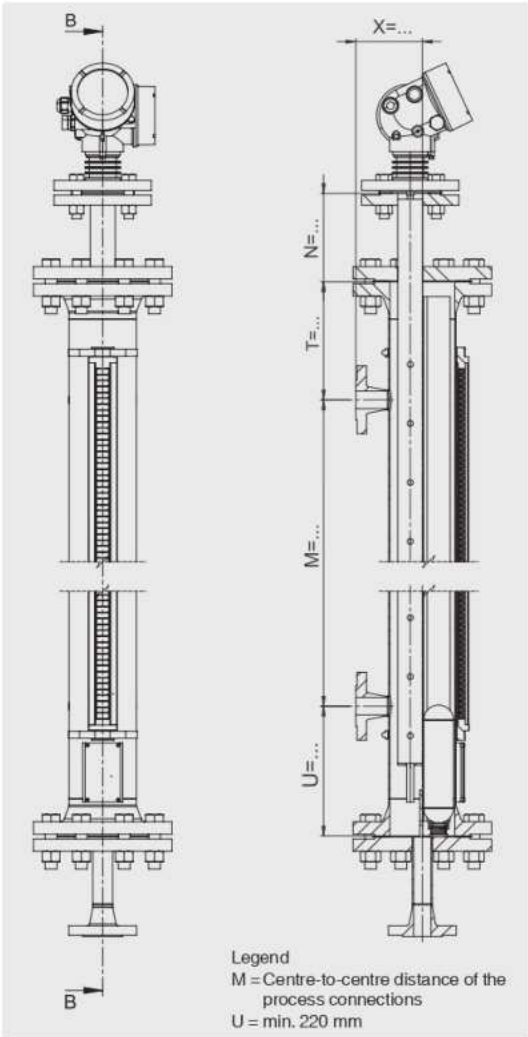
Legend
M = Centre-to-centre distance of the process connections
U = min. 150 mm
X = according to process connection
T = min. 100 mm

Specifications	
Bypass chamber	Ø 60.3 x 3.91 mm, max. 160 bar
Chamber end top	Flange connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	Pipe cap or flange connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ DIN, DN 10 ... DN 100, PN 64 ... PN 160 ■ Flange ANSI B 16.5, 1/2" ... 4", class 600 ... class 1,500
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT

Specifications	
External sensor connection	
Mounting flange	■ EN 1092-1, DN 50, PN 6 ... PN 160 ■ DIN, DN 50, PN 6 ... PN 160 ■ ANSI B 16.5, 2" class 150 ... class 1,500
Female thread	■ G 3/4 ... 2 ■ 3/4 ... 2 NPT
Centre-to-centre distance	Min. 150 mm to max. 6,000 mm Larger distances on request
Material	■ Stainless steel 1.4571 (316Ti) ■ Stainless steel 1.4401/1.4404 (316/316L)
Max. nominal pressure	160 bar
Temperature range	-196 ... +450 °C
Float	■ Cylindrical float ■ Corrugated float
Float	■ Cylindrical float ■ Corrugated float ■ Ball-segment float ■ Foam float
Magnetic display	Standard version: < 200 °C High-temperature version: > 200 °C

Special versions on request

Liquid gas/KOPlus version, model BNA-L
 Bypass chamber from stainless steel

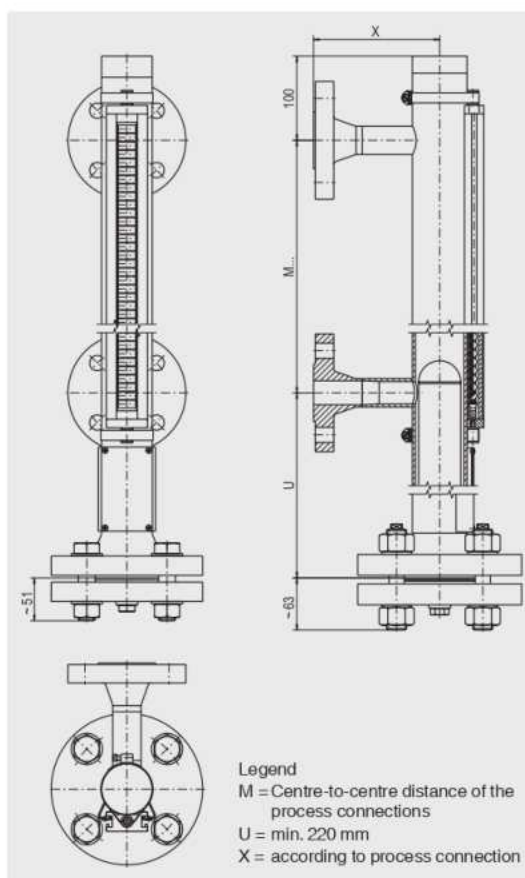


Specifications	
Bypass chamber	
Stainless steel 1.4571	Ø 88.9 x 2 mm, max. 40 bar Ø 88.9 x 2.9 mm, max. 40 bar Ø 114 x 2 mm, max. 25 bar Ø 114 x 3.6 mm, max. 40 bar Ø 114 x 4.5 mm, max. 40 bar Ø 114 x 6.3 mm, max. 63 bar
Stainless steel 1.4401/1.4404	Ø 88.9 x 2 mm, max. 40 bar Ø 88.9 x 3.05 mm, max. 40 bar Ø 114 x 2 mm, max. 25 bar Ø 114 x 3.05 mm, max. 40 bar Ø 114 x 6.02 mm, max. 63 bar
Chamber end top	Flange connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	Flange connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 10 ... DN 100, PN 6 ... PN 63 ■ DIN, DN 10 ... DN 100, PN 6 ... PN 64 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 600
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Centre-to-centre distance	Min. 150 mm to max. 6,000 mm Larger distances on request
Material	■ Stainless steel 1.4571 (316Ti) ■ Stainless steel 1.4401/1.4404 (316/316L)
Max. nominal pressure	63 bar
Temperature range	-196 ... +450 °C
Float	Cylindrical float
Magnetic display	Standard version: < 200 °C High-temperature version: > 200 °C

Special versions on request

Special materials, model BNA-X

Bypass chamber from titanium, Hastelloy or stainless steel 6Mo

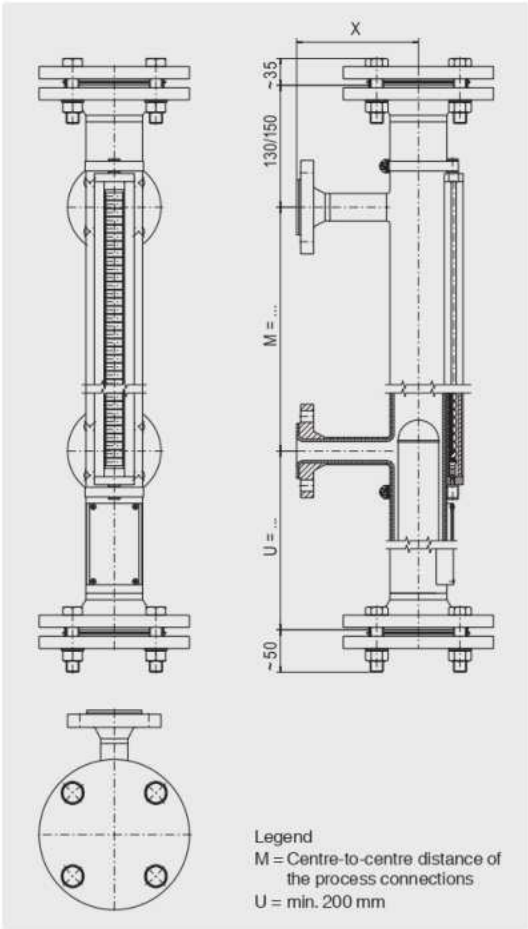


Specifications	
Bypass chamber	
Titanium 3.7035	Ø 60.3 x 2 mm, max. 16 bar Ø 60.3 x 2.77 mm, max. 40 bar
Hastelloy C276	Ø 60.3 x 2.77 mm, max. 50 bar Ø 60.3 x 3.91 mm, max. 160 bar
Stainless steel 6Mo 1.4547 (UNS S31254)	Ø 60.3 x 2.77 mm, max. 50 bar Ø 60.3 x 3.91 mm, max. 160 bar Ø 60.3 x 5.54 mm, max. 250 bar
Chamber end top	Pipe cap or threaded connection ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	Flange connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Titanium 3.7035	Mounting flange ■ EN 1092-1, DN 10 ... DN 100, PN 6 ... PN 63 ■ DIN, DN 10 ... DN 100, PN 6 ... PN 64 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 600
Hastelloy C276	Mounting flange ■ EN 1092-1, DN 10 ... DN 100, PN 6 ... PN 400 ■ DIN, DN 10 ... DN 100, PN 6 ... PN 400 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 2,500
Stainless steel 6Mo 1.4547 (UNS S31254)	Mounting flange ■ EN 1092-1, DN 10 ... DN 100, PN 63 ... PN 400 ■ DIN, DN 10 ... DN 100, PN 64 ... PN 400 ■ Flange ANSI B 16.5, 1/2" ... 4", class 600 ... class 2,500
Centre-to-centre distance	Min. 150 mm to max. 6,000 mm Larger distances on request
Material	■ PVDF ■ PP
Max. nominal pressure	
Titanium 3.7035	40 bar
Hastelloy C276	160 bar
Stainless steel 6Mo 1.4547 (UNS S31254)	250 bar
Temperature range	-10 ... +450 °C
Float	■ Cylindrical float ■ Corrugated float
Magnetic display	Standard version: < 200 °C High-temperature version: > 200 °C

1) Other materials on request

Special versions on request

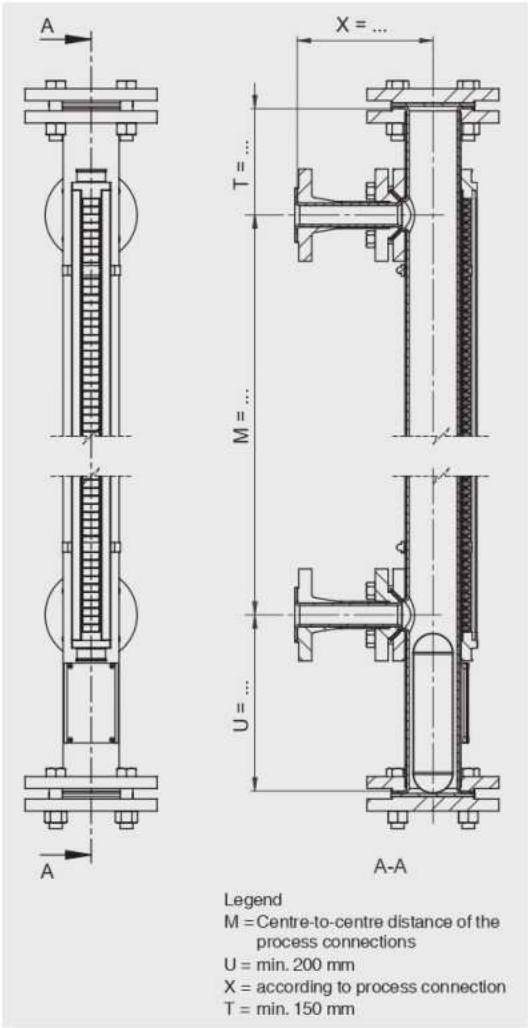
Special materials, model BNA-X
 Bypass chamber from stainless steel with internal coating E-CTFE



Specifications	
Bypass chamber	Ø 64 x 2 mm, max. 16 bar
Chamber end top	Flange connection ■ Vent flange → Options see page 17
Chamber end bottom	Flange connection ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 10 ... DN 50, PN 6 ... PN 16 ■ DIN, DN 10 ... DN 50, PN 6 ... PN 16 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 300
Centre-to-centre distance	
Overall pipe length < 2,500 mm	Min. 150 mm to max. ... mm
Overall pipe length > 2,500 mm	Bypass chamber separated by flange connection
Material	Stainless steel 1.4571 with internal coating E-CTFE
Max. nominal pressure	16 bar
Temperature range	Depending on medium
Float	Cylindrical float

Special versions on request

Special materials, model BNA-X
 Bypass chamber from stainless steel with internal coating PTFE

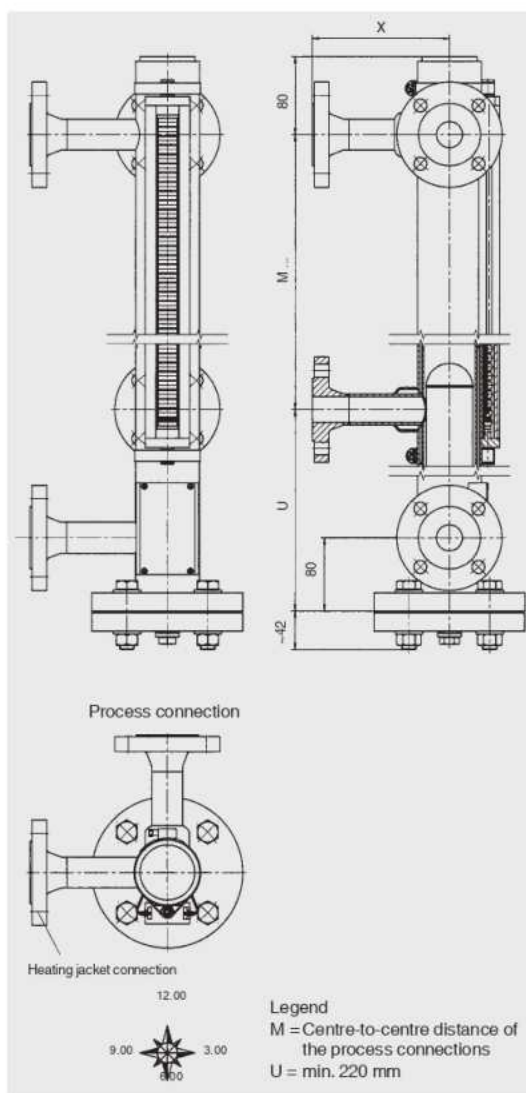


Specifications	
Bypass chamber	Ø 70 x 2 mm, max. 10 bar
Chamber end top	Flange connection ■ Vent flange → Options see page 17
Chamber end bottom	Flange connection ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 10 ... DN 50, PN 6 ... PN 16 ■ DIN, DN 10 ... DN 50, PN 6 ... PN 16 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 300
Centre-to-centre distance	
Overall pipe length < 2,500 mm	Min. 150 mm to max. ... mm
Overall pipe length > 2,500 mm	Bypass chamber separated by flange connection
Material	Stainless steel 1.4571 with internal coating PTFE
Max. nominal pressure	10 bar
Temperature range	Depending on medium
Float	Cylindrical float

Special versions on request

Heating jacket version, model BNA-J

Bypass chamber and heating jacket pipe from stainless steel

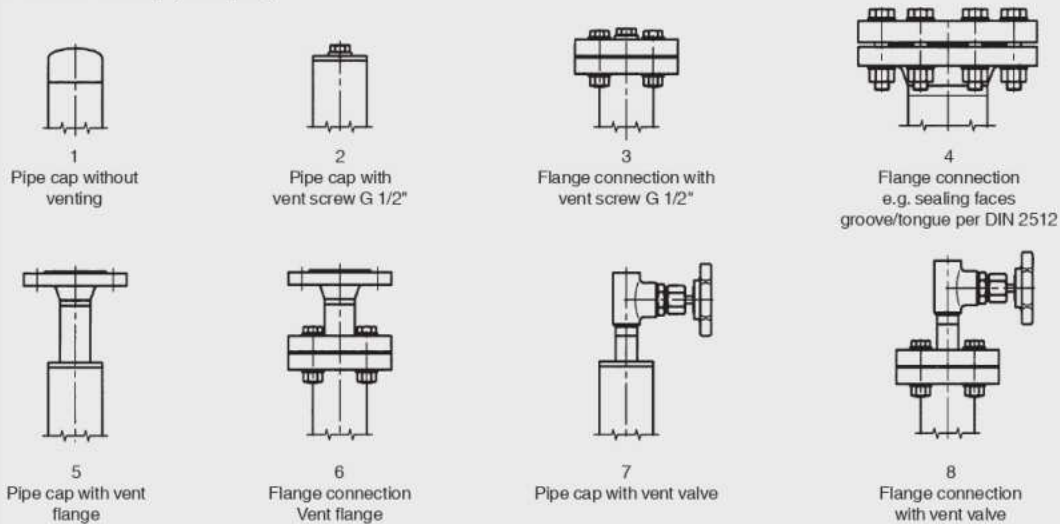


Specifications	
Bypass chamber	- Ø 60.3 x 2 mm, max. 40 bar - Ø 60.3 x 2.77 mm, max. 64 bar
Heating jacket pipe	Ø 70 x 2 mm
Chamber end top	- Pipe cap ■ Vent screw ■ Vent valve ■ Vent flange → Options see page 17
Chamber end bottom	- Flange connection ■ Drain plug ■ Drain valve ■ Drain flange → Options see page 17
Process connections	2 x lateral (options see page 18)
Mounting flange	■ EN 1092-1, DN 10 ... DN 100, PN 6 ... PN 100 ■ DIN, DN 10 ... DN 100, PN 6 ... PN 100 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 600
Weld stub	1/2" ... 1"
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Heating jacket connection	
Mounting flange	■ EN 1092-1, DN 10 ... DN 25, PN 6 ... PN 40 ■ DIN, DN 10 ... DN 25, PN 6 ... PN 40 ■ Flange ANSI B 16.5, 1/2" ... 4", class 150 ... class 300
Threaded bushing	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Threaded nipple	■ G 1/2 ... 1 ■ 1/2 ... 1 NPT
Centre-to-centre distance	Min. 150 mm to max. 6,000 mm Larger distances on request
Material	■ Stainless steel 1.4571 (316Ti) ■ Stainless steel 1.4401/1.4404 (316/316L)
Max. nominal pressure	64 bar
Temperature range	-60 ... +450 °C
Float	Cylindrical float
Magnetic display	Standard version: < 200 °C High-temperature version: > 200 °C

