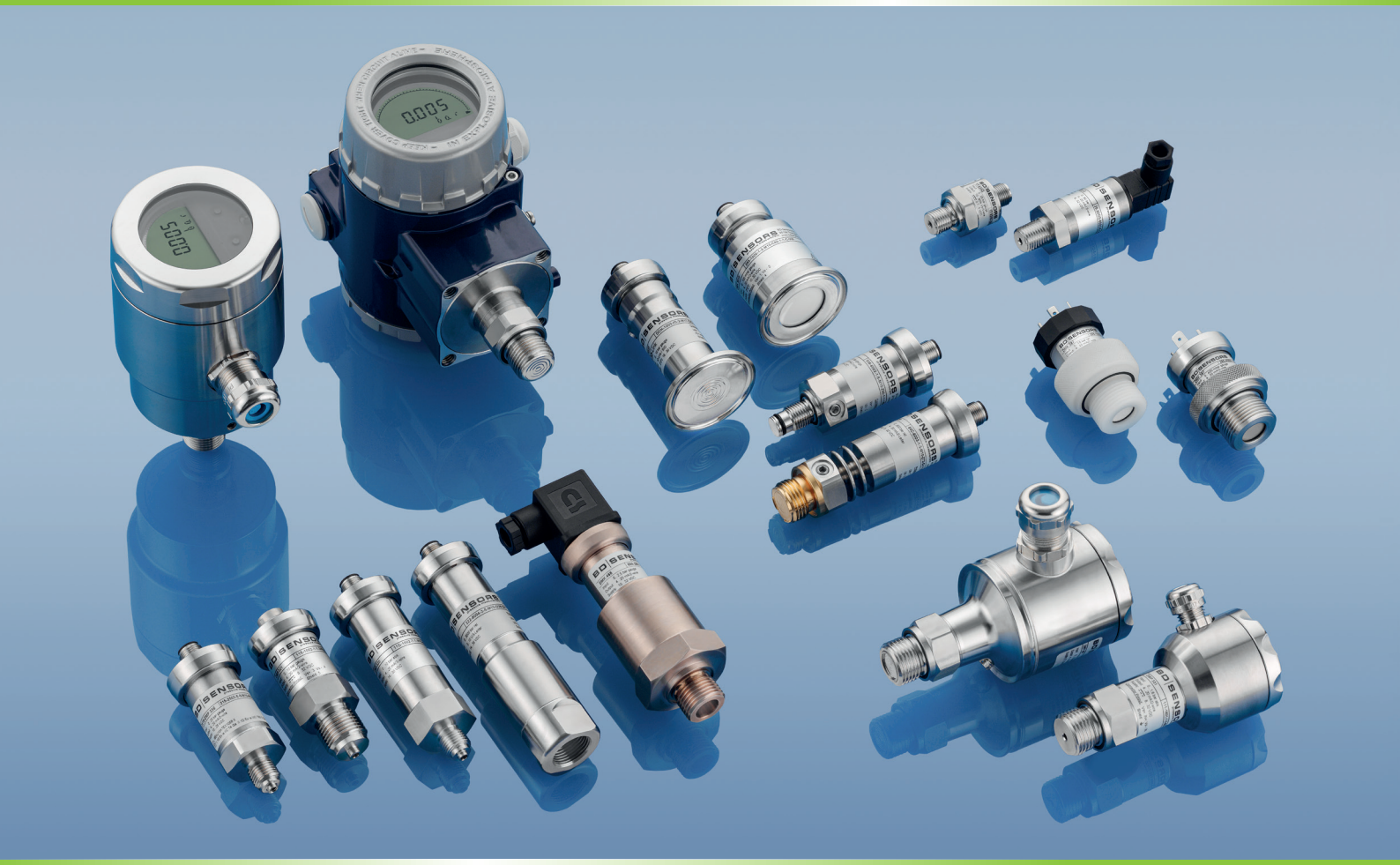
DRUCKMESSUMFORMER

PRODUKTKATALOG



DRUCK auf höchstem **NIVEAU.**

BD|SENSORS
pressure measurement

>> www.bdsensors.de

PRESSURE AT THE HIGHEST LEVEL

„Successful medium-sized companies are not successful because they are active in many areas, but rather because they concentrate on one area and do it better than anyone else“

This is our philosophy. That´s why BDSENSORS has concentrated on electronic pressure measurement technology from the beginning.

With our unremitting product and and quality strategy we have been successful in becoming a major player on the world market for electronic pressure sensing devices within a few years.

BD|SENSORS
pressure measurement

With 300 employees at 3 locations in Germany, the Czech Republic and China BD|SENSORS has solutions from 0.1 mbar to 6.000 bar:

- pressure sensors, pressure transducers pressure transmitters
- electronic pressure switches
- pressure measuring devices with display and switching outputs
- hydrostatic level probes

Two pressure transmitters and a submersible probe, based on a stainless steel silicon sensor were the beginning. Today the range extends to more than 70 standard products, from economical OEM devices to high-end products with HART® communication or field bus interface.

In addition we have developed hundreds of customer-specific applications, underlining the competence and flexibility of BD|SENSORS. The excellent price/performance ratio of our products is proof of the fact that we are able to meet the toughest demand: Being a problem-solver for our customers.

INDEX

For large production batches as well as for small production numbers, no matter for what medium or external factors, with almost any mechanical or electrical connection - we solve your problem

flexibly, quickly and cost-efficiently.

	PRODUCT	PREFERRED APPLICATION				MEDIA WETTED PARTS							NOMINAL PRESSURE		ACCURACY*	APPROVAL				
						Prozess-anschluss		pressure sensor diaphragm			seal									
		process industry	general purpose	hygienic	maritime	metal	PVDF/PP	silicon	stainless steel	ceramic	elastomer	without, welded	bar min	bar max	% FSO (standard)	EX	UL	SIL	HART	nautic
PRECISION	XMP i	•		•		•			•		•	•	0.40	600	≤± 0.10	•	•	•	•	
	XMP ci	•				•	•			•	•		0.16	20	≤± 0.10	•	•		•	
	x|act i	•		•		•			•			•	0.40	40	≤± 0.10	•	•	•	•	
	x|act ci	•				•	•			•	•		0.16	20	≤± 0.10	•	•		•	
	DMP 320		•			•			•		•		0.10	600	≤± 0.10		•			
	DMP 331 i		•			•			•		•	•	0.40	60	≤± 0.10	•	•			
	DMP 333 i		•			•			•		•		100	600	≤± 0.10	•	•			
	DMP 334 i		•			•			•			•	600	2.200	≤± 0.10					
	DMP 331 Pi			•		•			•		•	•	0.40	40	≤± 0.10	•	•			
INDUSTRY	DMP 321		•			•			•		•	•	0.10	600	≤± 0.25	•	•			
	DMP 331		•			•			•		•	•	0.10	60	≤± 0.35	•	•	•		
	DMP 333		•			•			•		•		100	600	≤± 0.35	•	•	•		
	DMP 334		•			•			•			•	600	2.200	≤± 0.35	•				
	DMP 335		•			•			•			•	10	600	≤± 0.50	•	•			
	DMP 336		•			•			•			•	16	1.000	≤± 0.50	•	•	•		
	DMP 343		•			•		•			•		0.01	1	≤± 0.35	•	•			
	DMP 457				•	•			•		•	•	0.10	600	≤± 0.35	•				•
	DMK 331		•			•	•			•	•		0.40	600	≤± 0.50	•	•	•		
	DMK 351		•			•	•			•	•		0.04	20	≤± 0.35	•	•			
	DMK 387		•			•	•			•	•		0.10	40	≤± 0.35	•	•			
	DMK 457				•	•				•	•		0.40	600	≤± 0.50	•				•
	DMK 458				•	•				•	•		0.04	20	≤± 0.25	•				•
	DMP 331 P			•		•			•		•	•	0.10	40	≤± 0.35	•	•	•		
	DMP 333 P		•			•			•		•	•	60	600	≤± 0.35	•	•			
	DMP 339 P			•		•			•		•	•	25	600	≤± 0.50		•			
	DMK 331 P		•	•		•			•		•		60	400	≤± 0.50	•	•	•		
	DMK 351 P			•		•				•	•		0.04	20	≤± 0.35	•	•			
OEM	17.600 G		•			•			•		•	•	6	600	≤± 0.50		•			
	17.609 G		•			•			•			•	6	60	≤± 0.50		•			
	17.620 G		•			•			•			•	16	1000	≤± 0.50		•			
	18.600 G		•			•		•			•		0.10	6	≤± 0.50		•			
	18.601 G		•			•			•		•		0.10	6	≤± 0.50		•			
	18.605 G		•			•			•		•		0.10	1	≤± 0.50		•			
	26.600 G		•			•				•	•		1	400	≤± 0.50		•			
	30.600 G		•			•				•	•		1.60	250	≤± 1.00		•			

* according to IEC 60770

XMP i

Precision Pressure Transmitter for the Process Industry with HART®-Communication and SIL2 (optionally)

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- turn-down 1:10
- two chamber aluminium die cast case or stainless field housing
- internal or flush welded diaphragm
- HART®-communication
- explosion protection intrinsic safety (ia)

Optional versions

- explosion protection flameproof equipment (d)
- SIL2 - version according to IEC 61508 / IEC 61511
- integrated display and operating module
- special materials as Hastelloy® and Tantalum
- cooling element for media temperatures up to 300 °C

The process pressure transmitter XMP i has been especially designed for the process industry as well as food and pharmaceutical industry (version stainless steel field housing) and measures vacuum, gauge and absolute pressure ranges of gases, steam, fluids up to 600 bar.

Different process connections such as threads and flanges with an internal or flush welded diaphragm are available and can be combined with a cooling element for media temperatures up to 300 °C. The transmitter is as a standard equipped with HART®-communication; the customer can choose between an aluminium die cast case or a stainless field housing.

Preferred areas of use are

Oil and gas industry / chemical and petrochemical industry

Food / pharmaceutical industry

Material and test certificates

- Inspection certificate 3.1 according to EN 10204
- Test report 2.2 according to EN 10204

Pressure ranges [1]												
Nominal pressure gauge / abs. [2]	[bar]	0.4	1	2	4	10	20	40	100	200	400	600
Overpressure	[bar]	2	5	10	20	40	80	105	210	600	1000	1000
Burst pressure ≥	[bar]	3	7.5	15	25	50	120	210	420	1000	1250	1250

[1] on customer request we adjust the devices within the turn-down-possibility by software to the required pressure ranges
[2] absolute pressure possible from 1 bar

Vacuum ranges						
Nominal pressure gauge	[bar]	-0.4 … 0.4	-1 … 1	-1 … 2	-1 … 4	-1 … 10
Overpressure	[bar]	2	5	10	20	40
Burst pressure ≥	[bar]	3	7.5	15	25	50

Output signal / Supply			
2-wire: 4 ... 20 mA with explosion protection	standard:	intrinsic safety (ia) with HART®-communication	V_S = 12 ... 28 V_{DC}
	options:	flameproof equipment (d) with HART®-communication	V_S = 13 ... 28 V_{DC}
		SIL2 / intrinsic safety (ia) with HART®-communication	V_S = 12 ... 28 V_{DC}
		SIL2 / flameproof equipment (d) with HART®-communication	V_S = 13 ... 28 V_{DC}
Current consumption	max. 25 mA		
Performance			
Accuracy [3] performance after turn-down (TD)	≤ ± 0.1 % FSO		
- TD ≤ 1:5	no change of accuracy		
- TD > 1:5	the accuracy is calculated as follows: ≤ 0.1 + 0.015 x (turn-down - 5) % FSO e.g. turn-down 9: ≤ 0.1 + 0.015 x (9 - 5) % FSO = 0.16 % FSO		
Permissible load	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	load during HART® communication: R_{min} = 250 Ω	
Influence effects	supply: 0.05 % FSO / 10 V	permissible load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions		
Response time	100 msec – without consideration of electronic damping	measuring rate 10/sec	
Adjustability	electronic damping: 0 … 100 sec	offset 0 ... 90 % FSO	turn-down of span up to 1:10

[3] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal errors / Permissible temperatures				
Tolerance band [4, 5]	≤ 0.2 % FSO x turn-down (in compensated range -20 … 85 °C)			
Permissible temperatures [6]	medium: -40 ... 125 °C for filling fluid silicone oil -10 ... 125 °C for filling fluid food compatible oil	without display:	environment:	-40 ... 80 °C
			storage:	-40 ... 80 °C
		with display:	environment:	-20 ... 70 °C
			storage:	-30 ... 80 °C
Permissible temperature medium for cooling element [7]	filling fluid silicone oil	overpressure: -40 … 300 °C	low pressure: -40 … 150 °C	
	filling fluid food compatible oil	overpressure: -10 … 250 °C	low pressure: -10 … 150 °C	

[4] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions
[5] for flange- and DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO
[6] max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C (without cooling element).
[7] max. temperature depends on the used sealing material, type of seal and installation

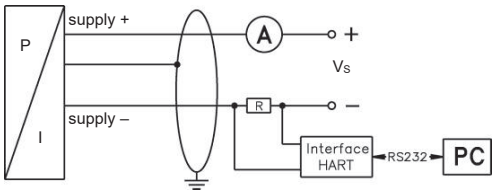
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 11 msec according to DIN EN 60068-2-27
Filling fluids	
Standard	silicone oil
Options for process connections	food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) Halocarbon and others on request
Materials	
Pressure port	stainless steel 1.4435 (316L)
Housing	aluminium die cast, powder-coated or stainless steel 1.4404 (316L)
Cable gland	brass, nickel plated
Viewing glass	laminated safety glass
Seals (media wetted)	thread: standard: FKM (recommended for medium temperatures ≤ 200 °C) options: FFKM (recommended for medium temperatures < 260 °C; min. permissible temperature from -15 °C, possible for p_N ≤ 100 bar); others on request welded version for pressure ports EN 837 with p_N between 1 and 40 bar DRD and flange: none, not included in the scope of delivery Clamp, Varivent®: none
Diaphragm	standard: stainless steel 1.4435 (316 L) options for process connections: Hastelloy® C-276 (2.4819); tantalum (possible from 1 bar) on request
Media wetted parts	pressure port, seal, diaphragm

Explosion protection		
Approvals AX12-XMP i AX2-XMP i (with SIL2)	**intrinsic safety** IBExU 05 ATEX 1106 X (with SIL2: IBExU 05 ATEX1105 X)	
	stainless steel field housing: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da safety technical maximum values: U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 27 nF	aluminium die cast case: zone 0/1: II 1/2G Ex ia IIB T4 Ga/Gb zone 20: II 1D Ex ia IIIC T85 °C Da safety technical maximum values: U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 33 nF
Approvals AX17-XMP i AX7-XMP i (with SIL2)	**flameproof enclosure** with aluminium die cast case IBExU 12 ATEX 1045 X (with SIL2: IBExU 12 ATEX1073 X) zone 1: II 2G Ex db IIC T5 Gb	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar zone 1 or higher: intrinsic safety: -40 ... 70 °C / flameproof enclosure: -20 ... 70 °C	
Connecting cables (by factory)	capacitance: signal line/shield also signal line/signal line: 160 pF/m inductance: signal line/shield also signal line/signal line: 1 µH/m	
Options		
SIL2-version	according to IEC 61508 / IEC 61511	
Display	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% ± 1 digit	
Miscellaneous		
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed	
Ingress protection	IP 67	
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position have to be specified in the order)	
Surface roughness	pressure port R_a < 0.8 µm (media wetted parts) diaphragm R_a < 0.15 µm weld seam R_a < 0.8 µm	
Weight	min. 400 g (depending on housing and mechanical connection)	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [8]	
ATEX Directive	2014/34/EU	

[8] this directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram / pin configuration

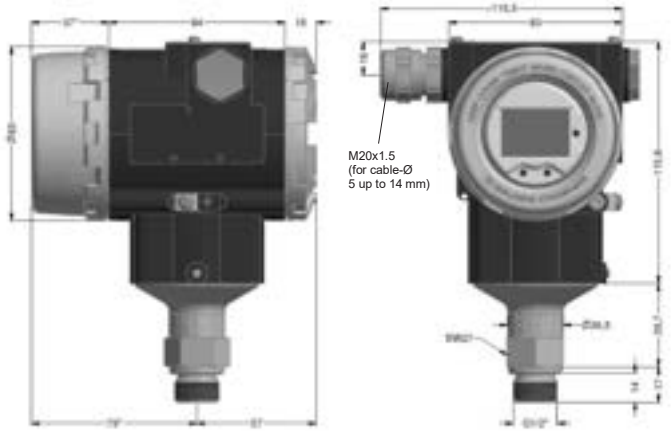
2-wire-system (current) and HART® - communication



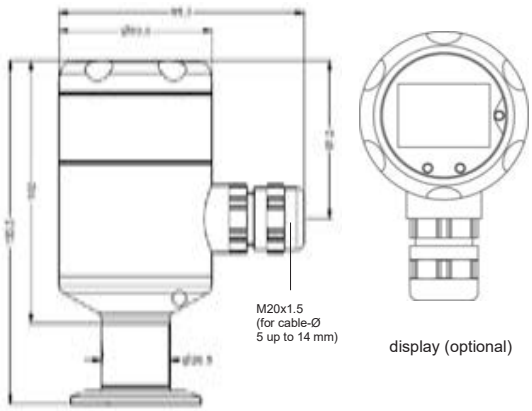
Electrical connections	aluminium case	stainless steel field housing
	clamp section 2.5 mm²	clamp section 1.5 mm²
Supply +	IN+	IN+
Supply –	IN-	IN-
Test (HART)	Test	-
Shield	⊕	⊕

Housing designs [9] (dimensions in mm)

aluminium die cast case



stainless steel field housing

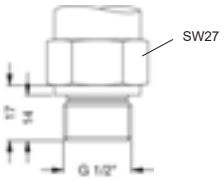


* without display and operating module marked dimensions decrease by 22 mm (with aluminium case)

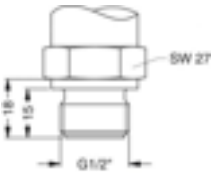
⇨ **for nominal pressure p_N > 400 bar increases the length of devices by 39 mm**

[9] aluminium case is horizontally rotatable as standard

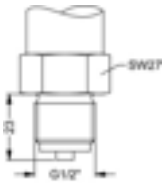
Standard pressure ports (dimensions in mm)



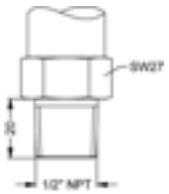
G1/2" DIN 3852



G1/2" flush (DIN 3852)
1 bar ≤ p_N ≤ 40 bar



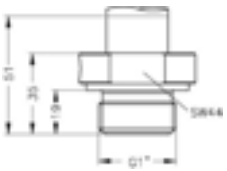
G1/2" EN 837
M20x1.5



1/2" NPT

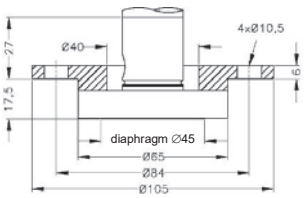
Process connections (dimensions in mm)

Inch thread (DIN 3852)



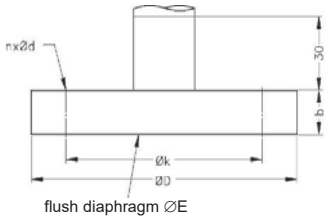
G1" flush
p_N ≤ 400 bar

DRD [10]



p_N ≤ 25 bar

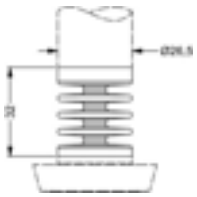
Flange (DIN 2501)



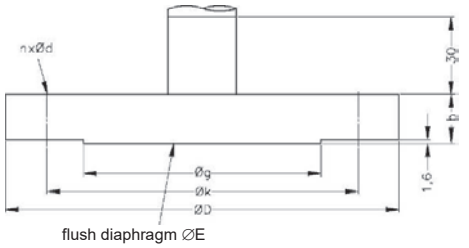
flush diaphragm ∅E

dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
p_N [bar]	≤ 40	≤ 40	≤ 16

Cooling element up to 300 °C [7]



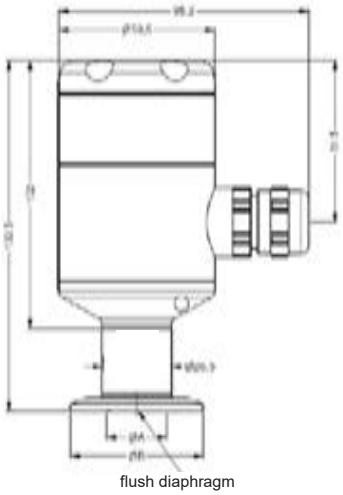
Flange (ANSI B16.5)



flush diaphragm ∅E

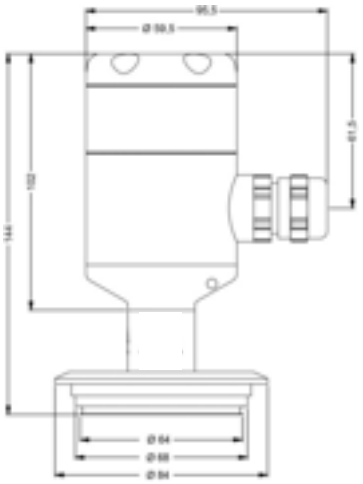
dimensions in mm		
size	2"/150 lbs	3"/150 lbs
D	152.4	190.5
E	86	89
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	4
d	19.1	19.1
p_N [bar]	≤ 10	≤ 10

Clamp (DIN 32676)



dimensions in mm				
size	3/4"	DN25	DN32	DN50
A	14	23	32	45
B	25	50.5	50.5	64
p_N [bar]	≥ 4 ≤ 8	≥ 0.25 ≤ 16	≤ 16	≤ 16

Varivent® (DN 40/50)
p_N ≤ 25 bar



[7] *max. temperature depends on the used sealing material, type of seal and installation*
[10] *mounting flange is included in the delivery (already pre-assembled)*

HART® is a registered trademark of HART Communication Foundation; Hastelloy® is a brand name of Haynes International Inc.
Windows® is a registered trademark of Microsoft Corporation

Ordering code XMP i

XMP i ☐☐☐-☐☐☐☐-☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure		
gauge	5 1 1	
absolute [1]	5 1 2	
Input [bar]		
0 ... 0.4 [1]	4 0 0 0	
0 ... 1	1 0 0 1	
0 ... 2	2 0 0 1	
0 ... 4	4 0 0 1	
0 ... 10	1 0 0 2	
0 … 20	2 0 0 2	
0 ... 40	4 0 0 2	
0 ... 100	1 0 0 3	
0 ... 200	2 0 0 3	
0 ... 400	4 0 0 3	
0 ... 600	6 0 0 3	
-0.4 … 0.4	S 4 0 0	
-1 … 1	S 1 0 2	
-1 ... 2	V 2 0 2	
-1 … 4	V 4 0 2	
-1 … 10	V 1 0 3	
customer	9 9 9 9	consult
Design		
Aluminium die cast case		
with display	A 0	
without display	A N	
Stainless steel field housing		
with display	F V	
without display	F N	
customer	9 9	consult
Output		
intrinsic safety (ia) 4 … 20 mA / 2-wire with HART®-communication	I	
flameproof equipment (d) 4 … 20 mA / 2-wire with HART®-communication [2]	G	
SIL2: intrinsic safety (ia) 4 … 20 mA / 2-wire with HART®-communication	IS	
SIL2: flameproof equipment (d) 4 … 20 mA / 2-wire with HART®-communication [2]	GS	
customer	9	consult
Accuracy		
0.1 % FSO	1	
Electrical connection		
terminal clamp alu housing	A K 0	
terminal clamp field housing	8 8 0	
customer	9 9 9	consult
Mechanical connection		
Standard pressure connections		
G1/2" DIN 3852	1 0 0	
G1/2" with flush welded diaphragm (DIN 3852) [3]	Z 0 0	
G1/2" EN 837	2 0 0	
1/2" NPT	N 0 0	
Process connections (up to 40 bar)		
G1" with flush welded diaphragm (DIN 3852)	Z S 1	
flange DN 25 / PN 40 (DIN 2501)	F 2 0	
flange DN 50 / PN 40 (DIN 2501)	F 2 3	
flange DN 80 / PN 16 (DIN 2501)	F 1 4	
flange DN 2" / 150 lbs (ANSI B16.5) [4]	F 3 2	
flange DN 3" / 150 lbs (ANSI B16.5) [4]	F 3 3	
DRD Ø 65 mm [5]	D R D	
Clamp DN 25 / 1" (DIN 32676) / 3A	C 6 1	
Clamp DN 32 / 1 1/2" (DIN 32676) / 3A	C 6 2	
Clamp DN 50 / 2" (DIN 32676) / 3A	C 6 3	
Clamp 3/4" (DIN 32676) / 3A	C 6 9	
Varivent® DN 40/50 / 3A	P 4 1	
Diaphragm		
stainless steel 1.4435 (316L)	1	
Hastelloy® [6]	H	consult
Tantalum [6, 7]	T	consult
Seal		
Inch thread:		
FKM	1	
FFKM [8]	7	
EN 837: without (welded version) [9]	2	
DRD, flange: *without*	0	
Filling fluid		
silicone oil	1	
food compatible oil [6]	2	
Halocarbon [6]	C	consult
customer	9	consult

Ordering code XMP i

XMP i □□□-□□□□-□□-□-□-□□□-□□□-□-□-□-□□□

Special version			
standard	0	0	0
with cooling element up to 300 °C [6]	2	0	0
special compensation -40 … +60 °C [10]	0	2	2

if setting range shall be different from nominal range please specify in your order

[1] absolute pressure possible from 1 bar
[2] only possible in combination with aluminium die cast case
[3] only possible for $p_N \geq 1$ bar up to 40 bar
[4] 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges $p_N \leq 10$ bar
[5] mounting flange is included in the delivery (already pre-assembled)
[6] only possible with process connections
[7] tantal diaphragm possible with nominal pressure ranges from 1 bar
[8] min. permissible temperature from -15 °C, possible for nominal pressure ranges $p_N \leq 100$ bar
[9] possible with pressure ranges between 1 bar and 40 bar
[10] option for version without display

HART® is a registered trade mark of HART Communication Foundation; Hastelloy® is a brand name of Haynes International Inc.
Varivent® is a brand name of GEA Tuchenhagen GmbH

XMP ci

Process Pressure Transmitter with HART®-communication

Ceramic Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 160 mbar up to 0... 20 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- turn-down 1:5
- two chamber aluminium die cast case or stainless field housing
- internal or flush mounted capacitive ceramic sensor
- HART®-communication
- explosion protection intrinsic safety (ia)
- diaphragm Al_2O_3 99.9 %

Optional versions

- explosion protection flameproof equipment (d)
- with integrated display and operating module
- several process connections (thread, flange, DRD etc.)

The process pressure transmitter XMP ci measures the pressure of gases, steam and fluids. The special-developed capacitive ceramic sensor for this transmitter has a high overpressure capability and excellent media stability.

Several process connections e.g. thread or flange are available. The transmitter is as a standard equipped with HART®-communication, the customer can choose between a two chamber aluminium die cast case or a stainless field housing.

Preferred areas of use are

- Oil and gas industry
- Chemical and petrochemical industry

Preferred using in

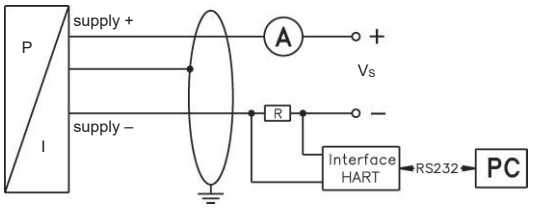
- Fuel and oil
- Aggressive media

Pressure ranges [1]								
Nominal pressure gauge	[bar]	0.16	0.4	1	2	5	10	20
Overpressure	[bar]	4	6	8	15	25	35	45
Permissible vacuum	[bar]	-0.3	-0.5		-1			
[1] On customer request we adjust the devices by software to the required pressure ranges. Within the turn-down-possibility (starting at 0.02 bar).								
Output signal / Supply								
2-wire: 4 ... 20 mA with explosion protection		standard: intrinsic safety (ia) with HART®-communication V_S = 12 ... 28 V_{DC} option: flameproof equipment (d) with HART®-communication V_S = 13 ... 28 V_{DC}						
Current consumption		max. 25 mA						
Performance								
Accuracy [2]		nominal pressure < 1 bar: ≤ ± 0.2 % FSO nominal pressure ≥ 1 bar: ≤ ± 0.1 % FSO for nominal pressure ranges from 0.16 bar up to 0.4 bar: ≤ ± (0.2 + (TD-1) x 0.02) % FSO for nominal pressure ranges from 1 bar up to 20 bar: ≤ ± (0.1 + (TD-1) x 0.01) % FSO with turn-down = nominal pressure range / adjusted range						
Permissible load		$R_{max} \leq [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ load during HART®-communication: R_{min} = 250 Ω						
Influence effects		supply: 0.05 % FSO / 10 V permissible load: 0.05 % FSO / kΩ						
Long term stability		≤ ± 0.1 % FSO / year at reference conditions						
Response time		200 msec – without consideration of electronic damping measuring rate 5/sec						
Adjustability		electronic damping: 0 … 100 sec offset 0 ... 80 % FSO turn-down of span: max. 1:5 (span min. 0.02 bar)						
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)								
Thermal effects (offset and span)								
Tolerance band		≤ ± 1 % FSO						
in compensated range		-20 … 80 °C						
Permissible temperatures								
Permissible temperatures [3]		without display: medium: -25 ... 125 °C environment: -40 ... 70 °C storage: -40 ... 80° C with display: medium: -25 ... 125 °C environment: -20 ... 70 °C storage: -30 ... 80° C						
[3] for pressure port in PVDF the medium temperature is -25 … 60 °C								
Electrical protection								
Short-circuit protection		permanent						
Reverse polarity protection		no damage, but also no function						
Electromagnetic compatibility		emission and immunity according to EN 61326						
Mechanical stability								
Vibration		5 g RMS (20 ... 2000 Hz) according to DIN EN 60068-2-6						
Shock		100 g / 11 msec according to DIN EN 60068-2-27						
Materials								
Pressure port		standard: stainless steel 1.4404 (316L) optionally for G1 1/2" flush: PVDF						
Housing		aluminium die cast, powder-coated or stainless steel 1.4404 (316L)						
Cable gland		brass, nickel plated						
Viewing glass		laminated safety glass						
Seals (media wetted)		FKM; EPDM others on request						
Diaphragm		ceramics Al_2O_3 99.9 %						
Media wetted parts		pressure port, seal, diaphragm						
Explosion protection								
Approval AX12-XMP ci		**intrinsic safety** IBExU 05 ATEX 1106 X						
		stainless steel field housing: zone 0/1 [4]: II 1G Ex ia IIC T4 Ga II 1/2G Ex ia IIC T4 Ga/Gb II 2G Ex ia IIC T4 Gb zone 20: II 1D Ex ia IIIC T85 °C Da safety techn. maximum values: U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 27 nF			aluminium die cast case: zone 0/1 [5]: II 1/2G Ex ia IIB T4 Ga/Gb II 2G Ex ia IIB T4 Gb zone 20: II 1D Ex ia IIIC T85 °C Da safety techn. maximum values: U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 33 nF			
Approval AX17-XMP ci		**flameproof enclosure** with aluminium die cast case IBExU 12 ATEX 1045 X zone 1: II 2G Ex db IIC T5 Gb						
Permissible temperatures for environment		in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: intrinsic safety: -40 ... 70° C flameproof enclosure: -20 ... 70 °C						

[4] The designation depends on the nominal pressure range. Nominal pressure ranges ≤160 mbar are marked with „2G“.
Nominal pressure ranges > 160 mbar and ≤10 bar are marked with „1/2G“. Nominal pressure ranges > 10 bar are marked with „1G“.
[5] The designation depends on the nominal pressure range. Nominal pressure ranges < 160 mbar are marked with „2G“.
Nominal pressure ranges ≥ 160 mbar are marked with „1/2G“.

Miscellaneous	
Display (optionally)	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1 % ± 1 digit
Ingress protection	IP 67
Installation position	any
Weight	min. 400 g (depending on housing and mechanical connection)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagram

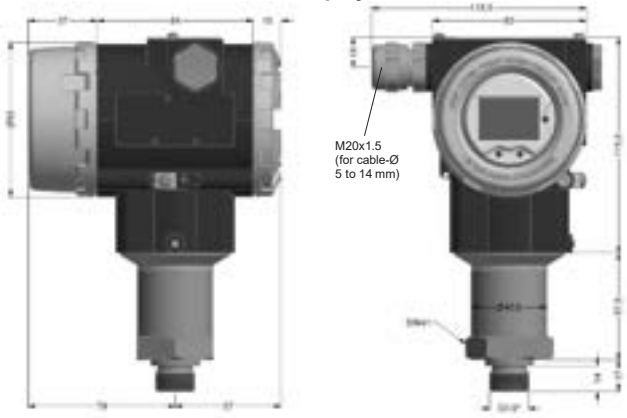


Pin configuration

Electrical connections	**aluminium die cast case:** terminal clamps (clamp section: 2.5 mm²)	**stainless steel field housing:** terminal clamps (clamp section: 1.5 mm²)
Supply + Supply – Test	IN+ IN- Test	IN+ IN- -
Shield	⊕	⊕

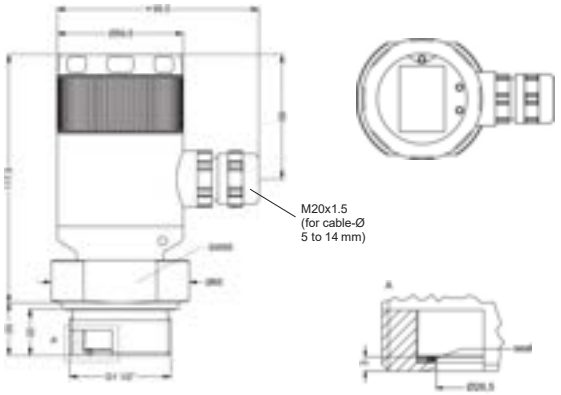
Housing designs [6] (dimensions in mm)

aluminium die cast case with display



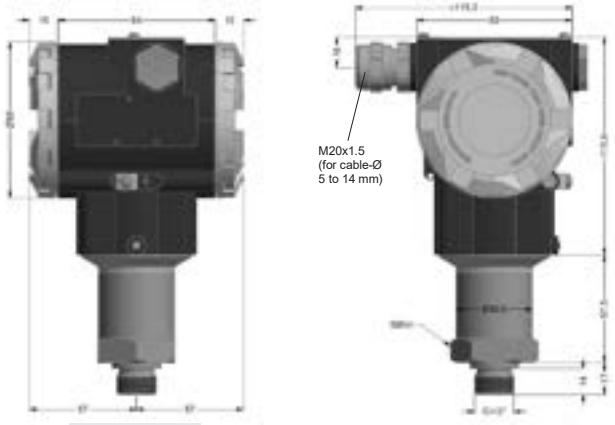
G1/2" DIN 3852

stainless steel field housing with display



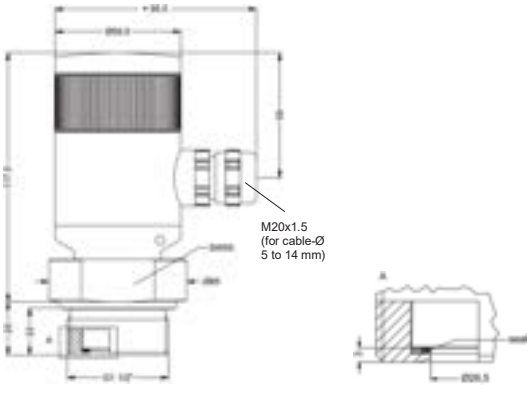
G1 1/2" flush DIN 3852

aluminium die cast case without display



G1/2" DIN 3852

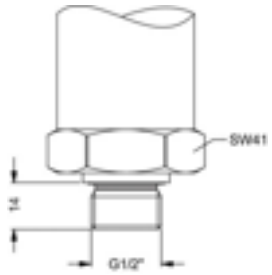
stainless steel field housing without display



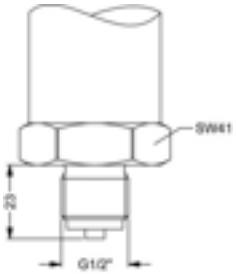
G1 1/2" flush DIN 3852

[6] aluminium die cast case is horizontally rotatable as standard

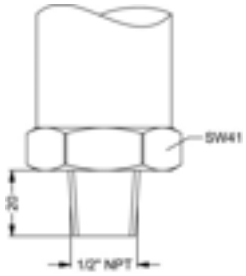
Standard pressure ports (dimensions in mm)



G1/2" DIN 3852



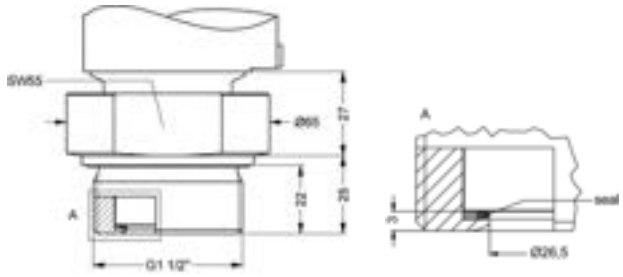
G1/2" EN 837



1/2" NPT

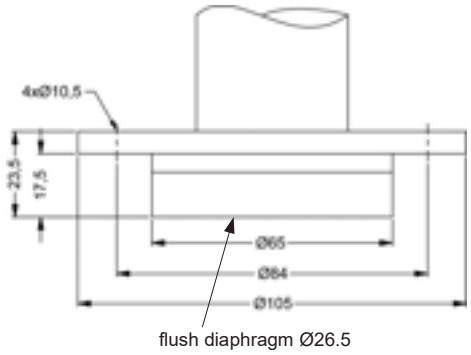
Process connections (dimensions in mm)

Inch thread



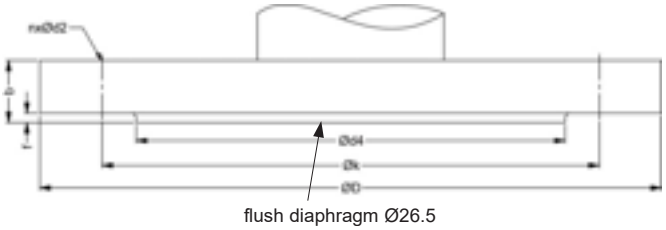
G1 1/2" flush DIN 3852

DRD [7]



flush diaphragm Ø26.5

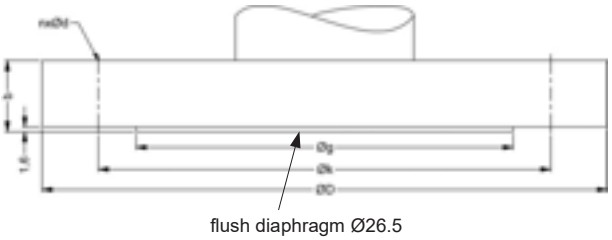
Flange (DIN 2501)



flush diaphragm Ø26.5

dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
k	85	125	160
d4	68	102	138
b	18	20	20
f	2	3	3
n	4	4	8
d2	14	18	18
p_N	≤ 40 bar	≤ 40 bar	≤ 16 bar

Flange (ANSI)



flush diaphragm Ø26.5

dimensions in mm		
size	2"/150 lbs	3"/150 lbs
D	152.4	190.5
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	4
d	19.1	19.1
p_N	≤ 10 bar	≤ 10 bar

[7] mounting flange is included in the delivery (already pre-assembled)

HART® is a registered trademark of HART Communication Foundation;
Windows® is a registered trademark of Microsoft Corporation

Ordering code XMP ci

XMP ci ☐☐☐-☐☐☐☐-☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

		Code	
Pressure			
	gauge	51E	
Input	[bar] ⚠		
	0.16	1600	
	0.40	4000	
	1	1001	
	2	2001	
	5	5001	
	10	1002	
	20	2002	
	customer	9999	consult
Design			
Aluminium die cast case			
	with display	A0	
	without display	AN	
Stainless steel field housing			
	with display	FV	
	without display	FN	
	customer	99	consult
Output			
	intrinsic safety (ia) 4 … 20 mA / 2-wire with HART®-communication	I	
	flameproof equipment (d) 4 … 20 mA / 2-wire with HART®-communication [1]	G	
	customer	9	consult
Accuracy			
p_N < 1 bar:	0.2 % FSO	B	
p_N ≥ 1 bar:	0.1 % FSO	1	
	customer	9	consult
Electrical connection			
	terminal clamp alu housing	AK0	
	terminal clamp field housing	880	
	customer	999	consult
Mechanical connection			
standard pressure connections:			
	G1/2" DIN 3852	100	
	G1/2" EN 837	200	
	1/2" NPT	N00	
process connections:			
	G 1 1/2" DIN flush (DIN 3852)	M00	
	flange DN 25 / PN 40 (DIN 2501)	F20	
	flange DN 50 / PN 40 (DIN 2501)	F23	
	flange DN 80 / PN 16 (DIN 2501)	F14	
	flange DN 2" / 150 lbs (ANSI B16.5) [2]	F32	
	flange DN 3" / 150 lbs (ANSI B16.5) [2]	F33	
	DRD Ø 65 mm [3]	DRD	
	customer	999	consult
Diaphragm			
	ceramics Al_2O_3 99,9 %	C	
	customer	9	consult
Seal			
	FKM	1	
	EPDM	3	
	customer	9	consult
Pressure port			
standard:			
	stainless steel 1.4404 (316L)	1	
option for G 1 1/2" flush:			
	PVDF [4]	B	
	customer	9	consult
Special version			
	standard	000	
	customer	999	consult

⚠ **if setting range shall be different from nominal range please specify in your order**

[1] only possible in combination with aluminium die cast case
[2] 2"/150 lbs and 3"/150 lbs only possible for nominal pressure ranges p_N ≤ 10 bar
[3] mounting flange is included in the delivery (already pre-assembled)
[4] for pressure port in PVDF the operation medium temperature is -25 … 60 °C

HART® is a registered trade mark of HART Communication Foundation

x|act i

Precision Pressure Transmitter for Food Industry, Pharmacy and Biotechnology with SIL2 (optionally)

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 40 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- turn-down 1:10
- hygienic version
- flush welded diaphragm
- several process connections (G1" cone, Clamp, dairy pipe, etc.)
- integrated display and operating module

Optional versions

- explosion protection intrinsic safety (ia)
- SIL2 -version according to IEC 61508 / IEC 61511
- HART®-communication
- cooling element for media temperatures up to 300 °C

The precise pressure transmitter x|act i has been especially designed for the food industry, pharmacy and biotechnology and measures vacuum, gauge and absolute pressure of gases, steam, and fluids up to 40 bar.

Several process connections e.g. thread or hygienic versions like Varivent®, dairy pipe and Clamp with a flush welded diaphragm are available, which can be combined with a cooling element for media temperatures up to 300 °C. The robust stainless steel globe housing has a high ingress protection IP 67 and all characteristics for a residue-free and antibacterial cleaning.

Preferred areas of use are

- Food industry
- Pharmacy

Material and test certificates

- Inspection certificate 3.1 according to EN 10204
- Test report 2.2 according to EN 10204

Pressure ranges [1]								
Nominal pressure gauge / abs. [2]	[bar]	0.4	1	2	4	10	20	40
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure ≥	[bar]	3	7.5	15	25	50	120	210

[1] higher pressure ranges on request; on demand we adjust the devices within the turn-down-possibility by software on the required pressure ranges
[2] absolute pressure possible from 1 bar

Vacuum ranges						
Nominal pressure gauge	[bar]	-0.4 … 0.4	-1 … 1	-1 … 2	-1 … 4	-1 … 10
Overpressure	[bar]	2	5	10	20	40
Burst pressure	[bar]	3	7.5	15	25	50

Output signal / Supply			
2-wire: 4 ... 20 mA	standard:	analogue signal	V_S = 12 … 30 V_{DC}
	options:	intrinsic safety (ia)	V_S = 12 … 28 V_{DC}
		intrinsic safety (ia) with HART®-communication	V_S = 12 … 28 V_{DC}
		SIL2	V_S = 12 … 30 V_{DC}
		SIL2 / intrinsic safety (ia)	V_S = 12 … 28 V_{DC}
		SIL2 / intrinsic safety (ia) with HART® communication	V_S = 12 … 28 V_{DC}
Current consumption	max. 25 mA		
Performance			
Accuracy [3] performance after turn-down (TD) - TD ≤ 1:5 - TD > 1:5	≤ ± 0.1 % FSO no change of accuracy the accuracy is calculated as follows: ≤ 0.1 + 0.015 x (turn-down - 5) % FSO e.g. turn-down 9: ≤ 0.1 + 0.015 x (9 - 5) % FSO = 0.16 % FSO		
Permissible load	R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω	load during HART® communication: R_{min} = 250 Ω	
Influence effects	supply: 0.05 % FSO / 10 V	permissible load: 0.05 % FSO / kΩ	
Long term stability	≤ ± (0.1 x turn-down) % FSO / year at reference conditions		
Response time	100 msec – without consideration of electronic damping		measuring rate 10/sec
Adjustability	electronic damping: 0 … 100 sec	offset: 0 ... 90 % FSO	turn-down of span: max. 1:10

[3] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span)	
Tolerance band [4, 5]	≤ ± 0.2 % FSO x turn-down
in compensated range	-20 … 85 °C

[4] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions
[5] for flange-, Varivent-, DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO

Permissible temperatures		
Filling fluid	silicone oil	food compatible oil
Medium [6]	-40 ... 125 °C	-10 ... 125 °C
Medium with cooling element [7]	overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C	overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C
Electronics / environment	-20 ... 70 °C	
Storage	-30 ... 80 °C	

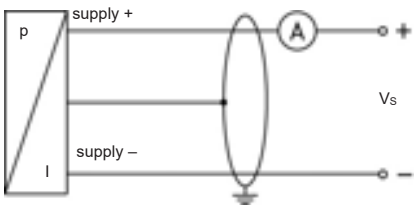
[6] for vacuum ranges and absolute pressure the max. medium temperature is 70 °C; max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C (without cooling element).
[7] max. temperature depends on the used sealing material, type of seal and installation

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 11 msec according to DIN EN 60068-2-27
Filling fluids	
Standard	silicone oil
Options	food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) Halocarbon and others on request
Materials	
Pressure port	stainless steel 1.4435 (316 L)
Housing	stainless steel 1.4301 (304)
Viewing glass	laminated safety glass
Seals (media wetted)	none, not included in the scope of delivery
Diaphragm	standard: stainless steel 1.4435 (316 L) options: Hastelloy® C-276 (2.4819); tantalum (possible from 1 bar on) on request
Media wetted parts	pressure port, diaphragm, seals (if existing)

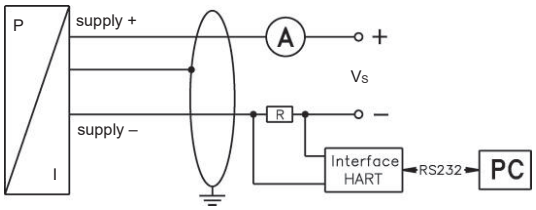
Explosion protection	
Approvals AX12-x|act i AX2 - x|act i (with SIL2)	IBExU 05 ATEX 1106 X (with SIL2: IBExU 05 ATEX1105 X) zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line 160 pF/m cable inductance: signal line/shield also signal line/signal line 1 µH/m
Option	
SIL2-version	according to IEC 61508 / IEC 61511
Miscellaneous	
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH
Display	LC display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% ± 1 digit
Ingress protection	IP 67
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $p_N \leq 2$ bar have to be specified in the order)
Surface roughness	pressure port $R_a < 0.8$ µm (media wetted parts) diaphragm $R_a < 0.15$ µm weld seam $R_a < 0.8$ µm
Weight	min. 400 g (depending on mechanical connection)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagrams

2-wire-system (current)

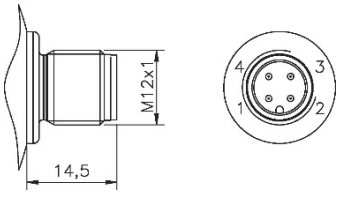


2-wire-system (current) HART® - communication

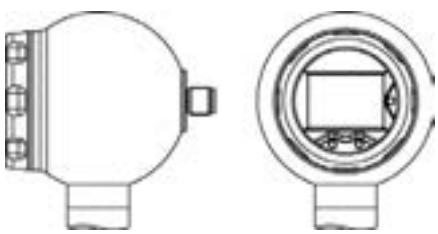


Pin configuration / electrical connection (dimensions in mm)

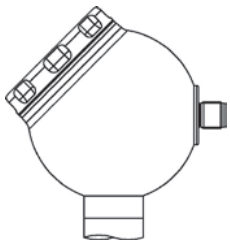
Electrical connections	M12x1 (4-pin), metal
Supply + Supply –	1 3
Shield	plug housing



Designs [8]



side display

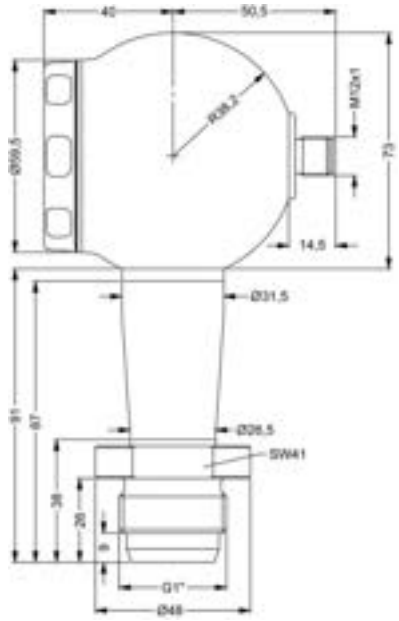


45° display

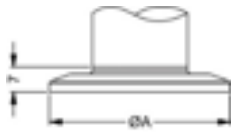
[8] *all designs in combination with G1" cone in horizontal rotatable housing as standard; other mech. connections in rotatable housing on request*

Dimensions (in mm)

G1" cone

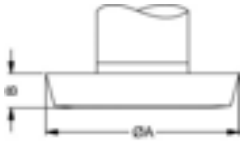


Clamp (DIN 32676)



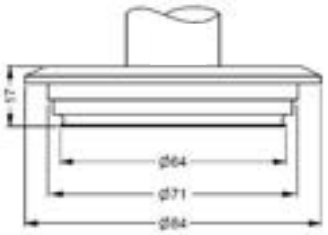
dimensions in mm				
size	3/4"	DN 25	DN 32	DN 50
A	25	50.5	50.5	64
p_N [bar]	≥ 4 ≤ 8	≥ 0,25 ≤ 16	≤ 16	≤ 16

dairy pipe [9] (DIN 11851)



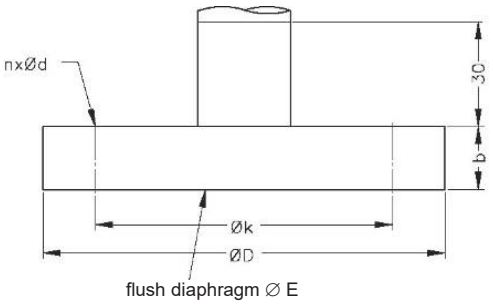
dimensions in mm			
size	DN 25	DN 40	DN 50
A	44	56	68,5
B	10	10	11
p_N [bar]	≥ 0.25 ≤ 40	≥ 0.25 ≤ 40	≥ 0.25 ≤ 25

Varivent®



DN40/50
p_N ≤ 25 bar

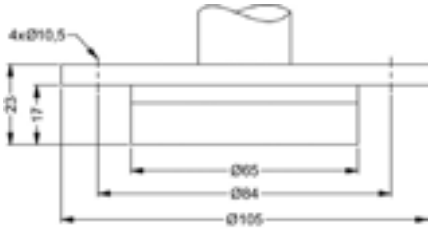
flange (DIN 2501)



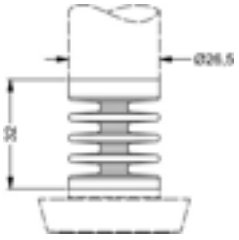
flush diaphragm ∅ E

dimensions in mm			
size	DN 25	DN 50	DN 80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
p_N [bar]	≤ 40	≤ 40	≤ 16

DRD [9] (for p_N ≤ 25 bar)



cooling element up to 300 °C [7]



[7] max. temperature depends on the used sealing material, type of seal and installation
[9] cup nut resp. mounting flange is included in the delivery (already pre-assembled)

HART® is a registered trademark of HART Communication Foundation; Hastelloy® is a trademark of Haynes International Inc.; Varivent® is a trademark of GEA Tuchenhagen GmbH; Windows® is a registered trademark of Microsoft Corporation

Ordering code x|act i

x|act i □□□-□□□□-□□-□-□-□□□-□□□-□-□-□-□□□

Pressure		
gauge	5 1 1	
absolute [1]	5 1 2	
Input [bar]		
0 ... 0.4 [1]	4 0 0 0	
0 ... 1	1 0 0 1	
0 ... 2	2 0 0 1	
0 ... 4	4 0 0 1	
0 ... 10	1 0 0 2	
0 … 20	2 0 0 2	
0 ... 40	4 0 0 2	
-0.4 … 0.4	S 4 0 0	
-1 … 1	S 1 0 2	
-1 ... 2	V 2 0 2	
-1 … 4	V 4 0 2	
-1 … 10	V 1 0 3	
customer	9 9 9 9	consult
Design		
side display	K H	
45° display	K 4	
Output		
4 … 20 mA / 2-wire	1	
intrinsic safety (ia) 4 … 20 mA / 2-wire	E	
intrinsic safety (ia) 4 … 20 mA / 2-wire with HART®-communication	I	
SIL2: 4 … 20 mA / 2-wire	1S	
SIL2: intrinsic safety (ia) 4 … 20 mA / 2-wire	ES	
SIL2: intrinsic safety (ia) 4 … 20 mA / 2-wire with HART®-communication	IS	
customer	9	consult
Accuracy		
0.1 % FSO	1	
Electrical connection		
male plug M12x1 (4-pin), metal	M 1 0	
customer	9 9 9	consult
Mechanical connection		
G1" cone	K S 1	
Clamp DN 25 / 1" (DIN 32676) / 3A (0,25 bar ≤ p_N ≤ 16 bar)	C 6 1	
Clamp DN 32 / 1 1/2" (DIN 32676) / 3A (p_N ≤ 16 bar)	C 6 2	
Clamp DN 50 / 2" (DIN 32676) / 3A (p_N ≤ 16 bar)	C 6 3	
Clamp 3/4" (DIN 32676) / 3A (4 bar ≤ p_N ≤ 8 bar)	C 6 9	
diary pipe DN 25 DIN 11851 (p_N ≤ 40 bar) [2]	M 7 3	
diary pipe DN 40 DIN 11851 (p_N ≤ 40 bar) [2]	M 7 5	
diary pipe DN 50 DIN 11851 (p_N ≤ 25 bar) [2]	M 7 6	
Varivent® DN 40/50 / 3A (p_N ≤ 25 bar)	P 4 1	
flange DN 25 DIN 2501 (p_N ≤ 40 bar)	F 2 0	
flange DN 50 DIN 2501 (p_N ≤ 40 bar)	F 2 3	
flange DN 80 DIN 2501 (p_N ≤ 16 bar)	F 1 4	
DRD Ø 65 mm (p_N ≤ 25 bar) [2]	D R D	
Diaphragm		
stainless steel 1.4435 (316L)	1	
Hastelloy® C-276 (2.4819)	H	consult
tantalum [3]	T	consult
Seal		
without	0	
Filling fluids		
silicone oil	1	
food compatible oil (FDA) / 3A	2	
Halocarbon	C	consult
customer	9	consult
Special version		
standard	0 0 0	
with cooling element up to 300°C / 3A	2 0 0	
customer	9 9 9	consult

if setting range shall be different from nominal range please specify in your order

[1] absolute pressure possible from 1 bar

[2] cup nut resp. mounting flange is included in the delivery (already pre-assembled)

[3] tantalum diaphragm possible with nominal pressure ranges from 1 bar

HART® is a registered trade mark of HART Communication Foundation; Hastelloy® is a brand name of Haynes International Inc.

Varivent® is a brand name of GEA Tuchenhagen GmbH

x|act ci

Precision Pressure Transmitter for Food / Beverage, Pharmaceutical Industry and Biotechnology

Ceramic Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 160 mbar up to 0... 20 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- turn-down 1:5
- hygienic version
- flush mounted, capacitive ceramic sensor
- several process connections (inch thread, Clamp, etc.)
- with integrated display and operating module
- diaphragm Al_2O_3 99.9 %

Optional versions

- explosion protection intrinsic safety (ia)
- HART®-communication

The precise pressure transmitter x|act ci measures the pressure of gases, steam and fluids. The special-developed capacitive ceramic sensor for this transmitter, which can optionally be delivered in pure ceramic, has a high overpressure capability and excellent media stability.

Several process connections e.g. inch thread or hygienic versions like Varivent®, dairy pipe or Clamp are available. The robust stainless steel globe housing has a high ingress protection IP 67 and all characteristics for a residue-free and antibacterial cleaning.

Preferred areas of use are

- Food and beverage
- Chemical and petrochemical industry
- Laboratory techniques

Preferred using in

- Viscous and pasty media

Pressure ranges [1]								
Nominal pressure gauge	[bar]	0.16	0.4	1	2	5	10	20
Overpressure	[bar]	4	6	8	15	25	35	45
Permissible vacuum	[bar]	-0.3	-0.5		-1			

[1] On customer request we adjust the devices by software on the required pressure ranges (within the turn-down-possibility; starting at 0.02 bar).

Output signal / Supply			
2-wire: 4 ... 20 mA	standard:	analogue signal	V_S = 12 … 30 V_{DC}
	options:	intrinsic safety (ia)	V_S = 12 … 28 V_{DC}
		intrinsic safety (ia) with HART®-communication	V_S = 12 … 28 V_{DC}
Current consumption	max. 25 mA		
Performance			
Accuracy [2]	nominal pressure < 1 bar:	≤ ± 0.2 % FSO	
	nominal pressure ≥ 1 bar:	≤ ± 0.1 % FSO	
	for nominal pressure ranges: from 0.16 bar up to 0.4 bar	≤ ± (0.2 + (TD-1) x 0.02) % FSO	
	for nominal pressure ranges: from 1 bar up to 20 bar	≤ ± (0.1 + (TD-1) x 0.01) % FSO	
	with turn-down = nominal pressure range / adjusted range		
Permissible load	R_{max} ≤ [(V_S – $V_{S\,min}$) / 0.02 A] Ω	load during HART® communication: R_{min} = 250 Ω	
Influence effects	supply: 0.05 % FSO / 10 V	permissible load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions		
Response time	200 msec – without consideration of electronic damping		measuring rate 5/sec
Adjustability	electronic damping:	0 … 100 sec	
	offset:	0 ... 80 % FSO	
	turn-down of span:	max. 1:5 (span min. 0.02 bar)	

[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span)			
Tolerance band	≤ ± 1 % FSO		
in compensated range	-20 … 80 °C		
Permissible temperatures			
Permissible temperatures [3]	medium: -25 ... 125 °C	environment: -20 ... 70 °C	storage: -30 ... 80 °C

[3] for pressure port in PVDF the medium temperature is -25 … 60 °C

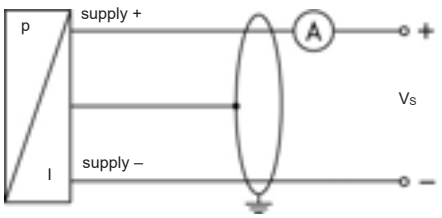
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to EN 61326		
Mechanical stability			
Vibration	5 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6	
Shock	100 g / 11 msec	according to DIN EN 60068-2-27	
Materials			
Pressure port	inch thread, DRD, flange, Varivent®, dairy pipe and clamp:		stainless steel 1.4404 (316L)
	optionally for G1 1/2" flush (DIN 3852):		PVDF
Housing	stainless steel 1.4301 (304)		
Viewing glass	laminated safety glass		
Seals	FKM; EPDM		others on request
Diaphragm	ceramics Al_2O_3 99.9 %		
Media wetted parts	pressure port, seals, diaphragm		
Explosion protection			
Approval AX12-x|act ci	IBExU05ATEX1106 X zone 0/1 [4]: II 2G Ex ia IIC T4 Gb II 1/2G Ex ia IIC T4 Ga/Gb II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da		
Safety technical maximum values	U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing		
Permissible temperatures for environment	in zone 0:	-20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar	
	in zone 1 or higher:	-40 ... 70 °C	
Connecting cables (by factory)	cable capacitance:	signal line/shield also signal line/signal line: 160 pF/m	
	cable inductance:	signal line/shield also signal line/signal line: 1 µH/m	

[4] The designation depends on the nominal pressure range. Nominal pressure ranges ≤160 mbar are marked with „2G“. Nominal pressure ranges > 160 mbar and ≤10 bar are marked with „1/2G“. Nominal pressure ranges > 10 bar are marked with „1G“. The note under item 17 in the EC type-examination certificate must be observed!

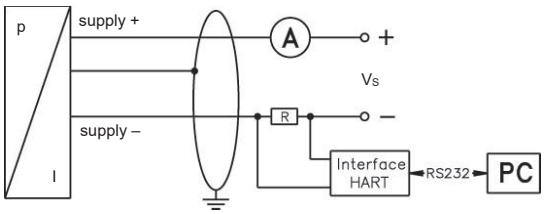
Miscellaneous	
Display	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% ± 1 digit
Ingress protection	IP 67
Installation position	any
Weight	min. 400 g (depending on mechanical connection)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagram

2-wire-system (current)

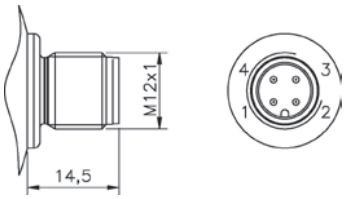


2-wire-system (current) HART®



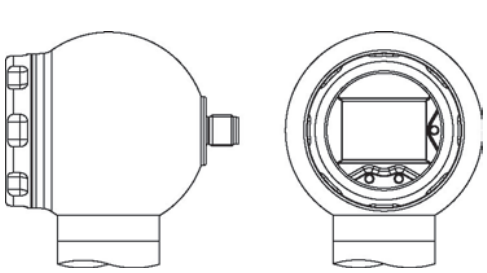
Pin configuration	
Electrical connections	M12x1 (4-pin), metal
Supply + Supply –	1 3
Shield	plug housing

Electrical connections (in mm)

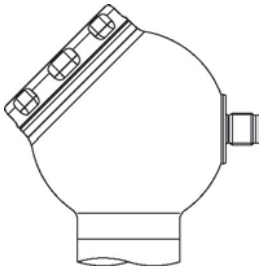


M12x1 (4-pin)

Designs [5]



side display

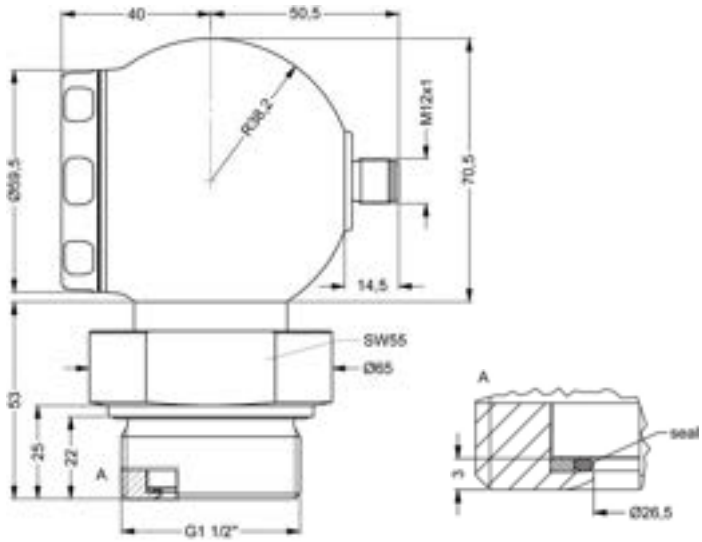


45° display

[5] all designs in combination with G1 1/2" flush in horizontal rotatable housing as standard; other mech. connections in rotatable housing on request

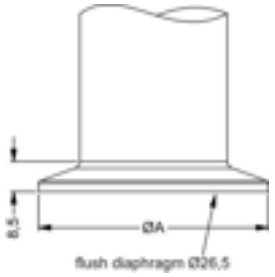
Dimensions (in mm)

Inch thread



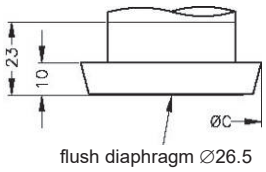
G1 1/2" flush DIN 3852

Clamp (DIN 32676)



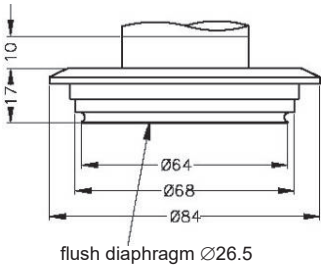
dimensions in mm		
size	DN32	DN50
A	50.5	64
p_N [bar]	≤ 16	≤ 16

Dairy pipe [6] (DIN 11851)



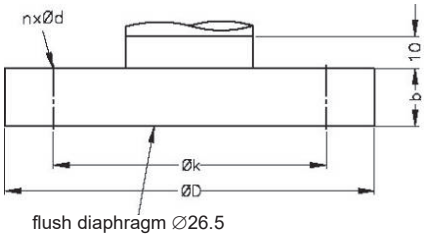
dimensions in mm		
size	DN 40	DN 50
C	56	68.5

Varivent®



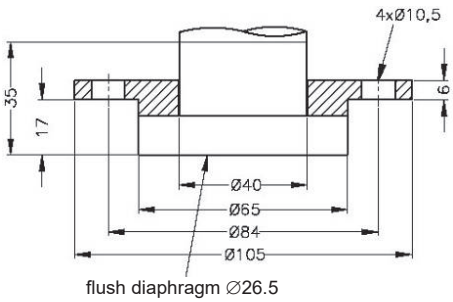
DN 40/50

Flange (DIN 2501)



dimensions in mm			
size	DN25	DN50/PN40	DN80
D	115	165	200
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
p_N [bar]	≤ 40	≤ 40	≤ 16

DRD [6]



[6] cup nut for dairy pipe or mounting flange for DRD is included in the delivery (already pre-assembled)

HART® is a registered trademark of HART Communication Foundation;
Varivent® is a trademark of GEA Tuchenhagen GmbH; Windows® is a registered trademark of Microsoft Corporation

Ordering code x|act ci

x|act ci □□□-□□□□-□□-□-□-□□□-□□□-□-□-□-□□□

		Code	
Pressure			
	gauge	5 1 E	
Input	[bar] ⚠		
	0.16	1 6 0 0	
	0.40	4 0 0 0	
	1	1 0 0 1	
	2	2 0 0 1	
	5	5 0 0 1	
	10	1 0 0 2	
	20	2 0 0 2	
	customer	9 9 9 9	consult
Design			
	side display	K H	
	45° display	K 4	
Output			
	4 … 20 mA / 2-wire	1	
	intrinsic safety (ia) 4 … 20 mA / 2-wire	E	
	intrinsic safety (ia) 4 … 20 mA / 2-wire with HART®-communication	I	
	customer	9	consult
Accuracy			
p_N < 1 bar	0.2 % FSO	B	
p_N ≥ 1 bar	0.1 % FSO	1	
	customer	9	consult
Electrical connection			
	male plug M12x1 (4-pin)	M 1 0	
	customer	9 9 9	consult
Mechanical connection			
	G 1 1/2" DIN flush (DIN 3852)	M 0 0	
	Clamp DN 32 / 1 1/2" (DIN 32676)	C 6 2	
	Clamp DN 50 / 2" (DIN 32676)	C 6 3	
	dairy pipe DN 40 (DIN 11851) [1]	M 7 5	
	dairy pipe DN 50 (DIN 11851) [1]	M 7 6	
	Varivent® DN 40/50	P 4 1	
	flange DN 25 / PN 40 (DIN 2501)	F 2 0	
	flange DN 50 / PN 40 (DIN 2501)	F 2 3	
	flange DN 80 / PN 16 (DIN 2501)	F 1 4	
	DRD Ø 65 mm [1]	D R D	
	customer	9 9 9	consult
Diaphragm			
	ceramics Al_2O_3 99,9 %	C	
	customer	9	consult
Seals			
	FKM	1	
	EPDM	3	
	customer	9	consult
Pressure port			
standard:			
	stainless steel 1.4404 (316L)	1	
option for G 1 1/2" flush:			
	PVDF [2]	B	
	customer	9	consult
Special version			
	standard	0 0 0	
	customer	9 9 9	consult

⚠ **if setting range shall be different from nominal range please specify in your order**

[1] cup nut resp. mounting flange is included in the delivery (already pre-assembled)

[2] for pressure port in PVDF the operation medium temperature is -25 … 60 °C

HART® is a registered trade mark of HART Communication Foundation; Varivent® is a brand name of GEA Tuchenhagen GmbH

DMP 320

Precision Pressure Transmitter with Fast Response Time

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0...100 mbar up to 0...600 bar

Output signal

3-wire: 0.1 … 10 V
4 … 20 mA
others on request

Special characteristics

- extremely fast response time ≤ 0.5 msec
- internal sample rate 10 kHz
- accuracy 0.1 % FSO
- excellent thermal behaviour
- outstanding long term stability

Optional versions

- customer specific versions

DMP 320 stands for speed and precision.

With a response time of ≤ 0.5 msec and a sampling rate of 10 kHz, the pressure transmitter was designed for applications, in which an extremely fast and exact pressure measuring is required. Pressure curves, peaks and hits can be monitored and evaluated exactly.

The signal processing of the sensor signal is done by newly developed digital electronics, which detect the signal with a sampling rate of 10 kHz. Sensor-specific deviations such as non-linearity, hysteresis and temperature errors are compensated actively.

Preferred areas of use are

- Plant and machine engineering
- Energy industry

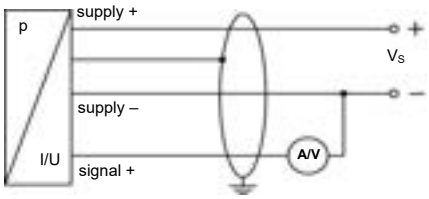
Input pressure range											
Nominal pressure gauge	[bar]	-1…0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure abs.	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge /abs	[bar]	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250	1250
Vacuum resistance		p_N ≥ 1 bar: unlimited vacuum resistance p_N < 1 bar: on request									

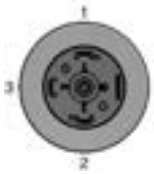
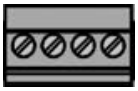
Output signal / Supply	
3-wire voltage	0.1 ... 10 V / V_S = 14 ... 30 V_{DC}
3-wire current	4 ... 20 mA / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [1]	nominal pressure ≥ 0.25 bar: ≤ ± 0.10 % FSO nominal pressure < 0.25 bar: ≤ ± 0.25 % FSO
Permissible load	current 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Response time	≤ 0.5 msec
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (offset and span)	
Tolerance band	≤ ± 0.2 % FSO
TC, average	± 0.02 % FSO / 10 K
in compensated range	-20 ... 80 °C
Permissible temperatures	
Medium	-40 ... 125°C
Electronics / environment	-40 ... 85°C
Storage	-40 ... 100°C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Materials	
Pressure Port	stainless steel 1.4404 (316 L)
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seals	standard: FKM options: EPDM others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
Miscellaneous	
Current consumption	3-wire voltage: < 30 mA 3-wire current: < 55 mA
Weight	approx. 200 g
Installation position	any [2]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [3]
[2] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar. *[3] This directive is only valid for devices with maximum permissible overpressure > 200 bar*	

Wiring diagram

3-wire-system (current / voltage)



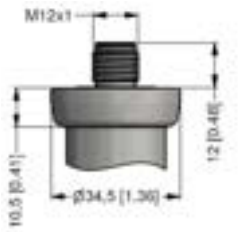
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
				 V_{S+} V_{S-} S+ GND	
Supply +	1	3	1	V_S+	WH (white)
Supply –	2	4	2	V_S-	BN (brown)
Signal +	3	1	3	S+	GN (green)
Shield	ground pin ⊕	5	4	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)

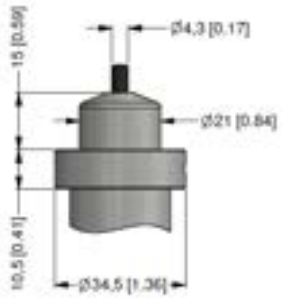
ISO 4400
(IP 65)

Binder series 723, 5-pin
(IP 67)

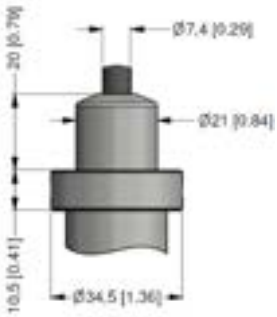


M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)



cable outlet
with PVC-cable (IP 67) [4]

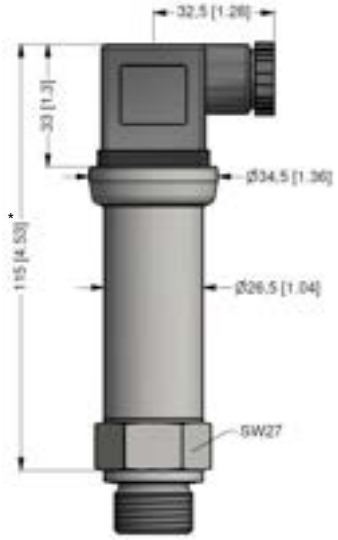


cable outlet, cable with
ventilation tube (IP 68) [5]

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

[4] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[5] different cable types and lengths available, permissible temperature depends on kind of cable

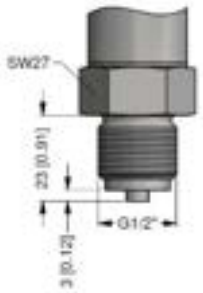
Dimensions (mm / in)



* for nominal pressure p_N > 40 bar the length of devices increases by 9 mm

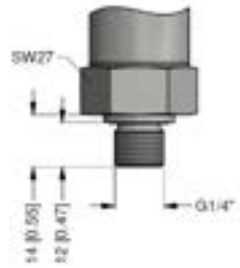
Mechanical connections (dimensions mm / in)

G1/2" DIN 3852

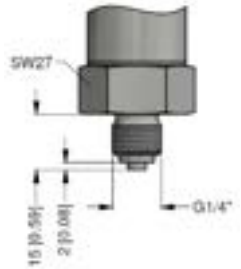


G1/2" EN 837

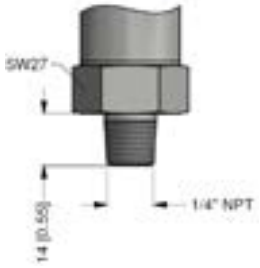
1/2" NPT



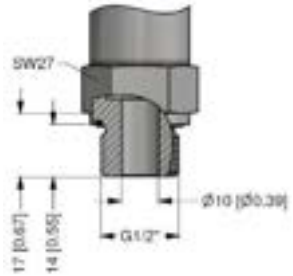
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" open port DIN 3852
(p_N ≤ 40 bar)

⇨ metric threads and other versions on request

Ordering code DMP 320

DMP 320 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure			
gauge		1 1 C	
absolute [1]		1 1 D	
Input	[bar]		
	0.10 [1]	1 0 0 0	
	0.16 [1]	1 6 0 0	
	0.25 [1]	2 5 0 0	
	0.40	4 0 0 0	
	0.60	6 0 0 0	
	1.0	1 0 0 1	
	1.6	1 6 0 1	
	2.5	2 5 0 1	
	4.0	4 0 0 1	
	6.0	6 0 0 1	
	10	1 0 0 2	
	16	1 6 0 2	
	25	2 5 0 2	
	40	4 0 0 2	
	60	6 0 0 2	
	100	1 0 0 3	
	160	1 6 0 3	
	250	2 5 0 3	
	400	4 0 0 3	
	600	6 0 0 3	
	-1 … 0	X 1 0 2	
customer		9 9 9 9	consult
Output			
0,1 … 10 V / 3 wire		3A	
4 … 20 mA / 3-wire		7	
customer		9	consult
Accuracy			
for $p_N \geq 0.25$ bar:	0.10 % FSO	1	
for $p_N < 0.25$ bar:	0.25 % FSO	2	
customer		9	consult
Electrical connection			
male and female plug ISO 4400		1 0 0	
male plug Binder series 723 (5-pin)		2 0 0	
cable outlet with PVC cable (IP67) [2]		T A 0	
cable outlet, cable with ventilation tube (IP68) [3]		T R 0	
male plug M12x1 (4-pin) / metal		M 1 0	
compact field housing stainless steel 1.4301 (304)		8 5 0	
customer		9 9 9	consult
Mechanical connection			
G1/2" DIN 3852		1 0 0	
G1/2" EN 837		2 0 0	
G1/4" DIN 3852		3 0 0	
G1/4" EN 837		4 0 0	
G1/2" DIN 3852 open pressure port [4]		H 0 0	
1/2" NPT		N 0 0	
1/4" NPT		N 4 0	
customer		9 9 9	consult
Seals			
FKM		1	
EPDM		3	
customer		9	consult
Special version			
standard		0 0 0	
customer		9 9 9	consult

1 absolute pressure possible from 0.4 bar
2 standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
3 code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
4 only for $p_N \leq 40$ bar

DMP 331i
DMP 333i

Precision Pressure Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signal

2-wire: 4 ... 20 mA
3-wire: 0 … 10 V
others on request

Product characteristics

- thermal error in compensated range
  -20 ... 80 °C: 0.2 % FSO
  TC 0.02 % FSO / 10K
- excellent long term stability

Optional versions

- IS-versions
  Ex ia = intrinsically safe
  for gases and dusts
- welded pressure sensor
- pressure port G1/2" flush
- customer specific versions

The precision pressure transmitter DMP 331i and DMP 333i demonstrate the further development of our industrial pressure transmitters.

The signal processing of sensor signal is done by digital electronics with 16-bit analogue digital converter. Consequently, it is possible to conduct an active compensation and the transmitters with excellent measurements and exceptionally attractive price to offer on the market.

Preferred areas of use are

- Laboratory techniques
- Energy production (gas consumption and thermal energy measurement)

Pressure ranges DMP 331i								
Nominal pressure gauge / absolute	[bar]	0.4	1	2	4	10	20	40	60
Overpressure	[bar]	2	5	10	20	40	80	105	105
Burst pressure ≥	[bar]	3	7.5	15	25	50	120	210	210

Vacuum ranges						
Nominal pressure gauge	[bar]	-0.4 ... 0.4	-1 ... 1	-1 ... 2	-1 ... 4	-1 ... 10
Overpressure	[bar]	2	5	10	20	40
Burst pressure ≥	[bar]	3	7.5	15	25	50

Pressure ranges DMP 333i					
Nominal pressure gauge / absolute	[bar]	100	200	400	600
Overpressure	[bar]	210	600	1000	1000
Burst pressure ≥	[bar]	420	1000	1250	1250

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	
Options analogue signal	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}	
Performance		
Accuracy [1]	≤ ± 0.1 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Response time	approx. 5 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Tolerance band [% FSO]	≤ ± 0.2	in compensated range -20 ... 80 °C
TC, average [% FSO / 10 K]	± 0.02	in compensated range -20 ... 80 °C
Permissible temperatures		
Medium	-25 ... 125°C	
Electronics / environment	-25 ... 85°C	
Storage	-40 ... 100°C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Materials		
Pressure port	stainless steel 1.4404 (316 L)	
Housing	stainless steel 1.4404 (316 L)	
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	FKM NBR welded version [2] others on request	
Diaphragm	stainless steel 1.4435 (316L)	
Media wetted parts	pressure port, seal, diaphragm	
[2] welded version only with pressure ports according to EN 837 and NPT; welded version not available with pressure ranges > 60 bar		

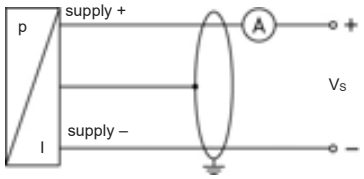
Mechanical stability		
Vibration	10 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec.	according to DIN EN 60068-2-27
Explosion protection (only for 4 ... 20 mA / 2-wire)		
Approvals DX19-DMP 331i DX19-DMP 333i	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da	
Safety technical max. values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ µH, the supply connections have an inner capacity of max. 27 nF to the housing	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 65 °C	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m	
Miscellaneous		
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA	
Weight	approx. 200 g	
Installation position	any [3]	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]	
ATEX Directive	2014/34/EU	

[3] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar.