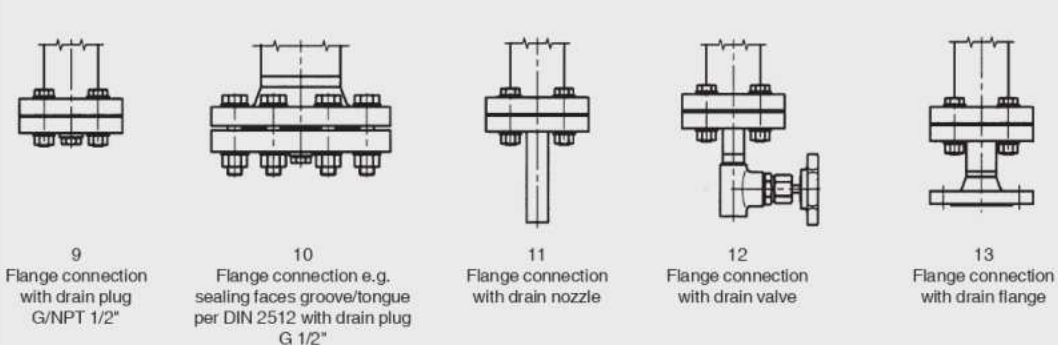
Special versions on request

Options for chamber ends

Chamber end top (examples)



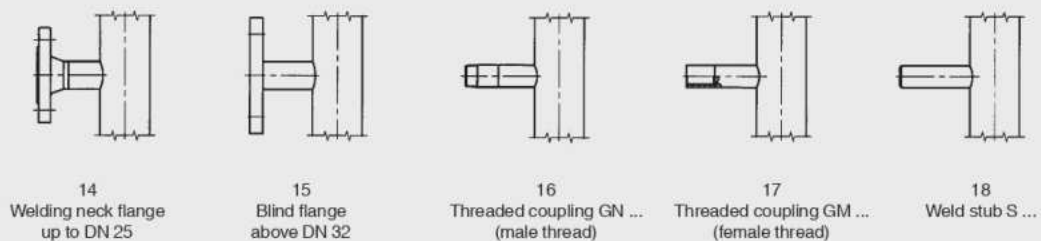
Chamber end bottom (examples)



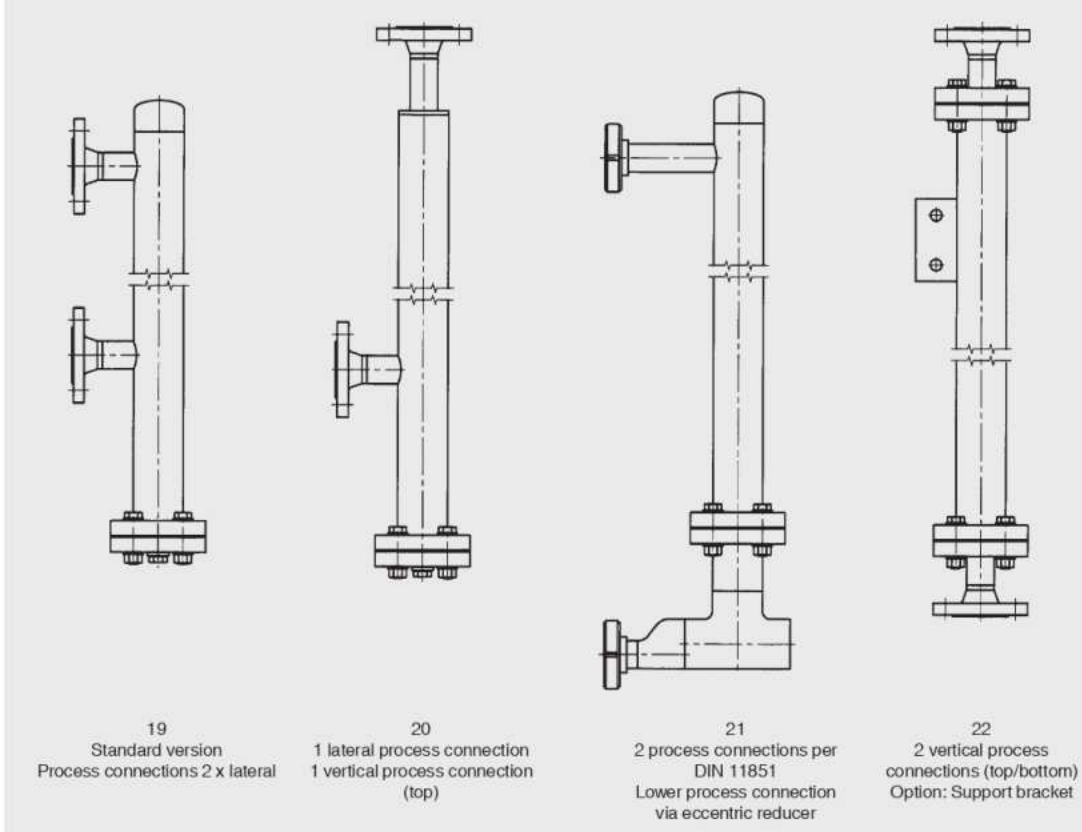
Other options on request

Option process connection

Process connection (examples)



Complete instrument (examples)



Other connections on request

Ordering information

Model / Material / Process specifications (operating temperature and pressure, density) / Process connection /
Centre-to-centre distance M / Approvals

For detailed information on floats, magnetic displays, level transmitters (reed chain and magnetostrictive) and magnetic switches see the following data sheets:

- Float; model BFT; see data sheet LM 10.02
- Magnetic display; model BMD; see data sheet LM 10.03
- Reed level transmitter; model BLR; see data sheet LM 10.04
- Magnetostrictive level transmitter; model BLM; see data sheet LM 10.05
- Magnetic switch; model BGU; see data sheet LM 10.06

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We reserve the right to make modifications to the specifications and materials.



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Fișa tehnică – Senzor scapări gaze Prosense - ATEX P-3112PE

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Corespondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Senzor scapări gaze Prosense - ATEX P-3112PE	Prosense Gaz ve Alev Dedektörleri
2	Condiții de lucru:	• Temperatură funcționare: - 40oC...+70oC • Umiditate: 5 ~ 95%RH fără condens • Alimentare: min 10VDC – max 28 VDC – nominal 24 VDC	
3	Parametri constructivi:	• Tip element detecție: catalitic • Carcasa: aluminiu în vopsea epoxidică • Capul senzorului: alamă placată cu nichel • Dimensiuni: 172,5x118,15x88mm	
4	Dotări minime:	Lipsește	
5	Caracteristici funcționale:	• Gaz detectat: gaz metan • Interfață ieșire: 4-20mA • Timp încălzire: 60 secunde • Viteză răspuns (T90): <15 secunde • Acuratețe: %±2	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat ATEX	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Clasă IP: IP65	
12	Condiții privind conformitatea cu standarde relevante:	• EN 13445 • II 1/2G Ex h IIB T6 ... T1 Ga/Gb	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

Trustworthy Certification

PROSENSE "PE" Series fixed gas detectors are certified with ATEX/IECEX.

Ex-proof Safety

The continuous measurement of explosive gases is done safely in hazardous areas thanks to the ex-proof housing.

Cost-Effective Solutions

"PE" series offers cost-effective solutions in Oil&Gas industries.

Robust and Durable

"PE" performs perfectly under harsh environmental conditions with the IP65 protection class.

Accurate Readings

Long-lasting Catalytic sensors undoubtedly provide an accurate and sensitive measurement.

Universal 4-20mA Analog Signal Output

4-20mA Analog output is simple to operate efficiently and it is universally usable in any control panel.

Quick Response Time

Catalytic sensor in PE offers quick response time with affordable prices.

Durable Sensor

PE Series uses a special Catalytic sensor which has a long life-time

Fail-Safe Technology Alarming

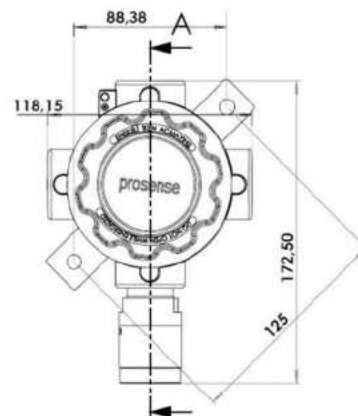
Optional relay module is suitable to use as Alarm1 and Fault. Additionally, it can be arranged as Alarm1 and Alarm2.

Applications

- LNG/LPG
- Oil&Gas
- Gas Distribution Stations

Optional Modules

- PE-2R: 2 Relays output card (Alarm1-Fault or Alarm1-Alarm2) (NO/NC adjustable)



Specifications	P-XY12PE
Sensing Element	Catalytic
Output Signal	4-20mA Analog
Sensor Warm-up Time	60sec
Response Time (T90)	<15sec
Accuracy	%±2
Operating Temperature	-40°C ~ +70°C
Humidity	5 ~ 95%RH Non-Condensing
Input	Min 10VDC - Max 28VDC - Nominal 24VDC
Power Consumption	Max. 4W
Optional Relay Outputs	2 Relay Contacts (Alarm1-Fault or Alarm1-Alarm2) (All relays are NO/NC adjustable)
Cable Entry	1/2"NPT
IP Rating	IP65
Junction Box	Epoxy Painted Die-Cast Aluminum
Sensor Head	Nickel-Plated Brass
Dimensions/Weight	172,5x118,15x88mm / 1150gr
ATEX Marking	II 2G Ex db IIC T4-T5 Gb
Hazardous Class	Zone 1 or Zone 2
Certificates	•IMQ 19 ATEX 045 X •IECEX IMQ 18.0009X
Standards	• IEC EN 60079-0 • IEC EN 60079-1 • IEC EN 60079-18

XY	Gas	Product Code	Sensor Type	Measuring Range
30	LPG	P-3012PE	Catalytic	0-100%LEL
31	Methane	P-3112PE	Catalytic	0-100%LEL
32	Petrol Vapour	P-3212PE	Catalytic	0-100%LEL
33	n-Butane	P-3312PE	Catalytic	0-100%LEL
34	Propane	P-3412PE	Catalytic	0-100%LEL
36	Hydrogen	P-3612PE	Catalytic	0-100%LEL

Prosense gas detectors are fully tested and calibrated before delivery. Gas detectors must always be routinely controlled and calibrated regarding EN 60079-29-2.



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info@prosense.com.tr - www.prosense.com.tr

Fișa tehnică – Senzor fum Orbis ORB-OP-52027

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Senzor optic fum Orbis ORB-OP-52027	Orbis I.S.
2	Condiții de lucru:	• Temperatură funcționare:-40C+60C • Umiditate: 0-98%RH • Alimentare: min 14VDC – max 28 VDC	
3	Parametri constructivi:	• Tip element detecție: Detectare fotoelectrică a luminii dispersate de particulele de fum pe un interval larg de unghiuri. • Carcasa: Policarbonat alb ignifug	
4	Dotări minime:	Lipsește	
5	Caracteristici funcționale:	• Detectare fum • Viteză răspuns : < 20 seconds	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Broșură tehnică • Certificat ATEX	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Clasă IP: IP44	
12	Condiții privind conformitatea cu standarde relevante:	• EMC Directive 2014/30/EU • ATEX Directive 2014/34/EU	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	

Orbis I.S. Optical Smoke Detector



Product overview

Product	I.S. Optical Smoke Detector
Part No.	ORB-OP-52027-AP0
Product	I.S. Optical Smoke Detector with flashing LED
Part No.	ORB-OP-52028-AP0

Approvals



Product information

The sensing technology in the Orbis I.S. Optical Smoke Detector is significantly different in design from previous optical smoke detectors.

- Improved sensitivity to black smoke
- Compensation for slow changes in sensitivity
- Extra confirmation of smoke before an alarm signal is given

Technical data

All data is supplied subject to change without notice. Specifications are typical at 24 V, 23°C and 50% RH unless otherwise stated.

Detection principle	Photo-electric detection of light scattered by smoke particles over a wide range of angles.
Sampling frequency	Once every four seconds
Operating voltage	14.8 V dc to 28 V dc
Supply Wiring	Two wire supply, polarity sensitive
Polarity reversal	Not allowed
Power up time	< 20 seconds
Minimum 'detector active' voltage	12 V
Power-up surge current at 24 V	105 µA
Average quiescent current at 24 V	85 µA
Alarm load	325 Ω in series with a 1.0 V drop
Minimum holding voltage	5 V
Minimum voltage to light alarm LED	6 V
Alarm reset voltage	< 1 V
Alarm reset time	One second
Alarm indicator	Integral indicator with 360° visibility
Remote output LED (-) characteristic	4.7 kΩ connected to negative supply
Operating and storage temperature	-40°C to +70°C Operating temperature is restricted by the intrinsic safety gas classification. Class T5: -40°C to +45°C Class T4: -40°C to +60°C The detector must be protected from conditions of condensation or icing
Humidity (no condensation or icing)	0% to 98% RH
Effect of atmospheric pressure on optical sensor	Unaffected by wind
Effect of wind speed	Insensitive to pressure
Designed to IP Rating	IP44
Standards & approvals	EN54-7, CPR, LPCB, MED, LR, DNV-GL, BV, ABS, CCS, KRS, VdS, BOSEC, IECEx, ATEX, PESO and FG
BASEEFA Cert No.	BASEEFA06ATEX0007X
Dimensions	100 mm diameter x 42 mm height 100 mm diameter x 50 mm height in base
Weight	75 g detector 135 g detector with base
Materials	Housing: White flame-retardant polycarbonate Terminals: Nickel plated stainless steel

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A Halma company

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Features

Optical smoke detectors have always been recognised as good detectors for general use. They are regarded as particularly suitable for smouldering fires and escape routes.

The performance of Orbis Marine optical detectors is good in black as well as in white smoke. In this respect Orbis detectors are different from traditional optical smoke detectors which perform far better in white smoke than in black.

Orbis I.S. Optical Smoke Detectors are also designed to reduce significantly the incidence of false alarms through over-sensitivity to transient phenomena.

Orbis I.S. Optical Smoke Detectors are recommended for use as general purpose smoke detectors for early warning of fires in most areas.

Operation

Orbis I.S. Optical Smoke Detectors work on the well established light scatter principle. The remarkable optical design of the Orbis I.S. Optical Smoke Detector enables it to respond to a wide spectrum of fires.

The sensing chamber contains an optical sensor which measures back-scattered light as well as the more usual forward-scattered light. Sensitivity to black smoke is greatly improved.

The detector is calibrated so that Orbis is highly reliable in detecting fires, but is much less likely to generate false alarms.

The stability of the detector-high reliability, low false alarm rate is further increased by the use of algorithms to decide when the detector should change to the alarm state. This removes the likelihood of a detector producing an alarm as a result of smoke from smoking materials or from another non-fire source.

Classification

Ex ia IIC T5 -40°C<Ta <+45°C (T4<60°C)Ga

EMC Directive 2014/30/EU

The Orbis I.S. Optical Smoke Detector complies with the essential requirements of the EMC Directive 2014/30/EU, provided that it is used as described in this datasheet.