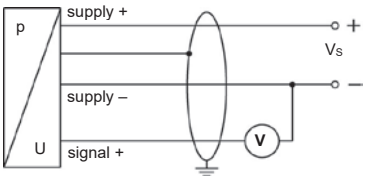
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams

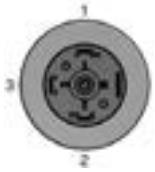
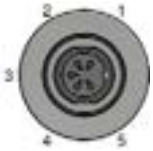
2-wire-system (current)

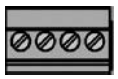


3-wire-system (voltage)

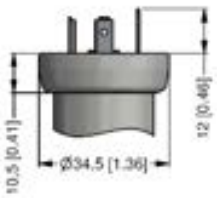


Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	Bayonet MIL-C-26482 (10-6)	
					
				2-wire	3-wire
Supply +	1	3	1	A	A
Supply –	2	4	2	B	D
Signal + (only for 3-wire)	3	1	3	-	B
Shield	ground contact ⊕	5	4	pressure port	

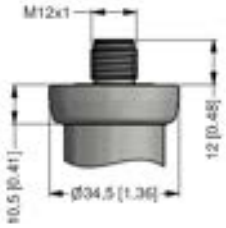
Electrical connections	compact field housing	cable colours (IEC 60757)
	 V_{S+} V_{S-} S+ GND	
Supply +	V_S+	WH (white)
Supply –	V_S-	BN (brown)
Signal + (only for 3-wire)	S+	GN (green)
Shield	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)

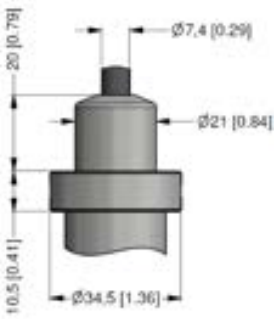
Binder series 723
(IP 67)



M12x1, 4-pin
(IP 67)

Bayonet MIL-C-26482 (10-6)
(IP 67)

cable outlet with PVC cable
(IP 67) [5]



cable outlet, cable with
ventilation tube (IP 68) [6]

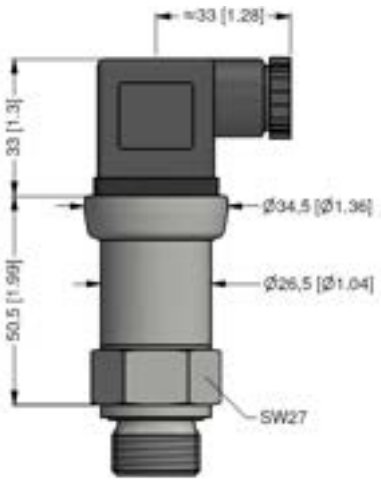
compact field housing
(IP 67)

⇨ **universal-field housing stainless steel 316L with cable gland M20x1.5 (ordering code 880) and other versions on request**

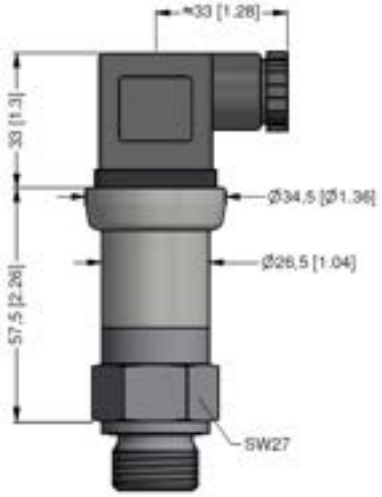
[5] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)*
[6] *different cable types and lengths available, permissible temperature depends on kind of cable*

Dimensions (mm / in)

DMP 331i [7]



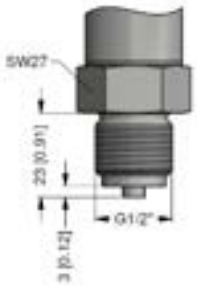
DMP 333i [7, 8]



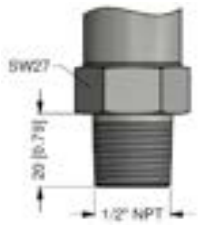
[7] with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm
[8] for nominal pressure p_N > 400 bar increases the length without IS-version by 19 mm and with IS-version by 39 mm

Mechanical connections (dimensions mm / in)

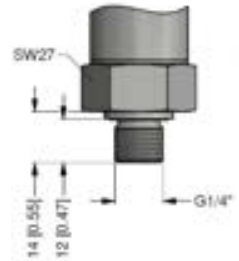
G1/2" DIN 3852



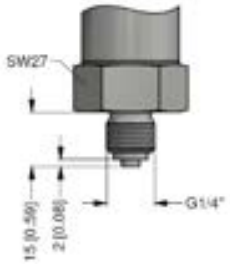
G1/2" EN 837



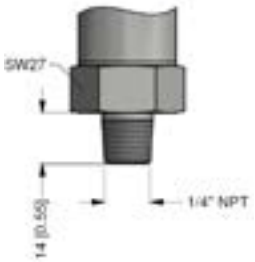
1/2" NPT



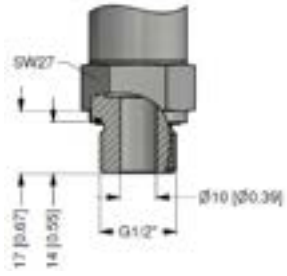
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" open port DIN 3852
(p_N ≤ 60 bar)

G1/2" flush DIN 3852
(p_N ≤ 60 bar)

⇨ **metric threads and others on request**

Ordering code DMP 331i / DMP 333i

DMP 331i / DMP 333i ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

	Code	
Pressure		
For DMP 331i		
gauge	1 1 0	
absolute	1 1 1	
For DMP 333i		
gauge [1]	1 3 0	
absolute	1 3 1	
Input [bar]		
For DMP 331i [2]		
0.40	4 0 0 0	
1.0	1 0 0 1	
2.0	2 0 0 1	
4.0	4 0 0 1	
10	1 0 0 2	
20	2 0 0 2	
40	4 0 0 2	
60	6 0 0 2	
For DMP 333i [2]		
100	1 0 0 3	
200	2 0 0 3	
400	4 0 0 3	
600	6 0 0 3	
For DMP 331i		
-0.40 … 0.40	S 4 0 0	
-1 … 1	S 1 0 2	
-1 … 2	V 2 0 2	
-1 … 4	V 4 0 2	
-1 … 10	V 1 0 3	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
intrinsic safety 4 … 20 mA / 2-wire	E	
0 … 10 V / 3-wire	3	
customer	9	consult
Accuracy		
0.1 % FSO	1	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
male plug M12x1 (4-pin) / metal - for analog output	M 1 0	
male plug M12x1 (4-pin) / metal - for digital output	M 1 3	
Bayonet MIL-C-26482 (10-6); 2 wire	B G 0	
Bayonet MIL-C-26482 (10-6); 3 wire	B G 4	
cable outlet with PVC cable (IP67) [3]	T A 0	
cable outlet, cable with ventilation tube (IP68) [4]	T R 0	
compact field housing stainless steel 1.4301 (304)	8 5 0	
customer	9 9 9	consult
Mechanical connection		
G1/2" DIN 3852	1 0 0	
G1/2" EN 837	2 0 0	
G1/4" DIN 3852	3 0 0	
G1/4" EN 837	4 0 0	
G1/2" DIN 3852 with flush sensor [5]	F 0 0	
G1/2" DIN 3852 open pressure port [5]	H 0 0	
1/2" NPT	N 0 0	
1/4" NPT	N 4 0	
customer	9 9 9	consult
Seal		
For DMP 331i		
FKM	1	
without (welded version) [6]	2	
For DMP 333i		
FKM	1	
NBR	5	
customer	9	consult
Special version		
standard	1 1 1	
customer	9 9 9	consult

[1] measurement starts with ambient pressure
[2] pressure ranges ≤ 60 bar as DMP 331i; pressure ranges > 60 bar as DMP 333i
[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[4] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[5] only possible for DMP 331i and p_N ≤ 60 bar
[6] welded version only with pressure ports according to EN 837 and NPT; welded version not available with pressure ranges > 60 bar

DMP 334i

Precision-Pressure Transmitter for High Pressure

Thinfilm Sensor

accuracy according to IEC 60770:
0.2 % FSO

Nominal pressure

from 0 ... 600 bar up to 0 ... 2200 bar

Analogue output

2-wire: 4 ... 20 mA
others on request

Special characteristics

- welded pressure sensor
- excellent accuracy
- robust and long-term stable

Optional versions

- pressure port
  M20x1.5 or 9/16 UNF
- different kinds of
  electrical connections

The precision pressure transmitter DMP 334i is a consistent further development of the approved industrial pressure transmitter DMP 334. Basic element is a thinfilm sensor which is welded with the pressure port.

The integrated digital electronics compensates actively sensor specific deviations like non-linearity and thermal error.

It is therefore possible to offer a high pressure transmitter with excellent metrological qualities.

Preferred areas of use are

Plant and machine engineering
Test benches

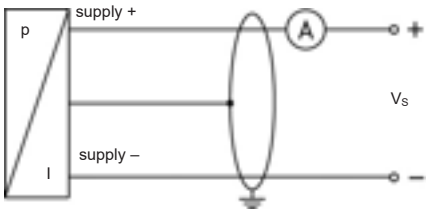
Commercial vehicles and
mobile hydraulics

Input pressure range						
Nominal pressure gauge	[bar]	600	1000	1600	2000	2200
Overpressure	[bar]	2000	2000	2800	2800	2800

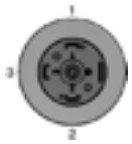
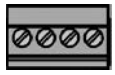
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}	
Performance		
Accuracy [1]	≤ ± 0.2 % FSO	
Permissible load	R_{max} = [(V_S – $V_{S\ min}$) / 0.02 A] Ω	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Response time	approx. 10 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
TC, average	< 0.25 % FSO / 10 K	
In compensated range	-20 ... 85 °C	
Permissible temperatures		
Medium	-40 ... 140 °C	
Electronics / environment	-25 ... 85 °C	
Storage	-40 ... 100 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec.	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4542 (17-4 PH)	
Housing	stainless steel 1.4404 (316L)	
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	none (welded)	
Diaphragm	stainless steel 1.4542 (17-4 PH)	
Media wetted parts	pressure port, diaphragm	
Miscellaneous		
Current consumption	max. 25 mA	
Weight	approx. 300 g	
Installation position	any	
Operational life	p_N = 600 bar: 100 million load cycles p_N > 600 bar: 10 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A)	

Wiring diagram

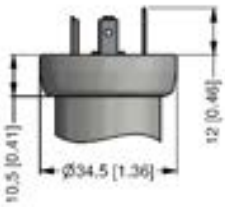
2-wire-system (current)



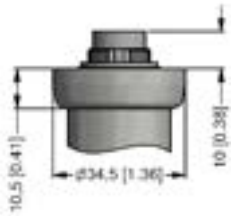
Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colour (IEC 60757)
				 V_{S+} V_{S-} GND	
Supply +	1	3	1	V_S+	WH (white)
Supply –	2	4	2	V_S-	BN (brown)
Shield	ground pin	5	4	GND	GNYE (green-yellow)

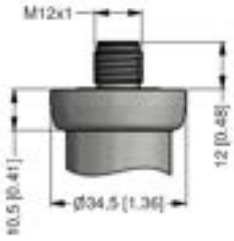
Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)



Binder series 723
(IP 67)



M12x1, 4-pin
(IP 67)

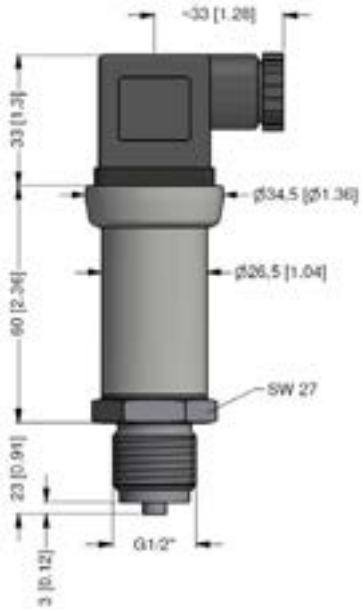
compact field housing
(IP 67)

cable outlet with
PVC cable (IP 67) [2]

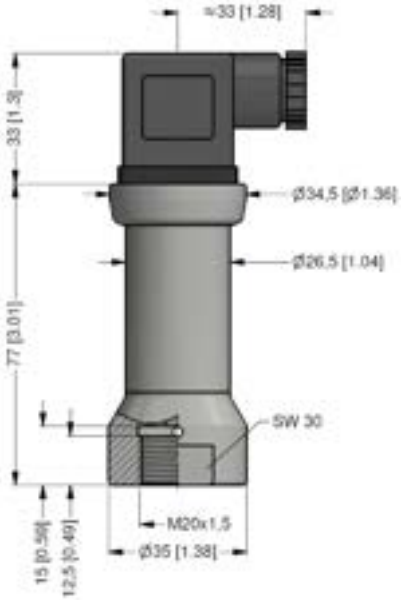
⇨ universal field housing in stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

[2] standard: 2 m PVC cable, without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

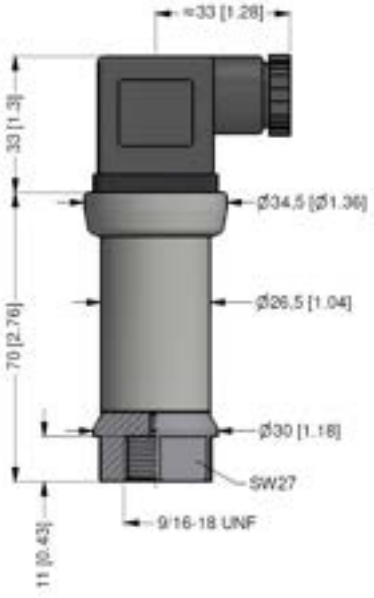
Mechanical connection (dimensions mm / in)



G1/2" EN 837 [3]



M20x1.5 internal thread



9/16-18 UNF internal thread

[3] According to EN 837, the pressure port and the complement at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of R_P > 260 N/mm² in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!

Ordering code DMP 334i

DMP 334i ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure		
gauge	1 4 0	
Input [bar]		
600	6 0 0 3	
1000	1 0 0 4	
1600	1 6 0 4	
2000	2 0 0 4	
2200	2 2 0 4	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
customer	9	consult
Accuracy		
0.2 % FSO	B	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
cable outlet with PVC cable (IP67) [1]	T A 0	
male plug M12x1 (4-pin) / metal	M 1 0	
compact field housing stainless steel 1.4301 (304)	8 5 0	
customer	9 9 9	consult
Mechanical connection		
G1/2" EN 837 [2]	2 0 0	
M20x1.5 internal thread	D 2 8	
9/16 UNF internal thread	V 0 0	
customer	9 9 9	consult
Seal		
without (welded version)	2	
customer	9	consult
Special version		
standard	1 1 1	
customer	9 9 9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C), others on request

[2] According to EN 837, the pressure port and the complement, at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of R_P > 260 N/mm² in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!

DMP 331Pi

Precision Pressure Transmitter

Pressure Ports and
Process Connections with
Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 40 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 10 V
others on request

Product characteristics

- excellent temperature response 0.04 % FSO / 10K
- processing of the sensor signal using digital electronics
- process connections suitable for hygienic application
- vacuum resistant

Optional versions

- IS-version
- cooling element for media temperatures up to 300 °C

The precision pressure transmitter DMP 331Pi demonstrates the further development of well-tried industrial pressure transmitter DMP 331P.

The signal from the specially designed piezoresistive stainless steel sensor is processed by the newly developed digital electronic system, performing thus an active compensation of sensor-specific deviations such as hysteresis, thermal errors and non-linearity.

The temperature range of -40 ... 125 °C can be extended by the integration of a cooling element up to 300 °C.

Preferred areas of use are

- Laboratory techniques
- Food and beverage
- Pharmaceutical industry

Pressure ranges								
Nominal pressure gauge / absolute [1]	[bar]	0.4	1	2	4	10	20	40
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure ≥	[bar]	3	7.5	15	25	50	120	210
Vacuum resistance		p_N ≥ 1 bar: unlimited vacuum resistance			p_N < 1 bar: on request			
[1] absolute pressure permissible 1 bar								

Vacuum ranges						
Nominal pressure	[bar]	-0.4 ... 0.4	-1 ... 1	-1 ... 2	-1 ... 4	-1 ... 10
Overpressure	[bar]	2	5	10	20	40
Burst pressure ≥	[bar]	3	7.5	15	25	50

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Option	3-wire: 0 ... 10 V / VS = 14 ... 36 VDC
Performance	
Accuracy [2]	≤ ± 0.1 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S – V_{S\ min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Response time	current 2-wire: approx. 5 msec voltage 3-wire: 25 msec
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects [3] (offset and span)	
Tolerance band [% FSO]	≤ ± 0.35
TC, average [% FSO / 10 K]	≤ ± 0.035
In compensated range	0 ... 80 °C
[3] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions	

Permissible temperatures		
Filling fluid	silicone oil	food compatible oil
Medium [4]	-40 ... 125 °C	-10 ... 125 °C
Medium with cooling element [5]	overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C [6]	overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C [6]
Electronics / environment	-25 ... 85 °C	
Storage	-40 ... 100 °C	

[4] max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C
[5] max. temperature depends on the used sealing material, type of seal and installation
[6] also for p_{abs} ≤ 1 bar

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Filling fluids	
Standard	silicone oil
Options	food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request

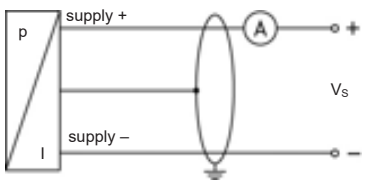
Mechanical stability		
Vibration according to DIN EN 60068-2-6	G 1/2": 20 g RMS (25 ... 2000 Hz)	others: 10 g RMS (25 … 2000 Hz)
Shock according to DIN EN 60068-2-27	G 1/2": 500 g / 1 msec	others: 100 g / 1 msec

Materials	
Pressure port	stainless steel 1.4435 (316 L) others on request
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seals (O-ring)	standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures < 260 °C) others on request Clamp, dairy pipe, Varivent®: without
Diaphragm	standard: stainless steel 1.4435 (316L) option: Hastelloy® C-276 (2.4819) and Tantalum on request
Media wetted parts	pressure port, diaphragm
Explosion protection (for 4 ... 20 mA / 2-wire)	
Approvals DX19-DMP 331Pi	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 65 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Miscellaneous	
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Surface roughness	pressure port R_a < 0.8 µm (media wetted parts)
	diaphragm R_a < 0.15 µm
	weld seam R_a < 0.8 µm
Weight	approx. 200 g
Installation position	any [7]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

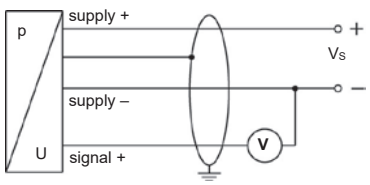
[7] *Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤1 bar.*

Wiring diagrams

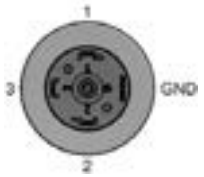
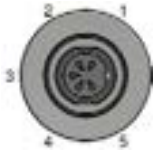
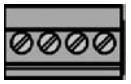
2-wire-system (current)



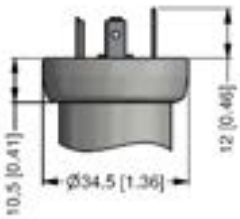
3-wire-system (voltage)



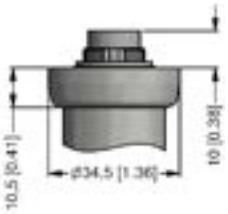
Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1/ metal (4-pin)	compact field housing	cable colours (IEC 60757)
				 V_{S+} V_{S-} S+ GND	
Supply +	1	3	1	V_{S+}	WH (white)
Supply –	2	4	2	V_{S-}	BN (brown)
Signal + (only for 3-wire)	3	1	3	S-	GN (green)
shield	ground pin ⊕	5	4	GND	GNYE (green-yellow)

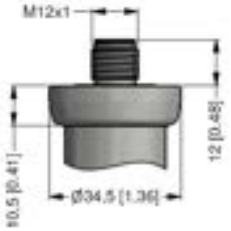
Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)

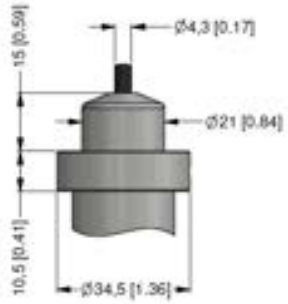


Binder series 723, 5-pin
(IP 67)

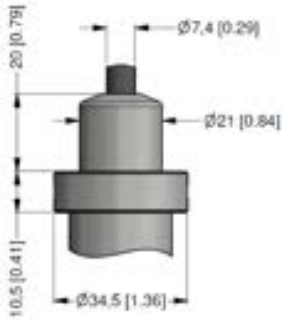


M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)



cable outlet
with PVC cable
(IP 67) [8]

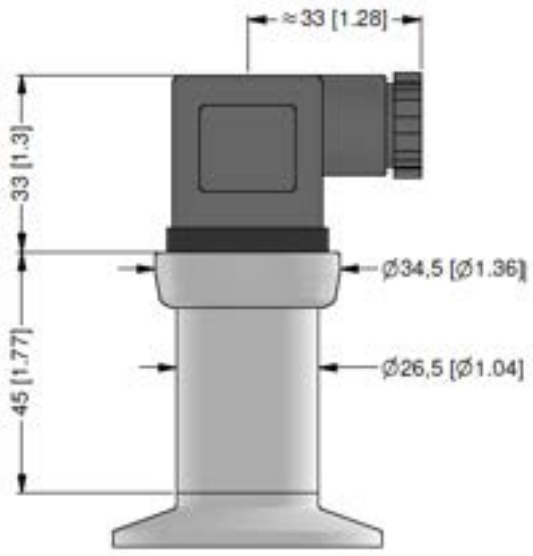


cable outlet,
cable with ventilation tube
(IP 68) [9]

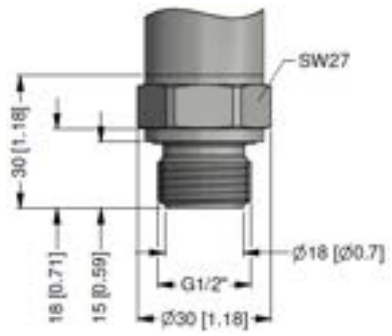
⇨ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

[8] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C)
[9] different cable types and lengths available, permissible temperature depends on kind of cable

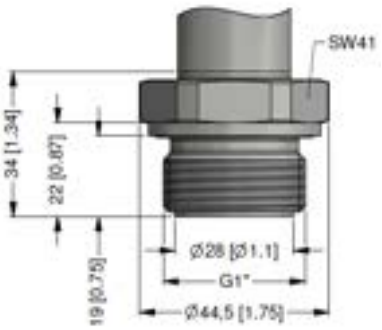
Dimensions (mm / in)



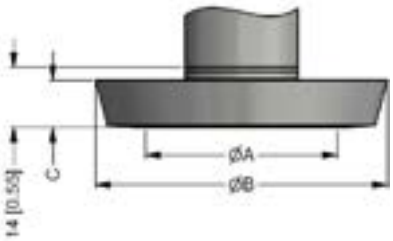
Mechanical connection (dimensions mm / in)



G1/2" flush DIN 3852
$p_N \geq 1$ bar

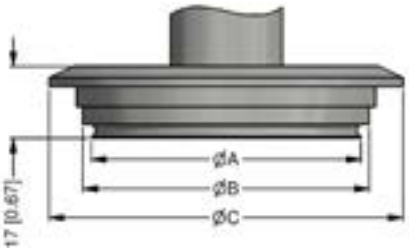


G1" flush DIN 3852



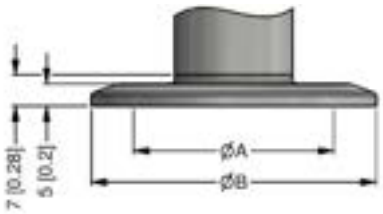
dairy pipe (DIN 11851)

dimensions in mm [in]			
size	DN 25	DN 40	DN 50
A	23 [0.91]	32 [1.26]	45 [1.77]
B	44 [1.73]	56 [1.20]	68.5 [2.70]
C	10 [0.39]	10 [0.39]	11 [0.43]
p_N [bar]	≤ 40	≤ 40	≤ 25



Varivent®
$p_N \leq 25$ bar

dimensions in mm [in]	
size	DN 40/50
A	64 [2.52]
B	68 [2.68]
C	84 [3.31]



Clamp (DIN 32676)

dimensions in mm [in]			
size	DN 25	DN 32	DN 50
A	23.0 [0.91]	23.0 [0.91]	45 [1.77]
B	50.5 [1.99]	50.5 [1.99]	64 [2.52]
p_N [bar]	0.25 ... 16	≤ 16	≤ 16

Cooling element up to 300 °C [7]
(optionally)

⇨ **metric threads and others on request**

[10] max. temperature depends on the used sealing material, type of seal and installation

Ordering code DMP 331Pi

DMP 331Pi ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure		
gauge	5 0 0	
absolute [1]	5 0 1	
Input [bar]		
0.4 [1]	4 0 0 0	
1.0	1 0 0 1	
2.0	2 0 0 1	
4.0	4 0 0 1	
10	1 0 0 2	
20	2 0 0 2	
40	4 0 0 2	
-0.40 … 0.40	S 4 0 0	
-1 … 1	S 1 0 2	
-1 … 2	V 2 0 2	
-1 … 4	V 4 0 2	
-1 … 10	V 1 0 3	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
intrinsic safety 4 … 20 mA / 2-wire	E	
0 … 10 V / 3-wire	3	
customer	9	consult
Accuracy		
0.1 % FSO	1	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
cable outlet with PVC cable (IP67) [2]	T A 0	
cable outlet, cable with ventilation tube (IP68) [3]	T R 0	
male plug M12x1 (4-pin) / metal	M 1 0	
compact field housing stainless steel 1.4301 (304) [4]	8 5 0	
customer	9 9 9	consult
Mechanical connection		
G1/2" with flush welded diaphragm (DIN 3852) [5]	Z 0 0	
G1" with flush welded diaphragm (DIN 3852)	Z S 1	
Clamp DN 25 / 1" (DIN 32676) / 3A	C 6 1	
Clamp DN 32 / 1 1/2" (DIN 32676) / 3A	C 6 2	
Clamp DN 50 / 2" (DIN 32676) / 3A	C 6 3	
dairy pipe DN 25 (DIN 11851) [4]	M 7 3	
dairy pipe DN 40 (DIN 11851) [4]	M 7 5	
dairy pipe DN 50 (DIN 11851) [4]	M 7 6	
Varivent® DN 40/50 / 3A	P 4 1	
customer	9 9 9	consult
Diaphragm		
stainless steel 1.4435 (316L)	1	
Hastelloy® C-276 (2.4819)	H	consult
tantalum	T	consult
customer	9	consult
Seal		
for clamp or dairy pipe: without	0	
for inch thread - standard: FKM	1	
for inch thread - option: FFKM	7	
customer	9	consult
Filling fluid		
silicone oil	1	
food compatible oil (FDA) / 3A	2	
customer	9	consult
Special version		
standard	1 1 1	
with cooling element up to 300 °C	2 1 1	
customer	9 9 9	consult

[1] absolute pressure possible from 1 bar
[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[4] The cup nut has to be mounted by production of pressure transmitter with electrical connection field housing and mechanical connection dairy pipe.
The cup nut has to be ordered as separate position.
[5] possible only for $p_N \geq 1$ bar

Hastelloy® is a brand name of Haynes International Inc.; Varivent® is a brand name of GEA Tuchenhagen GmbH

DMP 321

Industrial Pressure Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.25 % FSO
option: 0.1 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 20 mA / 0 … 10 V
others on request

Special characteristics

- perfect thermal behaviour
- excellent long-term stability
- compact design

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- welded pressure sensor
- customer specific versions

The pressure transmitter DMP 321 is the consistent further development of our in many applications approved DMP 331. It shows an improved signal behaviour and sets new standards in the industrial class.

Its metallic diaphragm made of stainless steel (1.4435 / 316L) offers a good corrosion resistance in many industrial processes.

The modular device concept allows to combine different pressure ranges with a variety of electrical and mechanical connections. Thus, a diversity of variations is created, meeting almost all requirements in industrial applications.

Preferred areas of use are

- Plant and machine engineering
- Environmental engineering
- Energy industry
- Mobile hydraulics

Input pressure range												
Nominal pressure gauge	[bar]	-1…0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge / absolute	[bar]	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250	1800
Vacuum resistance		p_N ≥ 1 bar: unlimited vacuum resistance p_N < 1 bar: on request									

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 10 ... 32 V_{DC}	
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 12 ... 28 V_{DC}	
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [1]	standard: ≤ ± 0.25 % FSO option: ≤ ± 0.1 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Tolerance band	≤ ± 0.75 % FSO	
in compensated range	-20 ... 85 °C	
Permissible temperatures		
Medium	-40 ... 125 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4404 (316 L)	
Housing	stainless steel 1.4404 (316 L)	
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	standard: FKM options: EPDM (for p_N ≤ 160 bar) welded version [2] (for p_N ≤ 40 bar)	others on request
Diaphragm	stainless steel 1.4435 (316 L)	
Media wetted parts	pressure port, seals, diaphragm	
[2] welded version only with pressure ports according to EN 837 and NPT, p_N ≤ 40 bar		

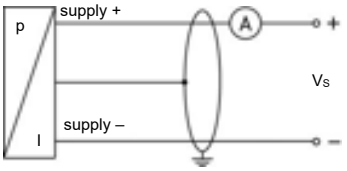
Explosion protection (only for 4 ... 20 mA / 2-wire)	
Approvals DX19-DMP 321	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Miscellaneous	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 140 g
Installation position	any [3]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]
ATEX Directive	2014/34/EU

[3] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar.

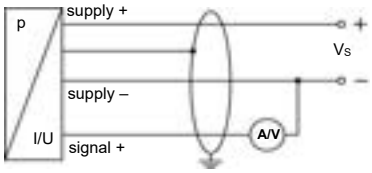
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

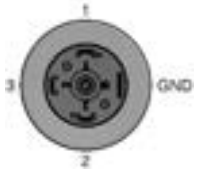
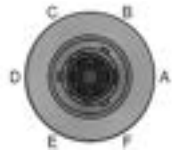
2-wire-system (current)

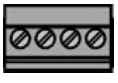


3-wire-system (current / voltage)



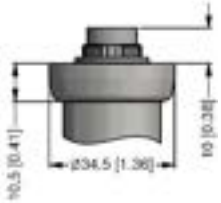
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	Bayonet MIL-C-26482 (10-6)	
					
				2-wire	3-wire
Supply +	1	3	1	A	A
Supply –	2	4	2	B	D
Signal + (for 3-wire)	3	1	3	-	B
Shield	ground pin	5	4	pressure port	

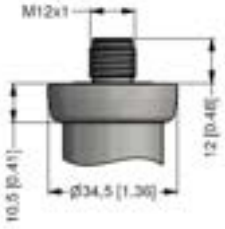
Electrical connection	compact field housing	cable colours (IEC 60757)
	 V_{S+} V_{S-} S+ GND	
Supply +	V_S+	WH (white)
Supply –	V_S-	BN (brown)
Signal + (for 3-wire)	S+	GN (green)
Shield	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)

ISO 4400
(IP 65)

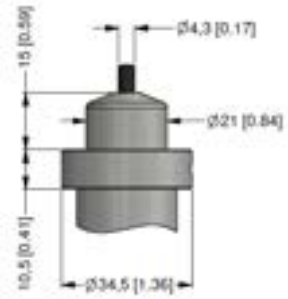


Binder series 723, 5-pin
(IP 67)

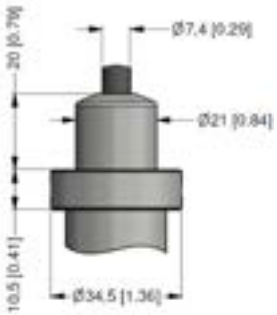


M12x1, 4-pin
(IP 67)

Bayonet MIL-C-26482 (10-6)
(IP 67)



cable outlet with PVC cable
(IP 67) [5]



cable outlet, cable with
ventilation tube (IP 68) [6]

compact field housing
(IP 67)

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

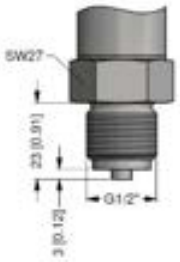
[5] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[6] different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

* for nominal pressure p_N > 60 bar increases the length of devices by 9 mm;
with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm additionally

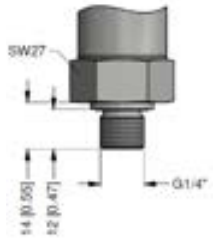
Mechanical connections (dimensions mm / in)

G1/2" DIN 3852

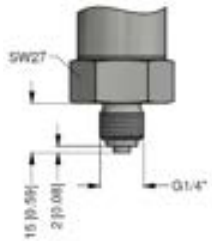


G1/2" EN 837

1/2" NPT

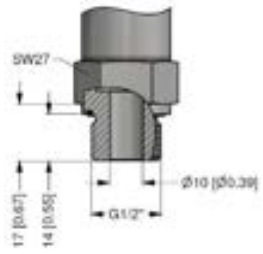


G1/4" DIN 3852



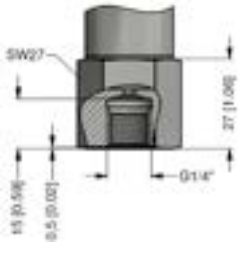
G1/4" EN 837

1/4" NPT



G1/2" open port DIN 3852
(p_N ≤ 40 bar)

G1/2" flush DIN 3852
(p_N ≤ 40 bar)



G1/4" DIN 3852
internal thread

⇨ **metric threads and other versions on request**

Ordering code DMP 321

DMP 321 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure			
gauge		1 1 5	
absolute [1]		1 1 6	
Input	**[bar]**		
	0.10 [1]	1 0 0 0	
	0.16 [1]	1 6 0 0	
	0.25 [1]	2 5 0 0	
	0.40	4 0 0 0	
	0.60	6 0 0 0	
	1.0	1 0 0 1	
	1.6	1 6 0 1	
	2.5	2 5 0 1	
	4.0	4 0 0 1	
	6.0	6 0 0 1	
	10	1 0 0 2	
	16	1 6 0 2	
	25	2 5 0 2	
	40	4 0 0 2	
	60	6 0 0 2	
	100	1 0 0 3	
	160	1 6 0 3	
	250	2 5 0 3	
	400	4 0 0 3	
	600	6 0 0 3	
	-1 … 0	X 1 0 2	
	customer	9 9 9 9	consult
Output			
4 … 20 mA / 2-wire		1	
0 … 20 mA / 3-wire		2	
0 … 10 V / 3-wire		3	
intrinsic safety 4 … 20 mA / 2-wire		E	
customer		9	consult
Accuracy			
standard:	0.25 % FSO	2	
option:	0.10 % FSO	1	
customer		9	consult
Electrical connection			
male and female plug ISO 4400		1 0 0	
male plug Binder series 723 (5-pin)		2 0 0	
cable outlet with PVC cable (IP67) [2]		T A 0	
cable outlet, cable with ventilation tube (IP68) [3]		T R 0	
male plug M12x1 (4-pin) / metal		M 1 0	
Bayonet MIL-C-26482 (10-6); 2 wire		B G 0	
Bayonet MIL-C-26482 (10-6); 3 wire		B G 4	
compact field housing stainless steel 1.4301 (304)		8 5 0	
customer		9 9 9	consult
Mechanical connection			
G1/2" DIN 3852		1 0 0	
G1/2" EN 837		2 0 0	
G1/4" DIN 3852		3 0 0	
G1/4" DIN 3852, internal thread		J 0 0	
G1/4" EN 837		4 0 0	
G1/2" DIN 3852 with flush sensor [4]		F 0 0	
G1/2" DIN 3852 open pressure port [4]		H 0 0	
1/2" NPT		N 0 0	
1/4" NPT		N 4 0	
customer		9 9 9	consult
Seal			
FKM		1	
EPDM		3	
without (welded version) [5]		2	
customer		9	consult
Special version			
standard		0 0 0	
customer		9 9 9	consult

[1] absolute pressure possible from 0.4 bar
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[4] not possible for nominal pressure $p_N > 40$ bar
[5] welded version only with pressure ports according to EN 837 and NPT, possible for $p_N \leq 40$ bar

DMP 331

Industrial Pressure Transmitter for Low Pressure

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 / 0.1 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 60 b

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 20 mA / 0 … 10 V
others on request

Special characteristic

- perfect thermal behaviour
- excellent long term stability
- pressure port
  G 1/2" flush from 100 mbar

Optional versions

- IS-version
  Ex ia = intrinsically safe
  for gases and dusts
- SIL 2-according to
  IEC 61508 / IEC 61511
- welded pressure sensor
- customer specific versions

The pressure transmitter DMP 331 can be used in all industrial areas when the medium is compatible with stainless steel 1.4404 (316 L) or 1.4435 (316 L). Additional are different elastomer seals as well as a helium tested welded version available.

The modulare concept of the device allows to combine different stainless steel sensors and electronic modules with a variety of electrical and mechanical versions.Thus a diversity of variations is created, meeting almost all requirements in industrial applications.

Preferred areas of use are

- Plant and machine engineering
- Environmental engineering (water - sewage - recycling)
- Energy industry

Input pressure range								
Nominal pressure gauge [bar]	-1…0	0.10	0.16	0.25	0.40	0.60	1	1.6
Nominal pressure absolute [bar]	-	-	-	-	0.40	0.60	1	1.6
Overpressure [bar]	5	0.5	1	1	2	5	5	10
Burst pressure ≥ [bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15

Nominal pressure gauge / abs. [bar]	2.5	4	6	10	16	25	40	60
Overpressure [bar]	10	20	40	40	80	80	105	105
Burst pressure ≥ [bar]	15	25	50	50	120	120	210	210
Vacuum resistance	p_N ≥ 1 bar: unlimited vacuum resistance p_N < 1 bar: on request							

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [1]	standard: nominal pressure < 0.4 bar: ≤ ± 0.50 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO option 1: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO option 2: for all nominal pressure ranges: ≤ ± 0.10 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 240 Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		

Thermal effects (offset and span)			
Nominal pressure p_N [bar]	-1 … 0	< 0.40	≥ 0.40
Tolerance band [% FSO]	≤ ± 0.75	≤ ± 1	≤ ± 0.75
in compensated range [°C]	-20 ... 85	0 ... 70	-20 … 85

Permissible temperatures	
Medium	-40 ... 125 °C
Electronics / environment	-40 ... 85 °C
Storage	-40 ... 100 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Materials	
Pressure port	stainless steel 1.4404 (316 L)
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seals	standard: FKM options: EPDM welded version [2] (for p_N ≤ 40 bar) others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
[2] welded version only with pressure ports according to EN 837 and NPT, p_N ≤ 40 bar	

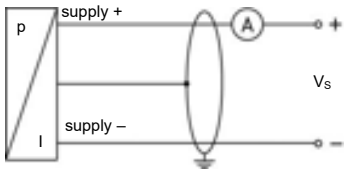
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approvals DX19-DMP 331	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Miscellaneous	
Option SIL2 version [3]	according to IEC 61508 / IEC 61511
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 200 g
Installation position	any [4]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

[3] only for 4 … 20 mA / 2-wire, not in combination with accuracy 0.1 %

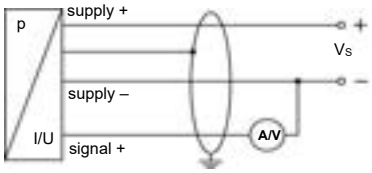
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar.

Wiring diagrams

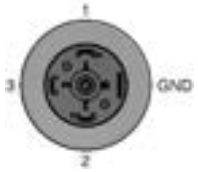
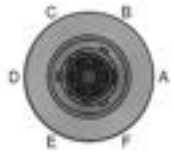
2-wire-system (current)

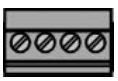


3-wire-system (current / voltage)



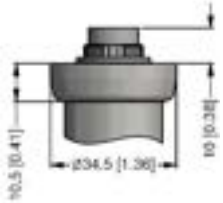
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	Bayonet MIL-C-26482 (10-6)	
					
				2-wire	3-wire
Supply +	1	3	1	A	A
Supply –	2	4	2	B	D
Signal + (for 3-wire)	3	1	3	-	B
Shield	ground pin	5	4	pressure port	

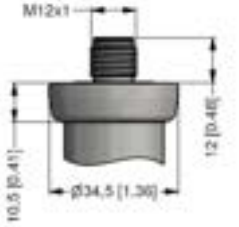
Electrical connection	compact field housing	cable colours (IEC 60757)
	 V_{S+} V_{S-} S+ GND	
Supply +	V_S+	WH (white)
Supply –	V_S-	BN (brown)
Signal + (for 3-wire)	S+	GN (green)
Shield	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)

ISO 4400
(IP 65)

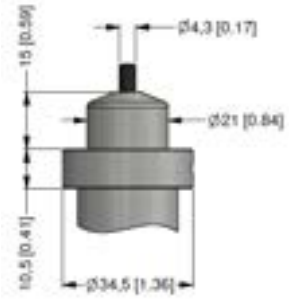


Binder series 723, 5-pin
(IP 67)

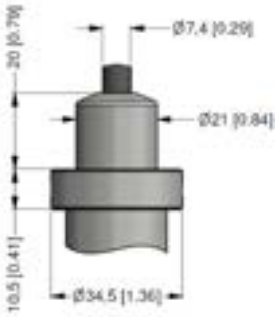


M12x1, 4-pin
(IP 67)

Bayonet MIL-C-26482 (10-6)
(IP 67)



cable outlet with PVC cable
(IP 67) [5]



cable outlet, cable with
ventilation tube (IP 68) [6]

compact field housing
(IP 67)

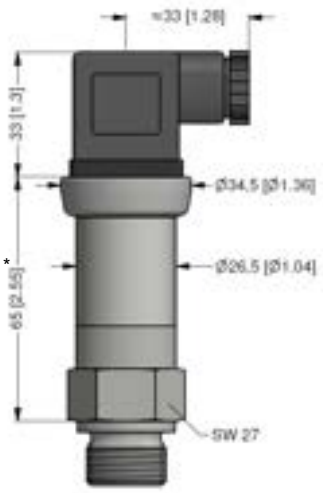
⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

[5] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[6] different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

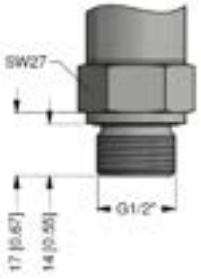
standard

SIL- and SIL-IS version

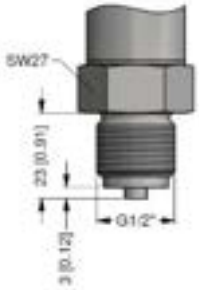


* with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm

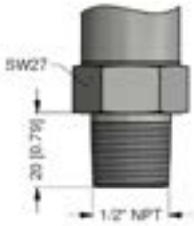
Mechanical connections (dimensions mm / in)



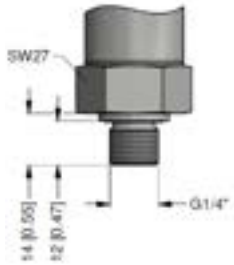
G1/2" DIN 3852



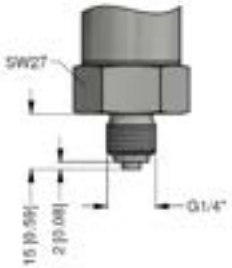
G1/2" EN 837



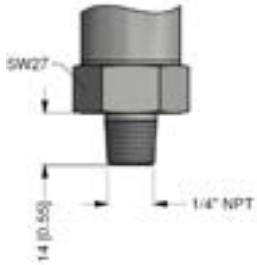
1/2" NPT



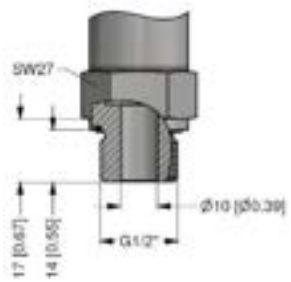
G1/4" DIN 3852



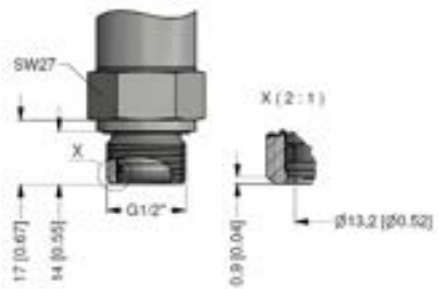
G1/4" EN 837



1/4" NPT



G1/2" open port DIN 3852
(p_N ≤ 40 bar)



G1/2" flush DIN 3852
(p_N ≤ 40 bar)

⇨ **metric threads and other versions on request**

Ordering code DMP 331

DMP 331 □□□-□□□□-□-□-□□□-□□□-□-□□□

Section / option	Code	Remark
Pressure		
gauge	1 1 0	
absolute [1]	1 1 1	
Input [bar]		
0.10 [1]	1 0 0 0	
0.16 [1]	1 6 0 0	
0.25 [1]	2 5 0 0	
0.40	4 0 0 0	
0.60	6 0 0 0	
1.0	1 0 0 1	
1.6	1 6 0 1	
2.5	2 5 0 1	
4.0	4 0 0 1	
6.0	6 0 0 1	
10	1 0 0 2	
16	1 6 0 2	
25	2 5 0 2	
40	4 0 0 2	
60	6 0 0 2	
-1 … 0	X 1 0 2	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
0 … 20 mA / 3-wire	2	
0 … 10 V / 3-wire	3	
intrinsic safety 4 … 20 mA / 2-wire	E	
SIL2 4 … 20 mA / 2-wire	1S	
SIL2 with intrinsic safety 4 … 20 mA / 2-wire	ES	
customer	9	consult
Accuracy		
standard for $p_N \geq 0.4$ bar: 0.35 % FSO	3	
standard for $p_N < 0.4$ bar: 0.50 % FSO	5	
option 1 for $p_N \geq 0.4$ bar: 0.25 % FSO	2	
option 2: 0.10 % FSO [2]	1	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
cable outlet with PVC cable (IP67) [3]	T A 0	
cable outlet, cable with ventilation tube (IP68) [4]	T R 0	
male plug M12x1 (4-pin) / metal	M 1 0	
Bayonet MIL-C-26482 (10-6); 2 wire	B G 0	
Bayonet MIL-C-26482 (10-6); 3 wire	B G 4	
compact field housing stainless steel 1.4301 (304)	8 5 0	
customer	9 9 9	consult
Mechanical connection		
G1/2" DIN 3852	1 0 0	
G1/2" EN 837	2 0 0	
G1/4" DIN 3852	3 0 0	
G1/4" EN 837	4 0 0	
G1/2" DIN 3852 with flush sensor [5]	F 0 0	
G1/2" DIN 3852 open pressure port [5]	H 0 0	
1/2" NPT	N 0 0	
1/4" NPT	N 4 0	
customer	9 9 9	consult
Seal		
FKM	1	
EPDM	3	
without (welded version) [5, 6]	2	
customer	9	consult
Special version		
standard	0 0 0	
customer	9 9 9	consult

[1] absolute pressure possible from 0.4 bar
[2] not in combination with SIL
[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C), others on request
[4] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[5] only for $p_N \leq 40$ bar
[6] welded version only with pressure ports according to EN 837 and NPT

DMP 333

Industrial Pressure Transmitter for High Pressure

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 / 0.1 % FSO

Nominal pressure

from 0 ... 100 bar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 20 mA / 0 … 10 V
others on request

Special characteristics

- excellent long-term stability, also with high dynamic pressure loads
- insensitive to pressure peaks
- high overpressure capability

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- SIL 2 version according to IEC 61508 / IEC 61511
- customer specific versions

The pressure transmitter type DMP 333 has been especially designed for use in hydraulic applications with high static and dynamic pressure. The transmitter is characterized by an excellent long term stability, also under fast changing pressure as well as positive and negative pressure peaks.

The modular concept of the device allows to combine different stainless steel sensors and electronic modules with a variety of electrical and mechanical versions. Thus a diversity of variations is created, meeting almost all requirements in hydraulic applications.

Preferred areas of use are

Plant and machine engineering
Machine tools
Hydraulic presses
Injection moulding machine
Handling equipment
Elevated platforms
Test benches

Mobile hydraulics

Input pressure range						
Nominal pressure gauge / abs.	[bar]	100	160	250	400	600
Overpressure	[bar]	210	600	1000	1000	1000
Burst pressure ≥	[bar]	1000	1000	1250	1250	1800

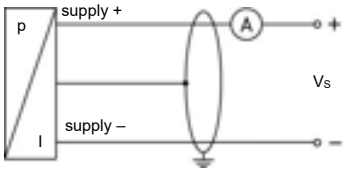
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [1]	standard: ≤ ± 0.35 % FSO option 1: ≤ ± 0.25 % FSO option 2: ≤ ± 0.10 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: $R_{max} = 240\ \Omega$ voltage 3-wire: $R_{min} = 10\ k\Omega$	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Tolerance band	≤ ± 0.75 % FSO	
in compensated range	0 ... 70 °C	
Permissible temperatures		
Medium	-40 ... 125 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4404 (316 L)	
Housing	stainless steel 1.4404 (316 L)	
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	standard: FKM options: EPDM (for p_N ≤ 160 bar) others on request	
Diaphragm	stainless steel 1.4435 (316 L)	
Media wetted parts	pressure port, seals, diaphragm	
Explosion protection (only for 4 ... 20 mA / 2-wire)		
Approvals DX19-DMP 333	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da	
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ µH, the supply connections have an inner capacity of max. 27 nF to the housing	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m	

Miscellaneous	
Option SIL2 version [2]	according to IEC 61508 / IEC 61511
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 140 g
Installation position	any [3]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]
ATEX Directive	2014/34/EU

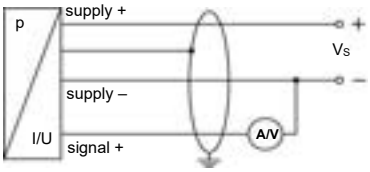
[2] only for 4 … 20 mA / 2-wire, not in combination with accuracy 0.1 %
[3] Pressure transmitters are calibrated in a vertical position with the pressure connection down.
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams

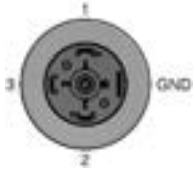
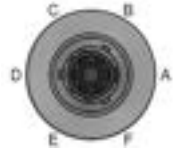
2-wire-system (current)

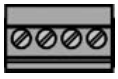


3-wire-system (current / voltage)



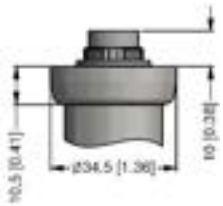
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	Bayonet MIL-C-26482 (10-6)	
					
				2-wire	3-wire
Supply +	1	3	1	A	A
Supply –	2	4	2	B	D
Signal + (for 3-wire)	3	1	3	-	B
Shield	ground pin	5	4	pressure port	

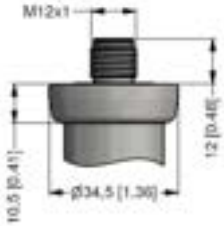
Electrical connection	compact field housing	cable colours (IEC 60757)
	 V_{S+} V_{S-} S+ GND	
Supply +	V_S+	WH (white)
Supply –	V_S-	BN (brown)
Signal + (for 3-wire)	S+	GN (green)
Shield	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)

ISO 4400
(IP 65)

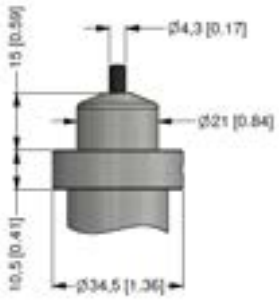


Binder series 723, 5-pin
(IP 67)

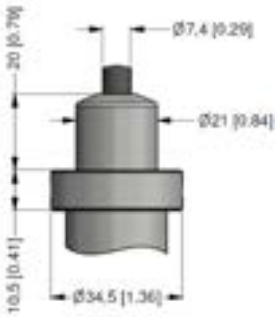


M12x1, 4-pin
(IP 67)

Bayonet MIL-C-26482 (10-6)
(IP 67)



cable outlet with PVC cable
(IP 67) [5]



cable outlet, cable with
ventilation tube (IP 68) [6]

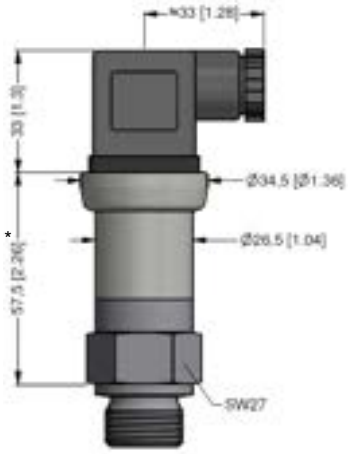
compact field housing
(IP 67)

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

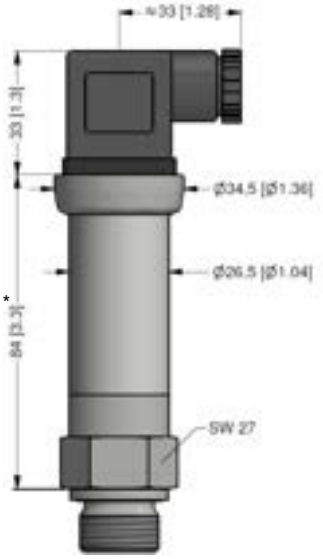
[5] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[6] different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

standard

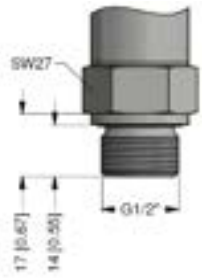


SIL- and SIL-IS-version

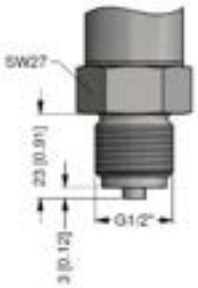


* with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm

Mechanical connections (dimensions mm / in)

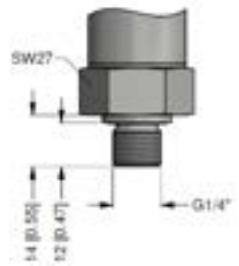


G1/2" DIN 3852

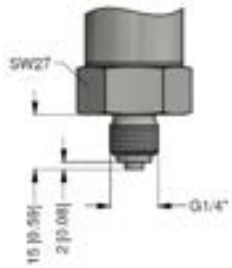


G1/2" EN 837

1/2" NPT



G1/4" DIN 3852



G1/4" EN 837

⇨ **metric threads and other versions on request**

Ordering code DMP 333

DMP 333 ☐☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐☐☐

		Code	
Pressure			
	gauge	1 3 0	
	absolute	1 3 1	
Input	**[bar]**		
	100	1 0 0 3	
	160	1 6 0 3	
	250	2 5 0 3	
	400	4 0 0 3	
	600	6 0 0 3	
	customer	9 9 9 9	consult
Output			
	4 … 20 mA / 2-wire	1	
	0 … 20 mA / 3-wire	2	
	0 … 10 V / 3-wire	3	
	intrinsic safety 4 … 20 mA / 2-wire	E	
	SIL2 4 … 20 mA / 2-wire	1S	
	SIL2 with Intrinsic safety 4 … 20 mA / 2-wire	ES	
	customer	9	consult
Accuracy			
standard:	0.35 % FSO	3	
option 1:	0.25 % FSO	2	
option 2:	0.10 % FSO [1]	1	
	customer	9	consult
Electrical connection			
	male and female plug ISO 4400	1 0 0	
	male plug Binder series 723 (5-pin)	2 0 0	
	cable outlet with PVC cable (IP67) [2]	T A 0	
	cable outlet, cable with ventilation tube (IP68) [3]	T R 0	
	male plug M12x1 (4-pin) / metal	M 1 0	
	Bayonet MIL-C-26482 (10-6); 2 wire	B G 0	
	Bayonet MIL-C-26482 (10-6); 3 wire	B G 4	
	compact field housing stainless steel 1.4301 (304)	8 5 0	
	customer	9 9 9	consult
Mechanical connection			
	G1/2" DIN 3852	1 0 0	
	G1/2" EN 837	2 0 0	
	G1/4" DIN 3852	3 0 0	
	G1/4" EN 837	4 0 0	
	1/2" NPT	N 0 0	
	customer	9 9 9	consult
Seals			
	FKM	1	
	EPDM [4]	3	
	customer	9	consult
Special version			
	standard	0 0 0	
	customer	9 9 9	consult

[1] not in combination with SIL
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[4] possible for nominal pressure ranges $p_N \leq 160$ bar

DMP 334

Industrial Pressure Transmitter for High Pressure

Thinfilm Sensor

accuracy according to IEC 60770:
0.35 % FSO

Nominal pressure

from 0 ... 600 bar up to 0 ... 2200 bar

Analogue output

2-wire: 4 ... 20 mA
3-wire: 0 … 10 V
others on request

Special characteristics

- extremely robust and excellent long-term stability
- welded pressure sensor

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- pressure port:
  M20 x 1.5 or 9/16 UNF
- adjustability of span and offset
- different kinds of electrical connections

The industrial pressure transmitter DMP 334 has been especially designed for use in hydraulic systems up to 2200 bar. The base element of DMP 334 is a thinfilm sensor, which is welded with the pressure port and meets high demands of operational safety and reliability.

These characteristics and the excellent measurement data of DMP 334 as well as distinguished offset stability offer a pressure transmitter with easy handling, reliability, and robustness for hydraulic user. The DMP 334 is deliverable with standard HP connections.

Preferred areas of use are

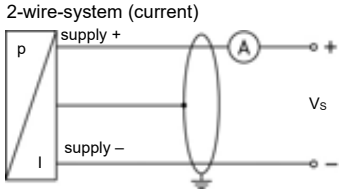
- Plant and machine engineering
- Commercial vehicles and mobile hydraulics

Input pressure range						
Nominal pressure gauge	[bar]	600	1000	1600	2000	2200
Overpressure	[bar]	2000	2000	2800	2800	2800
Burst pressure ≥	[bar]	3000	4000	6000	6000	6000

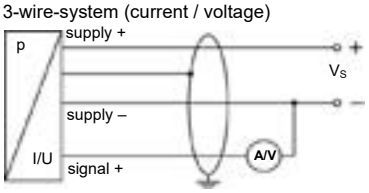
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}	
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	
Option 3-wire	3-wire: 0 ...10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [1]	≤ ± 0.35 % FSO	
Permissible load	current 2-wire: R_{max} = [(V_S – V_S min) / 0.02 A] Ω	voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V	load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.2 % FSO / year at reference conditions	
Response time	< 5 msec	
Adjustability [2]	adjustment of offset and span is possible within ± 5 % of the nominal pressure range; please select "041" as a special version in the order code	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
[2] adjustable version is not possible in combination with IS-version, compact field housing and cable outlet		
Thermal effects (offset and span)		
Thermal error	≤ ± 0.25 % FSO / 10 K	
In compensated range	-20 ... 85 °C	
Permissible temperatures		
Medium	-40 ... 140 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec.	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4542 (17-4 PH)	
Housing	stainless steel 1.4404 (316L)	
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	none (welded version)	
Diaphragm	stainless steel 1.4542 (17-4 PH)	
Media wetted parts	pressure port, diaphragm	
Explosion protection (only for 4 … 20 mA / 2-wire)		
Approvals DX19-DMP 334	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga	zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m	
Miscellaneous		
Current consumption	signal output current: max. 25 mA	signal output voltage: max. 8.5 mA
Weight	approx. 240 g	
Installation position	any	
Operational life	p_N = 600 bar: 100 million load cycles	p_N > 600 bar: 10 million load cycles
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A)
ATEX Directive	2014/34/EU	

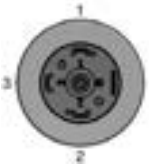
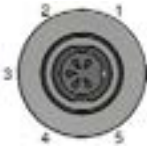
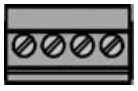
Wiring diagrams

2-wire-system (current)

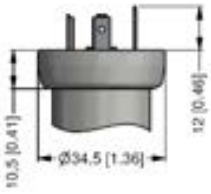


3-wire-system (current / voltage)



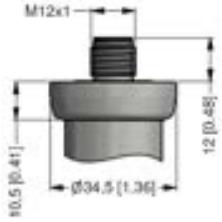
Pin configuration					
Electrical connection	ISO 4400 	Binder 723 (5-pin) 	M12x1 / metal (4-pin) 	compact field housing 	cable colours (IEC 60757)
Supply + Supply – Signal + (only for 3-wire)	1 2 3	3 4 1	1 2 3	V_S+ V_S- S+	WH (white) BN (brown) GN (green)
Shield	ground pin ⊕	5	4	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



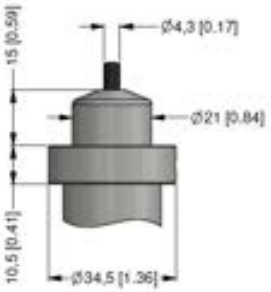
ISO 4400
(IP 65)

Binder series 723, 5-pin
(IP 67)



M12x1, 4-pin
(IP 67)

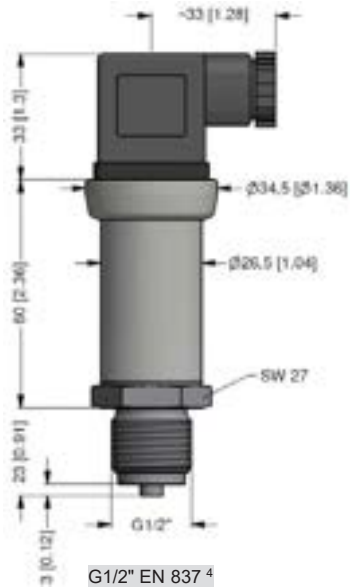
compact field housing
(IP 67)



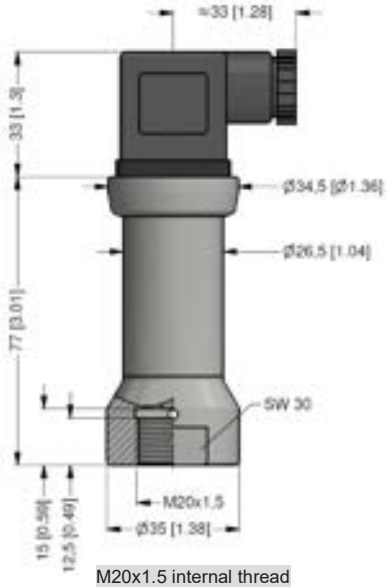
cable outlet with PVC cable
(IP 67) [3]

[3] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request*

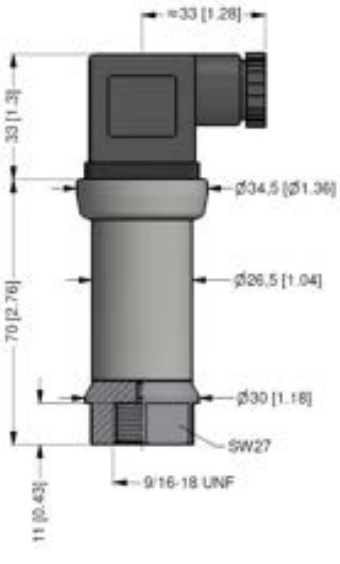
Mechanical connection (dimensions mm / in)



G1/2" EN 837 [4]



M20x1.5 internal thread



9/16-18 UNF internal thread

[4] *According to EN 837, the pressure port and the complement at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of R_P > 260 N/mm² in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!*

Ordering code DMP 334

DMP 334 □□□-□□□□-□-□-□□□-□□□-□-□□□

Pressure																						
gauge	1	4	0																			
Input	**[bar]**																					
600				6	0	0	3															
1000				1	0	0	4															
1600				1	6	0	4															
2000				2	0	0	4															
2200				2	2	0	4															
customer				9	9	9	9															consult
Output																						
4 … 20 mA / 2-wire								1														
0 … 10 V / 3-wire								3														
intrinsic safety 4 … 20 mA / 2-wire								E														
customer								9														consult
Accuracy																						
0.35 % FSO									3													
customer									9													consult
Electrical connection																						
male and female plug ISO 4400										1	0	0										
male plug Binder series 723 (5-pin)										2	0	0										
cable outlet with PVC cable (IP67) [1]										T	A	0										
male plug M12x1 (4-pin) / metal										M	1	0										
comapct field housing stainless steel 1.4301 (304)										8	5	0										
customer										9	9	9										consult
Mechanical connection																						
G1/2" EN 837 [2]													2	0	0							
M20x1.5 internal thread													D	2	8							
9/16 UNF internal thread													V	0	0							
customer													9	9	9							consult
Seal																						
without (welded version)																2						
customer																9						consult
Special version																						
standard (adjustable) [3]																	0	4	1			
IS version, cable outlet, field housing																	0	0	0			
customer																	9	9	9			consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

[2] According to EN 837, the pressure port and the complement, at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of R_P > 260 N/mm² in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!

[3] not possible in combination with IS-version, compact field housing and cable outlet with PVC cable

DMP 335

Industrial Pressure Transmitter

Welded, Dry
Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 16 bar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 10 V
others on request

Special characteristics

- suitable for oxygen applications
- insensitive to pressure peaks
- high overpressure capability

Optional versions

- IS-version
  Ex ia = intrinsically safe
  for gases and dusts
- customer specific versions

The industrial pressure transmitter DMP 335 is based on a welded stainless steel pressure sensor without fluid.

This characteristic has a special advantage with applications where silicone oil or elastomeric seals cannot be used.

Preferred areas of use are

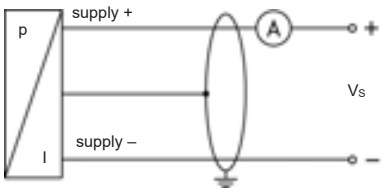
- Medical technology
- Plant and machine engineering
- Commercial vehicles and mobile hydraulics
- Refrigeration
- Oxygen application

Input pressure range										
Nominal pressure gauge	[bar]	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	32	50	80	120	200	320	500	800	1200
Burst pressure ≥	[bar]	80	125	200	300	500	800	1400	2000	3000
Vacuum resistance		unlimited								

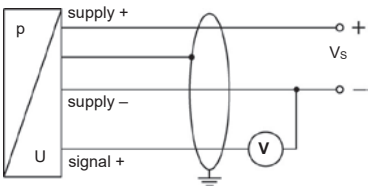
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	
Option 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [1]	≤ ± 0.5 % FSO	
Permissible load	current 2-wire: voltage 3-wire:	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ $R_{min} = 10\ k\Omega$
Influence effects	supply: load:	0.05 % FSO / 10 V 0.05 % FSO / kΩ
Long term stability	≤ ± 0.2 % FSO / year at reference conditions	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Thermal error	± 0.3 % FSO / 10 K	
In compensated range	0 … 70 °C	
Permissible temperatures		
Medium	-40 ... 125 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	20 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	500 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4571 (316 Ti)	
Housing	stainless steel 1.4404 (316 L)	
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	none (welded)	
Diaphragm	stainless steel 1.4542 (17-4PH)	
Media wetted parts	pressure port, diaphragm	
Explosion protection (only for 4 … 20 mA / 2-wire)		
Approvals DX19-DMP 335	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da	
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing	
Permissible temperatures for environment	in zone 0: in zone 1 or higher:	-20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar -40/-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: cable inductance:	signal line/shield also signal line/signal line: 160 pF/m signal line/shield also signal line/signal line: 1 µH/m
Miscellaneous		
Current consumption	signal output current: signal output voltage:	max. 25 mA max. 7 mA
Weight	approx. 140 g	
Installation position	any	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [2]	
ATEX Directive	2014/34/EU	
[2] This directive is only valid for devices with maximum permissible overpressure > 200 bar.		

Wiring diagrams

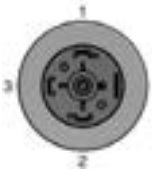
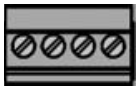
2-wire-system (current)



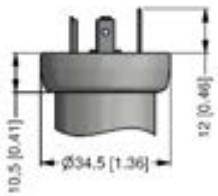
3-wire-system (voltage)



Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
				 Vs+ Vs- S+ GND	
Supply +	1	3	1	V_S+	WH (white)
Supply –	2	4	2	V_S-	BN (brown)
Signal + (only for 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin	5	4	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



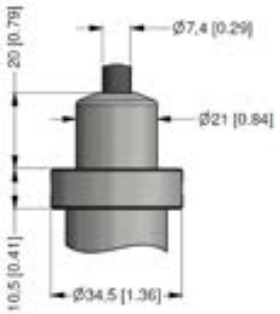
ISO 4400
(IP 65)

Binder series 723, 5-pin
(IP 67)

M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)

cable outlet
with PVC-cable (IP 67) [3]

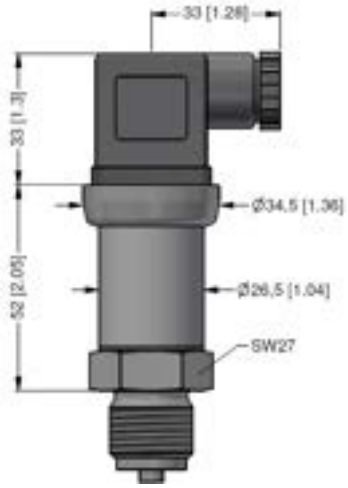


cable outlet, cable with
ventilation tube (IP 68) [4]

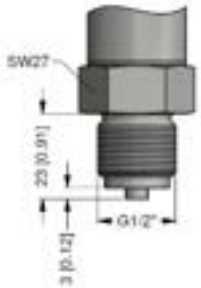
⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

[3] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)*
[4] *different cable types and lengths available, permissible temperature depends on kind of cable*

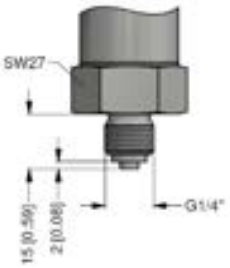
Dimensions (mm / in)



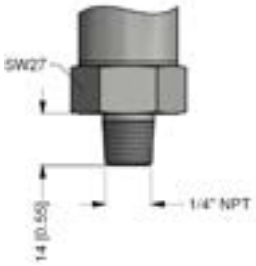
Mechanical connections (dimensions mm / in)



G1/2" EN 837



G1/4" EN 837



1/4" NPT

⇨ metric threads and other versions on request

Accessories

Plug-on Display PA 430

Functional range

- ► free scalable display
- ► switch mode, hysteresis,
  parameterizable deceleration of the contacts
- ► display 330 ° rotatable
- ► connector 300 ° rotatable
- ► no external power supply necessary

Product characteristics

- ► plug-on display for pressure transmitter with output signal:
  4 … 20 mA / 2-wire or 0 … 10 V / 3-wire
- ► 4-digit LED display

Optional versions

- ► IS-version
- ► 1 or 2 programmable contacts

Ordering code DMP 335

DMP 335 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

	Pressure	Input	Output	Accuracy	Electrical connection	Mechanical connection	Seal	Special version	
Pressure									
gauge	2 1 0								
Input [bar]									
16		1 6 0 2							
25		2 5 0 2							
40		4 0 0 2							
60		6 0 0 2							
100		1 0 0 3							
160		1 6 0 3							
250		2 5 0 3							
400		4 0 0 3							
600		6 0 0 3							
customer		9 9 9 9							consult
Output									
4 … 20 mA / 2-wire			1						
0 … 10 V / 3-wire			3						
intrinsic safety 4 … 20 mA / 2-wire			E						
customer			9						consult
Accuracy									
0.5 % FSO				5					
customer				9					consult
Electrical connection									
male and female plug ISO 4400					1 0 0				
male plug Binder series 723 (5-pin)					2 0 0				
cable outlet with PVC cable (IP67) [1]					T A 0				
cable outlet, cable with ventilation tube (IP68) [2]					T R 0				
male plug M12x1 (4-pin) / metal					M 1 0				
compact field housing stainless steel 1.4301 (304)					8 5 0				
customer					9 9 9				consult
Mechanical connection									
G1/2" EN 837						2 0 0			
G1/4" EN 837						4 0 0			
1/4" NPT						N 4 0			
customer						9 9 9			consult
Seal									
without (welded version)							2		
customer							9		consult
Special version									
standard								0 0 0	
customer								9 9 9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 … 70 °C)
[2] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

DMP 336

Industrial Pressure Transmitter for Technical Gases and H_2 Applications

Welded, Dry
Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 16 bar up to 0 ... 1000 bar

Output signal

2-wire: 4 ... 20 mA
others on request

Special characteristics

- media wetted parts of special stainless steel
- insensitive to pressure peaks
- high overpressure capability
- oil and grease free according to ISO 15001 (e.g. for oxygen applications)

Optional version

- IS-version zone 0
  Ex ia = intrinsically safe for gases and dusts
- SIL 2-according to IEC 61508 / IEC 61511

The industrial pressure transmitter DMP 336 was especially developed for hydrogen applications and can also be used with other technical gases (e.g. oxygen).

This is achieved by using an alloy based on 316L which prevents hydrogen embrittlement of the media-wetted parts. Level of hydrocarbon and particle contamination are significantly reduced by special treatment during production and cleaning.

An IS- version is optionally available for explosion-protected applications zone 0 / 20.

Preferred areas of use are

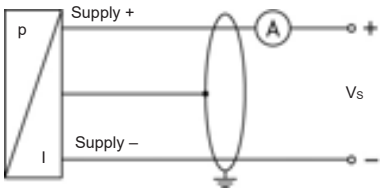
- Technical gases
- Hydrogen
- Fuel cell
- Medical technology

Input pressure range											
Nominal pressure gauge	[bar]	16	25	40	60	100	160	250	400	600	1000
Overpressure	[bar]	50	50	80	120	200	320	500	800	1200	1500
Burst pressure ≥	[bar]	125	125	200	300	500	800	1250	2000	2000	3000 [1]
Vacuum resistance		unlimited									
[1] UL confirmed max. burst pressure 2420 bar											

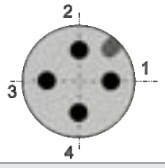
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 … 32 V_{DC}
Option IS-protection	2-wire: 4 … 20 mA / V_S = 10 ... 28 V_{DC}
Performance	
Accuracy [2]	≤ ± 0.5 % FSO
Permissible load	R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.2 % FSO / year at reference conditions
Response time	≤ 10 msec
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (offset and span)	
Thermal error	± 0.2 % FSO / 10 K
in compensated range	-25 … 85 °C
Permissible temperatures	
Permissible temperatures	medium: -40 ... 125 °C electronics / environment: -40 ... 100 °C storage: -40 ... 85 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	20 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Materials	
Housing	stainless steel 316L (1.4404)
Pressure port, sensor, diaphragm	stainless steel 316L (1.4435)
Seals	none (welded)
Media wetted parts	pressure port, sensor, diaphragm
Explosion protection	
Approvals DX19-DMP 336	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 135°C Da
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Miscellaneous	
Option SIL2 version	according to IEC 61508 / IEC 61511
Current consumption	max. 25 mA
Weight	approx. 140 g
Installation position	any
Operational life	p_N ≤ 600 bar: 100 million load cycles p_N > 600 bar: 10 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [3]
ATEX Directive	2014/34/EU
[3] This directive is only valid for devices with maximum permissible overpressure > 200 bar.	
Purity regarding residual particles / greases	
Oil and grease free version	residual particles: no particles > 100 µm (based on 10 dm²) residual greases: residual grease content < 0.2 mg/dm²

Wiring diagram

2-wire-system (current)

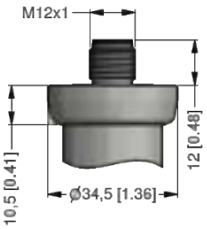


Pin configuration

Electrical connections	M12x1 / metal (4-pin)		cable colours (IEC 60757)
supply + supply –	1 2		WH (white) BN (brown)
Shield	4		GNYE (green-yellow)

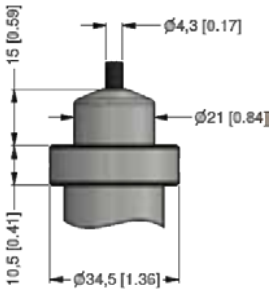
Electrical connections (dimensions mm / in)

standard



M12x1 4-pin (IP 67)

option

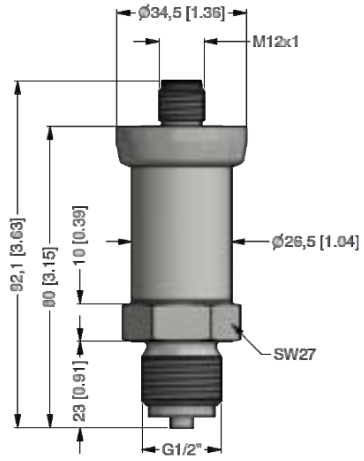


cable outlet with PVC cable (IP 67) [4]

[4] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

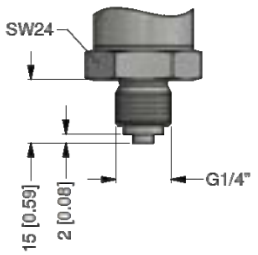
Mechanical connections (dimensions mm / in)

standard

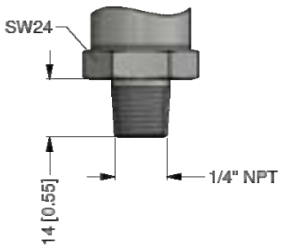


G1/2" EN 837

options



G1/4" EN 837
p_N ≤ 600 bar



1/4" NPT

⇨ **metric threads and different types on demand**

Ordering code DMP 336

DMP 336 □□□-□□□□-□-□-□□□-□□□-□-□□□

Pressure			
gauge	2 1 5		
Input	[bar]		
	16	1 6 0 2	
	25	2 5 0 2	
	40	4 0 0 2	
	60	6 0 0 2	
	100	1 0 0 3	
	160	1 6 0 3	
	250	2 5 0 3	
	400	4 0 0 3	
	600	6 0 0 3	
	1000	1 0 0 4	
	customer	9 9 9 9	consult
Output			
	4 … 20 mA / 2-wire	1	
	intrinsic safety 4 … 20 mA / 2-wire	E	
	SIL2: 4 … 20 mA / 2-wire	1S	
	SIL2: intrinsic safety 4 … 20 mA / 2-wire	ES	
	customer	9	consult
Accuracy			
	0.5 % FSO	5	
	customer	9	consult
Electrical connection			
	male plug M12x1 (4-pin) / metal	M 1 0	
	cable outlet with PVC cable (IP67) [1]	T A 0	
	customer	9 9 9	consult
Mechanical connection			
	G1/2" EN 837	2 0 0	
p_N ≤ 600 bar	G1/4" EN 837	4 0 0	
	1/4" NPT	N 4 0	
	customer	9 9 9	consult
Seal			
	without (welded version)	2	
	customer	9	consult
Special version			
	oil-and grease free -oxygen	0 0 7	
	customer	9 9 9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

DMP 343

Industrial Pressure Transmitter

Without Media Isolation

accuracy according to IEC 60770:
0.35 % FSO

Nominal pressure

from 0 ... 10 mbar up to 0 ... 1000 mbar

Product characteristics

- excellent linearity
- small thermal effect
- excellent long term stability

Optional versions

- IS-version:
  Ex ia = intrinsically safe for gases and dusts
- different electrical and mechanical connections
- customer specific versions

The pressure transmitter DMP 343 has been especially designed for the measurement of very low gauge pressure and for vacuum applications. Permissible media are non-aggressive, dry gases and non-aggressive, low viscos oils.

The DMP 343 features excellent thermal behaviour and outstanding long term stability. A variety of standard output signals as well as mechanical and electrical connections make the DMP 343 covering a wide field of applications.

Preferred areas of use are

- Plant and machine engineering
- Heating and air conditioning

Input pressure range													
Nominal pressure gauge	[mbar]	-1000 … 0	10	16	25	40	60	100	160	250	400	600	1000
Overpressure	[bar]	3	0.2	0.2	0.2	0.5	0.5	1	2	3	3	3	3
Permissible vacuum	[bar]	-1	-0.2			-0.5		-1					
Burst pressure	[bar]	5	0.3	0.3	0.3	0.75	0.75	1.5	3	5	5	5	5

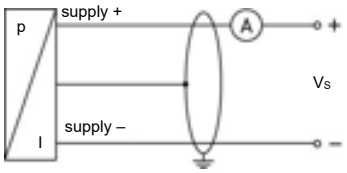
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [1]	standard: ≤ ± 0.35 % FSO nominal pressure ≤ 100 mbar: ≤ ± 0.50 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S – V_{S\,min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 240 Ω voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec
Long term stability	≤ ± 0.3 % FSO / year at reference conditions, for p_N < 100 mbar ≤ ± 0.1 % FSO / year at reference conditions, for p_N ≥ 100 mbar
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	

Thermal effects (offset and span)					
Nominal pressure p_N	[mbar]	-1000 ... 0	≤ 100	≤ 400	> 400
Tolerance band	[% FSO]	≤ ± 0.75	≤ ± 1.5	≤ ± 1	≤ ± 0.75
in compensated range	[°C]	-20 … 85	0 … 50	0 … 70	-20 … 85

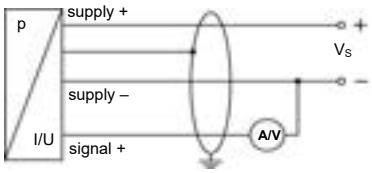
Permissible temperatures	
Medium	-40 ... 125 °C
Electronics / environment	-40 ... 85 °C
Storage	-40 ... 100 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Materials	
Pressure port	stainless steel 1.4404 (316L)
Housing	stainless steel 1.4404 (316L)
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seals	FKM
Sensor	stainless steel 1.4404 (316L), silicon, epoxy or RTV, mineral glass
Media wetted parts	pressure port, seals, sensor
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approvals DX19-DMP 343	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF opposite the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Miscellaneous	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 140 g
Installation position	any
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagrams

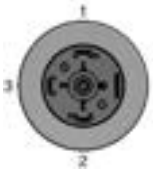
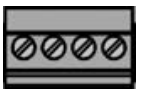
2-wire-system (current)



3-wire-system (current / voltage)



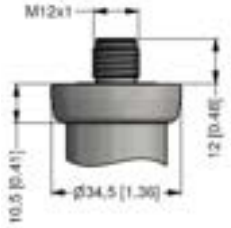
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
				 V_{S+} V_{S-} S+ GND	
Supply +	1	3	1	V_S+	WH (white)
Supply –	2	4	2	V_S-	BN (brown)
Signal + (only for 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin ⏚	5	4	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)

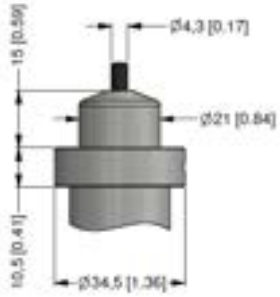
ISO 4400
(IP 65)

Binder series 723, 5-pin
(IP 67)

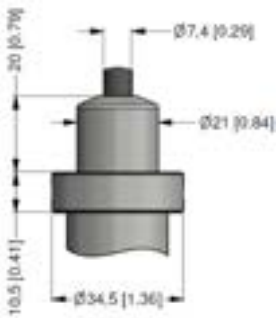


M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)



cable outlet
with PVC-cable (IP 67) [2]



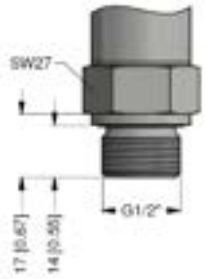
cable outlet, cable with
ventilation tube (IP 68) [3]

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

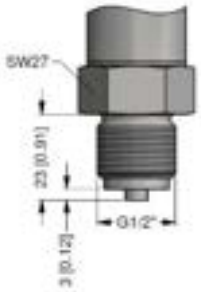
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[3] different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

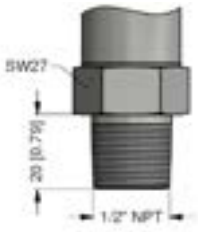
Mechanical connections (dimensions mm / in)



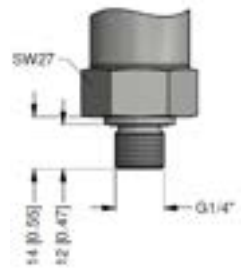
G1/2" DIN 3852



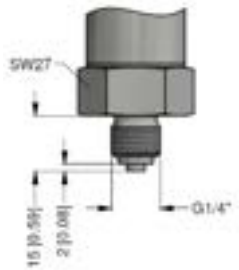
G1/2" EN 837



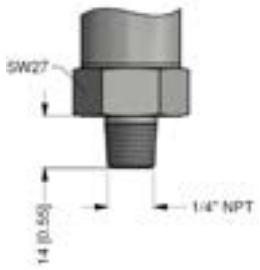
1/2" NPT



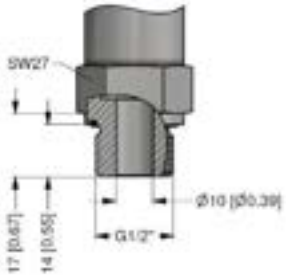
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" DIN 3852
open port

⇨ **metric threads and other versions on request**

Ordering code DMP 343

DMP 343 □□□-□□□□-□-□-□□□-□□□-□-□□□

Pressure																						
gauge	1	0	0																			
Input	**[mbar]**																					
10				0	1	0	0															
16				0	1	6	0															
25				0	2	5	0															
40				0	4	0	0															
60				0	6	0	0															
100				1	0	0	0															
160				1	6	0	0															
250				2	5	0	0															
400				4	0	0	0															
600				6	0	0	0															
1000				1	0	0	1															
-1000 … 0				X	1	0	2															
customer				9	9	9	9															consult
Output																						
4 … 20 mA / 2-wire								1														
0 … 20 mA / 3-wire								2														
0 … 10 V / 3-wire								3														
intrinsic safety 4 … 20 mA / 2-wire								E														
customer								9														consult
Accuracy																						
standard for p_N > 100 mbar: 0.35 % FSO									3													
standard for p_N ≤ 100 mbar: 0.5 % FSO									5													
Electrical connection																						
male and female plug ISO 4400										1	0	0										
male plug Binder series 723 (5-pin)										2	0	0										
cable outlet with PVC cable (IP67) [1]										T	A	0										
cable outlet, cable with ventilation tube (IP68) [2]										T	R	0										
male plug M12x1 (4-pin) / metal										M	1	0										
compact field housing stainless steel 1.4301 (304)										8	5	0										
customer										9	9	9										consult
Mechanical connection																						
G1/2" DIN 3852													1	0	0							
G1/2" EN 837													2	0	0							
G1/4" DIN 3852													3	0	0							
G1/4" EN 837													4	0	0							
G1/2" DIN 3852 open pressure port													H	0	0							
1/2" NPT													N	0	0							
1/4" NPT													N	4	0							
customer [3]													9	9	9							consult
Seals																						
FKM																1						
customer																9						consult
Special version																						
standard																	0	0	0			
customer																	9	9	9			consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

[2] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

[3] metric threads and others on request

DMP 457

Pressure Transmitter for Shipbuilding and Offshore

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- LR-certificate (Lloyd´s Register)
- DNV-approval (Det Norske Veritas)
- ABS-certificate (American Bureau of Shipping)
- CCS-certificate (China Classification Society)
- flush pressure port G 1/2" from 100 mbar
- excellent thermal behaviour

Optional versions

- IS-version Ex ia = intrinsically safe for gases and dusts
- welded pressure port

The pressure transmitter DMP 457 has been especially designed for rough conditions occurring especially in shipbuilding and offshore applications. All gaseous and liquid media, which are compatible with stainless steel 1.4404 (316L) respectively can be used.