A copy of the Declaration of Conformity is available from the Apollo website: www.apollo-fire.co.uk

Conformity of the Orbis I.S. Optical Smoke Detector with the EMC Directive, does not confer compliance with the directive on any apparatus or systems connected to them.

Construction Products Regulation 305/2011/EU

The Orbis I.S. Optical Smoke Detector complies with the essential requirements of the Construction Products Regulation 305/2011/EU.

A copy of the Declaration of Performance is available from the Apollo website: www.apollo-fire.co.uk.

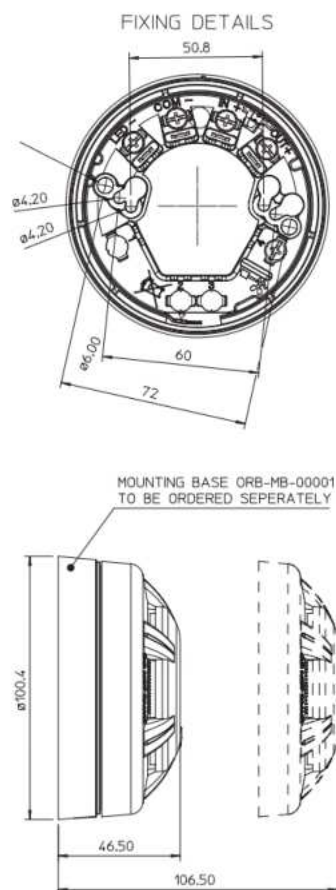
Marine Equipment Directive 2014/90/EU

The Orbis I.S. Optical Smoke Detector complies with the essential requirements of the Marine Equipment Directive 2014/90/EU.

ATEX Directive 2014/34/EU

The Orbis I.S. Optical Smoke Detector complies with the essential requirements of the ATEX Directive 2014/34/EU.

Orbis I.S. Optical Smoke Detector dimensional drawing



Orbis detectors: LED status

Feature	Description	Red LED status	Yellow LED status
StartUp™	Confirms that the detectors are wired in the correct polarity	Flashes once per second	No Flash
FasTest™	Maintenance procedure, takes just four seconds to functionally test and confirm detectors are functioning correctly	Flashes once per second	No flash
DirtAlert™	Shows that the drift compensation limit has been reached	No flash	Flashes once per second in StartUp (Stops flashing when StartUp finishes)
SensAlert™	Indicates that the sensor is not operating correctly	No flash	Flashes every four seconds (Flashes once per second in StartUp)
Normal operation	At the end of StartUp and FasTest (without flashing LED as standard)	No flash	No flash
Flashing LED version	Detectors red LED flashes in normal operation (at the end of FasTest)	Flashes every four seconds	No flash

Fișa tehnică - Ventilator antiex Casals HJBMX 25 M4

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Ventilator antiex Casals HJBMX 25 M4	CASALS VENTILACIÓN AIR INDUSTRIAL, SLU
2	Condiții de lucru:	• Tensiune alimentare: 230V 50Hz • Temperatură de lucru: ambient între -20°C și 60°C	
3	Parametri constructivi:	• Gura de aspirație: 250 mm • Placă pătrată din oțel inoxidabil AISI 304	
4	Dotări minime:	Lipsește	
5	Caracteristici funcționale:	• Debit de aer: 1450 m³/h	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Broșură tehnică	
9	Documentația care va fi prezentată la ofertare:	Broșură tehnică	
10	Documentație care va însoți produsul:	• Pașaport tehnic • Certificat ATEX	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipsește	
12	Condiții privind conformitatea cu standarde relevante:	• Directive 2014/34/UE • Ex h IIB+H2 T4 Gb • Ex db IIC T5 Gb	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni de la punerea în funcțiune	

HJBMX 25 M4 0,09kW Zone 1: FAN (Ex h IIB+H2 T4 Gb) + MOTOR (Ex db IIC T5 Gb) (268263103XD)

GENERAL DATA



ATEX SQUARE WALL PLATE FAN WITH VARIABLE PITCH BLADES

MANUFACTURING FEATURES

- Square plate made of inox steel AISI 304.
- Variable pitch angle PAGAS impeller.
- Supplied with galvanized motor support and protection guard according to the ROHS 2002/95/EC Directive (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipments).
- ATEX standard asynchronous motor. ATEX certified: II2G Ex d, Standard voltages 230V 50Hz for single phase motors, 230/400V 50Hz for three phase motors. IP55 protection.

APPLICATIONS

Designed for wall assembly, they are suitable for:

- Air renewal in buildings and industries.
- Smoke extraction (max. 60°C).
- General ventilation in closed environments classified as ATEX.
- Working temperature: ambient from -20°C to 60°C

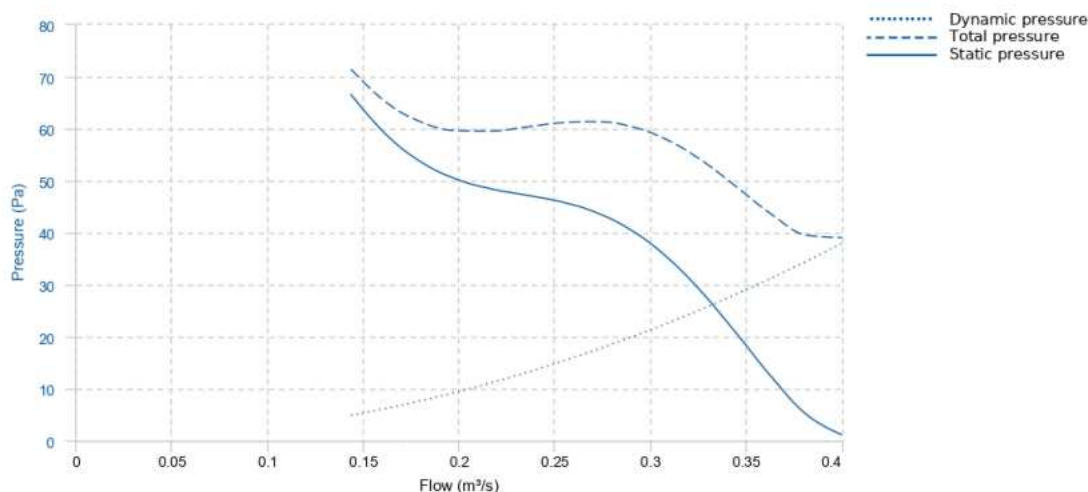
UNDER REQUEST

- 60Hz fans and special voltages.
- Stainless protection grid.

ORGANISM: L.O.M.
CERTIFICAT Nº: LOM 17.755X-C

In compliance with the Directive 2014/34/UE

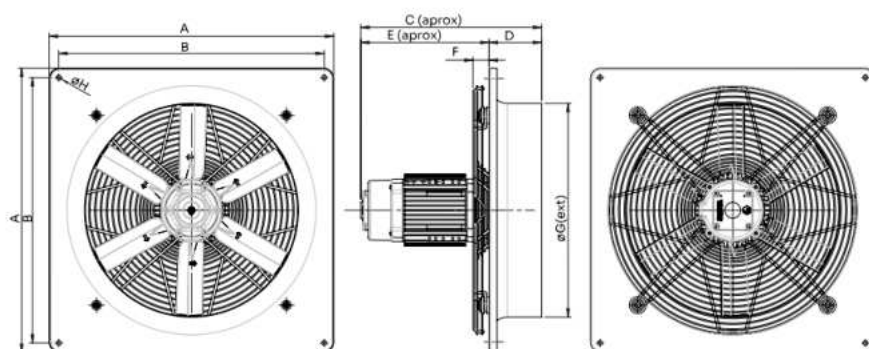
PERFORMANCE CURVE



TECHNICAL DATA

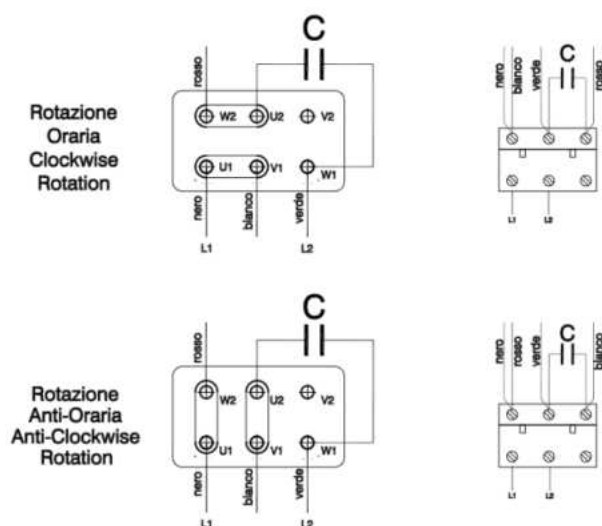
Fan							
RPM	1390	Approx. weight	4 kg	Max. Flow	0.4 m³/s		
Motor							
Power	0,09 kW	RPM	1390	I max. (230V)	0,98 A	Size	63
Efficiency (%)	53 %	FP	0.75				

DIMENSIONS



Dimensions (mm)									
A	370	B	320	C	337.5	D	78	E	259.5
F	31.5	G	253	H	7				

WIRING DIAGRAM



ACCESSORIES

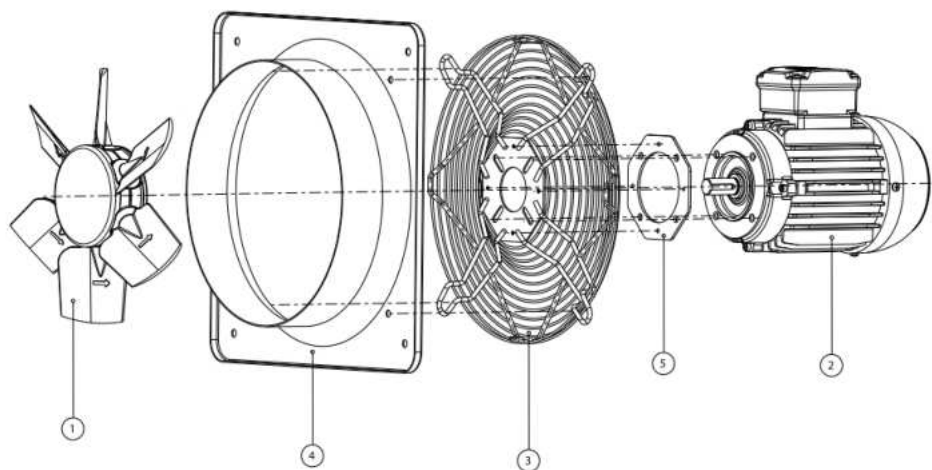


Outlet protection guard for axial fans
RP0 25
REF: 980000025



ATEX SWITCH
INT 16 ATEX
REF: 510200016X

SPARE PARTS



	Code	Model	Qty
2	721601110M051	MOTOR 0,09KW M4 B14	x1

Fișa tehnică – Supapa de blocare Pietro Fiorentini SSX/176

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	Supapa de blocare Pietro Fiorentini SSX/176	Pietro Fiorentini S.p.A.
2	Condiții de lucru:	• Max. inlet pressure - Up to 100 bar • Ambient temperature -20°C +60°C • Inlet gas temperature -20°C + 60°C	
3	Parametri constructivi:	• Incorporat în regulator-monitor	
4	Dotări minime:	Set de arcuri pentru ajustarea presiunii de funcționare	
5	Caracteristici funcționale:	• Setare presiunii de funcționare 2-22 bar	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Fișa tehnică	
9	Documentația care va fi prezentată la ofertare:	Fișa tehnică	
10	Documentație care va însoți produsul:	• Certificat de conformitate • Certificat 3.1	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Lipsește	
12	Condiții privind conformitatea cu standarde relevante:	• EN 334 • PED 2014/68/EU	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni	



SSX/176 slam shut

ASX 176 pressure regulator offers the possibility of installing an **SSX/176 incorporated slam shut valve**, depending on the regulator size, and this can be done either during the manufacturing process or be retrofitted in the field.

Retrofitting can be done without modifying the pressure regulator assembly, **but it requires piping modification.**

With the built-in slam shut, the Cg valve coefficients is 20% lower than the corresponding version without.

The main characteristics of this device are:

-  OPSO Over Pressure Shut-Off
-  UPSO Under Pressure Shut-Off
-  Internal by-pass
-  Push button for tripping test
-  Compact dimensions
-  Remote tripping option
-  Limit switch option

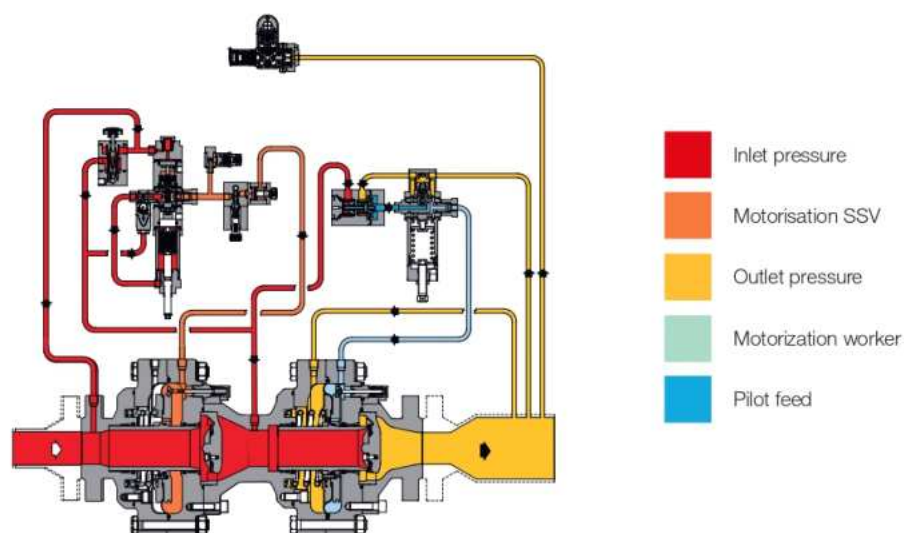


Figure 8 ASX 176 with SSX/176

Pressure switch types and ranges					
SSV Type	Model	Operation	Range Wh		Spring Table web link
			MPa	barg	
SSX/176	103M	OPSO	0.2 - 2.2	2 - 22	TT 1331
		UPSO	0.02 - 0.8	0.2 - 8	
SSX/176	104M	OPSO	1.5 - 4.5	15 - 45	TT 1331
		UPSO	0.16 - 1.8	1.6 - 18	
SSX/176	105M	OPSO	3 - 9	30 - 90	TT 1331
		UPSO	0.3 - 4.4	3 - 44	

Table 7 Setting table

General link to the calibration tables: [PRESS HERE](#) or use the QR code:



Fișa tehnică - PLC (Programmable Logic Controller) cu modulele aferente Siemens

Nr. crt.	Specificațiile tehnice impuse prin Caietul de sarcini	Correspondența propunerii tehnice cu specificațiile tehnice impuse prin Caietul de sarcini	Producător
0	1	2	3
1	Condiții generale:	PLC SIMATIC S7-1500 Sistemul compact de intrare/ieșire pentru dulapul de comandă SIMATIC ET 200SP	Siemens
2	Condiții de lucru:	• Temperatura de operare: 0°C ... +60°C • Umiditate relativă: 5% ... 95%, fără condensare • Rezistență la vibrații și șocuri conform standardelor industriale (de ex. IEC 60068)	
3	Parametri constructivi:	• Carcasă modulară, compactă, rezistentă la praf și umiditate (IP20) • Alimentare: 24 V DC • Interfețe de comunicare: Profinet, Ethernet, MPI, PROFIBUS (opțional) • Procesor puternic cu memorie integrată și module de extindere	
4	Dotări minime:	• CPU cu unitate centrală de procesare pentru execuția programelor de control • Porturi de comunicație pentru conectare la rețele industriale • Conectori pentru module de intrare/ieșire digitale și analogice • Software de programare TIA Portal compatibil	
5	Caracteristici funcționale:	• Execuție rapidă a programelor, suport pentru programe structurate și limbaje standard (LAD, FBD, STL, SCL) • Funcții de diagnostic avansate și protecție la erori • Capacitate de comunicare și integrare în sisteme SCADA și MES • Suport pentru comunicații redundante și sisteme de siguranță (Safety Integrated)	
6	Teste și certificări puse la dispoziția Beneficiarului:	• Certificat de conformitate	
7	Marcare și identificare:	Informație sunt indicate pe corpul produsului	
8	Mod de ofertare:	Oferta va include CPU, module I/O, cabluri și software necesar pentru punerea în funcțiune	
9	Documentația care va fi prezentată la ofertare:	• Fișe tehnice ale produsului	

10	Documentație care va însoți produsul:	• Fișe tehnice ale produsului • Certificări și declarații de conformitate • Manuale de instalare și utilizare	
11	Specificații de performanță și condiții privind siguranța în exploatare:	Timpi de răspuns și procesare conform specificațiilor Siemens	
12	Condiții privind conformitatea cu standarde relevante:	Conformitate cu standardele europene și internaționale aplicabile: IEC 61131-3, CE, RoHS, REACH	
13	Condiții de livrare:	Produsul va fi livrat în cutie de uzină, la locul de asamblare SP.	
14	Condiții de garanție și postgaranție:	Producătorul va garanta calitatea și buna funcționare timp de 24 luni de la punerea în funcțiune	



Product overview

for SIMATIC S7-1500

SIEMENS



Advanced Controller SIMATIC S7-1500

Our fastest controller for automation

With the SIMATIC S7-1500 controller, you can rely on maximum performance and built-in future-proofing. The modular controller enables you to implement the most demanding machine concepts and reliably accompanies you on your way through digital transformation.