Sensor element is a piezoresistive stainless steel sensor with high accuracy and excellent long-term stability. In order to meet the special requirements for shipbuilding and offshore applications extensive tests had to be passed to get the Lloyd´s Register (LR), Det Norske Veritas (DNV) and China Classification Society (CCS) approvals.

Preferred areas of use are

Diesel engines, drives
Compressors, pumps
Boiler
Hydraulic and pneumatic control systems

Fuel and oil

Input pressure range [1]											
Nominal pressure gauge [bar]	-1 ... 0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute [bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Level gauge / abs. [mH_2O]	-	1	1.6	2.5	4	6	10	16	25	40	60
Overpressure [bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥ [bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge [bar]	10	16	25	40	60	100	160	250	400	600
Nominal pressure abs. [bar]	10	16	25	40	60	100	160	250	400	600
Level gauge / abs. [mH_2O]	100	160	250	400	-	-	-	-	-	-
Overpressure [bar]	40	80	80	105	210	600	600	1000	1000	1000
Burst pressure ≥ [bar]	50	120	120	210	420	1000	1000	1250	-	-
Vacuum resistance	p_N ≥ 1 bar: unlimited vacuum resistance					p_N < 1 bar: on request				

[1] from 60 bar: measurement starts with ambient pressure

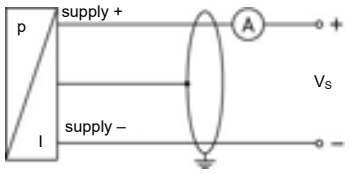
Output signal / Supply			
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}		
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}		
Performance			
Accuracy [2]	standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO option: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO		
Permissible load	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$		
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Long term stability	≤ ± 0.1 % FSO / year by reference conditions		
Response time	< 10 msec		
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal effects (offset and span)			
Nominal pressure p_N [bar]	-1 ... 0	< 0.4	≥ 0.40
Tolerance band [% FSO]	≤ ± 0.75	≤ ± 1	≤ ± 0.75
in compensated range [°C]	-20 ... 85	0 ... 70	-20 ... 85
Permissible temperatures			
Medium	-40 ... 125°C		
Electronics / environment	-40 ... 85°C		
Storage	-40 ... 100°C		
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to - EN 61326 - DNV (Det Norske Veritas)		
Mechanical stability			
Vibration	4 g (according to DNV: class B, curve 2 / basis: IEC 60068-2-6)		
Materials			
Pressure port	stainless steel 1.4404 (316L)		
Housing	standard: stainless steel 1.4404 (316L) option field housing: stainless steel 1.4404 (316L), with cable gland		
Cable sheath	TPE -U	(flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)	
Seals (media wetted)	standard: FKM option: welded version [3]	others on request	
Diaphragm	stainless steel 1.4435 (316L)		
Media wetted parts	pressure port, seals, diaphragm		
[3] welded version only with pressure ports according to EN 837 and NPT; possible for nominal pressure ranges p_N ≤ 40 bar			
Category of the environment			
Lloyd´s Register (LR)	EMV1, EMV2, EMV3, EMV4		number of certificate: 13/20055
Det Norske Veritas (DNV)	temperature: D humidity: B vibration: B electromagnetic compatibility: B enclosure: D		number of certificate: TAA00001GR

Explosion protection	
Approvals DX19-DMP 457	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, L_i ≈ 0 µH with field housing: C_i = 105 nF with cable outlet: C_i = 84.7 nF with ISO 4400: C_i = 62.2 nF the supply connections have an inner capacity of max. 90 nF (140 nF with field housing) to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m
Miscellaneous	
Current consumption	max. 25 mA
Weight	approx. 140 g (with ISO 4400)
Installation position	any [4]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [5]
ATEX Directive	2014/34/EU

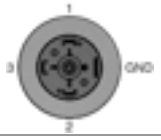
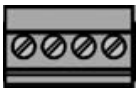
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar.
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram

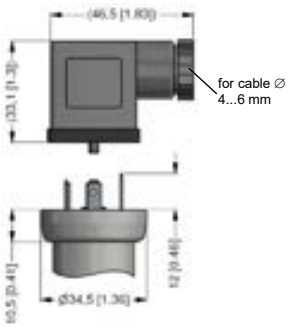
2-wire-system (current)



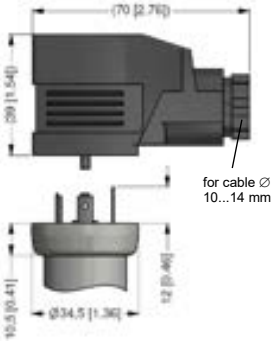
Pin configuration

Electrical connection	ISO 4400	field housing (clamp section: 2.5 mm²)	cable colours (IEC 60757)
		 V_{S+} V_{S-} GND	
Supply +	1	VS+	WH (white)
Supply –	2	VS-	BN (brown)
Shield	ground pin	GND	GNYE (green-yellow)

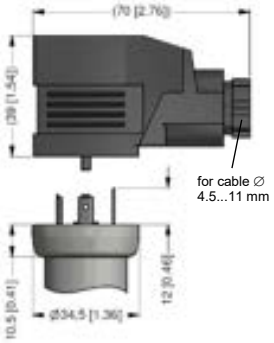
Electrical connections [6] (dimensions mm / in)



ISO 4400 - **Code G10**
(IP 65)



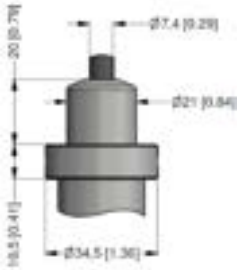
ISO 4400 - **Code G00**
(IP 65)



ISO 4400 - **Code G01**
(IP 65)

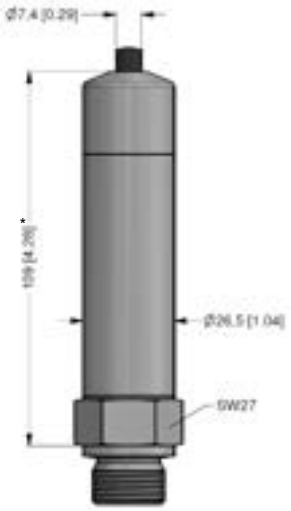
[6] Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.

Electrical connections [6] (dimensions mm / in)



cable outlet [7, 8]
(IP 68)

universal field housing
(IP 67)



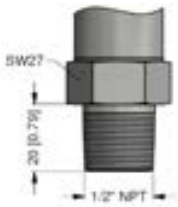
submersible version [8]
(IP 68)

[6] Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.
[7] tested at 4 bar or 40 mH_2O for 24 hours
[8] shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed); different lengths available
** total lengths increase by 9 mm for $p_N \geq 100$ bar with the optional accuracy ≤ ± 0.25 % FSO*

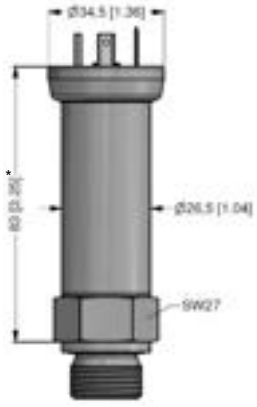
Mechanical connections (dimensions mm / in)

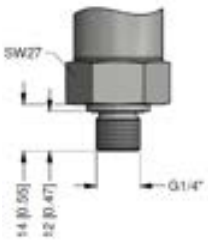
G1/2" DIN 3852

G1/2" EN 837

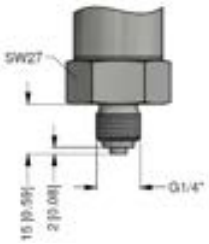


1/2" NPT

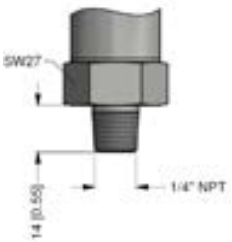




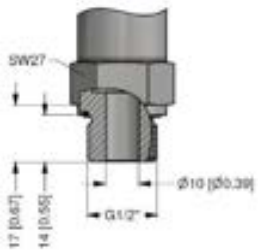
G1/4" DIN 3852



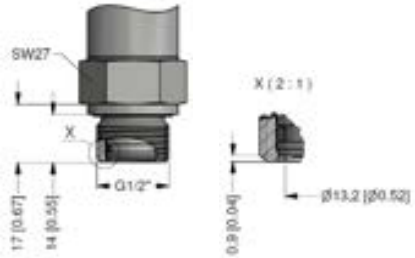
G1/4" EN 837



1/4" NPT



G1/2" open port DIN 3852
($p_N \leq 40$ bar)



G1/2" flush DIN 3852
($p_N \leq 40$ bar)

** total lengths increase by 9 mm for $p_N \geq 100$ bar with the optional accuracy ≤ ± 0.25 % FSO*

Ordering code DMP 457

DMP 457 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

		Code	
Pressure			
in bar, gauge [1]		6 0 0	
in bar, absolute [2]		6 0 1	
in mH_2O, gauge [1]		6 0 2	
in mH_2O, absolute [2]		6 0 3	
Input	**[mH_2O]**	**[bar]**	
1.0	0.10 [2]	1 0 0 0	
1.6	0.16 [2]	1 6 0 0	
2.5	0.25 [2]	2 5 0 0	
4.0	0.40	4 0 0 0	
6.0	0.60	6 0 0 0	
10	1.0	1 0 0 1	
16	1.6	1 6 0 1	
25	2.5	2 5 0 1	
40	4.0	4 0 0 1	
60	6.0	6 0 0 1	
100	10	1 0 0 2	
160	16	1 6 0 2	
250	25	2 5 0 2	
400	40	4 0 0 2	
	60	6 0 0 2	
	100	1 0 0 3	
	160	1 6 0 3	
	250	2 5 0 3	
	400	4 0 0 3	
	600	6 0 0 3	
	-1 … 0	X 1 0 2	
	customer	9 9 9 9	consult
Output			
4 … 20 mA / 2-wire		1	
intrinsic safety 4 … 20 mA / 2-wire		E	
customer		9	consult
Accuracy			
standard for $p_N \geq 0{,}4$ bar:	0.35 % FSO	3	
standard for $p_N < 0{,}4$ bar:	0.50 % FSO	5	
option for $p_N \geq 0{,}4$ bar:	0.25 % FSO	2	
	customer	9	consult
Electrical connection			
male and female plug ISO 4400 (for cable Ø 4...6 mm)		G 1 0	
male and female plug ISO 4400 GL [3] (for cable Ø 10...14 mm)		G 0 0	
male and female plug ISO 4400 GL [3] (for cable Ø 4,5...11 mm)		G 0 1	
cable outlet (TPE-U-cable) [4]		T R 3	
field housing stainless steel (316L)		8 8 0	
submersible version (1.4404 / 316L) with TPE-U-cable [4]		T T 3	
customer		9 9 9	consult
Mechanical connection			
G1/2" DIN 3852		1 0 0	
G1/2" EN 837		2 0 0	
G1/4" DIN 3852		3 0 0	
G1/4" EN 837		4 0 0	
G 1/2" DIN 3852 with flush sensor [5]		F 0 0	
G1/2" DIN 3852 open pressure port [5]		H 0 0	
1/2" NPT		N 0 0	
1/4" NPT		N 4 0	
customer		9 9 9	consult
Seal			
FKM		1	
without (welded version) [6]		2	
customer		9	consult
Special version			
standard		0 0 0	
customer		9 9 9	consult

[1] from 60 bar: measurement starts with ambient pressure
[2] absolute pressure possible from 0.4 bar
[3] cable socket is GL-approbated
[4] shielded TPE-U-cable with ventilation tube available in different lengths
[5] only for $p_N \leq 40$ bar possible
[6] welded version only with pressure ports according to EN 837 and NPT; possible with pressure ranges $p_N \leq 40$ bar

DMK 331

Industrial Pressure Transmitter

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 20 mA / 0 … 10 V
others on request

Special characteristics

- pressure port G 1/2" flush for pasty and polluted media
- pressure port G 1/2" open port PVDF for aggressive media
- oxygen application

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- SIL 2
  according to IEC 61508 / IEC 61511
- customer specific versions

The industrial pressure transmitter DMK 331 with ceramic sensor has been especially designed for pasty, polluted or aggressive media and for oxygen applications at low pressure range.

As with all industrial pressure transmitters made by BD|SENSORS, you may choose between various electrical and mechanical connections also on DMK 331.

Preferred areas of use are

- Plant and machine engineering
- Energy industry
- Environmental engineering (water - sewage - recycling)
- Medical technology

Input pressure range [1]																		
Nominal pressure gauge [bar]	-1…0	0.4	0.6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure absolute [bar]	-	-	0.6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600
Overpressure [bar]	4	1	2	2	4	4	10	10	20	40	40	100	100	200	400	400	600	800
Burst pressure ≥ [bar]	7	2	4	4	5	7,5	12	18	30	50	75	120	180	300	500	750	1000	1100
Vacuum resistance	p_N ≥ 1 bar: unlimited vacuum resistance										p_N < 1 bar: on request							
[1] PVDF pressure port possible for nominal pressure ranges up to 60 bar																		

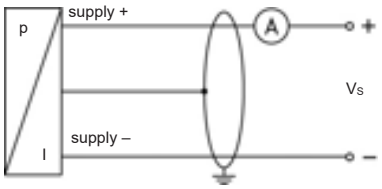
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	SIL-version: V_S = 14 ... 28 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 ... 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [2]	≤ ± 0.5 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 240 Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.3 % FSO / year at reference conditions	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Thermal error	≤ ± 0.2 % FSO / 10 K	
in compensated range	0 ... 85 °C	
Permissible temperatures		
Medium [3]	-40 ... 125 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	
[3] for pressure port in PVDF the medium temperature is -30 … 60 °C		
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	500 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	standard: stainless steel 1.4404 (316 L) optional for G1/2" open port (for p_N ≤ 60 bar): PVDF	others on request
Housing	stainless steel 1.4404 (316 L)	
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	standard: FKM option: EPDM (for p_N ≤ 160 bar)	others on request
Diaphragm	ceramic Al_2O_3 96 %	
Media wetted parts	pressure port, seals, diaphragm	
Explosion protection (only for 4 … 20 mA / 2-wire)		
Approval DX19-DMK 331	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X stainless steel pressure port: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da plastic pressure port: zone 1: II 2G Ex ia IIC T4 Gb zone 21: II 2D Ex ia IIIC T85°C Db	
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m	

Miscellaneous		
Option SIL2 version [4]	according to IEC 61508 / IEC 61511	
Option oxygen application	for $p_N \leq 25$ bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C	
Current consumption	signal output current: max. 25 mA	signal output voltage: max. 7 mA
Weight	approx. 140 g	
Installation position	any	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A) [5]
ATEX Directive	2014/34/EU	

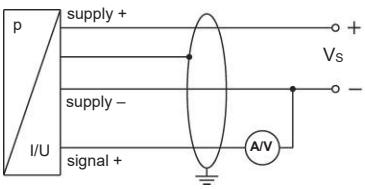
[4] only for 4 … 20 mA / 2-wire
[5] this directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

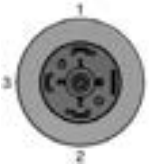
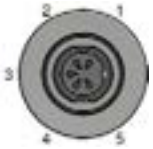
2-wire-system (current)



3-wire-system (current / voltage)

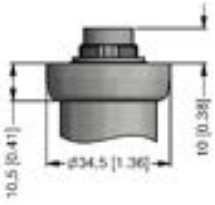


Pin configuration

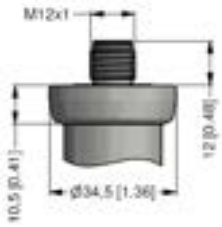
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colour (IEC 60757)
				 V_{S+} V_{S-} S+ GND	
Supply +	1	3	1	V_S+	WH (white)
Supply –	2	4	2	V_S-	BN (brown)
Signal + (only for 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin ⊕	5	4	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)

ISO 4400
(IP 65)

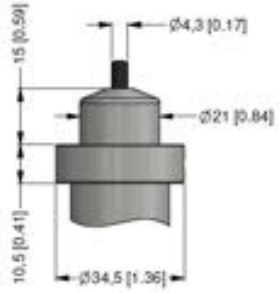


Binder Serie 723, 5-pin
(IP 67)

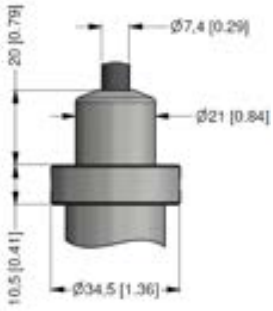


M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)



cable outlet
with PVC-cable (IP 67) [6]



cable outlet, cable with
ventilation tube (IP 68) [7]

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

[6] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[7] different cable types and lengths available, permissible temperature depends on kind of cable

Ordering code DMK 331

DMK 331 □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure																							
gauge	2	5	0																				
absolute	2	5	1																				
Input	**[bar]**																						
0.4				4	0	0	0																
0.6				6	0	0	0																
1.0				1	0	0	1																
1.6				1	6	0	1																
2.5				2	5	0	1																
4.0				4	0	0	1																
6.0				6	0	0	1																
10				1	0	0	2																
16				1	6	0	2																
25				2	5	0	2																
40				4	0	0	2																
60				6	0	0	2																
100				1	0	0	3																
160				1	6	0	3																
250				2	5	0	3																
400				4	0	0	3																
600				6	0	0	3																
-1 … 0				X	1	0	2																
customer				9	9	9	9																consult
Output																							
4 … 20 mA / 2-wire								1															
0 … 20 mA / 3-wire								2															
0 … 10 V / 3-wire								3															
intrinsic safety 4 … 20 mA / 2-wire								E															
SIL2 4 … 20 mA / 2-wire								1S															
SIL2 with intrinsic safety 4 … 20 mA / 2-wire								ES															
customer								9															consult
Accuracy																							
0.5 % FSO									5														
customer									9														consult
Electrical connection																							
male and female plug ISO 4400										1	0	0											
male plug Binder series 723 (5-pin)										2	0	0											
cable outlet with PVC cable (IP67) [1]										T	A	0											
cable outlet, cable with ventilation tube (IP68) [2]										T	R	0											
male plug M12x1 (4-pin) / metal										M	1	0											
compact field housing stainless steel 1.4301 (304)										8	5	0											
customer										9	9	9											consult
Mechanical connection [3]																							
G1/2" DIN 3852													1	0	0								
G1/2" EN 837													2	0	0								
G1/4" DIN 3852													3	0	0								
G1/4" EN 837													4	0	0								
G1/2" DIN 3852 with semi-flush sensor [4]													F	0	0								
G1/2" DIN 3852 open pressure port													H	0	0								
1/2" NPT													N	0	0								
1/4" NPT													N	4	0								
customer													9	9	9								consult
Seal																							
FKM																1							
EPDM [5]																3							
customer																9							consult
Pressure port																							
stainless steel 1.4404 (316L)																	1						
PVDF [6]																	B						
customer																	9						consult
Diaphragm																							
ceramics Al_2O_3 96 %																		2					
customer																		9					consult
Special version																							
standard																			0	0	0		
oxygen application [7]																			0	0	7		
customer																			9	9	9		consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[2] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[3] metric threads and others on request
[4] possible for nominal pressure ranges $p_N \leq 60$ bar; absolute pressure ranges on request
[5] possible for nominal pressure ranges $p_N \leq 160$ bar
[6] PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar); permissible medium temperature: -30 … 60 °C
[7] oxygen application with FKM-seal up to 25 bar possible

DMK 351

Pressure Transmitter

Ceramic Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

Output signal

2-wire: 4 ... 20 mA
3-wire: 0 … 10 V
others on request

Product characteristics

- high media resistance

Optional versions

- IS-version (temperature class T4)
  Ex ia = intrinsically safe for
  gases and dusts
- IS-version (temperature class T6)
- diaphragm 99.9 % Al_2O_3
- customer specific versions

The pressure transmitter DMK 351 has been specially designed for applications in plant and machine engineering as well as laboratory techniques and is suitable for measuring small system pressure and filling heights.

By using our own-developed capacitive sensor, optionally available as Al_2O_3 99.9%, the DMK 351 offers a high overpressure resistance and a high temperature and media resistance. The pressure transmitter is available in an intrinsically safe version for a use in explosive environments.

Preferred areas of use are

- Plant and machine engineering
- Laboratory techniques

Preferred used for

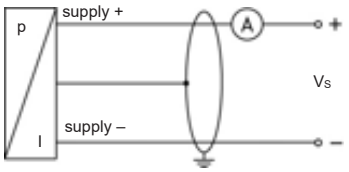
- Fuel and oil
- Water

Pressure ranges																
Nominal pressure [1]	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH_2O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0.2		-0.3		-0.5				-1						
[1] available in gauge and absolute; nominal pressure ranges absolute from 1 bar and not in combination with output 0 … 10 V / 3-wire																

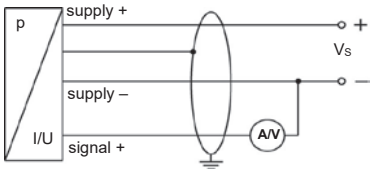
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	
Option 3-wire	3-wire: 0 ... 10 V / V_S =12.5 ... 32 V_{DC}	
Performance		
Accuracy [2]	standard: ≤ ± 0.35 % FSO option for p_N ≥ 0.6 bar: ≤ ± 0.25 % FSO	
Permissible load	current 2-wire: R_{max} = [(V_S – V_{Smin}) / 0.02 A] Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Turn-on time	700 msec	
Mean measuring rate	5/sec	
Response time	mean response time: < 200 msec	max. response time: 380 msec
[2] accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Tolerance band	≤ ± 1 % FSO	
in compensated range	-20 … 80 °C	
Permissible temperatures		
Medium [3]	-40 ... 125 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	
[3] for pressure port in PVDF the operation medium temperature is -30 … 60 °C and in PP-HT 0 … 60 °C		
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	standard: stainless steel 1.4404 (316L)	option [4]: PP-HT, PVDF
Housing	standard: stainless steel 1.4404 (316L)	option [4]: PP-HT, PVDF
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seal	standard: FKM	option: EPDM
Diaphragm	standard: ceramics Al_2O_3 96 %	option: ceramics Al_2O_3 99.9 %
Media wetted parts	pressure port, seals, diaphragm	
[4] only with mech. connection G1/2" DIN 3852 open port, bore 12 mm, p_N ≤ 10 bar and without explosion protection possible		
Explosion protection (only for 4 … 20 mA / 2-wire with stainless steel version)		
Approval DX 14-DMK 351	IBExU 05 ATEX 1070 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T110 °C Da	option: II 1G Ex ia IIC T6 Ga
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i = 14 nF, L_i ≈ 0 µH, C_{gnd} = 27 nF	
Max. permissible temperature for environment	in zone 0: -20 ... 60 °C for p_{atm} 0.8 bar up to 1.1 bar in zone 1 and higher: -25 ... 70 °C for T6: -25 … 60 °C	
Connecting cables (by factory)	cable capacity: signal line / shield also signal line / signal line: 220 pF/m cable inductance: signal line / shield also signal line / signal line: 1.5 µH/m	
Miscellaneous		
Installation position	any	
Current consumption	signal output current: max. 21 mA signal output voltage: max. 5 mA	
Weight	min. 200 g	
Operational life	100 million load cycles	
CE-conformity	EMC-directive: 2014/30/EU	
ATEX Directive	2014/34/EU	

Wiring diagram

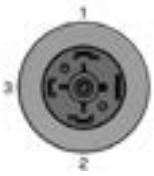
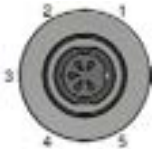
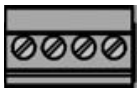
2-wire-system (current)



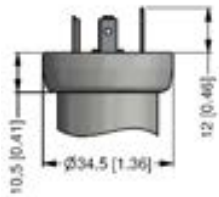
3-wire-system (current / voltage)



Pin configuration

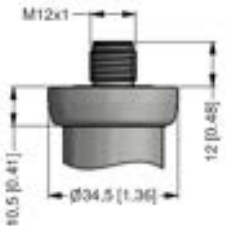
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
					
				V_{S+} V_{S-} S+ GND	
Supply +	1	3	1	V_S+	WH (white)
Supply –	2	4	2	V_S-	BN (brown)
Signal + (only for 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin ⊕	5	4	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



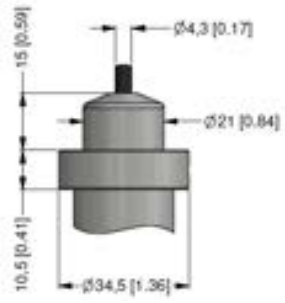
ISO 4400
(IP 65)

Binder series 723, 5-pin
(IP 67)

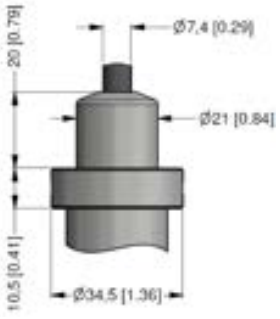


M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)



cable outlet
with PVC-cable (IP 67) [5]

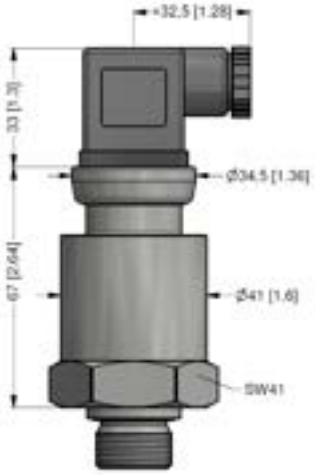


cable outlet, cable with
ventilation tube (IP 68) [6]

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

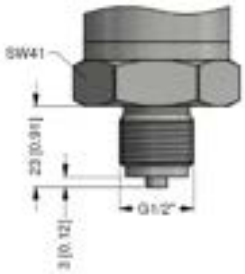
[5] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[6] different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)



Mechanical connection (dimensions mm / in)

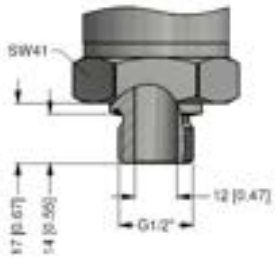
G1/2" DIN 3852



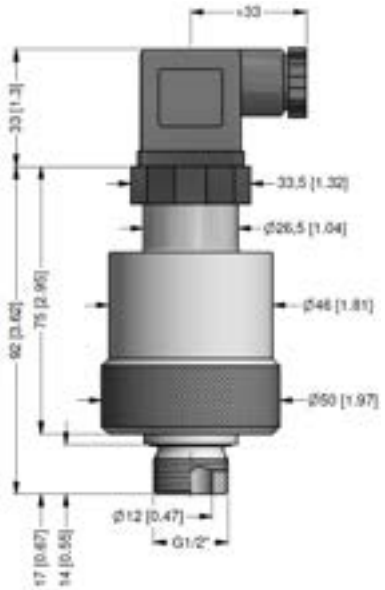
G1/2" EN 837

1/2" NPT

G1/2" DIN 3852 open port, bore 12 mm:



housing and pressure port in stainless steel



housing and pressure port in PP-HT / PVDF
for $p_N \leq 10$ bar, without explosion protection

Ordering code DMK 351

DMK 351 □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure	Code	
in bar, gauge	2 9 0	
in bar, absolute [1]	2 9 1	
in mH_2O, gauge	2 9 2	

Input [mH_2O]	[bar]	Code	
0.4	0.04	0 4 0 0	
0.6	0.06	0 6 0 0	
1.0	0.10	1 0 0 0	
1.6	0.16	1 6 0 0	
2.5	0.25	2 5 0 0	
4.0	0.40	4 0 0 0	
6.0	0.60	6 0 0 0	
10	1.0	1 0 0 1	
16	1.6	1 6 0 1	
25	2.5	2 5 0 1	
40	4.0	4 0 0 1	
60	6.0	6 0 0 1	
100	10	1 0 0 2	
160	16	1 6 0 2	
200	20	2 0 0 2	
customer		9 9 9 9	consult

Output	Code	
4 … 20 mA / 2-wire	1	
0 … 10 V / 3-wire	3	
intrinsic safety T4; 4 … 20 mA / 2-wire	E	
intrinsic safety T6; 4 … 20 mA / 2-wire	E6	
customer	9	consult

Accuracy		Code	
standard:	0.35 % FSO	3	
option for $p_N \geq 0.6$ bar:	0.25 % FSO	2	
	customer	9	consult

Electrical connection	Code	
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
male plug M12x1 (4-pin) / metal	M 1 0	
cable outlet with PVC cable (IP67) [2]	T A 0	
cable outlet, cable with ventilation tube (IP68) [3]	T R 0	
compact field housing stainless steel 1.4301 (304)	8 5 0	
customer	9 9 9	consult

Mechanical connection	Code	
G1/2" DIN 3852	1 0 0	
G1/2" EN 837	2 0 0	
1/2" NPT	N 0 0	
G1/2" DIN 3852 open pressure port	H 0 0	
customer	9 9 9	consult

Seal	Code	
FKM	1	
EPDM	3	
customer	9	consult

Pressure port	Code	
stainless steel 1.4404 (316L)	1	
PP-HT [4]	R	
PVDF [4]	B	
customer	9	consult

Diaphragm	Code	
ceramics Al_2O_3 96 %	2	
ceramics Al_2O_3 99.9 %	C	
customer	9	consult

Special version	Code	
standard	0 0 0	
customer	9 9 9	consult

[1] nominal pressure ranges absolute from 1 bar and not in combination with output 0 … 10 V / 3-wire
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[4] PP-HT / PVDF possible only with G1/2" DIN 3852 open pressure port, $p_N \leq 10$ bar and without explosion protection; for pressure port in PVDF the operation medium temperature is -30 … 60 °C and in PP-HT 0 … 60 °C

DMK 387

Pressure Transmitter

Ceramic sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 40 bar

Output signal

2-wire: 4 ... 20 mA
3-wire and others on request

Product characteristics

- diaphragm
  ceramics 99.9 % Al_2O_3
- high long-term stability

Optional versions

- IS-version
  Ex ia = intrinsically safe for
  gases and dust
- different kinds of inch threads
- pressure port in PVDF or PP-HT
  for aggressive media

The pressure transmitter DMK 387 has been specially designed for applications in plant and machine engineering as well as laboratory techniques and is suitable for measuring small system pressure and filling heights.

By using our own-developed capacitive sensor, available in Al_2O_3 99.9%, the DMK 387 offers a high overpressure resistance and a high temperature and media resistance. The pressure transmitter is available in an intrinsically safe version for usage in explosive environments.

Preferred areas of use

- Plant and machine engineering
- Laboratory techniques
- Water
- Aggressive media

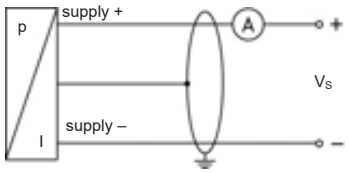
Input pressure range															
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40
Level	[mH_2O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
Overpressure	[bar]	3	4	5	5	5	7	7	12	12	20	20	20	40	70
Burst pressure ≥	[bar]	4	6	8	8	8	9	9	18	18	25	30	30	45	80
Permissible vacuum	[bar]	-0.2	-0.3	-0.5				-1							

Output signal / Supply			
Standard	2-wire: 4 ... 20 mA / V_S = 14 ... 36 V_{DC}		
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}		
On request	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}		
Performance			
Accuracy [1]	standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO		others on request
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ		
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Long term stability	≤ ± 0.1 % FSO / year		
Turn-on time	450 msec		
Mean response time	≤ 70 msec		
Measuring rate	80 Hz		
[1] accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal effects (offset and span)			
Tolerance band	≤ ± 1 % FSO		
In compensated range	-20 … 80 °C		
Permissible temperatures			
Medium [2]	-40 ... 125 °C		
Electronics / environment	-40 ... 85 °C		
Storage	-40 ... 85 °C		
[2] for pressure port in PVDF the operation medium temperature is -30 … 60 °C and in PP-HT 0 … 60 °C			
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to EN 61326		
Mechanical stability			
Vibration	10 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6	
Materials			
Pressure port / housing		pressure port	housing
	standard:	stainless steel 1.4404 (316 L)	stainless steel 1.4404 (316 L)
	options for G3/4" flush:	PVDF (p_{max} = 20 bar)	PVDF
		PP-HT (p_{max} = 10 bar)	PP-HT
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)		
Seals (O-rings)	FKM, EPDM, FFKM		others on request
Diaphragm	ceramics Al_2O_3 99.9 %		others on request
Media wetted parts	pressure port, seals, diaphragm		
Explosion protection (only for 4 … 20 mA / 2-wire)			
Approval DX14B-DMK 387	IBExU 15 ATEX 1066 X / IECEx IBE 18.0019X pressure port: stainless steel zone 0: II 1G Ex ia IIC T4 Ga pressure port: PVDF or PP-HT zone 1: II 2G Ex ia IIC T4 Gb for all pressure ports zone 20: II 1D Ex ia IIIC T135 °C Da		
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 14 nF, L_i = 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing		
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -25 ... 65 °C		
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m		

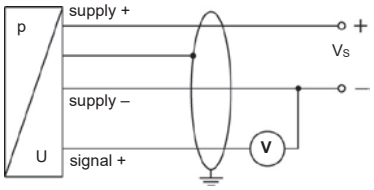
Miscellaneous	
Current consumption	max. 22 mA
Weight	approx. 180 g
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagrams

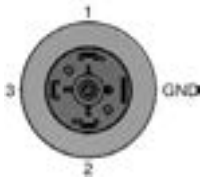
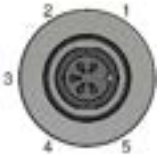
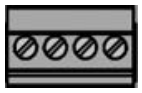
2-wire-system (current)



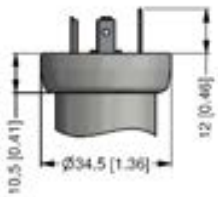
3-wire-system (voltage)



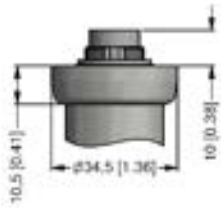
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
					
supply +	1	3	1	V_S+	WH (white)
supply –	2	4	2	V_S-	BN (brown)
signal + (only 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin	5	4	GND	GNYE (green-yellow)

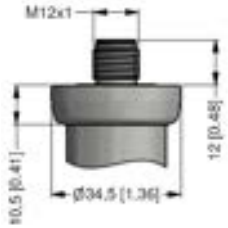
Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)

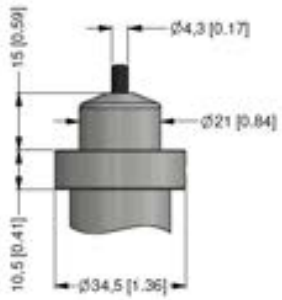


Binder series 723, 5-pin
(IP 67)

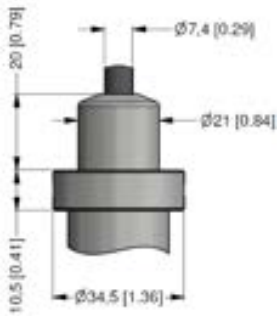


M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)



cable outlet
with PVC-cable (IP 67) [3]

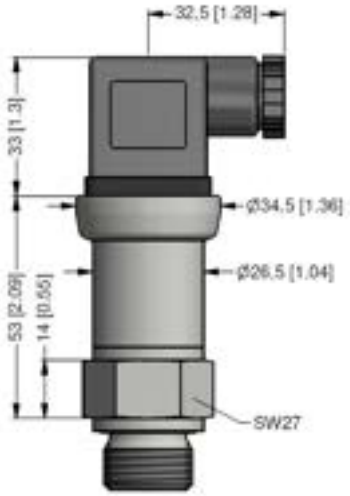


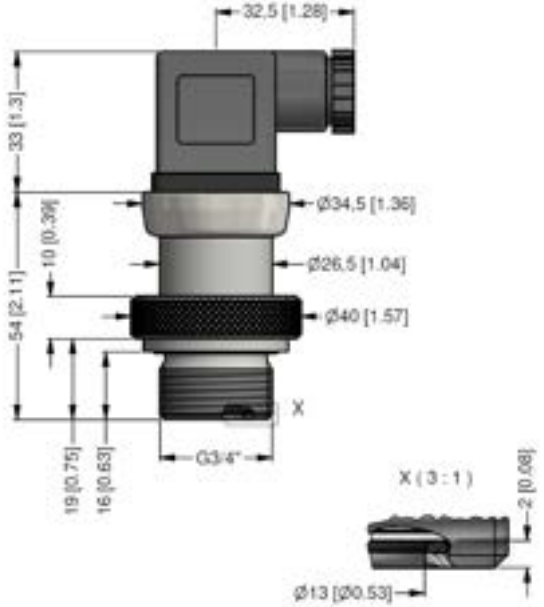
cable outlet, cable with
ventilation tube (IP 68) [4]

⇨ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[4] different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)



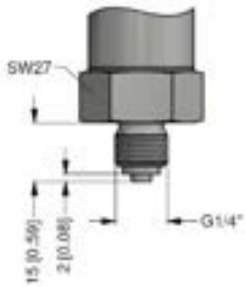


G 3/4" flush [5]

G1/2" DIN 3852

G1/2" EN 837

G1/4" DIN 3852



G1/4" EN 837

[5] not in combination with field housing

Ordering code DMK 387

DMK 387 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

			Code	
Pressure				
	gauge in bar		2 8 5	
	gauge in mH_2O		2 8 6	
Input	**[mH_2O]**	**[bar]**		
	1.0	0.1	1 0 0 0	
	1.6	0.16	1 6 0 0	
	2.5	0.25	2 5 0 0	
	4.0	0.40	4 0 0 0	
	6.0	0.60	6 0 0 0	
	10	1.0	1 0 0 1	
	16	1.6	1 6 0 1	
	25	2.5	2 5 0 1	
	40	4.0	4 0 0 1	
	60	6.0	6 0 0 1	
	100	10	1 0 0 2	
	160	16	1 6 0 2	
	250	25	2 5 0 2	
	400	40	4 0 0 2	
	customer		9 9 9 9	consult
Output				
	4 … 20 mA / 2-wire		1	
	0 … 10 V / 3-wire		3	consult
	intrinsic safety 4 … 20 mA / 2-wire		E	
	customer		9	consult
Accuracy				
standard	0.35 % FSO		3	
option	0.25 % FSO		2	
	customer		9	consult
Electrical connection				
	male and female plug ISO 4400		1 0 0	
	male plug Binder series 723 (5-pin)		2 0 0	
	cable outlet with PVC cable (IP67) [1]		T A 0	
	cable outlet, cable with ventilation tube (IP68) [2]		T R 0	
	male plug M12x1 (4-pin) / metal		M 1 0	
	compact field housing stainless steel 1.4301 (304)		8 5 0	
	customer		9 9 9	consult
Mechanical connection [3]				
	G1/2" DIN 3852		1 0 0	
	G1/2" EN 837		2 0 0	
	G1/4" DIN 3852		3 0 0	
	G1/4" EN 837		4 0 0	
	G3/4" with flush sensor [4]		K 0 0	
	customer		9 9 9	consult
Seal				
	FKM		1	
	EPDM		3	
	FFKM		7	
	customer		9	consult
Pressure port				
	stainless steel 1.4404 (316L)		1	
	PVDF (p_{max} = 20 bar) [5]		B	
	PP-HT (p_{max} = 10 bar) [5]		R	
	customer		9	consult
Diaphragm				
	ceramics Al_2O_3 99.9 %		C	
	customer		9	consult
Special version				
	standard		0 0 0	
	customer		9 9 9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[2] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[3] metric threads and others on request
[4] not in combination with field housing
[5] only for mechanical connection G3/4"; for pressure port in PVDF the operation medium temperature is -30 … 60 °C and in PP-HT 0 … 60 °C

DMK 457

Pressure Transmitter for Shipbuilding and Offshore

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- LR-certificate (Lloyd´s Register)
- DNV-approval (Det Norske Veritas)
- ABS-certificate
  (American Bureau of Shipping)
- CCS-certificate
  (China Classification Society)
- pressure port in CuNiFe
  (sea water resistant)
- oxygen application

Optional versions

- IS-version
  Ex ia = intrinsically safe
  for gases and dusts

The pressure transmitter DMK 457 with ceramic sensor has been designed for typical applications in shipbuilding and offshore constructions as alternative to our pressure transmitter DMP 457 with piezoresistive stainless steel sensor.