SIMATIC S7-1500 has a modular structure and its functionality is scalable. Various central processing units (CPU versions) are available, each in several performance classes. A wide variety of signal modules for input and output as well as technology modules for special technological functions such as counting and communication modules are available for central or distributed configuration as interfaces to the machine or plant. The SIMATIC S7-1500 system is approved for IP20 degree of protection and is intended for installation in a control cabinet.

<https://www.siemens.com/s7-1500>

System overview

Efficient engineering

- TIA Portal Engineering enables complete access to the entire digitalized automation: digital planning, integrated engineering and transparent operation. Standardized libraries, diagnostics functions and energy management functions increase productivity, simulation option packages shorten time-to-market and the connection to the management level offers more transparency for optimizations.

Functional design

- SIMATIC S7-1500 offers easy handling and maximum user-friendliness in many new details: integrated potential bridges, shield elements that can be mounted without tools, uniform front connectors with type coding, ergonomic terminal labeling and latching front flap. Easy expandability, individual combinability and upward compatibility offer the highest cost efficiency and investment security.

Highest performance

- With the SIMATIC S7-1500, you can achieve maximum performance and productivity in your manufacturing process thanks to the fast backplane bus with PROFINET performance, the shortest response times and a command processing time of up to 1 ns in the CPU. Communication on a separate core relieves the cyclical program parts and ensures better results thanks to fewer cycle fluctuations. The PROFINET connection with deterministic time response ensures reproducibility and precision in the μ s range - especially for Motion Control applications.

Integrated system diagnostics

- The integrated diagnostics functionality enables error messages to be visualized identically as plain text information in TIA Portal, on the HMI, on the Web server and on the CPU display based on a uniform display concept. LEDs signal channel-specific IO errors directly on the module. The configuration and the message paths of the diagnostics are integrated into the system in a user-friendly manner. The trace function is supported on all CPUs - long-term recording of up to 64 signals with an external computer is also possible.

Safety Integrated

- One system for standard and fail-safe applications: one controller, one communication and one engineering for standard and fail-safe automation. Safety Integrated stands for simple connection of PROFIsafe devices via PROFIBUS and PROFINET, and for data consistency between standard and fail-safe program parts. Mixed operation of fail-safe and standard I/O modules is supported.

Technology Integrated

- SIMATIC S7-1500 enables the integration of Motion Control without additional modules. PROFIdrive-capable drives are connected via standardized PLCOpen blocks and so-called technology objects.

Security Integrated

- The SIMATIC S7-1500 Security-by-Default concept includes measures ranging from authorization levels and block protection to communication integrity. Security Integrated protects your investments, prevents machines from being copied and contributes to high system availability.

Five steps to the right controller:

Type of structure, system performance, programming, Motion Control, system architecture: Do you already know which functions and performance features your controller should have? Then our function check will take you directly to the right SIMATIC controller in five steps.

<https://www.siemens.com/controller>

 : Safety-related component

* By clicking on the article number, you will be taken to the product in the TIA Selection Tool cloud.

Central processing units

[Compare technical specifications online](#)

Article number



Standard CPUs

[Compare technical specifications online](#)

CPU 1511-1PN, 300KB Prog., 1,5MB Data	6ES7511-1AL03-0AB0
CPU 1511F-1PN, 450KB prog, 1,5MB Data	6ES7511-1FL03-0AB0
CPU 1513-1 PN, 600KB Prog., 2,5MB Data	6ES7513-1AM03-0AB0
CPU 1513F-1 PN, 900KB Prog., 2,5MB data	6ES7513-1FM03-0AB0
CPU 1515-2 PN, 1MB Prog., 4,5MB Data	6ES7515-2AN03-0AB0
CPU 1515F-2 PN, 1,5MB Prog., 4,5MB Data	6ES7515-2FN03-0AB0
CPU 1516-3 PN/DP, 2MB Prog., 7,5MB Data	6ES7516-3AP03-0AB0
CPU 1516F-3 PN/DP, 3MB Prog, 7,5MB Data	6ES7516-3FP03-0AB0
CPU 1517-3 PN, 4MB prog., 50MB data	6ES7517-3AQ10-0AB0
CPU 1517-3 PN/DP, 2MB Prog./8MB Data	6ES7517-3AP00-0AB0
CPU 1517F-3 PN, 6MB prog., 50MB data	6ES7517-3FQ10-0AB0
CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	6ES7517-3FP01-0AB0
CPU 1518-3 PN, 12MB prog., 150MB data	6ES7518-3AT10-0AB0
CPU 1518-4 PN/DP, 6 MB Prog., 60MB Data	6ES7518-4AP00-0AB0
CPU 1518F-3 PN, 18MB prog., 150MB data	6ES7518-3FT10-0AB0
CPU 1518F-4 PN/DP, 9 MB Prog, 60MB Data	6ES7518-4FP00-0AB0
CPU 1518-4 PN/DP MFP + C/C++ RT + OPC UA	6ES7518-4AX00-1AC0
CPU 1518F-4 PN/DP MFP + C/C++ RT + OPC UA	6ES7518-4FX00-1AC0
CPU 1511-1PN, 150KB Program, 1MB Data	6ES7511-1AK02-0AB0
CPU 1511F-1PN, 225KB prog, 1MB data	6ES7511-1FK02-0AB0
CPU 1513-1 PN, 300KB Prog., 1,5MB Data	6ES7513-1AL02-0AB0
CPU 1513F-1 PN, 450KB Prog., 1,5MB data	6ES7513-1FL02-0AB0
CPU 1515-2 PN, 500KB Prog., 3MB Data	6ES7515-2AM02-0AB0
CPU 1515F-2 PN, 750KB Prog., 3MB Data	6ES7515-2FM02-0AB0
CPU 1516-3 PN/DP, 1MB Prog., 5MB Data	6ES7516-3AN02-0AB0
CPU 1516F-3 PN/DP, 1,5MB Prog, 5MB Data	6ES7516-3FN02-0AB0
CPU 1517F-3 PN/DP, 3MB Prog., 8MB Data	6ES7517-3FP00-0AB0
SIPLUS S7-1500 CPU 1511-1 PN	6AG1511-1AK02-2AB0
SIPLUS S7-1500 CPU 1513-1 PN	6AG1513-1AL02-2AB0
SIPLUS S7-1500 CPU 1511F-1 PN	6AG1511-1FK02-2AB0
SIPLUS S7-1500 CPU 1513F-1 PN	6AG1513-1FL02-2AB0
SIPLUS S7-1500 CPU 1515F-2 PN	6AG1515-2FM02-2AB0
SIPLUS S7-1500 CPU 1516-3 PN/DP	6AG1516-3AN02-2AB0
SIPLUS S7-1500 CPU 1516F-3 PN/DP	6AG1516-3FN02-2AB0
SIPLUS S7-1500 CPU 1511-1 PN T1 RAIL	6AG2511-1AK02-1AB0
SIPLUS S7-1500 CPU 1516F-3 PN/DP RAIL	6AG2516-3FN02-2AB0
SIPLUS S7-1500 CPU 1511-1 PN	6AG1511-1AK02-7AB0
SIPLUS S7-1500 CPU 1513-1 PN	6AG1513-1AL02-7AB0
SIPLUS S7-1500 CPU 1516-3 PN/DP	6AG1516-3AN02-7AB0
SIPLUS S7-1500 CPU 1515F-2 PN RAIL	6AG2515-2FM02-4AB0
SIPLUS S7-1500 CPU 1516-3 PN/DP RAIL	6AG2516-3AN02-4AB0
SIPLUS S7-1500 CPU 1516F-3 PN/DP RAIL	6AG2516-3FN02-4AB0
SIPLUS S7-1500 CPU 1511-1 PN	6AG1511-1AL03-2AB0
SIPLUS S7-1500 CPU 1511F-1 PN	6AG1511-1FL03-2AB0
SIPLUS S7-1500 CPU 1513-1 PN	6AG1513-1AM03-2AB0
SIPLUS S7-1500 CPU 1513F-1 PN	6AG1513-1FM03-2AB0
SIPLUS S7-1500 CPU 1515F-2 PN	6AG1515-2FN03-2AB0
SIPLUS S7-1500 CPU 1516-3 PN	6AG1516-3AP03-2AB0
SIPLUS S7-1500 CPU 1516F-3 PN	6AG1516-3FP03-2AB0
SIPLUS S7-1500 CPU 1518-4 PN/DP	6AG1518-4AP00-4AB0
SIPLUS S7-1500 CPU 1518-4 PN/DP MFP	6AG1518-4AX00-4AC0
SIPLUS S7-1500 CPU 1518F-4 PN/DP	6AG1518-4FP00-4AB0
SIPLUS S7-1500 CPU 1511-1 PN RAIL	6AG2511-1AL03-1AB0

 : Safety-related component

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Central processing units

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	Article number
SIPLUS S7-1500 CPU 1516F-3 PN RAIL	6AG2516-3FP03-2AB0
SIPLUS S7-1500 CPU 1511-1 PN	6AG1511-1AL03-7AB0
SIPLUS S7-1500 CPU 1513-1 PN	6AG1513-1AM03-7AB0
SIPLUS S7-1500 CPU 1515F-2 PN RAIL	6AG2515-2FN03-4AB0
SIPLUS S7-1500 CPU 1516-3 PN RAIL	6AG2516-3AP03-4AB0
SIPLUS S7-1500 CPU 1516F-3 PN RAIL	6AG2516-3FP03-4AB0
Compact CPUs	Compare technical specifications online
CPU 1511C-1 PN, 300KB Prog., 1,5MB Data	6ES7511-1CL03-0AB0
CPU 1512C-1 PN, 400 KB Prog., 2 MB Data	6ES7512-1CM03-0AB0
CPU 1511C-1 PN, 175 KB Prog, 1 MB Data	6ES7511-1CK01-0AB0
CPU 1512C-1 PN, 250 KB Prog, 1 MB Data	6ES7512-1CK01-0AB0
Technology CPUs	Compare technical specifications online
CPU 1511T-1PN, 450KB Prog., 1.5MB Data	6ES7511-1TL03-0AB0
CPU 1511TF-1PN, 450KB Prog., 1.5MB Data	6ES7511-1UL03-0AB0
CPU 1515T-2 PN, 1.5MB Progr, 4.5MB Data	6ES7515-2TN03-0AB0
CPU 1515TF-2 PN, 1.5MB Progr, 4.5MB Data	6ES7515-2UN03-0AB0
CPU 1516T-3 PN, 3MB prog., 25MB data	6ES7516-3TP10-0AB0
CPU 1516T-3 PN/DP, 3MB prog./7.5MB data	6ES7516-3TN00-0AB0
CPU 1516TF-3 PN, 3MB prog., 25MB data	6ES7516-3UP10-0AB0
CPU 1516TF-3 PN/DP, 3MB prog./7.5MB data	6ES7516-3UN00-0AB0
CPU 1517T-3 PN, 6MB prog., 50MB data	6ES7517-3TQ10-0AB0
CPU 1517T-3 PN/DP, 3MB prog./8MB data	6ES7517-3TP00-0AB0
CPU 1517TF-3 PN, 6MB prog., 50MB data	6ES7517-3UQ10-0AB0
CPU 1517TF-3 PN/DP, 3MB prog., 8MB data	6ES7517-3UP00-0AB0
CPU 1518T-3 PN, 18MB prog., 150MB data	6ES7518-3TT10-0AB0
CPU 1518T-4 PN/DP, 9MB Prog., 60MB data	6ES7518-4TP00-0AB0
CPU 1518TF-3 PN, 18MB prog., 150MB data	6ES7518-3UT10-0AB0
CPU 1518TF-4 PN/DP, 9MB Prog, 60MB data	6ES7518-4UP00-0AB0
CPU 1511T-1PN, 225KB progr., 1MB data	6ES7511-1TK01-0AB0
CPU 1511TF-1PN, 225KB progr., 1MB data	6ES7511-1UK01-0AB0
CPU 1515T-2 PN, 750KB progr, 3MB data	6ES7515-2TM01-0AB0
CPU 1515TF-2 PN, 750KB progr, 3MB data	6ES7515-2UM01-0AB0
Fault-tolerant and redundant CPUs	Compare technical specifications online
CPU 1513R-1 PN, 600KB program/2,5MB data	6ES7513-1RM03-0AB0
CPU 1515R-2 PN, 1MB program/ 4,5MB data	6ES7515-2RN03-0AB0
CPU 1517H-3 PN, 2MB program/8MB data	6ES7517-3HP00-0AB0
CPU 1517H-4 PN, 4MB prog., 50MB data	6ES7517-4HQ10-0AB0
CPU 1518HF-4 PN, 9MB program/60MB data	6ES7518-4JP00-0AB0
CPU 1518HF-4 PN, 18MB prog., 150MB data	6ES7518-4JT10-0AB0
SIPLUS S7-1500 CPU 1517H-3 PN	6AG1517-3HP00-4AB0
SIPLUS S7-1500 CPU 1518HF-4 PN	6AG1518-4JP00-4AB0
SIPLUS S7-1500 CPU 1517H-3 PN	6AG1517-3HP00-4AB0
SIPLUS S7-1500 CPU 1518HF-4 PN	6AG1518-4JP00-4AB0
CPU 1513R-1 PN, 300KB program/1,5MB data	6ES7513-1RL00-0AB0
CPU 1515R-2 PN, 500KB program/ 3MB data	6ES7515-2RM00-0AB0
SIPLUS S7-1500 CPU 1515R-2 PN	6AG1515-2RM00-7AB0
SIPLUS S7-1500 CPU 1515R-2 PN TX RAIL	6AG2515-2RM00-4AB0

 : Safety-related component

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Digital modules

[Compare technical specifications online](#)

Article number



Digital input

[Compare technical specifications online](#)

S7-1500, DI 16x24VDC BA	6ES7521-1BH10-0AA0
S7-1500, DI 16x24VDC SRC BA	6ES7521-1BH50-0AA0
S7-1500, DI 16x24VDC HS	6ES7521-7BH00-0AB0
S7-1500, DI 16x24VDC HF	6ES7521-1BH00-0AB0
S7-1500, DI 16xNAMUR HF	6ES7521-7TH00-0AB0
S7-1500, DI 16x230VAC BA	6ES7521-1FH00-0AA0
S7-1500, DI 16 x 24...125V UC HF	6ES7521-7EH00-0AB0
S7-1500, DI 32x24VDC BA	6ES7521-1BL10-0AA0
S7-1500, DI 32x24VDC HF	6ES7521-1BL00-0AB0
S7-1500, DI 64x24VDC SNK/SRC BA	6ES7521-1BP00-0AA0
SIPLUS S7-1500 DI 16x24VDC HF	6AG1521-1BH00-7AB0
SIPLUS S7-1500 DI 16x24VDC SRC BA	6AG1521-1BH50-7AA0
SIPLUS S7-1500 DI 32x24VDC HF	6AG1521-1BL00-7AB0
SIPLUS S7-1500 DI 16x230VAC BA	6AG1521-1FH00-7AA0
SIPLUS S7-1500 DI 48VUC/125VDC HF	6AG1521-7EH00-7AB0
SIPLUS S7-1500 DI 16x24VDC HF TX RAIL	6AG2521-1BH00-4AB0
SIPLUS S7-1500 DI 16x110VDC HF TX RAIL	6AG2521-7EH00-4AB0

Digital output

[Compare technical specifications online](#)

S7-1500, DQ 8x24VDC/2A HF	6ES7522-1BF00-0AB0
S7-1500, DQ 8x24VDC/5A HS	6ES7522-5BF00-0AB0
S7-1500, DQ 8x230VAC/2A ST (Triac)	6ES7522-5FF00-0AB0
S7-1500, DQ 8x230VAC/5A ST (Relay)	6ES7522-5HF00-0AB0
S7-1500, DQ 16x24VDC/0.5A BA	6ES7522-1BH10-0AA0
S7-1500, DQ 16x24V DC/0.5A HF	6ES7522-1BH01-0AB0
S7-1500, DQ 16x230VAC/1A ST (Triac)	6ES7522-5FH00-0AB0
S7-1500, DQ 16x230VAC/2A ST (Relay)	6ES7522-5HH00-0AB0
S7-1500, DQ 16x24...48VUC/125VDC/0.5A ST	6ES7522-5EH00-0AB0
S7-1500, DQ 32x24VDC/0.5A BA	6ES7522-1BL10-0AA0
S7-1500, DQ 32x24VDC/0.5A HF	6ES7522-1BL01-0AB0
S7-1500, DQ 64x24VDC/0.3A BA	6ES7522-1BP00-0AA0
S7-1500, DQ 64x24VDC/0.3A SNK BA	6ES7522-1BP50-0AA0
SIPLUS S7-1500 DQ 8x230VAC/5A ST (RELAY)	6AG1522-5HF00-2AB0
SIPLUS S7-1500 DQ 8x230VAC ST 5A T1 RAIL	6AG2522-5HF00-1AB0
SIPLUS S7-1500 DQ 8x24VDC/2A HF	6AG1522-1BF00-7AB0
SIPLUS S7-1500 DQ 16x24VDC/0.5A HF	6AG1522-1BH01-7AB0
SIPLUS S7-1500 DQ 32x24VDC/0.5A HF	6AG1522-1BL01-7AB0
SIPLUS S7-1500 DQ 16x48VUC/125VDC ST	6AG1522-5EH00-7AB0
SIPLUS S7-1500 DQ 8x230VAC/2A ST (TRIAC)	6AG1522-5FF00-7AB0
SIPLUS S7-1500 16DQ 230VAC 1A ST TRIAC	6AG1522-5FH00-7AB0
SIPLUS S7-1500 16DQ 230VAC 2A RLY	6AG1522-5HH00-7AB0
SIPLUS S7-1500 DQ 16x24VDC HF TX RAIL	6AG2522-1BH01-4AB0
SIPLUS S7-1500 DQ 16x110VDC ST TX RAIL	6AG2522-5EH00-4AB0

Digital inputs/outputs

[Compare technical specifications online](#)

S7-1500, DI 16x24VDC/DQ 16x24VDC/0.5A BA	6ES7523-1BL00-0AA0
S7-1500, DI 32x24VDC/DQ 32x24VDC/0.3A BA	6ES7523-1BP50-0AA0

Fail-safe digital modules

[Compare technical specifications online](#)

ET 200MP, F-DI 16x24VDC	6ES7526-1BH00-0AB0
ET 200MP, F-DQ 8x24VDC 2A PPM	6ES7526-2BF00-0AB0
SIPLUS S7-1500 F-DI 16x24VDC	6AG1526-1BH00-2AB0
SIPLUS S7-1500 F-DQ 8x24VDC/2A	6AG1526-2BF00-2AB0
SIPLUS S7-1500 F-DI 16x24VDC T1 RAIL	6AG2526-1BH00-1AB0
SIPLUS S7-1500 F-DQ 8x24VDC 2A T1 RAIL	6AG2526-2BF00-1AB0

 : Safety-related component

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Analog modules

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Article number



Analog input

[Compare technical specifications online](#)

S7-1500, AI 4xU/I/RTD/TC ST	6ES7531-7QD00-0AB0
S7-1500, AI 8xU/I/R/RTD BA	6ES7531-7QF00-0AB0
S7-1500, AI 8xU/I/RTD/TC ST	6ES7531-7KF00-0AB0
S7-1500, AI 8xU/I HS	6ES7531-7NF10-0AB0
S7-1500, AI 8 X U/R/RTD/TC HF	6ES7531-7PF00-0AB0
S7-1500, AI 8xU/I HF	6ES7531-7NF00-0AB0
S7-1500, AI 8xHART HF	6ES7531-7TF00-0AB0
S7-1500, AI 16xU BA	6ES7531-7LH00-0AB0
S7-1500, AI 16xI BA	6ES7531-7MH00-0AB0
S7-1500, AI 24xCVM HF	6ES7531-7LK00-0AB0
ET 200MP, F-AI 8xI 0(4)...20mA	6ES7536-1MF00-0AB0
SIPLUS S7-1500 AI 8XU/R/RTD/TC HF	6AG1531-7PF00-4AB0
SIPLUS S7-1500 AI 8XU/I/RTD/TC ST	6AG1531-7KF00-7AB0
SIPLUS S7-1500 AI 16xU BA	6AG1531-7LH00-7AB0
SIPLUS S7-1500 AI 16xI BA	6AG1531-7MH00-7AB0
SIPLUS S7-1500 AI 8XU/I HF	6AG1531-7NF00-7AB0
SIPLUS S7-1500 AI 8XU/I HS	6AG1531-7NF10-7AB0
SIPLUS S7-1500 AI 8xU/I/RTD/TC TX RAIL	6AG2531-7KF00-4AB0
SIPLUS S7-1500 AI 8xU/I HS TX RAIL	6AG2531-7NF10-4AB0

Analog output

[Compare technical specifications online](#)

S7-1500, AQ 2xU/I ST	6ES7532-5NB00-0AB0
S7-1500, AQ 4xU/I ST	6ES7532-5HD00-0AB0
S7-1500, AQ 4xU/I HF	6ES7532-5ND00-0AB0
S7-1500, AQ 8xU/I HS	6ES7532-5HF00-0AB0
S7-1500, AQ 8xHART HF	6ES7532-8TF00-0AB0
SIPLUS S7-1500 AQ 4XU/I ST	6AG1532-5HD00-7AB0
SIPLUS S7-1500 AQ 8XU/I HS	6AG1532-5HF00-7AB0
SIPLUS S7-1500 AQ 4xU/I ST TX RAIL	6AG2532-5HD00-4AB0

Analog inputs/outputs

[Compare technical specifications online](#)

S7-1500, AI 4x U/I/RTD/TC/AQ 2x U/I ST	6ES7534-7QE00-0AB0
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Communication modules

[Compare technical specifications online](#)

Article number



S7-1500, CM PTP RS232 BA	6ES7540-1AD01-0AA0
S7-1500, CM PTP RS422/485 BA	6ES7540-1AB01-0AA0
S7-1500, CM PTP RS232 HF	6ES7541-1AD01-0AB0
S7-1500, CM PTP RS422/485 HF	6ES7541-1AB01-0AB0
S7-1500, CM 1542-5	6GK7542-5DX10-0XE0
Communication module CM 1542-1	6GK7542-1AX10-0XE0
S7-1500, CM 8xiO-Link	6ES7547-1JF00-0AB0
S7-1500, CP 1543-1	6GK7543-1AX00-0XE0
Communication processor CP 1543-1	6GK7543-1AX10-0XE0
S7-1500, CP 1542-5	6GK7542-5FX10-0XE0
S7-1500, CP 1545-1	6GK7545-1GX00-0XE0
Communication processor CP 1545-1	6GK7545-1GX10-0XE0

SIPLUS

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SIPLUS S7-1500 CM 1542-5	6AG1542-5DX10-7XE0
SIPLUS NET CP 1543-1	6AG1543-1AX00-2XE0

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Technology modules

[Compare technical specifications online](#)

	Article number
S7-1500, TM Count 2x24V	6ES7550-1AA01-0AB0
S7-1500, TM PosInput 2	6ES7551-1AB01-0AB0
S7-1500, TM Timer DIDQ 24x24V	6ES7552-1AA01-0AB0
S7-1500, TM PTO4	6ES7553-1AA01-0AB0
S7-1500, TM FAST	6ES7554-1AA00-0AB0
S7-1500, TM NPU	6ES7556-1AA00-0AB0
S7-1500, TM MFP	6ES7558-1AA00-0AB0
SIWAREX WP521 ST Waagebaugruppe	7MH4980-1AA01
SIWAREX WP522 ST Waagebaugruppe	7MH4980-2AA01
SIPLUS	Compare technical specifications online
SIPLUS S7-1500 TM COUNT 2X24V	6AG1550-1AA01-7AB0
SIPLUS S7-1500 TM POSINPUT 2	6AG1551-1AB01-7AB0

System power supplies

[Compare technical specifications online](#)

	Article number
S7-1500, PS 25W 24V DC	6ES7505-0KA00-0AB0
S7-1500, PS 25W 24V DC	6ES7505-0KA01-0AB0
S7-1500, PS 60W 24/48/60V DC	6ES7505-0RA00-0AB0
S7-1500, PS 60W 24/48/60V DC HF	6ES7505-0RB00-0AB0
S7-1500, PS 60W 120/230V AC/DC	6ES7507-0RA00-0AB0
SIPLUS	Compare technical specifications online
SIPLUS S7-1500 PS 60W 24/48/60V DC	6AG1505-0RA00-7AB0
SIPLUS S7-1500 PS 60W 120/230V AC/DC	6AG1507-0RA00-7AB0
SIPLUS S7-1500 PS 25W 24V DC	6AG1505-0KA00-7AB0

Load current supplies

[Compare technical specifications online](#)

	Article number
SIMATIC PM 1507/1AC/24VDC/3A	6EP1332-4BA00
SIMATIC PM 1507/1AC/24VDC/8A	6EP1333-4BA00
SIPLUS	Compare technical specifications online
SIPLUS S7-1500 PM 1507 24V/3A	6AG1332-4BA00-7AA0
SIPLUS S7-1500 PM 1507 24V/8A	6AG1333-4BA00-7AA0

Accessories

[Compare technical specifications online](#)

	Article number
Memory card	Compare technical specifications online
SIMATIC S7 memory card, 4 MB	6ES7954-8LC04-0AA0
SIMATIC S7 Memory Card, 12 MB	6ES7954-8LE04-0AA0
SIMATIC S7 Memory Card, 24 MB	6ES7954-8LF04-0AA0
SIMATIC S7 Memory Card, 256 MB	6ES7954-8LL04-0AA0
SIMATIC S7 Memory Card, 2 GB	6ES7954-8LP04-0AA0
SIMATIC S7 Memory Card, 32 GB	6ES7954-8LT04-0AA0
Memory Card S7-1500T MC KinPlus 2 GB	6ES7954-8LP80-0AA0
Memory Card S7-1500T MC KinPlus 32 GB	6ES7954-8LT80-0AA0

 : Safety-related component

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Accessories

[Compare technical specifications online](#)

Article number

SIPLUS RIC memory cards**Front connector**[Compare technical specifications online](#)

Frontconnector Screw Type (35mm Mod.)

6ES7592-1AM00-0XB0

Frontconnector Push-in (35mm Mod.)

6ES7592-1BM00-0XB0

Frontconnector Push-in (25mm Mod.)

6ES7592-1BM00-0XA0

Jumpers (35mm Mod.)

6ES7592-3AA00-0AA0

CPU display as spare part[Compare technical specifications online](#)

Display for CPU 1511/1512C/1513

6ES7591-1AA01-0AA0

Display module for S7-1500 CPUs $\geq$ V3, 35m

6ES7591-1AB10-0AA0

Display module for S7-1500 CPUs, 35 mm

6ES7591-1AB00-0AA0

Display for CPU 1515/1516/1517/1518

6ES7591-1BA02-0AA0

Display module for S7-1500 CPUs, 70 mm

6ES7591-1BB00-0AA0

SIPLUS S7-1500 FRONTKLAPPE V2 CPU 35MM

6AG1591-1AA01-2AA0

SIPLUS S7-1500 Displaymodul CPUs 35mm

6AG1591-1AB00-2AA0

SIPLUS S7-1500 FRONTKLAPPE CPU 70MM

6AG1591-1BA02-2AA0

SIPLUS S7-1500 Display CPU 35mm V3.0

6AG1591-1AB10-2AA0

SIPLUS S7-1500 Displaymodul CPUs 70mm

6AG1591-1BB00-2AA0

Front door[Compare technical specifications online](#)

Universal Front Door S7-1500 IO (35mm)

6ES7528-0AA00-7AA0

Universal Front Door S7-1500 IO(25mm)

6ES7528-0AA00-0AA0

Universal Front Door S7-1500 PS

6ES7528-0AA60-7AA0

Universal Front Door S7-1500 PS/CP

6ES7528-0AA80-7AA0

Universal Front Door S7-1500 F-IO

6ES7528-0AA10-7AA0

Labeling sheets[Compare technical specifications online](#)

Labeling Sheets S7-1500, AL grey

6ES7592-2AX00-0AA0

Labeling Sheets S7-1500, AL grey

6ES7592-1AX00-0AA0

Labeling Sheets S7-1500, yellow

6ES7592-2CX00-0AA0

Miscellaneous[Compare technical specifications online](#)

Grounding Element (20pcs.)

6ES7590-5AA00-0AA0

U-Type-Connector S7-1500 (Spare Part)

6ES7590-0AA00-0AA0

Shielding Set f. S7-1500 25mm Modules

6ES7590-5CA10-0XA0

Shielding Set f. S7-1500 35mm Modules

6ES7590-5CA00-0AA0

Connector Plug for Power Supply (PS/PM)

6ES7590-8AA00-0AA0

Shielding Terminal S7-1500 Periphery

6ES7590-5BA00-0AA0

Repeater RS485 f. PROFIBUS/MPI

6ES7972-0AA02-0XA0

Diagnostic repeater f. PROFIBUS-DP,

6ES7972-0AB01-0XA0

ET 200MP, 5 E-coding Elements Type F

6ES7592-6EF00-1AA0

S7-1500, TM FAST Debug Connector

6ES7554-1AA00-5AA0

SIPLUS S7-1500 E-CODING ELEMENTS TYPE F

6AG1592-6EF00-2AA0

SIPLUS Diagnose-Repeater fuer Profibus

6AG1972-0AB01-4XA0

SIPLUS S7-1500 U-Verbinder

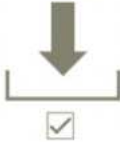
6AG1590-0AA00-7AA0

SIPLUS DP RS485-Repeater

6AG1972-0AA02-7XA0

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		Article number
OSD 	SIMATIC STEP 7 Prof. V18 DL	6ES7822-1AE08-0YA5
	SIMATIC STEP 7 Professional V18	6ES7822-1AA08-0YA5
	SIMATIC STEP 7 Prof. TIA Portal SUS DL	6ES7822-1AE00-0YY0
	STEP 7 Professional TIA Portal SUS	6ES7822-1AA00-0YL5
	STEP 7 Safety Advanced V18 SW DL	6ES7833-1FA18-0YH5
	STEP 7 Safety Advanced V18	6ES7833-1FA18-0YA5
	STEP7 Safety Advanced, SUS Download	6ES7833-1FC00-0YY0
	STEP7 Safety Advanced, SW Update Service	6ES7833-1FC00-0YX2

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Product overview

for SIMATIC ET 200SP (I/O, CPU, Open Controller)

SIEMENS



SIMATIC ET 200SP

The powerful IO system for compact control cabinets

SIMATIC ET 200SP is a multifunctional and finely scalable distributed I/O system with a large range of modules.

SIMATIC ET 200SP is approved for IP20 degree of protection and designed for installation in a control cabinet. In addition, SIMATIC ET 200SP supports redundant system concepts that increase the availability of the IO station and eliminate single points of failure (system redundancy R1 with the IM R1 interface module).

<https://www.siemens.com/et20sp>

Highlights

Easy cabling and tool-free setup make for quick and simple station setup

- Tool-free cabling with push-in terminal.
- Shielding terminal for analog signals.
- Tool-free setup of the station.

The clearly structured identification system simplifies mounting and servicing

- Machine-printable reference identification labels for clear assignment of the module to the BaseUnit.
- Clearly structured pin assignment with color coding of the terminal.
- Data Matrix code on the module for fast access to technical information in the free Service & Support app.

Simple extension ensures consistent functionality from IP20 to IP65/67

- Direct connection of ET 200AL IO modules.
- Consistent diagnostics from IP20 to IP67.
- Consistent functionality, for example configuration control.

Safety Integrated ensures reduction of the engineering work, the wiring work as well as a reduction of the types and parts

- Maximum integration: one IO system, one controller, one network and one engineering system for standard and fail-safe automation.
- SIL 3 with safety digital input and output modules.
- SIL 2 with standard analog and digital output modules via safe group shutdown.