In combination with the copper-nickel-alloy the DMK 457 is suitable for seawater, e.g. level measurement in ballast tanks, etc.

Preferred areas of use are

Drives
Compressors
Boiler
Pneumatic control systems
Oxygen applications

Fuel and oil

Water and sea water

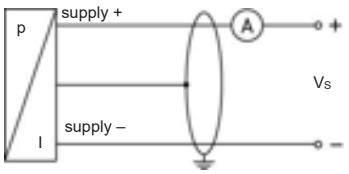
Input pressure range																			
Nominal pressure gauge [bar]	-1 … 0	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure abs. [bar]	-	-	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Level gauge / abs. [mH_2O]	-	-	6	10	16	25	40	60	100	160	250	400	600	-	-	-	-	-
Overpressure [bar]	4	1	2	2	4	4	10	10	20	40	40	100	100	200	400	400	600	800
Burst pressure ≥ [bar]	7	2	4	4	5	5	12	12	25	50	50	120	120	250	500	500	650	880
Vacuum resistance	p_N ≥ 1 bar: unlimited vacuum resistance p_N < 1 bar: on request																	

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	
Performance		
Accuracy [1]	IEC 60770: ≤ ± 0.5 % FSO	
Permissible load	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.3% FSO / year at reference conditions	
Response time	< 10 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Thermal error	≤ ± 0.2 % FSO / 10 K	
in compensated range	0 ... 85 °C	
Permissible temperatures		
Medium	-40 ... 125°C	
Electronics / environment	-40 ... 85°C	
Storage	-40 ... 100°C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to - EN 61326 - DNV (Det Norske Veritas)	
Mechanical stability		
Vibration	4 g (according to DNV: class B, curve 2 / basis: IEC 60068-2-6)	
Materials		
Pressure port	standard:	stainless steel 1.4404 (316L)
	option [2]:	CuNi10Fe1Mn (sea water resistant) - for p_N ≤ 400 bar with mechanical connection G1/2" DIN 3852, G1/2" EN 837, G1/2" open port, G1/4" DIN 3852, G1/4" EN 837 - in combination with housing in CuNi10Fe1Mn (not with field housing) -
Housing	standard:	stainless steel 1.4404 (316L)
	option [2]:	CuNi10Fe1Mn (sea water resistant) - in combination with pressure port in CuNi10Fe1Mn -
	option field housing:	stainless steel 1.4404 (316L); with cable gland (CuNi10Fe1Mn not possible)
Cable sheath	TPE -U	(flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)
Seals (media wetted)	standard:	FKM
	option:	FFKM (only for p_N ≤ 100 bar) others on request
Diaphragm	ceramic Al_2O_3 96 %	
Media wetted parts	pressure port, seals, diaphragm	
[2] IS-version on request		
Category of the environment		
Lloyd´s Register (LR) [3]	EMV1, EMV2, EMV3, EMV4	number of certificate: 13/20055
Det Norske Veritas (DNV)	temperature: D	number of certificate: TAA00001GR
	humidity: B	
	vibration: B	
	electromagnetic compatibility: B	
	enclosure: D	
[3] for p_N ≤ 160 bar		

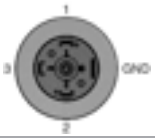
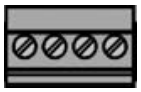
Explosion protection	
Approvals DX19-DMK 457	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, L_i ≈ 0 µH with field housing: C_i = 105 nF with cable outlet: C_i = 84.7 nF with ISO 4400: C_i = 62.2 nF the supply connections have an inner capacity of max. 90 nF (140 nF with field housing) to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m
Miscellaneous	
Option oxygen application	for p_N ≤ 25 bar: O-ring in FKM Vi 567 (with BAM-approval) permissible maximum values are 25 bar/150° C
Current consumption	max. 25 mA
Weight	approx. 140 g (with ISO 4400)
Installation position	any
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]
ATEX-directive	2014/34/EU
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar	

Wiring diagram

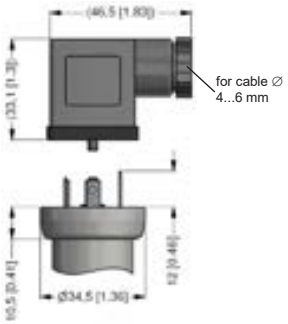
2-wire-system (current)



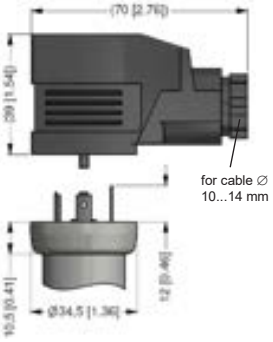
Pin configuration

Electrical connection	ISO 4400	field housing (clamp section: 2.5 mm²)	cable colours (IEC 60757)
			
		V_{S+} V_{S-} S+ GND	
Supply +	1	VS+	WH (white)
Supply –	2	VS-	BN (brown)
Shield	ground pin	GND	GNYE (green-yellow)

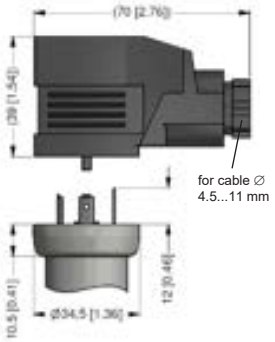
Electrical connections [5] (dimensions mm / in)



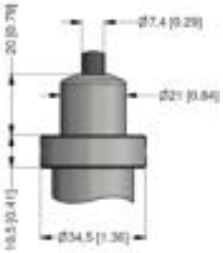
ISO 4400 - **code G10**
(IP 65)



ISO 4400 - **code G00**
(IP 65)

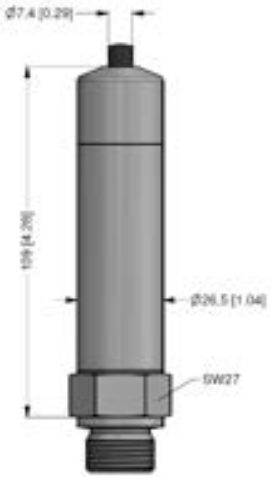


ISO 4400 - **code G01**
(IP 65)



cable outlet [6, 7]
(IP 68)

universal field housing
(IP 67)



submersible version [7]
(IP 68)

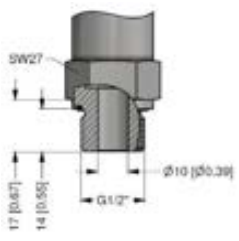
[5] *Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.*
[6] *tested at 4 bar or 40 mH$_2$O for 24 hours*
[7] *shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed); different lengths available*

Mechanical connection (dimensions mm / in)

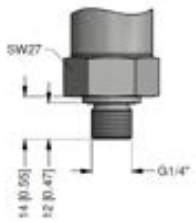
G1/2" DIN 3852

G1/2" EN 837

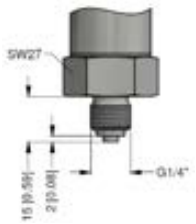
1/2" NPT



G1/2" open port
DIN 3852 (≤ 40 bar)



G1/4" DIN 3852



G1/4" EN 837

1/4" NPT

Ordering code DMK 457

DMK 457 □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure		Code	
in bar, gauge		5 9 0	
in bar, absolute [1]		5 9 1	
in mH_2O, gauge		5 9 2	
in mH_2O, absolute [1]		5 9 3	
Input [mH_2O]	[bar]		
4	0.4 [1]	4 0 0 0	
6	0.6	6 0 0 0	
10	1.0	1 0 0 1	
16	1.6	1 6 0 1	
25	2.5	2 5 0 1	
40	4.0	4 0 0 1	
60	6.0	6 0 0 1	
100	10	1 0 0 2	
160	16	1 6 0 2	
250	25	2 5 0 2	
400	40	4 0 0 2	
600	60	6 0 0 2	
	100	1 0 0 3	
	160	1 6 0 3	
	250	2 5 0 3	
	400	4 0 0 3	
	600	6 0 0 3	
	-1 … 0	X 1 0 2	
	customer	9 9 9 9	consult
Output			
4 … 20 mA / 2-wire		1	
intrinsic safety 4 … 20 mA / 2-wire		E	
customer		9	consult
Accuracy			
0.5 % FSO		5	
customer		9	consult
Electrical connection			
male and female plug ISO 4400 (for cable Ø 4...6 mm)		G 1 0	
male and female plug ISO 4400 GL [2] (for cable Ø 10...14 mm)		G 0 0	
male and female plug ISO 4400 GL [2] (for cable Ø 4.5...11 mm)		G 0 1	
cable outlet with TPE-U-cable [3]		T R 3	
field housing stainless steel 1.4404 (316L)		8 8 0	
submersible version in 1.4404 (316L) with TPE-U-cable [3]		T T 3	
submersible version in CuNiFe with TPE-U-cable [3]		T S 3	
customer		9 9 9	consult
Mechanical connection			
G1/2" DIN 3852		1 0 0	
G1/2" EN 837		2 0 0	
G1/4" DIN 3852		3 0 0	
G1/4" EN 837		4 0 0	
G1/2" DIN 3852 open pressure port [4]		H 0 0	
1/2" NPT		N 0 0	
1/4" NPT		N 4 0	
customer		9 9 9	consult
Seals			
FKM		1	
FFKM [5]		7	
customer		9	consult
Pressure port			
stainless steel 1.4404 (316L)		1	
copper-nickel-alloy (CuNi10Fe1Mn) [6]		K	
customer		9	consult
Diaphragm			
ceramics Al_2O_3 96 %		2	
customer		9	consult
Special version			
standard		0 0 0	
oxygen application [7]		0 0 7	
customer		9 9 9	consult

[1] absolute pressure possible from 0.6 bar
[2] cable socket is GL-approbated
[3] shielded TPE-U-cable with ventilation tube available in different lengths
[4] only for $p_N \leq 40$ bar possible
[5] only for $p_N \leq 100$ bar possible
[6] optionally for nominal pressure ranges up to 400 bar and mechanical connections G1/2" DIN 3852, G1/2" EN 837, G1/2" open pressure port, G1/4" DIN 3852, G1/4" EN837 in combination with housing in CuNi10Fe1Mn (not with field housing)
[7] oxygen application with FKM seal possible up to 25 bar

DMK 458

Pressure Transmitter for Marine and Offshore

Ceramic Sensor

accuracy according to IEC 60770:
standard: 0.25 % FSO
option: 0.1 % FSO

Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Product characteristics

- LR-certificate (Lloyd´s Register)
- DNV-approval (Det Norske Veritas)
- ABS-certificate
  (American Bureau of Shipping)
- CCS-certificate
  (China Classification Society)
- high overpressure resistance
- excellent long term stability

Optional versions

- IS-version
  Ex ia= intrinsically safe for gases
- diaphragm Al_2O_3 99.9 %
- pressure port in CuNiFe
  (sea water resistant)

The pressure transmitter DMK 458 has been developed for marine and offshore applications. In addition to thread connections, different flush versions are available, which are especially suitable for pasty, viscous, and polluted media.

Due to the capacitive ceramic sensor developed by BD|SENSORS, which is optionally available in Al_2O_3 99.9 %, the DMK 458 shows an outstanding accuracy as well as a high overload and temperature resistance.

Preferred areas of use are

Monitoring of pressure during loading and unloading processes

Monitoring of a ship´s position and draught
Use in anti-heeling systems
Water and sea water

Level measurement in ballast and storage tanks

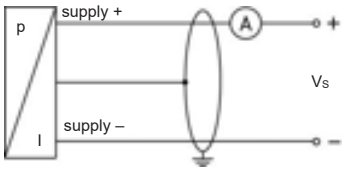
Pressure ranges																
Nominal pressure [1]	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH_2O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0.2		-0.3		-0.5				-1						
[1] available in gauge and absolute; nominal pressure ranges absolute from 1 bar																

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}	$V_{S\ rated}$ = 24 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	$V_{S\ rated}$ = 24 V_{DC}
Performance		
Accuracy [2]	standard: ≤ ± 0.25 % FSO	option for p_N ≥ 0.6 bar [3]: ≤ ± 0.1 % FSO
Permissible load	$R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$	
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Influence effects	supply: 0.05 % FSO / 10 V	load: 0.05 % FSO / kΩ
Turn-on time	700 msec	
Mean response time	< 200 msec	mean measuring rate 5/sec
Max. response time	380 msec	
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) *[3] under the influence of disturbance burst according to EN 61000-4-4 (2004) +2 kV accuracy decreases on ≤ ± 0.25 % FSO*		
Thermal effects (offset and span)		
Tolerance band	≤ ± 1 % FSO	
in compensated range	-20 … 80 °C	
Permissible temperatures		
Medium	-40 ... 125 °C	
Electronics / environment	-25 … 85 °C	
Storage	-40 ... 100 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to - EN 61326	- DNV (Det Norske Veritas)
Mechanical stability		
Vibration	4 g (according to DNV: Class B, curve 2 / basis: IEC 60068-2-6)	
Materials		
Pressure port	standard: stainless steel 1.4404 (316 L) option: CuNi10Fe1Mn (sea water resistant) - only for G1/2" open pressure port and in combination with housing in CuNi10Fe1Mn (not possible with field housing) -	
Housing	standard: stainless steel 1.4404 (316 L) option: CuNi10Fe1Mn (sea water resistant) - only in combination with pressure port in CuNi10Fe1Mn -	
Option field housing (not possible with CuNi10Fe1Mn)	stainless steel 1.4404 (316L) cable gland: absolute, sealed gauge: brass, nickel plated gauge: polyamide (with integrated pressure reference)	
Cable sheath for option cable outlet	TPE -U (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil)	
Seals (media wetted)	FKM	others on request
Diaphragm	standard: ceramics Al_2O_3 96 %	option: ceramics Al_2O_3 99.9 %
Media wetted parts	pressure port, seals, diaphragm	
Category of the environment		
Lloyd´s Register (LR)	EMV1, EMV2, EMV3 [4], EMV4	number of certificate: 13/20055
Det Norske Veritas (DNV)	temperature: D vibration: B humidity: B enclosure: D electromagnetic compatibility: B	number of certificate: TAA00001GR
[4] not valid for IS-version (DX14A-DMK 458)		
Explosion protection		
Approval DX14A-DMK 458	IBExU 07 ATEX 1180 X field housing: zone 0: II 1G Ex ia IIC T4 Ga ISO 4400, M12x1, cable outlet: zone 0: II 1G Ex ia IIB T4 Ga	
Safety technical maximum values	U_i = 28 V; I_i = 93 mA; P_i = 660 mW; L_i = 0 µH field housing: C_i = 52.3 nF; 90.2 nF opposite GND ISO 4400, M12x1, cable outlet: C_i = 105 nF; 140 nF opposite GND	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °C	
Permissible temperatures for medium	-40 ... 85 °C	

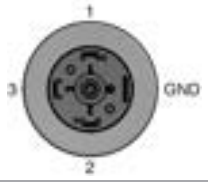
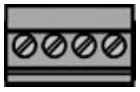
Miscellaneous	
Ingress protection	IP 65, IP 67, IP 68
Installation position	any
Current consumption	max. 21 mA
Weight	min. 400 g (depending on housing and mechanical connection)
Operational life	100 million load cycles
CE conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagram

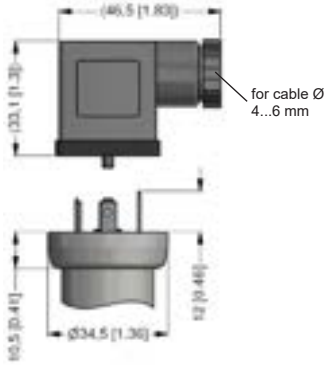
2-wire-system (current)



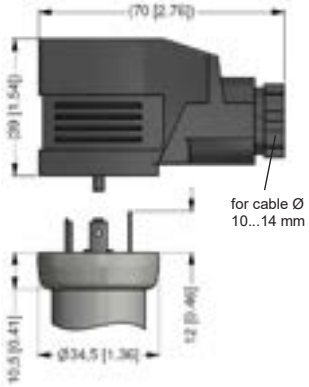
Pin configuration

Electrical connection	ISO 4400	field housing (clamp section: 2.5 mm²)	M12x1 (4-pin), metal	cable colours (IEC 60757)
				
	1 GND 2	V_{S+} V_{S-} GND	3 2 4 1	
Supply +	1	V_S+	1	WH (white)
Supply –	2	V_S-	2	BN (brown)
Shield	ground pin ⏚	GND	4	GNYE (green-yellow)

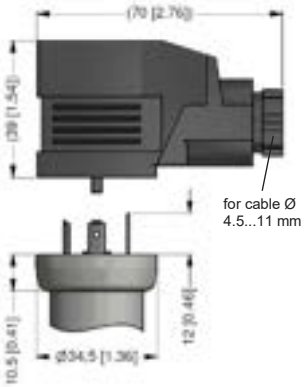
Electrical connections (dimensions mm / in)



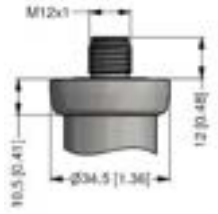
ISO 4400 - **code G10**
(IP 65)



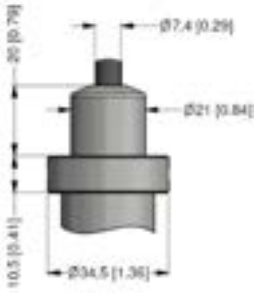
ISO 4400 - **code G00**
(IP 65)



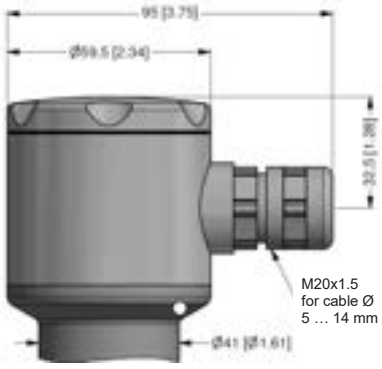
ISO 4400 - **code G01**
(IP 65)



M12x1 4-pin
(IP 67)



cable outlet [5]
(IP 68)

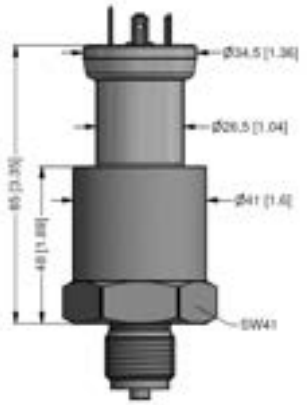


field housing
(IP 67)

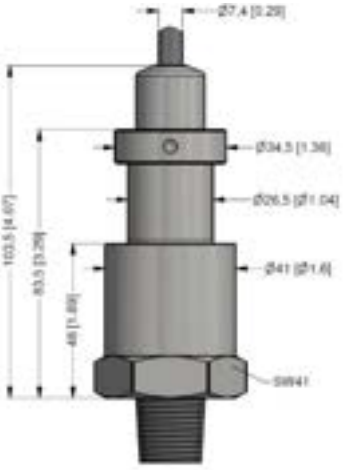
[5] *cable versions are delivered with shielded cable (different lengths available);*
for gauge pressure cable with ventilation tube required; tested at 4 bar or 40 mH_2O for 24 hours

Dimensions (mm / in)

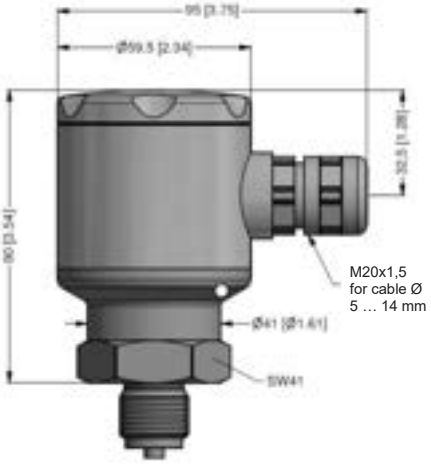
plug versions



cable outlet

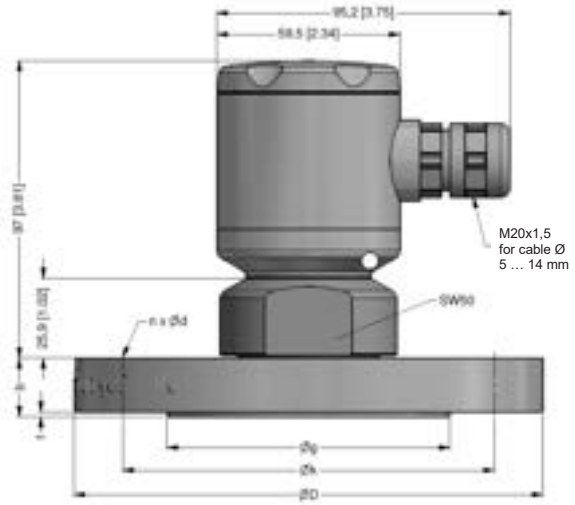


field housing

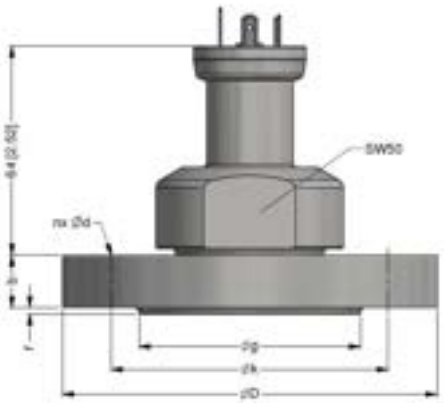


Mechanical connections (dimensions mm / in)

flanges



flange with field housing

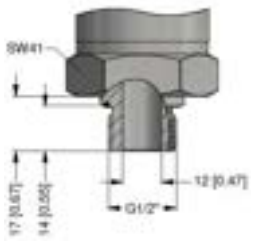


flange with plug version and cable outlet

size	dimensions in mm					
	DIN 2501				ANSI	
	DN25/PN40	DN40/PN40	DN50/PN40	DN80/PN16	2"/150 lbs	3"/150 lbs
b	18	18	20	20	19.1	23.9
d	14	18	18	18	19.1	19.1
D	115	150	165	200	152.4	190.5
f	2	3	3	3	2	2
g	68	88	102	138	91.9	127
k	85	110	125	160	120.7	152.4
n	4	4	4	8	4	4
p_N [bar]	≤ 40	≤ 40	≤ 40	≤ 16	≤ 10	≤ 10

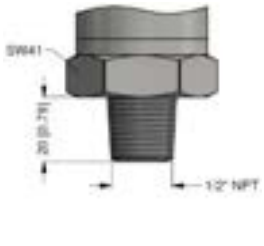
inch threads

G1/2" 3852



G1/2" DIN 3852
open port

G1/2" EN 837



1/2" NPT

Ordering code DMK 458

DMK 458 □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

	Pressure	Input	Output	Accuracy	Electrical connection	Mechanical connection	Seals	Pressure port	Diaphragm	Special version	
Pressure											
in bar, gauge	59A										
in bar, absolute [1]	59B										
in mH_2O, gauge	59C										
in mH_2O, absolute [1]	59D										consult
Input [mH_2O] / [bar]											
0.4 / 0.04		0400									
0.6 / 0.06		0600									
1.0 / 0.1		1000									
1.6 / 0.16		1600									
2.5 / 0.25		2500									
4.0 / 0.40		4000									
6.0 / 0.60		6000									
10 / 1.0		1001									
16 / 1.6		1601									
25 / 2.5		2501									
40 / 4.0		4001									
60 / 6.0		6001									
100 / 10		1002									
160 / 16		1602									
200 / 20		2002									
customer		9999									consult
Output											
4 … 20 mA / 2-wire			1								
intrinsic safety 4 … 20 mA / 2-wire			E								
customer			9								consult
Accuracy											
standard: 0.25 % FSO				2							
option for p_N ≥ 0,6 bar: 0.1 % FSO				1							
customer				9							consult
Electrical connection											
male and female plug ISO 4400 (for cable Ø 4 … 6 mm)					G10						
male and female plug ISO 4400 GL [2] (for cable Ø 10 … 14 mm)					G00						
male and female plug ISO 4400 GL [2] (for cable Ø 4.5 … 11 mm)					G01						
male plug M12x1 (4-pin) / metal version					M10						
cable outlet with TPE-U-cable [3] (with ventilation tube)					TR3						
field housing stainless steel 1.4404 (316L)					880						
customer					999						consult
Mechanical connection											
G 1/2" DIN 3852						100					
G 1/2" EN 837						200					
1/2" NPT						N00					
G1/2" DIN 3852 open pressure port						H00					
flange DN 25 / PN 40 (DIN 2501)						F20					
flange DN 40 / PN 40 (DIN 2501)						F22					
flange DN 50 / PN 40 (DIN 2501)						F23					
flange DN 80 / PN 16 (DIN 2501) [4]						F14					
flange DN 2" / 150 lbs (ANSI B 16.5) [4]						F32					
flange DN 3" / 150 lbs (ANSI B 16.5) [4]						F33					
customer						999					consult
Seals											
FKM							1				
andere							9				consult
Pressure port											
stainless steel 1.4404 (316L)								8			
copper-nickel-alloy (CuNi10Fe1Mn) [5]								K			
customer								9			consult
Diaphragm											
ceramics Al_2O_3 96 %									2		
ceramics Al_2O_3 99.9 %									C		
customer									9		consult
Special version											
standard										000	
customer										999	consult

DMP 331P

Industrial Pressure Transmitter

Process Connections with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 40 bar

Output signals

2-wire: 4 ... 20 mA / 3-wire: 0 ... 10 V
others on request

Special characteristics

- hygienic version
- diaphragm with low surface roughness
- CIP / SIP cleaning up to 150 °C
- vacuum resistant

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dust
- SIL 2 version
  according to IEC 61508 / IEC 61511
- diaphragm in
  Hastelloy® or Tantalum
- cooling element for media temperatures up to 300 °C

The pressure transmitter DMP 331P was designed for use in the food / beverage and pharmaceutical industry. The compact design with hygienic versions makes it possible to achieve an outstanding performance in terms of accuracy, temperature behaviour and long term stability.

The modular construction concept allows a combination of various process connections with different filling fluids and a cooling element. Several electrical connections complete the profile of DMP 331P.

Preferred areas of use are

- Food and beverage
- Pharmaceutical industry

Material and test certificates

- Inspection certificate 3.1
  according to EN 10204
- Test report 2.2
  according to EN 10204

Input pressure range [1]								
Nominal pressure gauge	[bar]	-1…0	0.10	0.16	0.25	0.40	0.60	1	1.6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15

Nominal pressure gauge / absolute	[bar]	2.5	4	6	10	16	25	40
Overpressure	[bar]	10	20	40	40	80	80	105
Burst pressure ≥	[bar]	15	25	50	50	120	120	210
Vacuum resistance		p_N > 1 bar: unlimited vacuum resistance p_N ≤ 1 bar: on request						

[1] consider the pressure resistance of fittings and clamps

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [2]	standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO option: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V	load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference conditions	
Response time	2-wire: < 10 msec	3-wire: ≤ 3 msec

[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span) [3]			
Nominal pressure p_N [bar]	-1 … 0	< 0.40	≥ 0.40
Tolerance band [% FSO]	≤ ± 0.75	≤ ± 1.5	≤ ± 0.75
in compensated range [°C]	-20 ... 85	0 ... 50	-20 ... 85

[3] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

Permissible temperatures		
Filling fluid	silicone oil	food compatible oil
Medium [4]	-40 ... 125 °C	-10 ... 125 °C
Medium with cooling element [5]	overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C [6]	overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C [6]
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	

[4] max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C
[5] max. temperature depends on the used sealing material, type of seal and installation
[6] also for p_{abs} ≤ 1 bar

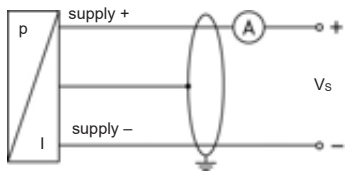
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration according to DIN EN 60068-2-6	G 1/2": 20 g RMS (25 ... 2000 Hz) — others: 10 g RMS (25 … 2000 Hz)
Shock according to DIN EN 60068-2-27	G 1/2": 500 g / 1 msec — others: 100 g / 1 msec
Filling fluids	
Standard	silicone oil
Option	food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request

Materials		
Pressure port	stainless steel 1.4435 (316 L)	others on request
Housing	stainless steel 1.4404 (316 L)	
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seals	standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures < 260 °C) Clamp, dairy pipe, Varivent®: without	others on request
Diaphragm	standard: stainless steel 1.4435 (316 L) option: Hastelloy® C-276 (2.4819)	Tantalum on request
Media wetted parts	pressure port, seal, diaphragm	
Explosion protection (only for 4 … 20 mA / 2-wire)		
Approvals DX19-DMP 331P	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga	zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m	
Miscellaneous		
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH	
Option SIL2 version [7]	according to IEC 61508 / IEC 61511	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA	
Surface roughness	pressure port R_a < 0.8 µm (media wetted parts) diaphragm R_a < 0.15 µm weld seam R_a < 0.8 µm	
Weight	min. 200 g (depending on process connection)	
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position for p_N ≤ 2 bar have to be specified in the order)	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	
ATEX Directive	2014/34/EU	

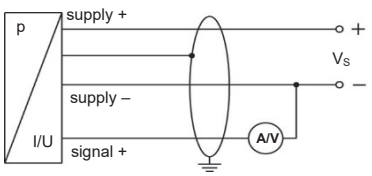
[7] *only for 4 … 20 mA / 2-wire*

Wiring diagrams

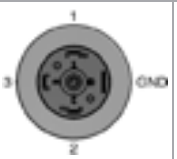
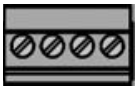
2-wire-system (current)



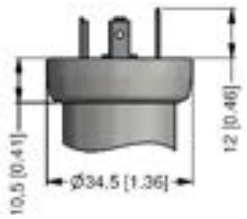
3-wire-system (current / voltage)



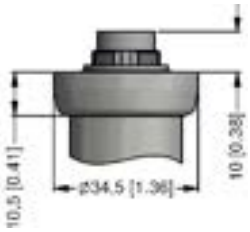
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
					
				V_{S+} V_{S-} S+ GND	
Supply +	1	3	1	V_{S+}	WH (white)
Supply –	2	4	2	V_{S-}	BN (brown)
Signal + (only 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin ⊕	5	4	GND	GNYE (green-yellow)

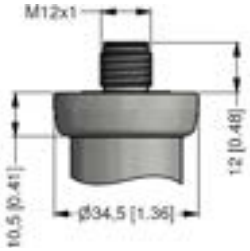
Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)



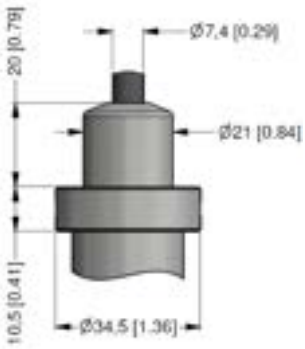
Binder series 723, 5-pin
(IP 67)



M12x1, 4-pin
(IP 67)

compact field housing
(IP 67)

cable outlet with PVC cable
(IP 67) [8]

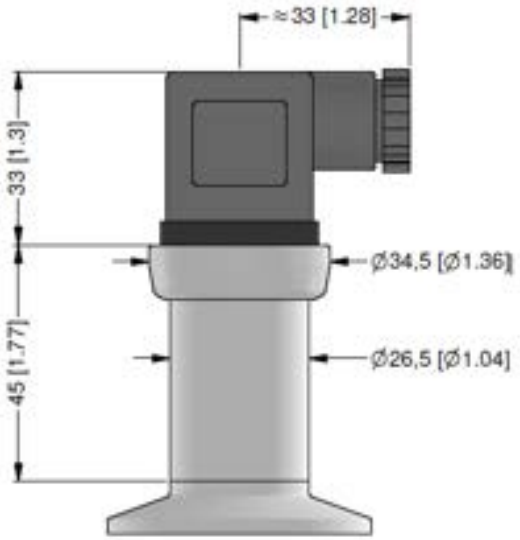


cable outlet,
cable with ventilation tube
(IP 68) [9]

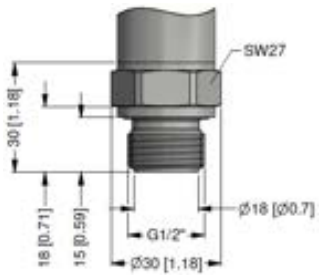
⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

[8] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C)*
[9] *different cable types and lengths available, permissible temperature depends on kind of cable*

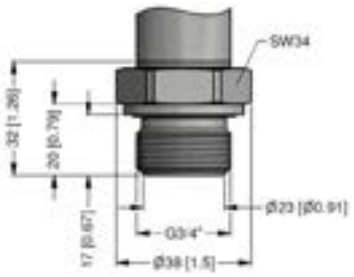
Dimensions (mm / in)



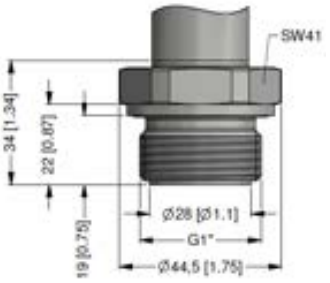
Mechanical connection (dimension mm / in)



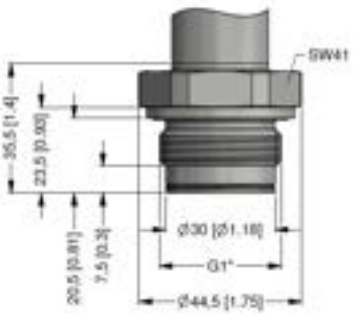
G1/2" flush DIN 3852
$p_N \geq 1$ bar



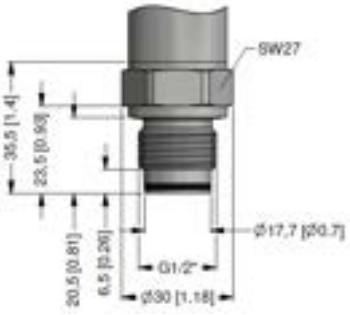
G3/4" flush DIN 3852



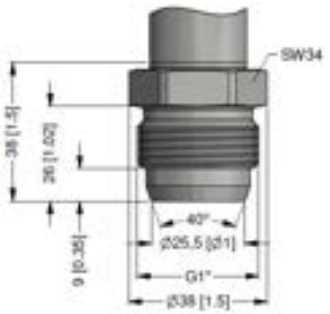
G1" flush DIN 3852



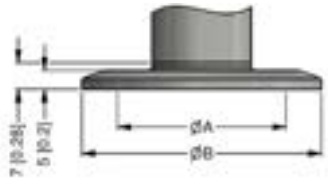
G1" flush with radial o-ring



G1/2" flush with radial o-ring
$p_N \geq 1$ bar

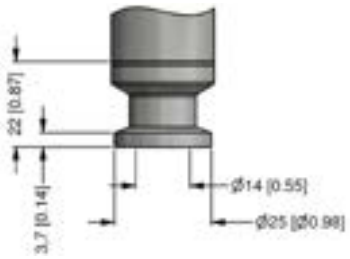


G1" cone



Clamp (DIN 32676)

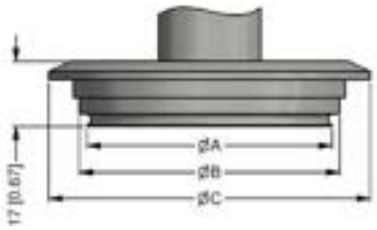
size	DN 25	DN 32	DN 50
A	23.0 [0.91]	23.0 [0.91]	45 [1.77]
B	50.5 [1.99]	50.5 [1.99]	64 [2.52]
p_N [bar]	0.25 ... 16	≤ 16	≤ 16



Clamp 3/4″ (DIN 32676)
4 bar ≤ p_N ≤ 8 bar

dairy pipe (DIN 11851)

size	DN 25	DN 40	DN 50
A	23 [0.91]	32 [1.26]	45 [1.77]
B	44 [1.73]	56 [1.20]	68.5 [2.70]
C	10 [0.39]	10 [0.39]	11 [0.43]
p_N [bar]	≤ 40	≤ 40	≤ 25



Varivent® DN 40/50
$p_N \leq 25$ bar

size	DN 40/50
A	64 [2.52]
B	68 [2.68]
C	84 [3.31]

cooling element up to 300 °C [10]
(optionally)

⇨ **SIL- and SIL-Ex version: total length increases by 26.5 mm!**
⇨ **metric threads and other versions on request**

[10] *max. temperature depends on the used sealing material, type of seal and installation*

Ordering code DMP 331P

DMP 331P ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure		
gauge	5 0 0	
absolute	5 0 1	
Input [bar]		
0.10 [1]	1 0 0 0	
0.16 [1]	1 6 0 0	
0.25 [1]	2 5 0 0	
0.40	4 0 0 0	
0.60	6 0 0 0	
1.0	1 0 0 1	
1.6	1 6 0 1	
2.5	2 5 0 1	
4.0	4 0 0 1	
6.0	6 0 0 1	
10	1 0 0 2	
16	1 6 0 2	
25	2 5 0 2	
40	4 0 0 2	
-1 … 0	X 1 0 2	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
0 … 20 mA / 3-wire	2	
0 … 10 V / 3-wire	3	
intrinsic safety 4 … 20 mA / 2-wire	E	
SIL2 4 … 20 mA / 2-wire	1S	
SIL2 with intrinsic safety 4 … 20 mA / 2-wire	ES	
customer	9	consult
Accuracy		
standard for $p_N \geq 0.4$ bar: 0.35 % FSO	3	
standard for $p_N < 0.4$ bar: 0.50 % FSO	5	
option for $p_N \geq 0.4$ bar: 0.25 % FSO	2	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
cable outlet with PVC cable (IP67) [2]	T A 0	
cable outlet, cable with ventilation tube (IP68) [3]	T R 0	
male plug M12x1 (4-pin) / metal	M 1 0	
compact field housing stainless steel 1.4301 (304) [4]	8 5 0	
customer	9 9 9	consult
Mechanical connection		
G1/2" with flush welded diaphragm (DIN 3852) [5]	Z 0 0	
G3/4" with flush welded diaphragm (DIN 3852)	Z S 0	
G1" with flush welded diaphragm (DIN 3852)	Z S 1	
G1" DIN 3852 with rad. o-ring and flush diaphragm	Z S 7	
G1/2" DIN 3852 with rad. o-ring and flush diaphragm [5]	Z 6 1	
G 1" cone	K S 1	
Clamp DN 25 / 1" (DIN 32676) / 3A	C 6 1	
Clamp DN 32 / 1 1/2" (DIN 32676) / 3A	C 6 2	
Clamp DN 50 / 2" (DIN 32676) / 3A	C 6 3	
Clamp 3/4" (DIN 32676) / 3A	C 6 9	
dairy pipe DN 25 (DIN 11851) [4]	M 7 3	
dairy pipe DN 40 (DIN 11851) [4]	M 7 5	
dairy pipe DN 50 (DIN 11851) [4]	M 7 6	
Varivent® DN 40/50 / 3A	P 4 1	
customer	9 9 9	consult
Diaphragm		
stainless steel 1.4435 (316L)	1	
tantalum	T	consult
Hastelloy® C-276 (2.4819)	H	consult
customer	9	consult
Seal		
for clamp, dairy pipe, Varivent®: without	0	
for inch thread - standard: FKM	1	
for inch thread - option: FFKM	7	
customer	9	consult
Filling fluid		
silicone oil	1	
food compatible oil (FDA) / 3A	2	
customer	9	consult
Special version		
standard	0 0 0	
with cooling element up to 300°C / 3A	2 0 0	
customer	9 9 9	consult

[1] absolute pressure possible from 0.4 bar

[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C), others on request

[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

[4] The cup nut has to be mounted by production of pressure transmitter with electrical connection field housing and mechanical connection dairy pipe. The cup nut has to be ordered as separate position.

[5] possible only for $p_N \geq 1$ bar

Varivent® is a brand name of GEA Tuchenhagen GmbH, Hastelloy® is a brand name of Haynes International Inc.

DMP 333P

Industrial Pressure Transmitter

Pressure Ports with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25% FSO

Nominal pressure

from 0 ... 60 bar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V
others on request

Special characteristics

- suited for viscous and pasty media

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts (in preparation)
- gold-plated process connection for hydrogen applications
- customer specific versions

The The pressure transmitter DMP 333P is suitable for measuring the pressure of viscous, pasty or gaseous media and for applications that require a front-flush, dead space-free process connection. Especially for hydrogen applications there is the possibility to use the process connection with gold plating. A wide range of electrical connection variants are available to enable the DMP 333P to be integrated easily and quickly in the various system configurations.

Preferred areas of use are

- Plant and machine engineering
- Hydrogen

Preferred used for

- Viscous and pasty media

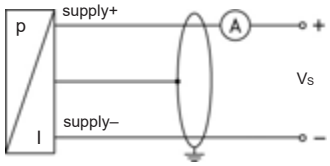
Input pressure range							
Nominal pressure gauge [1]	[bar]	60	100	-	-	-	-
Nominal pressure absolute	[bar]	60	100	160	250	400	600
Overpressure	[bar]	210	210	600	1000	1000	1000
Burst pressure ≥	[bar]	1000	1000	1000	1250	1250	1800
[1] measurement starts with ambient pressure							

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC} (in preparation)
Options 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [2]	standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO
Permissible load	current 2-wire: $R_{max} = [(U_B - U_{B\,min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (Offset and Span) / Permissible temperatures	
Tolerance band	≤ ± 0.75 % FSO
In compensated range	-20 ... 80 °C
Permissible temperatures	medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration according to DIN EN 60068-2-6	20 g RMS (25 ... 2000 Hz)
Shock according to DIN EN 60068-2-27	500 g / 1 msec
Filling fluids	
Standard	silicone oil others on request
Materials	
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Pressure port	standard: stainless steel 1.4404 (316 L) option: stainless steel 1.4404 (316 L), golden others on request
Diaphragm	standard: stainless steel 1.4435 (316 L) option: stainless steel 1.4435 (316 L), golden others on request
Seals	FKM others on request
Media wetted parts	pressure port, seal, diaphragm

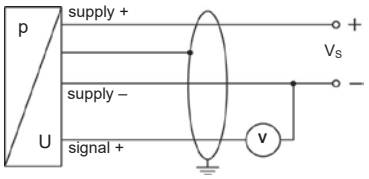
Explosion protection (only for 4 … 20 mA / 2-wire) in preparation	
Approvals DX19-DMP 333P	IBExU 10 ATEX xxxx X zone 0: II 1G Ex ia IIC T4 Ga; zone 20: II 1D Ex ia IIIC T 135°C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 up to bis 1.1 bar in zone 1: -20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m
Miscellaneous	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	min. 200 g (depending on process connection)
Installation position	any (standard calibration in a vertical position with the pressure port connection down)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)

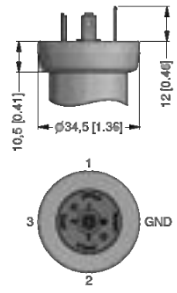


Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
Supply +	1	3	1	IN +	WH (white)
Supply –	2	4	2	IN –	BN (brown)
Signal + (only 3-wire)	3	1	3	OUT +	GN (green)
Shield	ground pin ⊕	5	4	⊕	GNYE (green-yellow)

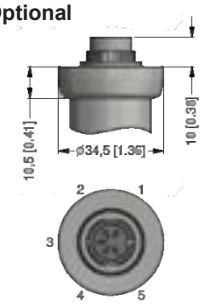
Electrical connections (dimensions mm / in)

Standard

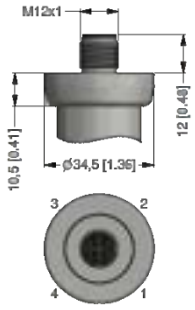


ISO 4400
(IP 65)

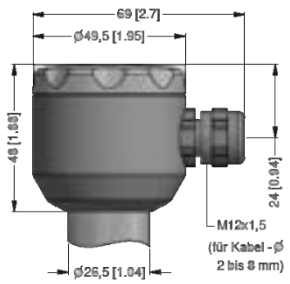
Optional



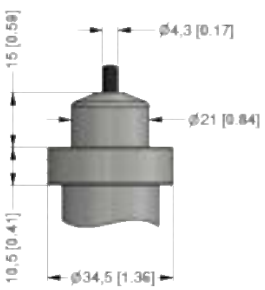
Binder series 723, 5-pin
(IP 67)



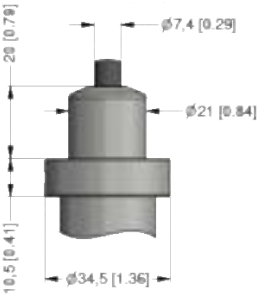
M12x1, 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet
with PVC cable (IP 67) [3]

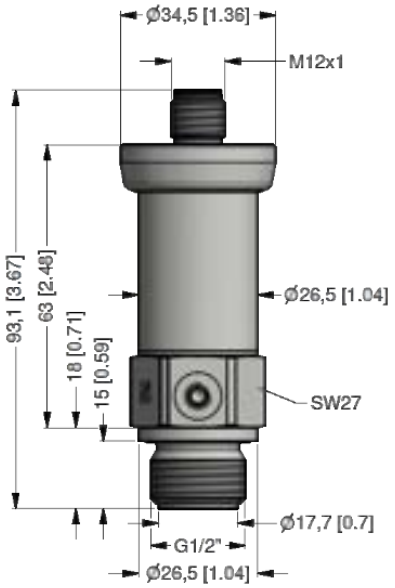


cable outlet, cable with
ventilation tube (IP 68) [4]

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C)
[4] different cable types and lengths available, permissible temperature depends on kind of cable

Mechanical connection (dimension mm / in)



G1/2" flush DIN 3852

⇨ **metric threads and other versions on request**

Ordering code DMP 333P

DMP 333P ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure			
	gauge [1]	5 4 C	
	absolute	5 4 D	
Input	[bar]		
	60	6 0 0 2	
	100	1 0 0 3	
	160	1 6 0 3	
	250	2 5 0 3	
	400	4 0 0 3	
	600	6 0 0 3	
	customer	9 9 9 9	consult
Output			
	4 … 20 mA / 2-wire	1	
	0 … 10 V / 3-wire	3	
	intrinsic safety 4 … 20 mA / 2-wire	E	in preparation
	customer	9	consult
Accuracy			
standard:	0.35 % FSO	3	
option:	0.25 % FSO	2	
	customer	9	consult
Electrical connection			
	male and female plug ISO 4400	1 0 0	
	male plug Binder series 723 (5-pin)	2 0 0	
	cable outlet with PVC-cable (IP67) [2]	T A 0	
	male plug M12x1 (4-pin) / metal	M 1 0	
	compact field housing stainless steel1.4301 (304)	8 5 0	
	customer	9 9 9	consult
Mechanical connection			
	G1/2" DIN 3852 with flush diaphragm	Z 0 0	
	customer	9 9 9	consult
Diaphragm			
	stainless steel 1.4435 (316L)	1	
	stainless steel 1.4435 (316L), golden	G	
	customer	9	consult
Seal			
	FKM	1	
	customer	9	consult
Filling fluid			
	silicone oil	1	
	customer	9	consult
Special version			
	standard	0 0 0	
	customer	9 9 9	consult

[1] measurement starts with ambient pressure
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

DMP 339P

Industrial Pressure Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 25 bar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

Special characteristics

- mechanical connection: G 1/4" flush welded
- suitable for viscous and pasty media

Optional versions

- several electrical connections
- customer specific versions

The DMP 339P industrial pressure transmitter features a G 1/4" flush welded pressure port and was designed for the use in a range of machinery including metering systems. It is ideal for measuring the pressure of viscous and pasty media. No dead spaces arise from the flush welded stainless steel diaphragm.

Material accumulation, dripping and stringing in machinery is eliminated. This increases the efficiency and reliability of your machines.

The DMP 339P is available with various electrical connections, ensuring an excellent adaption to the application conditions.

Preferred areas of use are

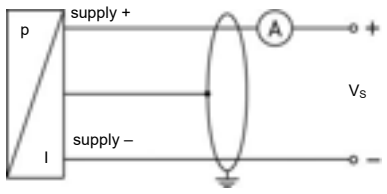
- Plant and Machine Engineering - especially conveyor plants and dosing systems
- Hydraulics

Input pressure range									
Nominal pressure gauge	[bar]	25	40	60	100	160	250	400	600
Overpressure (static)	[bar]	50	80	120	200	320	500	800	1200
Burst pressure ≥	[bar]	125	200	300	500	800	1250	2000	2000

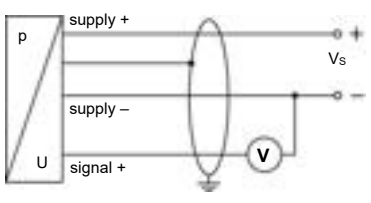
Output signal / Supply		
2-wire	4 ... 20 mA / V_S = 9 ... 36 V_{DC}	
3-wire	0 … 10 V / V_S = 14 … 30 V_{DC}	
Performance		
Accuracy [1]	≤ ± 0.5 % FSO	
Permissible load	2 wire: $R_{max} = [(V_S – V_{S\ min}) / 0.02\ A]\ \Omega$ 3 wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
Long term stability	≤ ± 0.15 % FSO / year at reference conditions	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Thermal error	≤ ± 0.15 % FSO / 10 K	
in compensated range	-10 ... 80 °C	
Permissible temperatures		
Medium	-10 ... 125 °C	
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 85 °C	
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic protection	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6
Shock	100 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Pressure port / housing	stainless steel 1.4404 (316L)	
O-ring pressure port	FKM	others on request
Diaphragm	stainless steel 1.4435	
Filling fluid	silicone oil	
Media wetted parts	pressure port, seal, diaphragm	
Miscellaneous		
Weight	approx. 170 g	
Current consumption	signal ouput current: max. 25 mA signal output voltage: max. 7 mA	
Operational life	100 million load cycles	
CE-conformity	2014/30/EU (EMC)	Pressure Equipment Directive: 2014/68/EU (module A) [2]
[2] This directive is only valid for devices with maximum permissible overpressure > 200 bar		

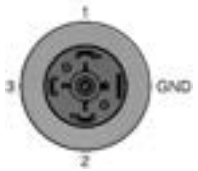
Wiring diagrams

2-wire-system (current)

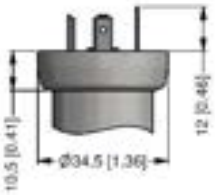


3-wire-system (voltage)



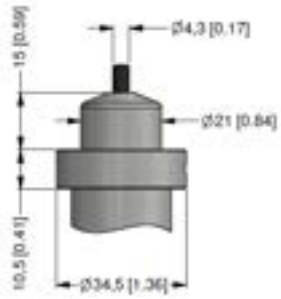
Pin configuration			
Electrical connection	ISO 4400 	M12x1 / metal 4-pin 	cable colours (IEC 60757)
Supply +	1	1	WH (white)
Supply –	2	2	BN (brown)
Signal (only 3-wire)	3	3	GN (green)
Shield	ground pin	4	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)

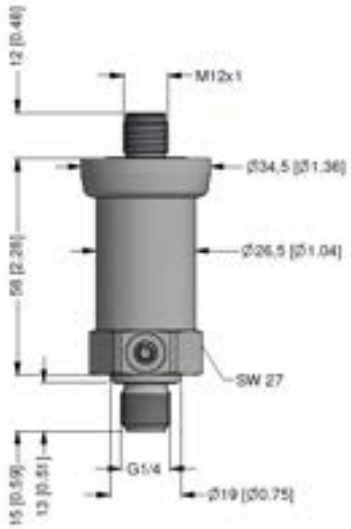
M12x1, 4 pin
(IP 67)



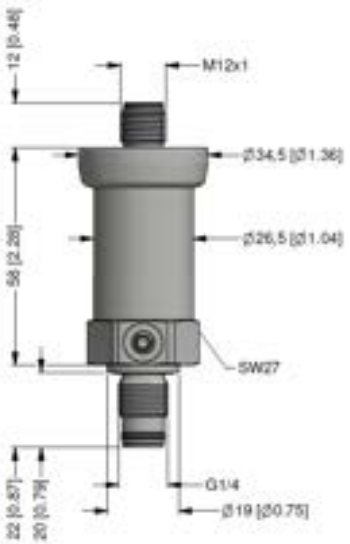
cable outlet with
PVC cable (IP 67) [3]

[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)



G 1/4" DIN 3852 flush



G 1/4" DIN 3852 flush
with 2 O-rings

Ordering code DMP 339P

DMP 339P □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure		
gauge	508	
Input	**[bar]**	
25	2502	
40	4002	
60	6002	
100	1003	
160	1603	
250	2503	
400	4003	
600	6003	
customer	9999	consult
Output		
4 … 20 mA / 2-wire	1	
0 … 10 V / 3-wire	3	
customer	9	consult
Accuracy		
0.5 % FSO	5	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	100	
male plug M12x1 (4-pin) / metal	M10	
cable outlet with PVC cable (IP67) [1]	TA0	
customer	999	consult
Mechanical connection		
G1/4" DIN3852, flush, welded	Z02	
G1/4" DIN3852, flush with 2 O-rings	Z54	
customer	999	consult
Diaphragm		
stainless steel 1.4435 (316L)	1	
customer	9	consult
Seal		
FKM	1	
customer	9	consult
Filling fluids		
silicone oil	1	
customer	9	consult
Special version		
standard	000	
customer	999	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

DMK 331P

Industrial Pressure Transmitter

Pressure Ports with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 60 bar up to 0 ... 400 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 20 mA / 0 … 10 V
others on request

Special characteristics

- suited for viscous and pasty media

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- SIL 2
  according to IEC 61508 / IEC 61511
- food compatible filling fluid with FDA approval
- cooling element for media temperatures up to 300 °C
- customer specific versions

The pressure transmitter DMK 331P is suitable for measuring the pressure of viscous and pasty media, where a totally flush pressure port is required.

As on all industrial pressure transmitters made by BD|SENSORS, you may choose between various electrical and mechanical connections also on DMK 331P.

Preferred areas of use are

- Plant and machine engineering
- Food industry

Preferred used for

- Viscous and pasty media

Input pressure range					
Nominal pressure gauge/abs. [bar]	60	100	160	250	400
Overpressure [bar]	100	200	400	400	600
Burst pressure ≥ [bar]	180	300	500	750	1000

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [1]	≤ ± 0.5 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.3 % FSO / year at reference conditions	
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span) [2]		
Thermal error	≤ ± 0.2 % FSO / 10 K	
In compensated range	0 ... 85°C	
[2] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions		

Permissible temperatures		
Filling fluid	silicone oil	food compatible oil
Medium [3]	-40 ... 125 °C	-10 ... 125 °C
Medium with cooling element [4]	overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C	overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	
[3] max. temperature of the medium for overpressure > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C *[4] max. temperature depends on the used sealing material, type of seal and installation*		

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	20 g RMS (25 … 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Filling fluids	
Standard	silicone oil
Options	food compatible oil (with FDA approval) (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request
Materials	
Pressure port / housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seals	standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM [5] (recommended for medium temperatures < 260 °C) others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
[5] for pressure ranges p_N ≤ 100 bar	

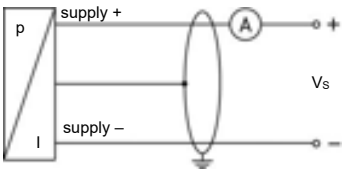
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approvals DX19-DMK 331P	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m

Miscellaneous		
Option SIL 2 version [6]	according to IEC 61508 / IEC 61511	
Current consumption	signal output current: max. 25 mA	signal output voltage: max. 7 mA
Weight	min. 200 g (depending on process connection)	
Installation position	any (standard calibration in a vertical position with the pressure port connection down)	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A) [7]
ATEX Directive	2014/34/EU	

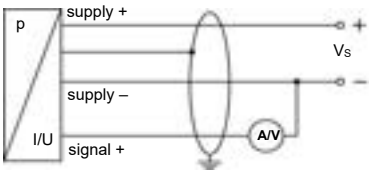
[6] only for 4 … 20 mA / 2-wire
[7] this directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

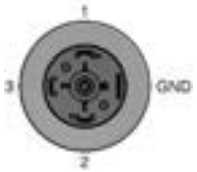
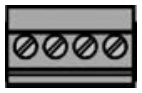
2-wire-system (current)



3-wire-system (current / voltage)

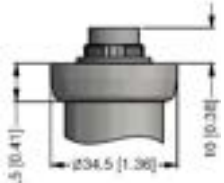


Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
					
supply +	1	3	1	V_S+	WH (white)
supply –	2	4	2	V_S-	BN (brown)
signal + (only 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin ⊕	5	4	GND	GNYE (green-yellow)

Electrical connections (dimensions mm / in)

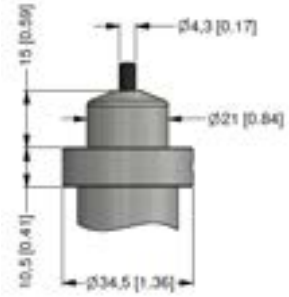
ISO 4400
(IP 65)



Binder series 723, 5-pin
(IP 67)

M12x1, 4-pin
(IP 67)

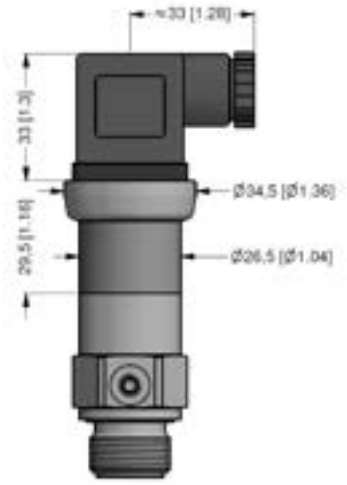
compact field housing
(IP 67)



cable outlet
with PVC-cable (IP 67) [8]

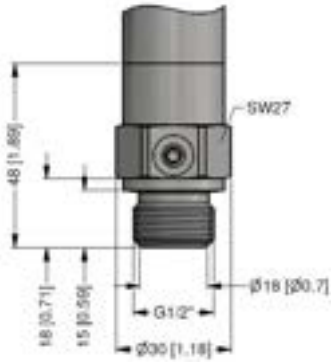
⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

[8] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

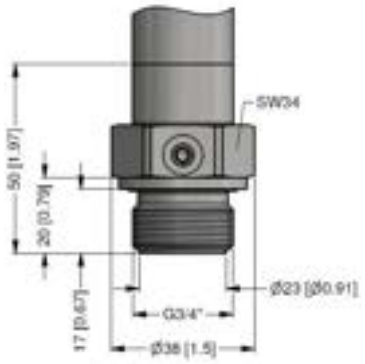
Dimensions (mm / in)	**cooling element up to 300 °C [4] (optionally)**
	 possible for $p_N \leq 160$ bar

[4] max. temperature depends on the used sealing material, type of seal and installation

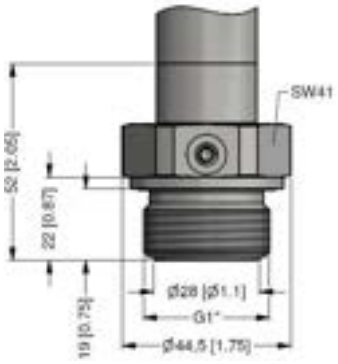
Mechanical connections (dimensions mm / in)



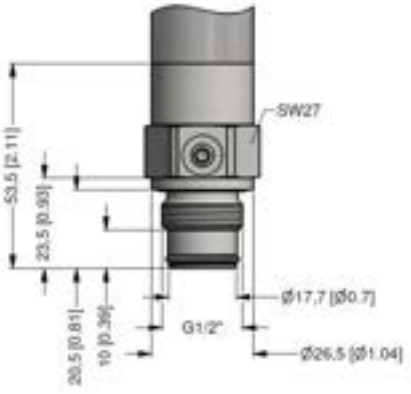
G1/2" flush DIN 3852



G3/4" flush DIN 3852



G1" flush DIN 3852



G1/2" flush
with radial o-ring

⇨ SIL- and SIL-Ex version: total length increases by 26.5 mm!
⇨ metric threads and other versions on request

Ordering code DMK 331P

DMK 331P □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure		
gauge	5 0 5	
absolute	5 0 6	
Input [bar]		
60	6 0 0 2	
100	1 0 0 3	
160	1 6 0 3	
250	2 5 0 3	
400	4 0 0 3	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
0 … 20 mA / 3-wire	2	
0 … 10 V / 3-wire	3	
intrinsic safety 4 … 20 mA / 2-wire	E	
SIL2 4 … 20 mA / 2-wire	1S	
SIL2 with intrinsic safety 4 … 20 mA / 2-wire	ES	
customer	9	consult
Accuracy		
0.5 % FSO	5	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
cable outlet with PVC-cable (IP67) [1]	T A 0	
male plug M12x1 (4-pin) / metal	M 1 0	
compact field housing stainless steel1.4301 (304)	8 5 0	
customer	9 9 9	consult
Mechanical connection		
G1/2" DIN 3852 with flush diaphragm	Z 0 0	
G3/4" DIN 3852 with flush diaphragm	Z S 0	
G1" DIN 3852 with flush diaphragm	Z S 1	
G 1/2" DIN 3852 with rad. o-ring and flush diaphragm	Z 6 1	
customer	9 9 9	consult
Diaphragm		
stainless steel 1.4435 (316L)	1	
customer	9	consult
Seals		
FKM	1	
FFKM [2]	7	
customer	9	consult
Filling fluids		
silicone oil	1	
food compatible oil	2	
customer	9	consult
Special version		
standard	0 0 0	
with cooling element up to 300°C [3]	2 0 0	
customer	9 9 9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[2] only for $p_N \leq 100$ bar possible
[3] only for $p_N \leq 160$ bar possible

DMK 351P

Pressure Transmitter for the Process Industry

Ceramic Sensor

accuracy according to IEC 60770:
Standard: 0.35 % FSO
Option: 0.25 % FSO

Nominal pressure

from 0 … 40 mbar up to 0 … 20 bar

Output signal

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V
others on request

Special characteristics

- hygienic version
- different process connections (G1 1/2", diary pipe, Clamp, etc.)
- high overpressure capability

Optional versions

- IS-version
  Ex ia = intrinsically safe
  for gases and dusts
- diaphragm 99.9 % Al_2O_3
- customer specific versions
  e.g. special pressure ranges

The pressure transmitter DMK 351P has been designed for measuring small system pressure in the food industry and chemical industry.

The DMK 351P is based on an own-developed capacitive ceramic sensor element. It features high overpressure resistance and high resistance against most of aggressive media. A variety of different process and electrical connections and an intrinsically safe version complete the range of possibilities.

Preferred areas of use are

- Food industry
- Chemical and petrochemical industry

Preferred used for

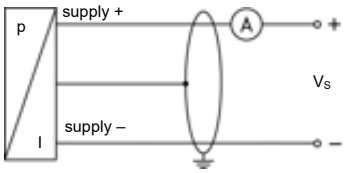
- Paint and varnish
- Viscous and pasty media

Pressure ranges																
Nominal pressure gauge	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Nominal pressure absolute [1]	[bar]	on request					0.4	0.6	1	1.6	2.5	4	6	10	16	20
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0.2		-0.3		-0.5				-1						
[1] not in combination with output 0 … 10 V / 3-wire																

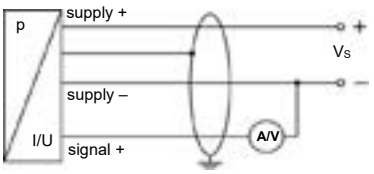
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Option 3-wire	3-wire: 0 … 10 V / V_S = 12.5 ... 32 V_{DC}
Performance	
Accuracy [2]	standard: ≤ ± 0.35 % FSO option for p_N ≥ 0.6 bar: ≤ ± 0.25 % FSO
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Permissible load	current 2-wire: R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω voltage 3-wire: R_{min} = 10 kΩ
Turn-on time	700 msec
Mean measuring rate	5 / sec
Response time	mean response time: ≤ 200 msec max. response time: 380 msec
[2] accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effect (offset and span)	
Tolerance band	≤ ± 1 % FSO
In compensated range	-20 … 80 °C
Permissible temperatures	
Permissible temperatures	medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 … 100 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 1 msec according to DIN EN 60068-2-27
Materials	
Pressure port	stainless steel 1.4404 (316L)
Housing	stainless steel 1.4404 (316L)
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seal (media wetted)	FKM EPDM others on request
Diaphragm	standard: ceramic Al_2O_3 96 % option: ceramic Al_2O_3 99.9 %
Media wetted parts	pressure port, seals, diaphragm
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approval DX 14-DMK 351 P	IBExU 05 ATEX 1070 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T110 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 14 nF, L_i ≈ 0 µH, C_{gnd} = 27 nF
Max. permissible temperature for environment	zone 0: -20 ... 60 °C for p_{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °C
Connecting cables (by factory)	cable capacity: signal line / shield also signal line / signal line: 220 pF/m cable inductance: signal line / shield also signal line / signal line: 1.5 µH/m
Miscellaneous	
Current consumption	max. 21 mA
Weight	min. 200 g
Installation position	any
Operational life	100 million load cycles
CE-conformity	EMC-directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagram

2-wire-system (current)



3-wire-system (current / voltage)

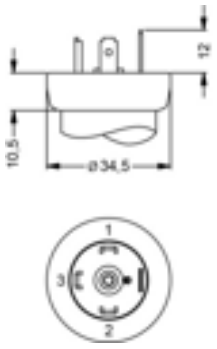


Pin configuration

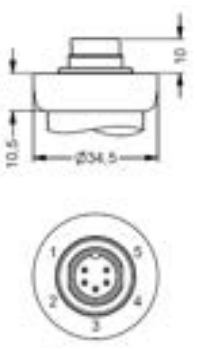
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	compact field housing	cable colours (IEC 60757)
Supply +	1	3	1	IN +	WH (white)
Supply –	2	4	2	IN –	BN (brown)
Signal + (only 3-wire)	3	1	3	OUT +	GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

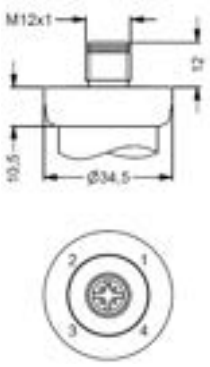
standard **options**



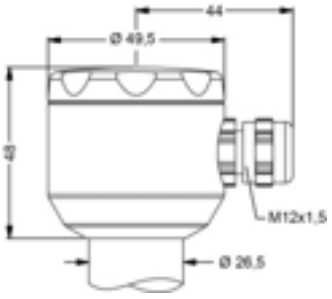
ISO 4400
(IP 65)



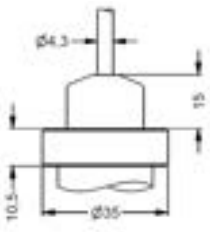
Binder series 723 5-pin
(IP 67)



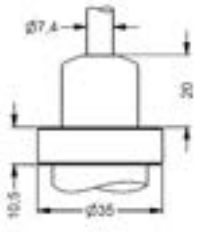
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet with
PVC-cable (IP 67) [3]



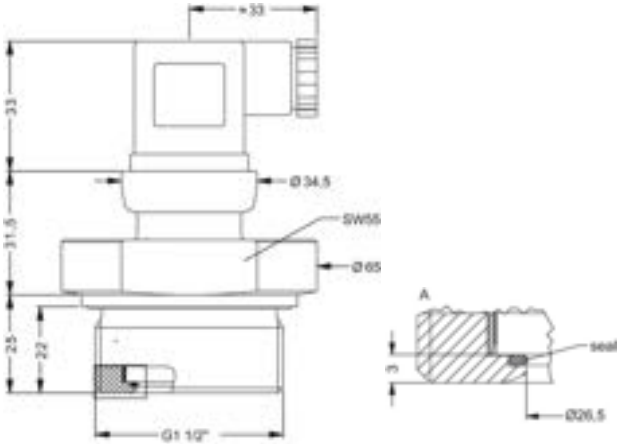
cable outlet, cable with
ventilation tube (IP 68) [4]

⇨ **universal stainless steel field housing 1.4404 with cable gland M20x1.5 (ordering code 880) and other versions on request**

[3] standard: 2 m PVC-cable without ventilation tube (permissible temperature: -5 … 70 °C)
[4] different cable types and lengths available, permissible temperature depends on kind of cable

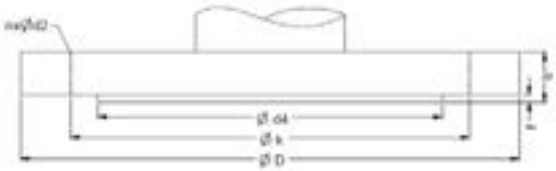
Mechanical connections (dimensions in mm)

standard



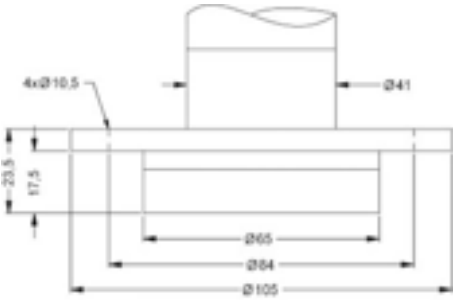
G1 1/2" DIN 3852

options

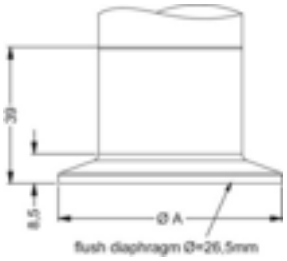


flange (DIN 2501)

dimensions in mm			
size	DN 25	DN 50	DN 80
D	115	165	200
k	85	125	160
d4	68	102	138
b	18	20	20
f	2	3	3
n	4	4	8
d2	14	18	18
p_N [bar]	≤ 40	≤ 40	≤ 16

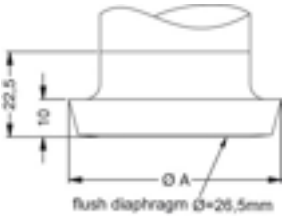


flange DRD [5]



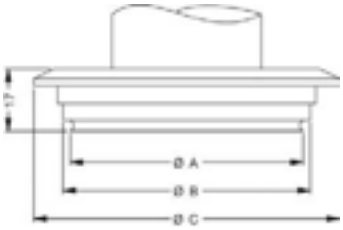
Clamp (DIN 32676)

dimensions in mm		
size	DN 32	DN 50
A	50.5	64
p_N [bar]	≤ 16	≤ 16



dairy pipe (DIN 11851)

dimensions in mm		
size	DN 40	DN 50
A	56	68.5



Varivent®

dimensions in mm	
size	DN 40/50
A	64
B	68
C	84

[5] mounting flange is included in the delivery (already pre-assembled)

Ordering code DMK 351P

DMK 351P ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

	[mH_2O]	[bar]	Code	
Pressure				
gauge			2 9 5	
absolute [1]			2 9 6	
Input	[mH_2O]	[bar]		
	0.4	0.04	0 4 0 0	
	0.6	0.06	0 6 0 0	
	1.0	0.10	1 0 0 0	
	1.6	0.16	1 6 0 0	
	2.5	0.25	2 5 0 0	
	4.0	0.40	4 0 0 0	
	6.0	0.60	6 0 0 0	
	10	1.0	1 0 0 1	
	16	1.6	1 6 0 1	
	25	2.5	2 5 0 1	
	40	4.0	4 0 0 1	
	60	6.0	6 0 0 1	
	100	10	1 0 0 2	
	160	16	1 6 0 2	
	200	20	2 0 0 2	
customer			9 9 9 9	consult
Output				
4 … 20 mA / 2-wire			1	
0 … 10 V / 3-wire			3	consult
intrinsic safety 4 … 20 mA / 2-wire			E	
customer			9	consult
Accuracy				
standard: 0.35 % FSO			3	
option for $p_N \geq 0.6$ bar: 0.25 % FSO			2	
customer			9	consult
Electrical connection				
male and female plug ISO 4400			1 0 0	
male plug Binder series 723 (5-pin)			2 0 0	
male plug M12x1 (4-pin) / metal			M 1 0	
cable outlet with PVC cable (IP67) [2]			T A 0	
cable outlet, cable with ventilation tube (IP68) [3]			T R 0	
compact field housing stainless steel 1.4301 (304)			8 5 0	
customer			9 9 9	consult
Mechanical connection				
G 1 1/2" DIN flush (DIN 3852)			M 0 0	
Clamp DN 32 (DIN 32676)			C 6 2	
Clamp DN 50 (DIN 32676)			C 6 3	
dairy pipe DN 40 (DIN 11851) [4]			M 7 5	
dairy pipe DN 50 (DIN 11851) [4]			M 7 6	
Varivent® DN 40/50			P 4 1	consult
flange DN 25 / PN 40 (DIN 2501)			F 2 0	consult
flange DN 50 / PN 40 (DIN 2501)			F 2 3	consult
flange DN 80 / PN 16 (DIN 2501)			F 1 4	consult
customer			9 9 9	consult
Seal				
FKM			1	
EPDM			3	
customer			9	consult
Pressure port				
stainless steel 1.4404 (316L)			1	
customer			9	consult
Diaphragm				
ceramics Al_2O_3 96 %			2	
ceramics Al_2O_3 99.9 %			C	
customer			9	consult
Special version				
standard			0 0 0	
customer			9 9 9	consult

[1] absolute pressure from 0.04 bar up to 0.25 bar on request and not in combination with output 0 … 10 V / 3-wire
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[4] The cup nut has to be mounted by production of pressure transmitter with electrical connection field housing and mechanical connection dairy pipe. The cup nut has to be ordered as separate position.

Varivent® is a brand name of GEA Tuchenhagen GmbH

17.600 G

OEM Pressure Transmitter Heavy Duty

Applications:

- mobile hydraulic
- presses
- general mechanical engineering
- oxygen application

Characteristics:

- stainless steel sensor, welded
- accuracy 0.5 % FSO according to IEC 60770
- nominal pressure ranges from 0 … 6 bar up to 0 … 600 bar

Technical Data

Input pressure range												
Nominal pressure gauge	[bar]	6	10	16	25	40	60	100	160	250	400	600
Overpressure (static)	[bar]	12	20	32	50	80	120	200	320	500	800	1 200
Burst pressure ≥	[bar]	30	50	80	125	200	300	500	800	1 400	2 000	3 000
Vacuum resistance		unlimited										

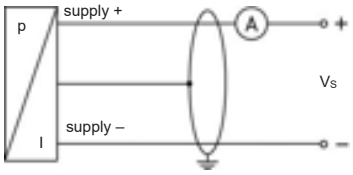
Output signal / Supply				
Standard	2-wire:	4 ... 20 mA	/	V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V	/	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 ... 90 % of V_S	/	V_S = 2.7 ... 5 V_{DC}
Performance				
Accuracy [1]	≤ ± 0.5 % FSO			
Permissible load	2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$		3-wire:	R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V		load:	0.05 % FSO / kΩ
Response time	2-wire: ≤ 10 msec		3-wire:	≤ 3 msec
Long term stability	≤ ± 0.3 % FSO / year at reference conditions			
Measuring rate	1 kHz			
[1] *accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)*				
Thermal effects (offset and span) / Permissible temperatures				
Thermal error	≤ ± 0.3 % FSO / 10 K	in compensated range	0 ... 70 °C	
Permissible temperatures	medium: -40 ... 125 °C	electronics / environment: -40 ... 85 °C		storage: -40 ... 85 °C
Electrical protection				
Short-circuit protection	permanent	3-wire ratiometric: none		
Reverse polarity protection	no damage, but also no function			
Electromagnetic protection	emission and immunity according to EN 61326			
Mechanical stability				
Vibration	20 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6		
Shock	500 g / 1 msec	according to DIN EN 60068-2-27		

Materials	
Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304)
Seal of pressure port	FKM for G 1/4″ DIN 3852 others on request
Seal of sensor	none (welded)
Diaphragm	stainless steel 1.4542 (630)
Media wetted parts	pressure port, seal of pressure port, diaphragm
Miscellaneous	
Weight	approx. 120 g
Current consumption	2-wire: max. 25 mA 3-wire ratiometric: typ. 3 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [2]

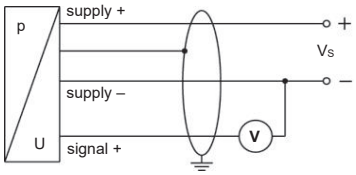
[2] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

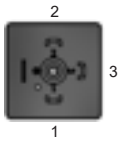
2-wire-system (current)



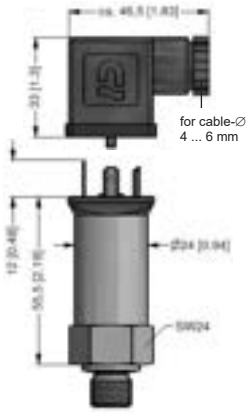
3-wire-system (voltage)



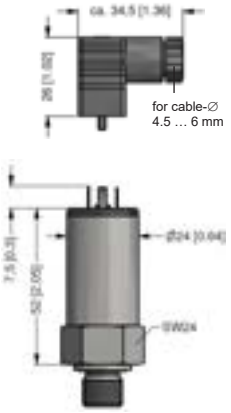
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), metal	cable colours (IEC 60757)
				
Supply +	1	1	1	WH (white)
Supply –	2	2	2	BN (brown)
Signal + (for 3-wire)	3	3	3	GN (green)
Shield	ground pin ⊕	ground pin ⊕	4	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)



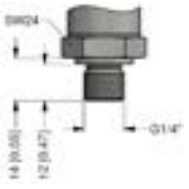
Micro, contact
distance 9.4 mm (IP 65)

M12x1, 4-pin
(IP 67)

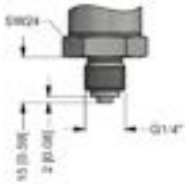
cable outlet with
PVC-cable (IP 67) [3, 4]

[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[4] different cable types and lengths available, permissible temperature depends on kind of cable

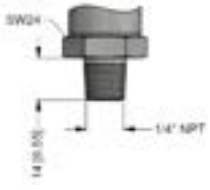
Mechanical connection (dimensions mm / in)



G1/4" DIN 3852
(not for oxygen)



G1/4" EN 837



1/4" NPT

G1/2" EN 837

Ordering code 17.600 G

17.600 G -□□□□-□-□-□-□□□-□□□-□-□□□

Input	**[bar]**																		
6		6	0	0	1														
10		1	0	0	2														
16		1	6	0	2														
25		2	5	0	2														
40		4	0	0	2														
60		6	0	0	2														
100		1	0	0	3														
160		1	6	0	3														
250		2	5	0	3														
400		4	0	0	3														
600		6	0	0	3														
customer		9	9	9	9														consult
Pressure																			
gauge						R													
Output																			
4 … 20 mA / 2-wire							1												
0 … 10 V / 3-wire							3												
10 …90% of Vs / 3-wire ratiometric							R												
Accuracy																			
0.5 % FSO								5											
customer								9											consult
Electrical connection																			
male and female plug ISO 4400									1	0	0								
male and female plug Micro									C	1	0								
male plug M12x1 (4-pin), metal									M	2	0								
cable outlet with PVC-cable [1]									T	M	0								
customer									9	9	9								consult
Mechanical connection / Seal																			
G1/4" DIN 3852 / on pressure port: FKM												3	0	0	P				
G1/4" EN 837 / without												4	0	0	2				
1/4" NPT / without												N	4	0	2				
G1/2" EN 837 / without												2	0	0	2				
customer												9	9	9	9				consult
Special version																			
standard																0	0	0	
oxygen application [2]																0	0	7	
oil and grease free																0	0	8	
customer																9	9	9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C)

[2] not possible with G1/4" DIN 3852

17.609 G

OEM Pressure Transmitter

Application

- refrigeration

Characteristics

- stainless steel sensor, welded
- accuracy 0.5 % FSO according to IEC 60770
- nominal pressure ranges from
  0 … 6 bar up to 0 … 60 bar
  -1 … 6 bar up to -1 … 60 bar