Flexibility through expandability and quick replacement of modules

- Configuration control with option handling.
- Easy subsequent expandability through device design with gaps.
- Quick replacement of several modules during operation thanks to Multi Hot Swapping.

ET 200SP opens up a wide range of different communication paths

- Fast communication via PROFINET with isochronous backplane bus as standard.
- Support of Ethernet-based fieldbuses through multi-fieldbus interface module.
- PROFIBUS, the proven fieldbus standard as alternative.
- IO-Link ensures a uniform connection of switching devices, sensors or RFID devices to the control level using a cost-effective point-to-point connection.

- With AS-Interface, sensors and actuators of the lowest field level can be easily and quickly networked and connected to the SIMATIC ET 200SP.
- Different communication modules of the ET 200SP enable flexible and high-performance solutions in a distributed configuration, such as PTP, CAN/CANopen or DALI (Digital Addressable Lighting Interface)

Optimum performance for distributed technological tasks

The following technology modules are available and offer hardware-level signal pre-processing directly in the field:

- Counting and measuring.
- Positioning.
- Weighing and dosing tasks.
- Cam and measuring input applications.
- Load control.
- Drive controller.
- Energy management.

MultiFieldbus

- With the MultiFieldbus, you can easily and flexibly use different fieldbus systems with SIMATIC ET 200SP. Thanks to its support of the PROFINET, EtherNet/IP and Modbus/TCP protocols, the MultiFieldbus is designed for use on a wide range of Ethernet controllers.

Interface modules

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ET 200SP, IM 155-6 PN Basic	6ES7155-6AR01-0AN0
ET 200SP, IM 155-6 PN ST	6ES7155-6AU02-0BN0
ET 200SP, IM155-6PN ST	6ES7155-6AU01-0BN0
ET 200SP, IM 155-6 PN ST incl. BA 2xRJ45	6ES7155-6AA02-0BN0
ET 200SP, IM155-6PN ST incl. BA 2xRJ45	6ES7155-6AA01-0BN0
ET 200SP, IM155-6PN HS	6ES7155-6AU00-0DN0
ET 200SP, IM155-6PN/2 HF	6ES7155-6AU01-0CN0
ET 200SP, IM155-6PN/3 HF	6ES7155-6AU30-0CN0
ET 200SP, IM155-6DP HF incl. DP-Connect.	6ES7155-6BA01-0CN0
ET 200SP, IM 155-6 MF HF	6ES7155-6MU01-0CN0
ET 200SP, IM 155-6 PN R1	6ES7155-6AU00-0HM0
ET 200SP, IM 155-6 PN ST f. BaseCarrier	6ES7155-6AW02-0BN0

SIPLUS

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SIPLUS ET 200SP IM155-6PN HF	6AG1155-6AU01-2CN0
SIPLUS ET 200SP IM155-6PN HF T1 RAIL	6AG2155-6AU01-1CN0
SIPLUS ET 200SP IM155-6PN ST / BA	6AG1155-6AA01-7BN0
SIPLUS ET 200SP IM155-6PN R1	6AG1155-6AU00-7HM0
SIPLUS ET 200SP IM155-6PN ST	6AG1155-6AU01-7BN0
SIPLUS ET 200SP IM155-6PN HF	6AG1155-6AU01-7CN0
SIPLUS ET 200SP IM155-6DP HF	6AG1155-6BA01-7CN0
SIPLUS ET 200SP IM155-6PN ST BA TX RAIL	6AG2155-6AA01-4BN0
SIPLUS ET 200SP IM155-6PN ST TX RAIL	6AG2155-6AU01-4BN0
SIPLUS ET 200SP IM155-6PN HF TX RAIL	6AG2155-6AU01-4CN0

Central processing units

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CPU 1510SP-1 PN, 200KB Prog., 1MB Data	6ES7510-1DK03-0AB0
CPU1510SP F-1 PN, 300KB Prog., 1MB Data	6ES7510-1SK03-0AB0
CPU 1512SP-1 PN, 400KB Prog., 2MB Data	6ES7512-1DM03-0AB0
CPU 1512SP F-1 PN, 600KB Prog./2MB Data	6ES7512-1SM03-0AB0
CPU 1514SP-2 PN, 600KB Prog., 3,5MB Data	6ES7514-2DN03-0AB0
CPU 1514SP F-2 PN, 900KB Prog. 3,5MB Data	6ES7514-2SN03-0AB0
CPU 1514SP T-2 PN, 900KB Prog., 3,5MB Dat	6ES7514-2VN03-0AB0
CPU 1514SP TF-2 PN, 900KB Prog. 3,5MB Dat	6ES7514-2WN03-0AB0

Predecessor CPUs

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CPU 1510SP-1 PN, 100KB Prog./750KB Data	6ES7510-1DJ01-0AB0
CPU1510SP F-1 PN, 150KB Prog./750KB Data	6ES7510-1SJ01-0AB0
CPU 1512SP-1 PN, 200KB Prog./1MB Data	6ES7512-1DK01-0AB0
CPU 1512SP F-1 PN, 300KB Prog./1MB Data	6ES7512-1SK01-0AB0
SIPLUS ET 200SP CPU 1510SP F-1PN	6AG1510-1SJ01-2AB0
SIPLUS ET 200SP CPU 1512SP F-1PN	6AG1512-1SK01-2AB0
SIPLUS ET 200SP CPU 1510SP-1 PN	6AG1510-1DJ01-2AB0
SIPLUS ET 200SP CPU 1512SP-1 PN	6AG1512-1DK01-2AB0
SIPLUS ET 200SP CPU 1510SP-1 PN RAIL	6AG2510-1DJ01-1AB0
SIPLUS ET 200SP CPU 1510 F-1 PN RAIL	6AG2510-1SJ01-1AB0
SIPLUS ET 200SP CPU 1512SP-1 PN RAIL	6AG2512-1DK01-1AB0
SIPLUS ET 200SP CPU 1512 F-1 PN RAIL	6AG2512-1SK01-1AB0
SIPLUS ET 200SP CPU 1510SP-1 PN	6AG1510-1DJ01-7AB0
SIPLUS ET 200SP CPU 1512SP-1 PN	6AG1512-1DK01-7AB0
SIPLUS ET 200SP CPU 1512SP F-1 PN	6AG1512-1SK01-7AB0
SIPLUS ET 200SP CPU 1510SP-1 PN RAIL	6AG2510-1DJ01-4AB0
SIPLUS ET 200SP CPU 1512SP-1 PN RAIL	6AG2512-1DK01-4AB0

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Central processing units

[Compare technical specifications online](#)

Article number

SIPLUS ET 200SP CPU 1512 F-1 PN RAIL	6AG2512-1SK01-4AB0
SIPLUS	Compare technical specifications online
SIPLUS ET 200SP CPU 1510SP-1 PN	6AG1510-1DK03-2AB0
SIPLUS ET 200SP CPU 1510SP F-1 PN	6AG1510-1SK03-2AB0
SIPLUS ET 200SP CPU 1512SP-1 PN	6AG1512-1DM03-2AB0
SIPLUS ET 200SP CPU 1512SP F-1 PN	6AG1512-1SM03-2AB0
SIPLUS ET 200SP CPU 1512SP-1 PN RAIL	6AG2512-1DM03-1AB0
SIPLUS ET 200SP CPU 1512SP F-1 PN RAIL	6AG2512-1SM03-1AB0
SIPLUS ET 200SP CPU 1510SP-1 PN	6AG1510-1DK03-7AB0
SIPLUS ET 200SP CPU 1512SP F-1 PN	6AG1512-1SM03-7AB0
SIPLUS ET 200SP CPU 1512SP-1 PN RAIL	6AG2512-1DM03-4AB0
SIPLUS ET 200SP CPU 1512SP F-1 PN RAIL	6AG2512-1SM03-4AB0

Open Controller

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Article number



Standard CPUs

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CPU1515SP PC2	6ES7677-2DB42-0GB1
CPU1515SP PC2 - IndOS	6ES7677-2DB43-0GB1
CPU1515SP PC2 F	6ES7677-2SB42-0GB1
CPU1515SP PC2 F - IndOS	6ES7677-2SB43-0GB1
CPU1515SP PC2 + HMI 128PT	6ES7677-2DB42-0GK0
CPU1515SP PC2 F + HMI 128PT	6ES7677-2SB42-0GK0
CPU1515SP PC2 + HMI 512PT	6ES7677-2DB42-0GL0
CPU1515SP PC2 F + HMI 512PT	6ES7677-2SB42-0GL0
CPU1515SP PC2 + HMI 2048PT	6ES7677-2DB42-0GM0
CPU1515SP PC2 F + HMI 2048PT	6ES7677-2SB42-0GM0
CPU1515SP PC2	6ES7677-2DB42-0GB0
CPU1515SP PC2	6ES7677-2DB43-0GB0
CPU1515SP PC2 F	6ES7677-2SB42-0GB0
CPU1515SP PC2 F	6ES7677-2SB43-0GB0
SIPLUS ET 200SP CPU1515SP PC2	6AG1677-2DB42-2GB0
SIPLUS ET 200SP CPU1515SP PC2 F	6AG1677-2SB42-2GB0
SIPLUS ET 200SP CPU 1515SP PC2 RAIL	6AG2677-2DB42-2GB0
SIPLUS ET 200SP CPU1515SP PC2 F RAIL	6AG2677-2SB42-2GB0
SIPLUS ET 200SP CPU1515SP PC2	6AG1677-2DB42-2GB0
SIPLUS ET 200SP CPU1515SP PC2 F	6AG1677-2SB42-2GB0
SIPLUS ET 200SP CPU1515SP PC2 F RAIL	6AG2677-2SB42-2GB0
SIPLUS ET 200SP CPU 1515SP PC2 RAIL	6AG2677-2DB42-2GB0

Technology CPUs

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CPU1515SP PC2 T	6ES7677-2VB42-0GB1
CPU1515SP PC2 TF	6ES7677-2WB42-0GB1
CPU1515SP PC2 T + HMI 128PT	6ES7677-2VB42-0GK0
CPU1515SP PC2 TF + HMI 128PT	6ES7677-2WB42-0GK0
CPU1515SP PC2 T + HMI 512PT	6ES7677-2VB42-0GL0
CPU1515SP PC2 TF + HMI 512PT	6ES7677-2WB42-0GL0
CPU1515SP PC2 T + HMI 2048PT	6ES7677-2VB42-0GM0
CPU1515SP PC2 TF + HMI 2048PT	6ES7677-2WB42-0GM0
CPU1515SP PC2 T	6ES7677-2VB42-0GB0
CPU1515SP PC2 TF	6ES7677-2WB42-0GB0

SIPLUS

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SIPLUS ET 200SP CPU1515SP PC2	6AG1677-2DB42-2GB0
SIPLUS ET 200SP CPU1515SP PC2 F	6AG1677-2SB42-2GB0

 : Safety-related component

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Open Controller

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Article number

SIPLUS ET 200SP CPU 1515SP PC2 RAIL	6AG2677-2DB42-2GB0
SIPLUS ET 200SP CPU1515SP PC2 F RAIL	6AG2677-2SB42-2GB0

I/O modules

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Article number



Digital inputs

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ET 200SP, DI 8x 24V DC Basic, PU 1	6ES7131-6BF01-0AA0
ET 200SP, DI 8x 24V DC ST, PU 1	6ES7131-6BF01-0BA0
ET 200SP, DI 8x24VDC HF, PU 1	6ES7131-6BF00-0CA0
ET 200SP, DI 8x24VDC High Speed	6ES7131-6BF00-0DA0
ET 200SP, DI 16x 24V DC ST, PU 1	6ES7131-6BH01-0BA0
ET 200SP, DI 16x24VDC SRC BA	6ES7131-6BH60-0AA0
ET 200SP, DI 8x 24V DC SRC BA	6ES7131-6BF61-0AA0
ET 200SP, DI 8x 24VAC..48VUC BA, PU 1	6ES7131-6CF00-0AU0
ET 200SP, DI 4x 120..230V AC ST	6ES7131-6FD01-0BB1
ET 200SP, DI 8xNAMUR HF	6ES7131-6TF00-0CA0
ET 200SP, EI-Mod., F-DI 8x24VDC HF	6ES7136-6BA00-0CA0
ET 200SP, F-DI 8x24V DC HF	6ES7136-6BA01-0CA0
ET 200SP HA, EX-DI 4xNAMUR	6DL1131-6TD00-0HX1
SIPLUS ET 200SP F-DI 4/8x24VDC HF	6AG1136-6BA01-2CA0
SIPLUS ET 200SP F-DI 4/8x24VDC RAIL	6AG2136-6BA01-2CA0
SIPLUS ET 200SP DI 8x24VDC HF	6AG1131-6BF00-7CA0
SIPLUS ET 200SP DI 8x24VDC ST	6AG1131-6BF01-7BA0
SIPLUS ET 200SP DI 8x24VDC SOURCE BA	6AG1131-6BF61-7AA0
SIPLUS ET 200SP DI 16x24VDC ST	6AG1131-6BH01-7BA0
SIPLUS ET 200SP DI 8x48VUC BA	6AG1131-6CF00-7AU0
SIPLUS ET 200SP DI 4X120..230VAC ST	6AG1131-6FD01-7BB1
SIPLUS ET 200SP DI 8XNAMUR HF	6AG1131-6TF00-7CA0
SIPLUS ET 200SP DI 16x24VDC ST TX RAIL	6AG2131-6BH01-4BA0
SIPLUS ET 200SP DI 8x48VUC TX RAIL	6AG2131-6CF00-4AU0
SIPLUS ET 200SP DI 4X120/230VAC TX RAIL	6AG2131-6FD01-4BB1
SIPLUS ET 200SP DI 8xNAMUR HF TX RAIL	6AG2131-6TF00-4CA0

Digital outputs

[Compare technical specifications online](#)

ET 200SP, DQ 4X24VDC/2A ST, PU 1	6ES7132-6BD21-0BA0
ET 200SP, DQ 4x24VDC/2A HF, PU 1	6ES7132-6BD21-0CA0
ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	6ES7132-6BD20-0DA0
ET 200SP, DQ 8x 24V DC/0,5A Basic, PU 1	6ES7132-6BF01-0AA0
ET 200SP, DQ 8x 24V DC/0,5A ST, PU 1	6ES7132-6BF01-0BA0
ET 200SP, DQ 8x24VDC/0,5A HF, PU 1	6ES7132-6BF01-0CA0
ET 200SP, DQ 8x 24VDC/0,5A SINK BA, PU 1	6ES7132-6BF61-0AA0
ET 200SP, DQ 16x24VDC/0,5A BA, PU 1	6ES7132-6BH00-0AA0
ET 200SP, DQ 16x 24V DC/0,5A ST, PU 1	6ES7132-6BH01-0BA0
ET 200SP, DQ 16x24VDC/0,5A HF, PU 1	6ES7132-6BH00-0CA0
ET 200SP, DQ 16x24VDC/0,5A SINK BA, PU 1	6ES7132-6BH60-0AA0
ET 200SP, DQ 4x24..230VAC/2A ST	6ES7132-6FD00-0BB1
ET 200SP, DQ 4x24..230VAC/2A HF, PU 1	6ES7132-6FD00-0CU0
ET 200SP, RQ CO 4x 24V DC/2A ST, VPE 1	6ES7132-6GD51-0BA0
ET 200SP, RQ CO 3x120VDC..230VAC/5A ST	6ES7132-6HC50-0BU0
ET 200SP, RQ COni 3x120VDC..230VAC/5A ST	6ES7132-6HC70-0BU0
ET 200SP, RQ NO 4x 120VDC..230VAC/5A,PU1	6ES7132-6HD01-0BB1
ET 200SP,RQ NO-mA 4x120VDC..230VAC/5A ST	6ES7132-6MD00-0BB1
ET 200SP, F-RQ 1x24VDC/24..230VAC/5A ST	6ES7136-6RA00-0BF0