Technical Data

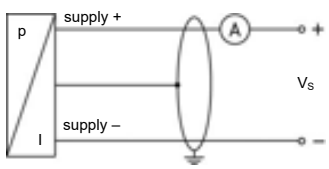
Pressure ranges							
Nominal pressure gauge	[bar]	6	10	16	25	40	60
Overpressure	[bar]	12	20	32	50	80	120
Burst pressure ≥	[bar]	30	50	80	125	200	300
Vacuum resistance		unlimited					
Vacuum ranges							
Nominal pressure gauge	[bar]	-1 ... 6	-1 ... 10	-1 ... 16	-1 ... 25	-1 ... 40	-1 ... 60
Overpressure	[bar]	12	20	32	50	80	120
Burst pressure	[bar]	30	50	80	125	200	300

Output signal / Supply			
Standard	2-wire:	4 ... 20 mA /	V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V /	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 ... 90 % of V_S /	V_S = 2.7 ... 5 V_{DC}
Performance			
Accuracy [1]	≤ ± 0.5 % FSO		
Permissible load	2-wire:	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	3-wire: R_{min} = 10 kΩ
Influence effects	supply:	0.05 % FSO / 10 V	load: 0.05 % FSO / kΩ
Response time	2-wire:	≤ 10 msec	3-wire: ≤ 3 msec
Long term stability	≤ ± 0.3 % FSO / year at reference conditions		
Measuring rate	1 kHz		
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal effects (offset and span) / Permissible temperatures			
Thermal error	≤ ± 0.3 % FSO / 10 K	in compensated range	0 ... 70 °C
Permissible temperatures	medium: -40 ... 125 °C	electronics / environment: -40 ... 85 °C	storage: -40 ... 85 °C
Electrical protection			
Short-circuit protection	permanent	3-wire ratiometric: none	
Reverse polarity protection	no damage, but also no function		
Electromagnetic protection	emission and immunity according to EN 61326		

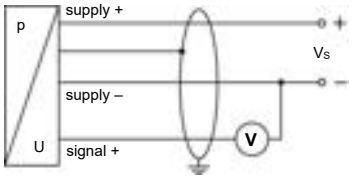
Mechanical stability		
Vibration	20 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6
Shock	500 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4571 (316Ti)	
Housing	stainless steel 1.4301 (304)	
Seal of sensor	none (welded)	
Diaphragm	stainless steel 1.4542 (630)	
Media wetted parts	pressure port, diaphragm	
Miscellaneous		
Mechanical connection	7/16"-20 UNF	
Weight	approx. 120 g	
Current consumption	2-wire: max. 25 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)	3-wire ratiometric: typ. 3 mA
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



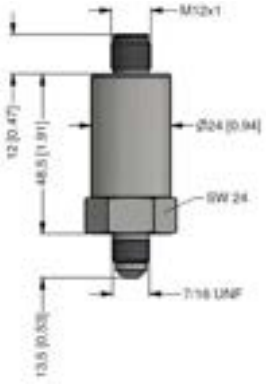
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), metal	cable colours (IEC 60757)
				
Supply +	1	1	1	WH (white)
Supply –	2	2	2	BN (brown)
Signal + (for 3-wire)	3	3	3	GN (green)
Shield	ground pin	ground pin	4	GNYE (green-yellow)

Dimensions (mm / in)

ISO 4400
(IP 65)

Micro, contact
distance 9.4 mm (IP 65)



M12x1, 4-pin
(IP 67)

cable outlet with
PVC-cable (IP 67) [2,3]

[2] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)*
[3] *different cable types and lengths available, permissible temperature depends on kind of cable*

Ordering code 17.609 G

17.609 G -□□□□-□-□-□-□□□-□□□-□-□□□

Input	**[bar]**																
6		6	0	0	1												
10		1	0	0	2												
16		1	6	0	2												
25		2	5	0	2												
40		4	0	0	2												
60		6	0	0	2												
-1 ... 6		V	6	0	2												
-1 ... 10		V	1	0	3												
-1 ... 16		V	1	6	3												
-1 ... 25		V	2	5	3												
-1 ... 40		V	4	0	3												
-1 ... 60		V	6	0	3												
customer		9	9	9	9												consult
Pressure																	
gauge						R											
Output																	
4 … 20 mA / 2-wire							1										
0 … 10 V / 3-wire							3										
10 … 90% of V_S / 3-wire ratiometric							R										
Accuracy																	
0.5 % FSO								5									
customer								9									consult
Electrical connection																	
male and female plug ISO 4400									1	0	0						
male and female plug Micro									C	1	0						
male plug M12x1 (4-pin), metal									M	2	0						
cable outlet with PVC-cable [1]									T	M	0						
customer									9	9	9						consult
Mechanical connection / Seal																	
7/16"-20 UNF												U	0	0	2		
customer												9	9	9	9		consult
Special version																	
standard																0	0	0
customer																9	9	9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 … 70 °C)

17.620 G

Compact
OEM Pressure Transmitter
Heavy Duty

Applications:

- mobile hydraulic, presses
- general mechanical engineering

Characteristics:

- stainless steel sensor, welded
- nominal pressure ranges from 0 … 16 bar up to 0 … 1000 bar
- accuracy according to IEC 60770: 0.5 % FSO

Technical Data

Input pressure range											
Nominal pressure gauge	[bar]	16	25	40	60	100	160	250	400	600	1000 [1]
Overpressure (static)	[bar]	50	50	80	120	200	320	500	800	1200	1500
Burst pressure ≥	[bar]	125	125	200	300	500	800	1250	2000	2000	3000 [2]

[1] only for static pressures
[2] UL confirmed max. burst pressure 2420 bar

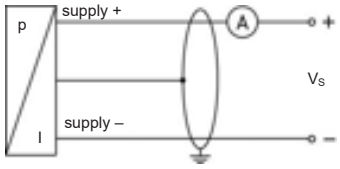
Output signal / Supply		
2-wire	4 ... 20 mA	V_S = 10 ... 30 V_{DC}
3-wire ratiometric	10 … 90% of V_S	V_S = 2.7 … 5 V_{DC}
Performance		
Accuracy [3]	≤ ± 0.5 % FSO	
Permissible load	2 wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	3 wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V	load: 0.05 % FSO / kΩ
Response time	typ. 2 msec	
Long term stability	≤ ± 0.2 % FSO / year at reference conditions	
Measuring rate	1 kHz	
[3] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span) / Permissible temperatures		
Thermal error	≤ ± 0.2 % FSO / 10 K	in compensated range -20 ... 80 °C
Permissible temperatures	medium: electronics / environment: storage:	-40 ... 125 °C -40 ... 85 °C -40 ... 85 °C
Electrical protection		
Short-circuit protection	2-wire: permanent	3-wire ratiometric: none
Reverse polarity protection	no damage, but also no function	
Electromagnetic protection	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	20 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6
Shock	500 g / 1 msec	according to DIN EN 60068-2-27

Materials		
Pressure port	p_N ≤ 600 bar: stainless steel 316L (1.4404)	p_N > 600 bar: stainless steel 17-4 PH (1.4542)
Housing	stainless steel 304 (1.4301)	
Seal of pressure port	G 1/4" DIN 3852: FKM	others on request
Seal of sensor	none (welded)	
Sensor	stainless steel 17-4PH (1.4548)	
Media wetted parts	pressure port, seal, sensor	
Miscellaneous		
Weight	approx. 54 g	
Current consumption	2-wire: max. 25 mA	3-wire ratiometric: typ. 2.5 mA
Operational life	p_N ≤ 600 bar: 100 million load cycles	p_N > 600 bar: 10 million load cycles
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A)

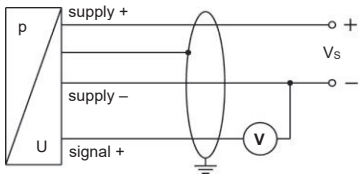
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

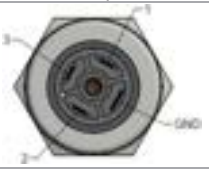
2-wire-system (current)



3-wire-system (voltage)

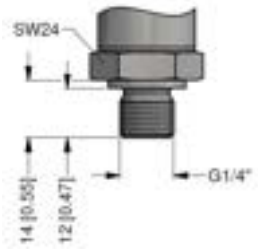


Pin configuration

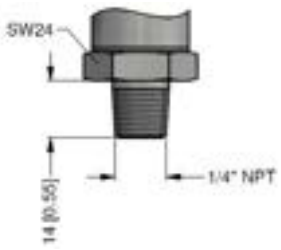
Electrical connection	male plug M12x1 (4-pin), metal	male plug Micro (contact distance 9.4 mm) on request
		
Supply +	1	1
Supply –	3	3
Signal + (for 3-wire)	2	2
Shield	housing	ground pin ⏚

Dimensions (mm / in)

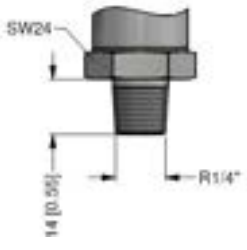
Mechanical connections (mm / in)



G1/4" DIN 3852



1/4" NPT



R 1/4"

Ordering code 17.620 G

17.620 G -□□□□-□-□-□-□□□-□□□-□-□□□

Input	**[bar]**																	
	16	1	6	0	2													
	25	2	5	0	2													
	40	4	0	0	2													
	60	6	0	0	2													
	100	1	0	0	3													
	160	1	6	0	3													
	250	2	5	0	3													
	400	4	0	0	3													
	600	6	0	0	3													
	1000	1	0	0	4													
	customer	9	9	9	9													consult
Pressure																		
	gauge					R												
Output																		
	4 … 20 mA / 2-wire						1											
	10 … 90% of Vs / 3-wire ratiometric						R											
	customer						9											consult
Accuracy																		
	0.5 % FSO							5										
	customer							9										consult
Electrical connection																		
	male plug M12x1 (4-pin), metal								M	1	3							
	male plug Micro (contact distance 9.4 mm)								C	B	0							consult
	customer								9	9	9							consult
Mechanical connection / Seal																		
	G1/4" DIN 3852 / on pressure port: FKM											3	0	0	P			
	1/4" NPT / without											N	4	0	2			
	R1/4" / without											R	4	0	2			
	customer											9	9	9	9			consult
Special version																		
	standard															0	0	0
	customer															9	9	consult

18.600 G

OEM Pressure Transmitter Pneumatics

Applications

- compressed air network
- general mechanical engineering

Characteristics

- silicon sensor without media isolation
- accuracy 0.5 % FSO according to IEC 60770
- nominal pressure ranges from 0 … 100 mbar up to 0 … 6 bar

Technical Data

Input pressure range											
Nominal pressure gauge	[bar]	-1 … 0	0,1	0,25	0,4	0,6	1	1,6	2,5	4	6
Overpressure	[bar]	3	0,5	1	1	3	3	6	10	10	20
Burst pressure	[bar]	5	1,5	3	3	3	7,5	7,5	15	25	25

Output signal / Supply			
Standard	2-wire:	4 ... 20 mA /	V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V /	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 ... 90 % of V_S /	V_S = 2.7 ... 5 V_{DC}
Performance			
Accuracy [1]	≤ ± 0.5 % FSO		
Permissible load	2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$		3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V		load: 0.05 % FSO / kΩ
Response time	2-wire: ≤ 10 msec		3-wire: ≤ 3 msec
Long term stability	≤ ± 0,2 % FSO / year at reference conditions		
Measuring rate	1 kHz		
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			

Thermal effects (offset and span)			
Nominal pressure p_N [bar]	-1 … 0	≤ 0.4	> 0.4
Tolerance band [% FSO]	≤ ± 1	≤ ± 1	≤ ± 0.75
in compensated range [°C]	0 … 70		-20 … 85

Permissible temperatures			
Permissible temperatures	medium: -25 … 125 °C	electronics / environment: -25 ... 85 °C	storage: -40 ... 85 °C

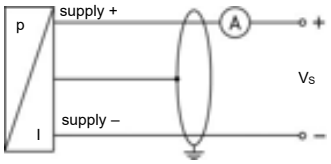
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

Mechanical stability		
Vibration	10 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6
Shock	100 g / 11 msec	according to DIN EN 60068-2-27

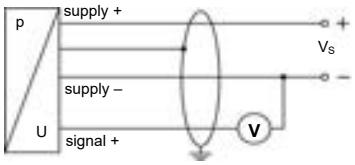
Materials	
Pressure port / housing	stainless steel 1.4301 (304)
Seals	FKM
Sensor	stainless steel 1.4404 (316L), silicon, glass, epoxy or RTV
Media wetted parts	pressure port, seals, sensor
Miscellaneous	
Weight	approx. 120 g
Permissible media	pressurized air, non-aggressive gases
Current consumption	2-wire: max. 25 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU

Wiring diagrams

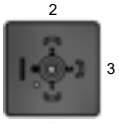
2-wire-system (current)



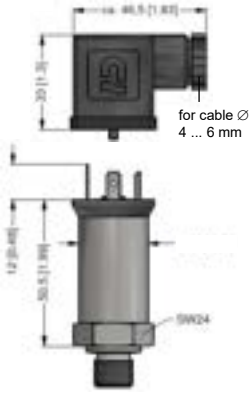
3-wire-system (voltage)



Pin configuration

Electrical connections	ISO 4400	M12x1 (4-pin), metal	cable colours (IEC 60757)
			
Supply +	1	1	WH (white)
Supply –	2	2	BN (brown)
Signal + (for 3-wire)	3	3	GN (green)
Shield	ground pin ⏚	4	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



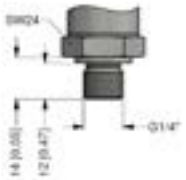
ISO 4400
(IP 65)

M12x1, 4-pin
(IP 67)

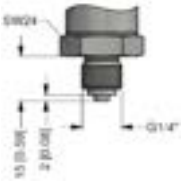
cable outlet with
PVC-cable (IP 67) [2, 3]

[2] *standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 ... 70 °C)*
[3] *different cable types and lengths available, permissible temperatur depends on kind of cable*

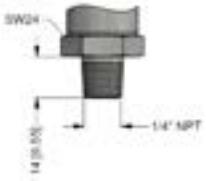
Mechanical connection (dimensions mm / in)



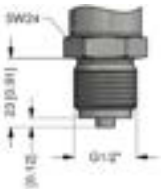
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" EN 837

other mechanical connections on request

Ordering code 18.600 G

18.600 G -□□□□-□-□-□-□□□-□□□-□-□□□

Input	**[bar]**																
0.10		1	0	0	0												
0.25		2	5	0	0												
0.40		4	0	0	0												
0.60		6	0	0	0												
1.0		1	0	0	1												
1.6		1	6	0	1												
2.5		2	5	0	1												
4.0		4	0	0	1												
6.0		6	0	0	1												
-1 … 0		X	1	0	2												
customer		9	9	9	9												consult
Pressure																	
gauge						R											
Output																	
4 … 20 mA / 2-wire							1										
0 … 10 V / 3-wire							3										
10 … 90% of V_S / 3-wire ratiometric							R										
customer							9										consult
Accuracy																	
0.5 % FSO								5									
customer								9									consult
Electrical connection																	
male and female plug ISO 4400									1	0	0						
male plug M12x1 (4-pin), metal									M	2	0						
cable outlet with PVC-cable [1]									T	M	0						
customer									9	9	9						consult
Mechanical connection																	
G1/4" DIN 3852												3	0	0			
G1/4" EN 837												4	0	0			
1/4" NPT												N	4	0			
customer												9	9	9			consult
Seals																	
FKM															1		
customer															9		consult
Special version																	
standard																0 0 0	
customer																9 9 9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C)

18.601 G

OEM Pressure Transmitter Low Pressure

Applications

- general industrial applications

Characteristics

- piezoresistive stainless steel sensor
- accuracy 0.5 % FSO according to IEC 60770
- nominal pressure ranges from 0 … 100 mbar up to 0 … 6 bar

Technical Data

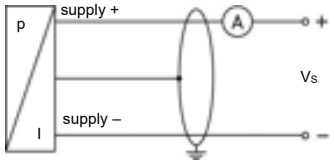
Input pressure range											
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6
Overpressure	[bar]	1	1	1	1	3	3	6	10	10	21
Burst pressure ≥	[bar]	1.5	1.5	1.5	1.5	5	5	10	17.5	17.5	35
Vacuum resistance		unlimited									

Output signal / Supply				
Standard	2-wire:	4 ... 20 mA	/	V_S = 8 ... 32 V_{DC}
Options 3-wire	3-wire:	0 ... 10 V	/	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 ... 90 % of V_S	/	V_S = 2.7 ... 5 V_{DC}
Performance				
Accuracy[1]	p_N > 160 mbar: ≤ ± 0.5 % FSO p_N ≤ 160 mbar: ≤ ± 1 % FSO			
Permissible load	2-wire:	$R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$	3-wire:	R_{min} = 10 kΩ
Influence effects	supply:	0.05 % FSO / 10 V	load:	0.05 % FSO / kΩ
Response time	2-wire:	≤ 10 msec	3-wire:	≤ 3 msec
Long term stability	≤ ± 0,2 % FSO / year at reference conditions			
Measuring rate	1 kHz			
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)				
Thermal effects (offset and span) / Permissible temperatures				
Thermal error	≤ ± 0.3 % FSO / 10 K	in compensated range 0 ... 70 °C		
Permissible temperatures	medium: -25 … 125 °C	electronics / environment: -25 ... 85 °C		storage: -40 ... 85 °C
Electrical protection				
Short-circuit protection	permanent	3-wire ratiometric: none		
Reverse polarity protection	no damage, but also no function			
Electromagnetic compatibility	emission and immunity according to EN 61326			
Mechanical stability				
Vibration	10 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6		
Shock	100 g / 1 msec	according to DIN EN 60068-2-27		

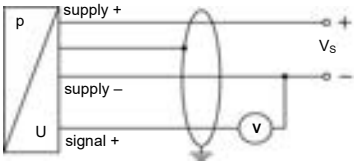
Materials	
Pressure port / housing	stainless steel 1.4301 (304)
Seals	FKM
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
Miscellaneous	
Weight	approx. 120 g
Current consumption	2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU

Wiring diagrams

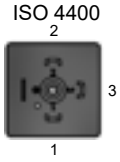
2-wire-system (current)



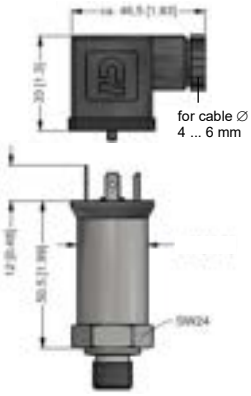
3-wire-system (voltage)



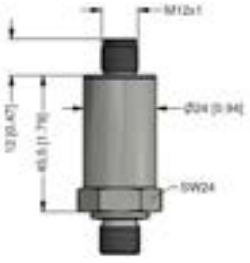
Pin configuration

Electrical connections	ISO 4400	M12x1 (4-pin), metal	cable colours (IEC 60757)
			
Supply +	1	1	WH (white)
Supply –	2	2	BN (brown)
Signal + (for 3-wire)	3	3	GN (green)
Shield	ground pin	4	GNYE (green-yellow)

Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)

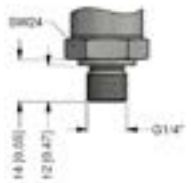


M12x1, 4-pin
(IP 67)

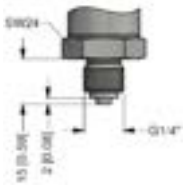
cable outlet with
PVC-cable (IP 67) [2, 3]

[2] *standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 ... 70 °C)*
[3] *different cable types and lengths available, permissible temperatur depends on kind of cable*

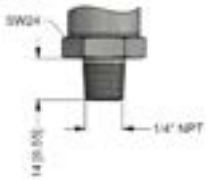
Mechanical connection (dimensions mm / in)



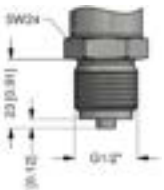
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" EN 837

Ordering code 18.601 G

18.601 G -□□□□-□-□-□-□□□-□□□-□-□□□

Input	**[bar]**																	
	0.10	1	0	0	0													
	0.16	1	6	0	0													
	0.25	2	5	0	0													
	0.40	4	0	0	0													
	0.60	6	0	0	0													
	1.0	1	0	0	1													
	1.6	1	6	0	1													
	2.5	2	5	0	1													
	4.0	4	0	0	1													
	6.0	6	0	0	1													
	customer	9	9	9	9													consult
Pressure																		
	gauge					R												
Output																		
	4 … 20 mA / 2-wire						1											
	0 … 10 V / 3-wire						3											
	10 … 90% of V_S / 3-wire ratiometric						R											
	customer						9											consult
Accuracy																		
P_N > 160 mbar:	≤ ± 0.5 % FSO							5										
P_N ≤ 160 mbar:	≤ ± 1 % FSO							8										
	customer							9										consult
Electrical connection																		
	male and female plug ISO 4400								1	0	0							
	male plug M12x1 (4-pin), metal								M	2	0							
	cable outlet with 2 m PVC cable [1]								T	M	0							
	customer								9	9	9							consult
Mechanical connection																		
	G1/4" DIN 3852											3	0	0				
	G1/4" EN 837											4	0	0				
	1/4" NPT											N	4	0				
	G1/2" EN 837											2	0	0				
	customer											9	9	9				consult
Seals																		
	FKM														1			
	customer														9			consult
Special version																		
	standard															0	0	0
	customer															9	9	9

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C)

18.605 G

Submersible OEM-Pressure Transmitter

Applications

- level measurement in water and fuel oil tanks

Characteristics

- piezoresistive stainless steel sensor
- accuracy 0.5 % FSO according to IEC 60770
- nominal pressure ranges from 0 … 1 mH_2O up to 0 … 10 mH_2O

Technical Data

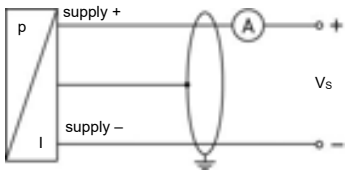
Input pressure range						
Nominal pressure gauge	[bar]	0.1	0.25	0.4	0.6	1
Level	[mH_2O]	1	2.5	4	6	10
Overpressure	[bar]	1	1	1	3	3
Burst pressure ≥	[bar]	1.5	1.5	1.5	5	5
Vacuum resistance		unlimited				

Output signal / Supply		
Standard	2-wire:	4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option 3-wire	3-wire:	0 ... 10 V / V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 … 90 % of V_S / V_S = 2.7 … 5 V_{DC}
Performance		
Accuracy [1]	p_N > 160 mbar: ≤ ± 0.5 % FSO	p_N ≤ 160 mbar: ≤ ± 1 % FSO
Permissible load	2-wire:	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$
	3-wire:	R_{min} = 10 kΩ
Influence effects	supply:	0.05 % FSO / 10 V
	load:	0.05 % FSO / kΩ
Response time	2-wire:	≤ 10 msec
	3-wire:	≤ 3 msec
Long term stability	≤ ± 0.2 % FSO / year at reference conditions	
Measuring range	1 kHz	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span) / Permissible temperatures		
Thermal error	≤ ± 0.3 % FSO / 10 K	in compensated range 0 ... 70 °C
Permissible temperatures	medium / electronics / environment / storage:	-10 ... 70 °C
Electrical protection		
Short circuit protection	permanent	3-wire ratiometric: none
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	

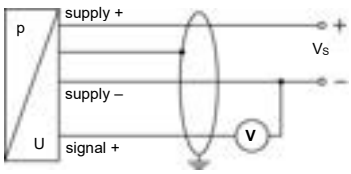
Mechanical stability		
Vibration	10 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6
Shock	100 g / 1 msec	according to DIN EN 60068-2-27
Materials (media wetted)		
Housing	stainless steel 1.4301 (304)	
Seals	FKM	
Diaphragm	stainless steel 1.4435 (316 L)	
Cable sheath	PVC (oil resistant)	
Miscellaneous		
Weight	approx. 120 g (without cable)	cable: 25 g / m
Cable length	3 m, 6 m, 9 m or 12 m; others on request	
Suitable for following media	water, fuel oil	
Current consumption	2-wire: max. 25 mA 3-wire voltage: typ. 5 mA (short circuit current: max. 20 mA)	3-wire ratiometric: typ. 1.5 mA
Ingress protection	IP 68	
CE-conformity	EMC Directive: 2014/30/EU	

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



Pin configuration	
Electrical connections	cable colours (IEC 60757)
Supply + Supply – Signal + (only for 3-wire)	WH (white) BN (brown) GN (green)
Shield	GNYE (green-yellow)

Dimensions (mm / in)

G1/4" DIN 3852
with PVC cable (with ventilation tube)

Ordering code 18.605 G

18.605 G - □□□□ - □ - □ - □ - □ - □□□ - □□□ - □ - □□□

Input	**[mH$_2$O]**	**[bar]**											
	1.0	0.1	1 0 0 0										
	2.5	0.25	2 5 0 0										
	4	0.4	4 0 0 0										
	6	0.6	6 0 0 0										
	10	1.0	1 0 0 1										
		customer	9 9 9 9										consult
Pressure													
		bar		B									
		mH$_2$O		M									
		customer		9									consult
Output													
		4 … 20 mA / 2-wire			1								
		0 … 10 V / 3-wire			3								
		10 … 90% of V$_S$ / 3-wire ratiometric			R								
		customer			9								consult
Accuracy													
P$_N$ > 160 mbar:		≤ ± 0.5 % FSO				5							
P$_N$ ≤ 160 mbar:		≤ ± 1 % FSO				8							
		customer				9							consult
Electrical connection													
		PVC-cable					1						
		customer					9						consult
Cable length													
		3 m						0 0 3					
		6 m						0 0 6					
		9 m						0 0 9					
		12 m						0 1 2					
		customer						9 9 9					
Mechanical connection													
		G1/4" DIN 3852							3 0 0				
		customer							9 9 9				consult
Seals													
		FKM								1			
		customer								9			consult
Special version													
		standard									0 0 0		
		customer									9 9 9		consult

26.600 G

OEM Pressure Transmitter Standard

Applications

- mechanical and plant engineering
- general industrial applications

Characteristics

- ceramic sensor
- accuracy 0.5 % FSO according to IEC 60770
- nominal pressure ranges from 0 … 1 bar up to 0 … 400 bar
- option: oil and grease free version

Technical Data

Input pressure range																
Nominal pressure gauge	[bar]	-1…0[1]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
Nominal pressure abs.	[bar]	-	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
Overpressure	[bar]	3	3	5	5	12	12	20	50	50	120	120	200	400	400	650
Burst pressure ≥	[bar]	4	4	7	7.5	15	18	30	70	75	150	180	300	500	750	1000
Vacuum resistance		unlimited														
[1] for this pressure range accuracy is ≤ 1 % FSO IEC 60770																

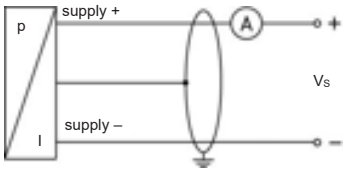
Output signal / Supply			
Standard	2-wire:	4 ... 20 mA /	V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V /	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 ... 90 % of V_S /	V_S = 2.7 ... 5 V_{DC}
Performance			
Accuracy [2]	≤ ± 0.5 % FSO		for p_N -1…0 bar: ≤ 1 % FSO
Permissible load	2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$		3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V		load: 0.05 % FSO / kΩ
Response time	2-wire: ≤ 10 msec		3-wire: ≤ 3 msec
Long term stability	≤ ± 0.3 % FSO / year at reference conditions		
Measuring rate	1 kHz		
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal effects (offset and span) / Permissible temperatures			
Thermal error	≤ ± 0.3 % FSO / 10 K	in compensated range:	0 … 85 °C
Permissible temperatures	medium: -25 … 125 °C	electronics / environment: -25 … 85 °C	storage: -40 … 85 °C
Electrical protection			
Short-circuit protection	permanent	3-wire ratiometric: none	
Reverse polarity protection	no damage, but also no function		
Electromagnetic protection	emission and immunity according to EN 61326		
Mechanical stability			
Vibration	10 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6	
Shock	500 g / 1 msec	according to DIN EN 60068-2-27	

Materials	
Pressure port / housing	stainless steel 1.4301 (304)
Seals (media wetted)	FKM others on request
Diaphragm	ceramics Al_2O_3 96 %
Media wetted parts	pressure port, seals, diaphragm
Miscellaneous	
Option oxygen application	for $p_N \leq 25$ bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C
Weight	approx. 120 g
Current consumption	2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [3]

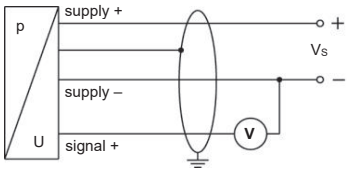
[3] this directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

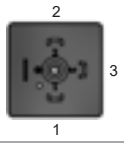
2-wire-system (current)



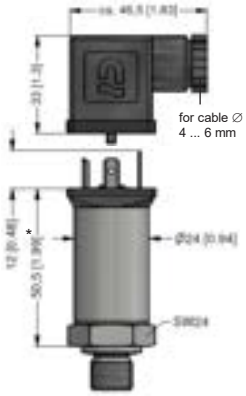
3-wire-system (voltage)



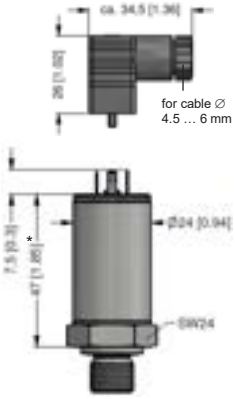
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), metal	cable colours (IEC 60757)
				
Supply +	1	1	1	WH (white)
Supply –	2	2	2	BN (brown)
Signal + (for 3-wire)	3	3	3	GN (green)
Shield	ground pin	ground pin	4	GNYE (green-yellow)

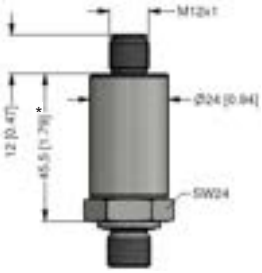
Electrical connections (dimensions mm / in)



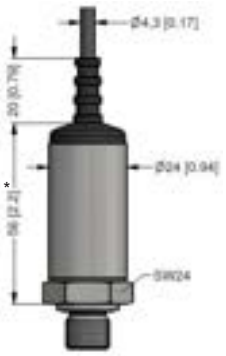
ISO 4400
(IP 65)



Micro, contact
distance 9.4 mm (IP 65)



M12x1, 4-pin
(IP 67)

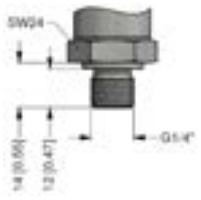


cable outlet with
PVC-cable (IP 67) [4,5]

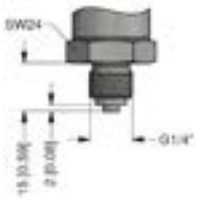
* pressure range p_N = 400 bar: total length increases by 12 mm

[4] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[5] different cable types and lengths available, permissible temperature depends on kind of cable

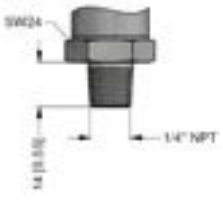
Mechanical connection (dimensions mm / in)



G1/4" DIN 3852



G1/4" EN 837



1/4" NPT

G1/2" EN 837

Ordering code 26.600 G

26.600 G -□□□□-□-□-□-□□□-□□□-□-□□□

Input	**[bar]**																	
1.0		1	0	0	1													
1.6		1	6	0	1													
2.5		2	5	0	1													
4.0		4	0	0	1													
6.0		6	0	0	1													
10		1	0	0	2													
16		1	6	0	2													
25		2	5	0	2													
40		4	0	0	2													
60		6	0	0	2													
100		1	0	0	3													
160		1	6	0	3													
250		2	5	0	3													
400		4	0	0	3													
-1 … 0		X	1	0	2													
customer		9	9	9	9													consult
Pressure																		
gauge						R												
absolute						A												
Output																		
4 … 20 mA / 2-wire							1											
0 … 10 V / 3-wire							3											
10 … 90% of V_S / 3-wire ratiometric							R											
customer							9											consult
Accuracy																		
0.5 % FSO								5										
P_N: -1…0 bar	1.0 % FSO							8										
customer								9										consult
Electrical connection																		
male and female plug ISO 4400									1	0	0							
male and female plug Micro									C	1	0							
male plug M12x1 (4-pin), metal									M	2	0							
cable outlet with PVC cable [1]									T	M	0							
customer									9	9	9							consult
Mechanical connection																		
G1/4" DIN 3852												3	0	0				
G1/4" EN 837												4	0	0				
1/4" NPT												N	4	0				
G1/2" EN 837												2	0	0				
customer												9	9	9				consult
Seal																		
FKM															1			
EPDM															3			
customer															9			consult
Special version																		
standard																0	0	0
oxygen application [2]																0	0	7
oil and grease free																0	0	8
customer																9	9	9 consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C)
[2] oxygen application with FKM seal up to 25 bar possible

30.600 G

OEM Pressure Transmitter Low Cost

Applications

- mechanical and plant engineering
- general industrial applications

Characteristics

- ceramic sensor
- accuracy 1 % FSO according to IEC 60770
- nominal pressure ranges from 0 … 1.6 bar up to 0 … 250 bar

Technical Data

Input pressure range													
Nominal pressure gauge	[bar]	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	5	5	12	12	20	50	50	120	120	200	400	400
Burst pressure ≥	[bar]	7	7.5	15	18	30	70	75	150	180	300	500	750
Vacuum resistance		unlimited											

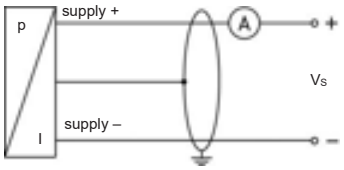
Output signal / Supply				
Standard	2-wire:	4 ... 20 mA	/	V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V	/	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 … 90 % of V_S	/	V_S = 2.7 ... 5 V_{DC}
Performance				
Accuracy [1]	≤ ± 1 % FSO			
Permissible load	2-wire:	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	3-wire:	R_{min} = 10 kΩ
Influence effects	supply:	0.05 % FSO / 10 V	load:	0.05 % FSO / kΩ
Response time	2-wire:	≤ 10 msec	3-wire:	≤ 3 msec
Long term stability	≤ ± 0.3 % FSO / year at reference conditions			
Measuring rate	1 kHz			
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)				
Thermal effects (offset and span) / Permissible temperatures				
Thermal error	≤ ± 0.5 % FSO / 10 K (typ.)	in compensated range	0 ... 85 °C	
Permissible temperatures	medium: -25 ... 125 °C	electronics / environment: -25 ... 85 °C		storage: -40 ... 85 °C
Electrical protection				
Short-circuit protection	permanent	3-wire ratiometric: none		
Reverse polarity protection	no damage, but also no function			
Electromagnetic protection	emission and immunity according to EN 61326			
Mechanical stability				
Vibration	10 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6		
Shock	500 g / 1 msec	according to DIN EN 60068-2-27		

Materials		
Pressure port / housing	stainless steel 1.4301 (304)	
Seals (media wetted)	FKM	others on request
Diaphragm	ceramics Al_2O_3 96 %	
Media wetted parts	pressure port, seals, diaphragm	
Miscellaneous		
Weight	approx. 120 g	
Current consumption	2-wire: max. 25 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)	3-wire ratiometric: typ. 1.5 mA
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A) [2]

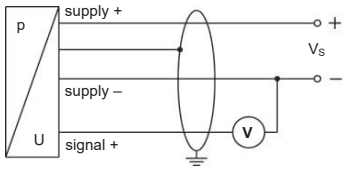
[2] *This directive is only valid for devices with maximum permissible overpressure > 200 bar*

Wiring diagrams

2-wire-system (current)



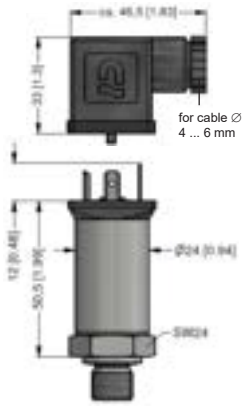
3-wire-system (voltage)



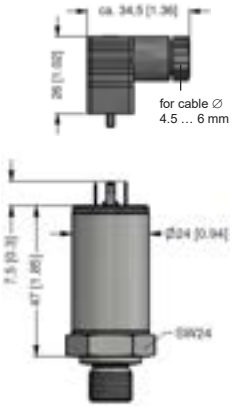
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), metal	cable colours (IEC 60757)
				
Supply +	1	1	1	WH (white)
Supply –	2	2	2	BN (brown)
Signal + (for 3-wire)	3	3	3	GN (green)
Shield	ground pin	ground pin	4	GNYE (green-yellow)

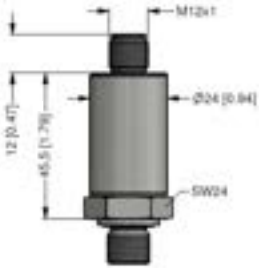
Electrical connections (dimensions mm / in)



ISO 4400
(IP 65)



Micro, contact-
distance 9.4 mm (IP 65)

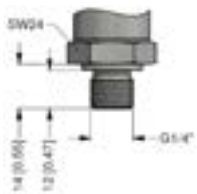


M12x1, 4-pin
(IP 67)

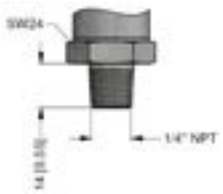
cable outlet
with PVC-cable (IP 67) [3,4]

[3] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)*
[4] *different cable types and lengths available, permissible temperature depends on kind of cable*

Mechanical connection (dimensions mm / in)



G1/4" DIN 3852



1/4" NPT

Ordering code 30.600 G

30.600 G -□□□□-□-□-□-□□□-□□□-2-□-□□□

Input	**[bar]**																	
	1.6	1	6	0	1													
	2.5	2	5	0	1													
	4.0	4	0	0	1													
	6.0	6	0	0	1													
	10	1	0	0	2													
	16	1	6	0	2													
	25	2	5	0	2													
	40	4	0	0	2													
	60	6	0	0	2													
	100	1	0	0	3													
	160	1	6	0	3													
	250	2	5	0	3													
	customer	9	9	9	9													consult
Pressure																		
	gauge					R												
Output																		
	4 … 20 mA / 2-wire						1											
	0 … 10 V / 3-wire						3											
	10 … 90% of V_S / 3-wire ratiometric						R											
	customer						9											consult
Accuracy																		
	1.0 % FSO							8										
	customer							9										consult
Electrical connection																		
	male and female plug ISO 4400								1	0	0							
	male and female plug Micro								C	1	0							
	male plug M12x1 (4-pin), metal								M	2	0							
	cable outlet with PVC cable [1]								T	M	0							
	customer								9	9	9							consult
Mechanical connection																		
	G1/4" DIN 3852											3	0	0				
	1/4" NPT											N	4	0				
	customer											9	9	9				consult
Seal																		
	FKM														1			
	customer														9			consult
Special version																		
	standard															0	0	0
	customer															9	9	9 consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C)

COMPETENCE

Industrial pressure measurement technology from 0.1 mbar up to 6000 bar

- pressure transmitters, electronic pressure switches or hydrostatic level probes
- OEM or high-end products
- standard products or customized solutions

BD|SENSORS has the right pressure measuring device at the right price.

PRICE / PERFORMANCE

pressure measurement at the highest level

The concentration on electronic pressure transmitter has led to extraordinary efficiency and economical pricing.

BD|SENSORS is certain to be one of the most economical suppliers on the world market, given equal technical and commercial conditions.

RELIABILITY

projectable delivery times and strict observance of deadlines

Short delivery times and firm deadlines, even for special designs, make BD|SENSORS a reliable partner for our customers.

BD|SENSORS reduces the level of your stock-keeping and increases your profitability.

FLEXIBILITY

We have special solutions for your individual requirement

We solve your problem in industrial pressure measurement quickly and economically, not only with large-scale production lines, but also for smaller requirements.

BD|SENSORS is especially flexible when technical support and quick assistance are required in service case as well as for rush orders.

INDUSTRIES

- plant and machine engineering
- chemical and biochemical industry
- energy industry
- renewable energy
- semiconducter industry / cleanroom technology
- HVAC
- hydraulics
- refrigeration
- calibration techniques
- laboratory techniques
- medical technology
- food and beverage
- vehicles and mobile hydraulics
- oil and gas industry
- pharmaceutical industry
- marine / shipbuilding / offshore
- heavy industry
- environmental industry
- packaging and paper industry

MEDIA

- sewage
- aggressive media
- colours
- gases
- fuels and oils
- pasty and viscous media
- oxygen
- water

BD|SENSORS
pressure measurement

DISTRIBUTION WORLDWIDE

HEADQUARTER DER BD | SENSORS GROUP
BD | SENSORS GmbH
BD-Sensors-Straße 1
95199 Thierstein
GERMANY

Tel.: +49 9235 9811-0
Fax: +49 9235 9811-11

www.bdsensors.de
info@bdsensors.de

DISTRIBUTION EASTERN EUROPE

BD | SENSORS s.r.o.
Hradištská 817
68708 Buchlovice
CZECH REPUBLIC

Tel.: +420 572 411-011
Fax: +420 572 411-497

www.bdsensors.cz
sale@bdsensors.cz

DISTRIBUTION CHINA

BD | SENSORS China
Building B, 2nd floor,
Building 10, No. 1188, Lianhang Road
Pujiang Town, Minhang District, Shanghai
CHINA

Tel.: +86 21 51600190
Fax: +86 21 33600610

www.bdsensors-china.com
info@bdsensors-china.com

Status 07/2024