 : Safety-related component

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I/O modules

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Article number

ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DB00-0CA0
ET 200SP, F-DQ 4x24VDC/2A PM HF	6ES7136-6DB01-0CA0
ET 200SP, F-DQ 8x24VDC/0.5A PP HF	6ES7136-6DC00-0CA0
ET 200SP HA, EX-DQ 2x17,4VDC/27MA	6DL1132-6CB00-0HX1
ET 200SP HA, EX-DQ 2x23,1VDC/20MA	6DL1132-6EB00-0HX1
SIPLUS ET 200SP F-DQ 4x24VDC/2A PM HF	6AG1136-6DB00-2CA0
SIPLUS ET 200SP F-DQ 8x24VDC/0.5A PP HF	6AG1136-6DC00-2CA0
SIPLUS ET 200SP F-RQ 24VDC/24-230VAC/5A	6AG1136-6RA00-2BF0
SIPLUS ET 200SP F-DQ 4X24VDC/2A PM RAIL	6AG2136-6DB00-1CA0
SIPLUS ET 200SP F-DQ 8x24VDC 0.5A RAIL	6AG2136-6DC00-1CA0
SIPLUS ET 200SP F-RQ 24VDC230VAC/5A RAIL	6AG2136-6RA00-1BF0
SIPLUS ET 200SP DQ 8x24VDC/0,5A ST	6AG1132-6BF01-7BA0
SIPLUS ET 200SP DQ 8x24VDC/0,5A SNK BA	6AG1132-6BF61-7AA0
SIPLUS ET 200SP DQ 16x24VDC/0,5A ST	6AG1132-6BH01-7BA0
SIPLUS ET 200SP DQ 4X24..230VAC/2A HF	6AG1132-6FD00-7CU0
SIPLUS ET 200SP RQ 4x24VDC/2A CO ST	6AG1132-6GD51-7BA0
SIPLUS ET 200SP RQ 4x120VDC/230VAC/5A	6AG1132-6HD01-7BB1
SIPLUS ET 200SP DQ 16X24VDC/0.5A TX RAIL	6AG2132-6BH01-4BA0
SIPLUS ET 200SP DQ 4X24..230VAC TX RAIL	6AG2132-6FD00-4CU0
SIPLUS ET 200SP RQ 4x24VDC/2A ST TX RAIL	6AG2132-6GD51-4BA0
SIPLUS ET 200SP RQ 4x120VDC/230 TX RAIL	6AG2132-6HD01-4BB1
SIPLUS ET 200SP RQ 4x120/230 MA TX RAIL	6AG2132-6MD00-4BB1

Digital inputs/outputs

[Compare technical specifications online](#)

ET 200SP, DI8x+DQ8x 24V DC/0,5A ST, PU1

6ES7133-6BH00-0BA0

Analog inputs

[Compare technical specifications online](#)

ET 200SP, AI 2xU Standard, PU 1	6ES7134-6FB00-0BA1
ET 200SP, AI 8xU Basic	6ES7134-6FF00-0AA1
ET 200SP, AI 2xI 2-/4-Wire ST, PU 1	6ES7134-6GB00-0BA1
ET 200SP, AI 4XI 2-/4-Wire ST, PU 1	6ES7134-6GD01-0BA1
ET 200SP, AI 8XI 2-/4-Wire Basic	6ES7134-6GF00-0AA1
ET 200SP AI 2 X U/I 2-, 4-Wire HF	6ES7134-6HB00-0CA1
ET 200SP AI 2 X U/I 2-, 4-Wire HS	6ES7134-6HB00-0DA1
ET 200SP, AI 4xU/I 2-Wire ST, PU 1	6ES7134-6HD01-0BA1
ET 200SP, AI 4x TC HS	6ES7134-6JD00-0DA1
ET 200SP, AI 4xRTD/TC 2-/3-/4-Wire HF	6ES7134-6JD00-0CA1
ET 200SP, AI 8xRTD/TC 2-Wire HF	6ES7134-6JF00-0CA1
ET 200SP, AI 4XI 2-WIRE 4...20MA HART	6ES7134-6TD00-0CA1
AI 2xSG 4-/6-wire HS Analog input module	7MH4134-6LB00-0DA0
ET 200SP AI Energy Meter CT ST	6ES7134-6PA01-0BU0
ET 200SP AI Energy Meter CT HF	6ES7134-6PA01-0CU0
ET 200SP AI Energy Meter RC ST	6ES7134-6PA21-0BU0
ET 200SP AI Energy Meter RC HF	6ES7134-6PA21-0CU0
ET 200SP, F-AI 4XI 0(4)..20mA HF	6ES7136-6AA00-0CA1
ET 200SP, F-AI 4xU 0..10V HF	6ES7136-6AB00-0CA1
ET 200SP HA, EX-AI 2xI 2-WIRE HART	6DL1134-6TB00-0HX1
ET 200SP HA, EX-AI 4xTC/2xRTD 2-/3-/4-W	6DL1134-6JD00-0HX1
ACCESSORY FOR 3NJ6	3NJ6920-3BE21
Current transformer 50/1A, 2,5VA C1,0	4NC5112-0CB21
SIPLUS ET 200SP AI 8xU BASIC	6AG1134-6FF00-2AA1
SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HF	6AG1134-6HB00-2CA1
SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HS	6AG1134-6HB00-2DA1
SIPLUS ET 200SP AI 4xRTD/TC HF	6AG1134-6JD00-2CA1
SIPLUS ET 200SP AI 4x TC HS	6AG1134-6JD00-2DA1
SIPLUS ET 200SP AI 8XRTD/TC 2-WIRE HF	6AG1134-6JF00-2CA1

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I/O modules

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Article number

SIPLUS ET 200SP AI 4XI 2-WIRE 4...20MA H	6AG1134-6TD00-2CA1
SIPLUS ET 200SP F-AI 4xI 2-/4-wire HF	6AG1136-6AA00-2CA1
SIPLUS ET 200SP F-AI 4xU 0...10V HF	6AG1136-6AB00-2CA1
SIPLUS ET 200SP AI 4XI 2-/4-WIRE T1 RAIL	6AG2134-6GD01-1BA1
SIPLUS ET 200SP AI 2XU/I 2/4W HF T1 RAIL	6AG2134-6HB00-1CA1
SIPLUS ET 200SP AI 4XU/I 2-WIRE T1 RAIL	6AG2134-6HD01-1BA1
SIPLUS ET 200SP AI 4xRTD/TC HF RAIL	6AG2134-6JD00-1CA1
SIPLUS ET 200SP AI 8XRTD/TC T1 RAIL	6AG2134-6JF00-1CA1
SIPLUS ET 200SP F-AI 4xI 2/4-w HF RAIL	6AG2136-6AA00-1CA1
SIPLUS ET 200SP F-AI 4xU 0...10V HF RAIL	6AG2136-6AB00-1CA1
SIPLUS ET 200SP AI 4xI 2-/4-w ST	6AG1134-6GD01-7BA1
SIPLUS ET 200SP AI 8XI 2-/4-WIRE BA	6AG1134-6GF00-7AA1
SIPLUS ET 200SP AI 4xU/I 2-w ST	6AG1134-6HD01-7BA1
SIPLUS ET 200SP AI 4XI 2-/4-WIRE TX RAIL	6AG2134-6GD01-4BA1
SIPLUS ET 200SP AI 8xI 2-/4-W BA TX RAIL	6AG2134-6GF00-4AA1
SIPLUS ET 200SP AI 4XU/I 2-WIRE TX RAIL	6AG2134-6HD01-4BA1

Analog outputs

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ET 200SP, AQ 2xU Standard, PU 1	6ES7135-6FB00-0BA1
ET 200SP, AQ 2xI Standard, PU 1	6ES7135-6GB00-0BA1
ET 200SP, AQ 2 X U/I High Feature	6ES7135-6HB00-0CA1
ET 200SP, AQ 2 X U/I High Speed	6ES7135-6HB00-0DA1
ET 200SP, AQ 4xU/I ST	6ES7135-6HD00-0BA1
ET 200SP, AQ 4xI HART HF	6ES7135-6TD00-0CA1
ET 200SP HA, EX-AQ 2xI HART	6DL1135-6TB00-0HX1
SIPLUS ET 200SP AQ 2 X U/I HIGH SPEED	6AG1135-6HB00-2DA1
SIPLUS ET 200SP AQ 4xI HART High Feature	6AG1135-6TD00-2CA1
SIPLUS ET 200SP AQ 2x U/I HS RAIL	6AG2135-6HB00-1DA1
SIPLUS ET 200SP AQ 2xI STANDARD	6AG1135-6GB00-7BA1
SIPLUS ET 200SP AQ 2xU/I HF	6AG1135-6HB00-7CA1
SIPLUS ET 200SP AQ 4xU/I ST	6AG1135-6HD00-7BA1
SIPLUS ET 200SP AQ 4XU/I ST TX RAIL	6AG2135-6HD00-4BA1

Power modules

[Compare technical specifications online](#)

ET 200SP, F-PM-E PPM, 24V DC	6ES7136-6PA00-0BC0
ET 200SP HA, Ex-PM E POWER MODULE	6DL1133-6PX00-0HW0
SIPLUS ET 200SP F-PM-E 24VDC/8A PPM	6AG1136-6PA00-2BC0
SIPLUS ET 200SP F-PM-E 24VDC/8A PPM RAIL	6AG2136-6PA00-1BC0

Motor starter

[Compare technical specifications online](#)

ET 200SP, D-O-L starter 0.1 - 0.4A HF	3RK1308-0AA00-0CP0
ET 200SP, D-O-L starter 0.3 - 1A HF	3RK1308-0AB00-0CP0
ET 200SP, D-O-L starter 0.9 - 3A HF	3RK1308-0AC00-0CP0
ET 200SP, D-O-L starter 2.8 - 9A HF	3RK1308-0AD00-0CP0
ET 200SP, D-O-L starter 4.0 - 12A HF	3RK1308-0AE00-0CP0
ET 200SP, D-O-L starter F 0.1-0.4A HF	3RK1308-0CA00-0CP0
ET 200SP, D-O-L starter F 0.3-1A HF	3RK1308-0CB00-0CP0
ET 200SP, D-O-L starter F 0.9-3A HF	3RK1308-0CC00-0CP0
ET 200SP, D-O-L starter F 2.8-9A HF	3RK1308-0CD00-0CP0
ET 200SP, D-O-L starter F 4.0-12A HF	3RK1308-0CE00-0CP0
ET 200SP, reversing starter 0.1 -0.4A HF	3RK1308-0BA00-0CP0
ET 200SP, reversing starter 0.3 - 1A HF	3RK1308-0BB00-0CP0
ET 200SP, reversing starter 0.9 - 3A HF	3RK1308-0BC00-0CP0
ET 200SP, reversing starter 2.8 - 9 A HF	3RK1308-0BD00-0CP0
ET 200SP, reversing starter 4.0 - 12A HF	3RK1308-0BE00-0CP0
ET 200SP, reversing starter F 0.1-0.4A HF	3RK1308-0DA00-0CP0
ET 200SP, reversing starter F 0.3-1A HF	3RK1308-0DB00-0CP0

 : Safety-related component

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I/O modules

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	Article number
ET 200SP, reversing starter F 0.9-3A HF	3RK1308-0DC00-0CP0
ET 200SP, reversing starter F 2.8-9A HF	3RK1308-0DD00-0CP0
ET 200SP, reversing starter F 4.0-12A HF	3RK1308-0DE00-0CP0
Technology modules	Compare technical specifications online
ET 200SP, DI 8x24VDC High Speed	6ES7131-6BF00-0DA0
ET 200SP, F-TM Count 1x1Vpp sin/cos HF	6ES7136-6CB00-0CA0
ET 200SP, TM Posinput 1	6ES7138-6BA01-0BA0
ET 200SP, TM Timer DIDQ 10x24V	6ES7138-6CG00-0BA0
ET 200SP, TM Count 1x24V	6ES7138-6AA01-0BA0
SIPLUS ET 200SP TM COUNT 1X24V	6AG1138-6AA01-2BA0
SIPLUS ET 200SP TM POSINPUT 1	6AG1138-6BA01-2BA0
SIPLUS ET 200SP TM TIMER DIDQ 10x24V	6AG1138-6CG00-2BA0
SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL	6AG2138-6AA01-1BA0
ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	6ES7132-6BD20-0DA0
ET 200SP, TM Pulse 2x24V	6ES7138-6DB00-0BB1
ET 200SP, TM Timer DIDQ 10x24V	6ES7138-6CG00-0BA0
ET 200SP, DQ 4x24..230VAC/2A HF, PU 1	6ES7132-6FD00-0CU0
SIPLUS ET 200SP TM TIMER DIDQ 10x24V	6AG1138-6CG00-2BA0
SIPLUS ET 200SP TM PULSE 2x24V	6AG1138-6DB00-2BB1
SIPLUS ET 200SP TM PULSE 2x24V T1 RAIL	6AG2138-6DB00-1BB1
SIPLUS ET 200SP DQ 4X24..230VAC/2A HF	6AG1132-6FD00-7CU0
SIPLUS ET 200SP DQ 4X24..230VAC TX RAIL	6AG2132-6FD00-4CU0
SIWAREX WP321 ST Weighing module	7MH4138-6AA00-0BA0
SIWAREX WP341 HF Weighing module	7MH4138-6CA00-0CU0
SIWAREX WP351 HF Weighing module	7MH4138-6BA00-0CU0
SIPLUS ET 200SP WP321	6AG1138-6AA00-2BA8
ET 200SP, TM Posinput 1	6ES7138-6BA01-0BA0
ET 200SP, TM Count 1x24V	6ES7138-6AA01-0BA0
SIPLUS ET 200SP TM COUNT 1X24V	6AG1138-6AA01-2BA0
SIPLUS ET 200SP TM POSINPUT 1	6AG1138-6BA01-2BA0
SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL	6AG2138-6AA01-1BA0
ET 200SP, TM PTO 2x24V	6ES7138-6EB00-0BA0
ET 200SP AI Energy Meter CT ST	6ES7134-6PA01-0BU0
ET 200SP AI Energy Meter RC ST	6ES7134-6PA21-0BU0
ET 200SP AI Energy Meter CT HF	6ES7134-6PA01-0CU0
ET 200SP AI Energy Meter RC HF	6ES7134-6PA21-0CU0
SIMATIC ET 200SP TM ECC 2xPWM ST	6FE1242-6TM10-0BB1
SIMATIC ET 200SP TM ECC PL ST	6FE1242-6TM20-0BB1
SIPLUS ET 200SP TM ECC 2xPWM ST	6AG1242-6TM10-2BB1
ET 200SP, DI 8x24VDC High Speed	6ES7131-6BF00-0DA0
ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	6ES7132-6BD20-0DA0
ET 200SP AI 2 X U/I 2-, 4-Wire HS	6ES7134-6HB00-0DA1
AI 2xSG 4-/6-wire HS Analog input module	7MH4134-6LB00-0DA0
ET 200SP, AQ 2 X U/I High Speed	6ES7135-6HB00-0DA1
ET 200SP, TM Timer DIDQ 10x24V	6ES7138-6CG00-0BA0
SIPLUS ET 200SP AI 2 X U/I 2-, 4-WIRE HS	6AG1134-6HB00-2DA1
SIPLUS ET 200SP AQ 2 X U/I HIGH SPEED	6AG1135-6HB00-2DA1
SIPLUS ET 200SP TM TIMER DIDQ 10x24V	6AG1138-6CG00-2BA0
SIPLUS ET 200SP AQ 2x U/I HS RAIL	6AG2135-6HB00-1DA1
ET 200SP, TM Timer DIDQ 10x24V	6ES7138-6CG00-0BA0
ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	6ES7132-6BD20-0DA0
SIPLUS ET 200SP TM TIMER DIDQ 10x24V	6AG1138-6CG00-2BA0
ET 200SP, TM Timer DIDQ 10x24V	6ES7138-6CG00-0BA0
SIPLUS ET 200SP TM TIMER DIDQ 10x24V	6AG1138-6CG00-2BA0

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I/O modules

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	Article number
AI 2xSG 4-/6-wire HS Analog input module	7MH4134-6LB00-0DA0
F-TM ServoDrive ST	6BK1136-6AB01-0BU0
F-TM StepDrive ST	6BK1136-6SB01-0BU0
F-TM ServoDrive HF	6BK1136-6AB01-0CU0
SITRANS FCT070 Coriolis flow transmitter	7ME4138-6AA00-0BB1
Technology module SITRANS FST070	7ME3448-6AA00-0BB1
Communication modules	Compare technical specifications online
Communication processor CP 1542SP-1 IRC	6GK7542-6VX00-0XE0
Communication processor CP 1542SP-1	6GK7542-6UX00-0XE0
Communication processor CP 1543SP-1	6GK7543-6WX00-0XE0
ET 200SP, cm DP for ET 200SP CPU	6ES7545-5DA00-0AB0
CM AS-I MASTER ST ET 200SP (AS-I V3.0)	3RK7137-6SA00-0BC1
F-CM AS-I SAFETY ST ET 200SP	3RK7136-6SC00-0BC1
ET 200SP, CM 1x DALI	6ES7137-6CA00-0BU0
ET 200SP, CM PTP, PU 1	6ES7137-6AA01-0BA0
ET 200SP CM CAN	6ES7137-6EA00-0BA0
ET 200SP, CM 4 X IO-Link ST	6ES7137-6BD00-0BA0
SIPLUS ET 200SP CM 4XIO-LINK	6AG1137-6BD00-2BA0
SIPLUS ET 200SP CM CAN	6AG1137-6EA00-2BA0
SIPLUS ET 200SP CM 4XIO-LINK ST T1 RAIL	6AG2137-6BD00-1BA0
SIPLUS ET 200SP CM CAN RAIL	6AG2137-6EA00-2BA0
SIPLUS ET 200SP CM PTP	6AG1137-6AA01-7BA0
SIPLUS ET 200SP CP 1543SP-1 ISEC	6AG1543-6WX00-7XE0
SIPLUS ET 200SP CM DP	6AG1545-5DA00-2AB0
SIPLUS ET 200SP CM PTP RAIL	6AG2137-6AA01-4BA0
SIPLUS ET 200SP CP 1542SP-1 IRC TX RAIL	6AG2542-6VX00-4XE0
SIPLUS ET 200SP CP 1543SP-1 ISEC TX RAIL	6AG2543-6WX00-4XE0
Cover modules	Compare technical specifications online
ET 200SP, 5 BU-Cover, 15mm	6ES7133-6CV15-1AM0
ET 200SP, 5 BU-Cover, 20mm	6ES7133-6CV20-1AM0
ET 200SP, BU cover, 30mm	3RK1908-1CA00-0BP0
Valve terminals	Compare technical specifications online
PotDis	Compare technical specifications online
PotDis-TB-n.c.-G, PU 1	6ES7193-6TP00-0TN0
PotDis-TB-BR-W, PU 1	6ES7193-6TP00-0TP0
PotDis-TB-P1-R, PU 1	6ES7193-6TP00-0TP1
PotDis-TB-P2-B, PU 1	6ES7193-6TP00-0TP2

Power supplies

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SIMATIC ET 200SP PS/1AC/24VDC/5A	6EP7133-6AB00-0BN0
SIMATIC ET 200SP PS/1AC/24VDC/10A	6EP7133-6AE00-0BN0

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Station expansion

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Article number



ET 200SP, Busadapter BA-Send BA1XFC

6ES7193-6AS00-0AA0

Base Unit

[Compare technical specifications online](#)

Article number

**BaseUnit Type A0, BU15-P16+A0+2B**

6ES7193-6BP00-0BA0

BaseUnit Type A0, BU15-P16+A0+2D

6ES7193-6BP00-0DA0

BaseUnit Type A0, BU15-P16+A10+2B

6ES7193-6BP20-0BA0

BaseUnit Type A0, BU15-P16+A10+2D

6ES7193-6BP20-0DA0

BaseUnit Type A1, BU15-P16+A0+2B/T

6ES7193-6BP00-0BA1

BaseUnit Type A1, BU15-P16+A0+2D/T

6ES7193-6BP00-0DA1

BaseUnit Type A1, BU15-P16+A0+12B/T

6ES7193-6BP40-0BA1

BaseUnit Type A1, BU15-P16+A0+12D/T

6ES7193-6BP40-0DA1

BaseUnit Type B0, BU20-P12+A4+0B

6ES7193-6BP20-0BB0

BaseUnit Type B1, BU20-P12+A0+4B, PU 1

6ES7193-6BP20-0BB1

BaseUnit Type C0, BU20-P6+A2+4D

6ES7193-6BP20-0DC0

BaseUnit Type C1, BU20-P6+A2+4B

6ES7193-6BP20-0BC1

BaseUnit Type D0, BU20-P12+A0+0B

6ES7193-6BP00-0BD0

BaseUnit Type F0, BU20-P8+A4+0B

6ES7193-6BP20-0BF0

ET 200SP, BaseUnit BU-Send

6ES7193-6BN00-0NE0

ET200 SP, BU with infeed 24V and 500V

3RK1908-0AP00-0AP0

ET200 SP, BU with infeed 24V

3RK1908-0AP00-0BP0

ET200 SP, BU with infeed 500V

3RK1908-0AP00-0CP0

ET200 SP, BU without infeed

3RK1908-0AP00-0DP0

ET 200SP, BU F-DI-infeed and 500 V

3RK1908-0AP00-0GP0

ET 200SP, BU F-DI-forwarding infeed 500V

3RK1908-0AP00-0HP0

ET 200SP, BU F-DI -forwarding

3RK1908-0AP00-0JP0

ET 200SP, BU F-DI -infeed

3RK1908-0AP00-0KP0

PotDis-BU type P1,dark-colored, PU 1

6ES7193-6UP00-0BP1

PotDis-BU type P2,dark-colored, PU 1

6ES7193-6UP00-0BP2

PotDis-BU type P1,light-colored, PU 1

6ES7193-6UP00-0DP1

PotDis-BU type P2,light-colored, PU 1

6ES7193-6UP00-0DP2

SIPLUS[Compare technical specifications online](#)

SIPLUS ET 200SP BU20-P8+A4+0B

6AG1193-6BP20-2BF0

SIPLUS ET 200SP BU20-P6+A2+4D

6AG1193-6BP20-7DC0

SIPLUS ET 200SP BU15-P16+A0+2B

6AG1193-6BP00-7BA0

SIPLUS ET 200SP BU15-P16+A0+2B/T

6AG1193-6BP00-7BA1

SIPLUS ET 200SP BU20-P12+A0+0B

6AG1193-6BP00-7BD0

SIPLUS ET 200SP BU15-P16+A0+2D

6AG1193-6BP00-7DA0

SIPLUS ET 200SP BU15-P16+A0+2D/T

6AG1193-6BP00-7DA1

SIPLUS ET 200SP BU15-P16+A10+2B

6AG1193-6BP20-7BA0

SIPLUS ET 200SP BU20-P12+A4+0B

6AG1193-6BP20-7BD0

SIPLUS ET 200SP BU20-P12+A0+4B TYP B1

6AG1193-6BP20-7BB1

SIPLUS ET 200SP BU15-P16+A10+2D

6AG1193-6BP20-7DA0

SIPLUS ET 200SP BU15-P16+A0+12B/T

6AG1193-6BP40-7BA1

SIPLUS ET 200SP BU15-P16+A0+12D/T

6AG1193-6BP40-7DA1

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Base Unit [Compare technical specifications online](#)

	Article number
SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL	6AG2193-6BP00-4BA0
SIPLUS ET 200SP BU20-P12+A0+0B TX RAIL	6AG2193-6BP00-4BD0
SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL	6AG2193-6BP00-4DA0
SIPLUS ET 200SP BU15-P16+A0+2D/T TX RAIL	6AG2193-6BP00-4DA1
SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL	6AG2193-6BP20-4BA0
SIPLUS ET 200SP BU20-P12+A0+4B TX RAIL	6AG2193-6BP20-4BB1
SIPLUS ET 200SP BU20-P8+A4+0B TX RAIL	6AG2193-6BP20-4BF0
SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL	6AG2193-6BP20-4DA0
SIPLUS ET 200SP BU20-P6+A2+4D TX RAIL	6AG2193-6BP20-4DC0

BaseCarrier [Compare technical specifications online](#)

	Article number
 BaseCarrier, Type A0, new pot.gr., PU 10	6ES7193-6MT15-2DA0
BaseCarrier, Type A0, bridged, PU 10	6ES7193-6MT15-2BA0
BaseCarrier for Servermodul, PU 1	6ES7193-6MT15-0SV0
Accessories	Compare technical specifications online
ET 200SP IO-Adapter, PU 1	6ES7193-6CM00-0AA0
ET200SP, Servermodul for BC, PU1	6ES7193-6PA20-0AA0
socket for I/O-module Type A, 15 mm, 32-pole (340 er Rolle)	6ES7193-6MS15-5AA0
SIMATIC, BaseCarrier system rail 60mm	6ES7193-6MG00-2AA0
SIMATIC, BaseCarrier system rail 120mm	6ES7193-6MH00-2AA0
Mounting rail 7.5mm x 35 mm x 19* for BaseCarrier (HW)	6ES7193-6MK00-2AA0
ET200SP, Fitting Screw for DIN-Rail	6ES7193-6FS00-3AA0

Accessories [Compare technical specifications online](#)

	Article number
 Memory card	Compare technical specifications online
SIMATIC S7 memory card, 4 MB	6ES7954-8LC04-0AA0
SIMATIC S7 Memory Card, 12 MB	6ES7954-8LE04-0AA0
SIMATIC S7 Memory Card, 24 MB	6ES7954-8LF04-0AA0
SIMATIC S7 Memory Card, 256 MB	6ES7954-8LL04-0AA0
SIMATIC S7 Memory Card, 2 GB	6ES7954-8LP04-0AA0
SIMATIC S7 Memory Card, 32 GB	6ES7954-8LT04-0AA0
Memory Card S7-1500T MC KinPlus 2 GB	6ES7954-8LP80-0AA0
Memory Card S7-1500T MC KinPlus 32 GB	6ES7954-8LT80-0AA0
SIMATIC system rail	Compare technical specifications online
SIMATIC system rail, length 482,6mm	6ES7193-6MR00-0AA0
SIMATIC system rail, length 530mm	6ES7193-6MR00-0BA0
SIMATIC system rail, length 830mm	6ES7193-6MR00-0CA0
SIMATIC system rail, length 2000mm	6ES7193-6MR00-0DA0
Color-coding plates	Compare technical specifications online
10 color-coded labels CC00	6ES7193-6CP00-2MA0
10 color-coded labels CC01	6ES7193-6CP01-2MA0
10 color-coded labels CC02	6ES7193-6CP02-2MA0
10 color-coded labels CC03	6ES7193-6CP03-2MA0
10 color-coded labels CC04	6ES7193-6CP04-2MA0
10 color-coded labels CC10	6ES7193-6CP10-2MT0
10 color-coded labels CC11	6ES7193-6CP11-2MT0
10 color-coded labels CC12	6ES7193-6CP12-2MT0
10 color-coded labels CC13	6ES7193-6CP13-2MT0
10 color-coded labels CC41	6ES7193-6CP41-2MB0

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Accessories

[Compare technical specifications online](#)

	Article number
10 color-coded labels CC51	6ES7193-6CP51-2MC0
10 color-coded labels CC52	6ES7193-6CP52-2MC0
10 color-coded labels CC62	6ES7193-6CP62-2MA0
10 color-coded labels CC63	6ES7193-6CP63-2MA0
10 color-coded labels CC71	6ES7193-6CP71-2AA0
10 color-coded labels CC72	6ES7193-6CP72-2AA0
10 color-coded labels CC73	6ES7193-6CP73-2AA0
10 color-coded labels CC81	6ES7193-6CP81-2AB0
10 color-coded labels CC82	6ES7193-6CP82-2AB0
10 color-coded labels CC83	6ES7193-6CP83-2AB0
10 color-coded labels CC84	6ES7193-6CP84-2AC0
10 color-coded labels CC85	6ES7193-6CP85-2AC0
10 color-coded labels CC86	6ES7193-6CP86-2AC0
Labeling strips	Compare technical specifications online
500 labeling Stripes, Light grey	6ES7193-6LR10-0AA0
500 labeling Stripes, Light yellow	6ES7193-6LR10-0AG0
1000 labeling Stripes A4, yellow	6ES7193-6LA10-0AG0
1000 labeling Stripes A4, Light grey	6ES7193-6LA10-0AA0
BusAdapter	Compare technical specifications online
ET 200SP, Busadapter BA 2xRJ45	6ES7193-6AR00-0AA0
ET 200SP, Busadapter BA 2XFC	6ES7193-6AF00-0AA0
ET 200SP, Busadapter BA 2xSCRJ	6ES7193-6AP00-0AA0
ET 200SP, Busadapter BA SCRJ/RJ45	6ES7193-6AP20-0AA0
ET 200SP, Bus adapter BA SCRJ/FC	6ES7193-6AP40-0AA0
SIMATIC Busadapter BA 2xM12	6ES7193-6AM00-0AA0
SIMATIC Busadapter BA 2XLC	6ES7193-6AG00-0AA0
SIMATIC Busadapter BA LC/RJ45	6ES7193-6AG20-0AA0
SIMATIC Bus adapter BA LC/FC	6ES7193-6AG40-0AA0
SIMATIC Busadapter BA 2xLC-LD	6ES7193-6AG50-0AA0
SIMATIC Busadapter BA LC-LD/RJ45	6ES7193-6AG60-0AA0
SIMATIC Busadapter BA LC-LD/M12	6ES7193-6AG70-0AA0
SIPLUS ET 200SP BA 2XLC	6AG1193-6AG00-2AA0
SIPLUS ET 200SP BA LC/RJ45	6AG1193-6AG20-2AA0
SIPLUS ET 200SP BA 2XSCRJ PN	6AG1193-6AP00-2AA0
SIPLUS ET 200SP BA 2XFC PN	6AG1193-6AF00-7AA0
SIPLUS ET 200SP BA 2xM12	6AG1193-6AM00-7AA0
SIPLUS ET 200SP BA 2xRJ45	6AG1193-6AR00-7AA0
SIPLUS ET 200SP BA 2XFC TX RAIL	6AG2193-6AF00-4AA0
SIPLUS ET 200SP BA 2xM12 RAIL	6AG2193-6AM00-4AA0
SIPLUS ET 200SP BA 2XRJ45 TX RAIL	6AG2193-6AR00-4AA0
Tools	Compare technical specifications online
FastConnect Stripping Tool	6GK1901-1GA00
FastConnect Stripping Tool	6GK1905-6AA00
TERMINATION KIT SC RJ POF PLUG	6GK1900-0ML00-0AA0
TERMINATION KIT SC RJ PCF PLUG	6GK1900-0NL00-0AA0
MotorStarter Accessories	Compare technical specifications online
ET 200SP, mech. additional mounting BU	3RK1908-1EA00-1BP0
ET200 SP, 3DI/LC module	3RK1908-1AA00-0BP0
ET200 SP, touch protection for power bus	3RK1908-1DA00-2BP0
FAN	3RW4928-8VB00
END RETAINER, STEEL	8WA1805
SIPLUS RIC memory cards	
160 Equipment Identifier Plates	6ES7193-6LF30-0AW0
5 shielding Connections	6ES7193-6SC20-1AM0

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Accessories

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	Article number
ET200SP, Servermodule	6ES7193-6PA00-0AA0
PB Connector, 90 Degree, with PG Socket	6ES7972-0BB70-0XA0
ET 200SP, 5 E-coding Elements Type H	6ES7193-6EH00-1AA0
ET 200SP, 5 E-coding Elements Type F	6ES7193-6EF00-1AA0
Repeater RS485 f. PROFIBUS/MPI	6ES7972-0AA02-0XA0
Diagnostic repeater f. PROFIBUS-DP,	6ES7972-0AB01-0XA0
SIRIUS SAFETY RELAY ADV ELECT. 3+1	3SK1122-2AB40
SIPLUS	Compare technical specifications online
SIPLUS Diagnose-Repeater fuer Profibus	6AG1972-0AB01-4XA0
SIPLUS ET 200SP Servermodul	6AG1193-6PA00-7AA0
SIPLUS DP RS485-Repeater	6AG1972-0AA02-7XA0
SIPLUS DP PB-Stecker PG-Buchse 90Grad	6AG1972-0BB70-7XA0
Junction box	Compare technical specifications online
SIWAREX JB Junction box aluminum	7MH5001-0AA20
SIWAREX JB Junction box stainless steel	7MH5001-0AA00
SIWAREX JB Junction box ATEX stain. st.	7MH5001-0AA01
Load cell connecting cable	Compare technical specifications online
SIWAREX cables for standard areas	7MH4702-8AG
SIWAREX cables for intrinsically safe	7MH4702-8AF
Configuration package	Compare technical specifications online
SIWATOOL software on CD	7MH4900-1AK01
Shield terminals	Compare technical specifications online
5 shielding Connections	6ES7193-6SC20-1AM0
EX barrier	Compare technical specifications online
SIWAREX IS Ex barrier for load cells	7MH4710-5BA
SIWAREX IS expansion box for load cell	7MH4710-5CA
Legal-for-trade verification kit	Compare technical specifications online
SIWAREX WP351 Legal for trade set	7MH4138-6BA00-0AY0
M12 data cable and accessories	Compare technical specifications online
Control M12 Cable Connector PRO	6GK1908-0DC10-6AA0

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