PRODUCT CATALOGUE
PRESSURE TRANSMITTER

BD|SENSORS
pressure measurement

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 260 employees at 4 locations in Germany, the Czech Republic, Russia and China BD|SENSORS has solutions from 0.1 mbar to 6000 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.

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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	sensor			nominal pressure (bar)	accuracy		media temperature	output signal				
	stainless steel sensor	ceramic sensor	DMS		standard	option		2-wire: 4 ... 20	3-wire: 0 ... 10 V	Modbus RTU RS 485	i^2C	IO-Link
XMP i	•			0 ... 0,4 up to 0 ... 600	0,1		-40 ... 125 °C	•				
XMP ci		•		0 ... 0,16 up to 0 ... 20	0,1		-25 ... 125 °C	•				
HU 300			•	0 ... 5.000 psi up to 0 ... 15.0000 psi	0,5		-40 ... 125 °C	•	•			
x|act i	•			0 ... 0,4 up to 0 ... 40	0,1		-40 ... 125 °C	•				
x|act ci		•		0 ... 0,16 up to 0 ... 20	0,1		-25 ... 125 °C	•				
DMP 331Pi	•			0 ... 0,4 up to 0 ... 40	0,1		-40 ... 125 °C	•	•			
DMK 331P		•		0 ... 60 up to 0 ... 400	0,5		-40 ... 125 °C	•	•			
DMK 351P		•		0 ... 0,04 up to 0 ... 20	0,35	0,25	-40 ... 125 °C	•	•			
DMP 331P	•			0 ... 0,1 up to 0 ... 40	0,35	0,25	-40 ... 125 °C	•	•			
DMP 331i DMP 333i	•			0 ... 0,4 up to 0 ... 600	0,1		-25 ... 125 °C	•	•			
DCT 531	•			0 ... 0,1 up to 0 ... 400	0,35	0,25	-25 ... 125 °C			•		
DCT 532	•			0 ... 0,1 up to 0 ... 400	0,35	0,25	-25 ... 125 °C				•	
DCT 533	•			0 ... 0,1 up to 0 ... 400	0,35	0,25	-25 ... 125 °C					•
DCT 561		•		0 ... 0,6 up to 0 ... 600	0,5		-25 ... 125 °C			•		
DCT 563		•		0 ... 0,6 up to 0 ... 600	0,5		-25 ... 125 °C					•
DMP 343	•			0 ... 0,01 up to 0 ... 1	0,35		-40 ... 125 °C	•	•			
DMP 331	•			0 ... 0,01 up to 0 ... 60	0,35	0,25 / 0,1	-40 ... 125 °C	•	•			
DMP 333	•			0 ... 100 up to 0 ... 600	0,35	0,25 / 0,1	-40 ... 125 °C	•	•			
DMP 339	•			0 ... 60 up to 0 ... 600	0,35		-40 ... 125 °C	•	•			
DMP 335	•			0 ... 6 up to 0 ... 600	0,5		-40 ... 125 °C	•	•			
DMP 334			•	0 ... 600 up to 0 ... 2.200	0,35		-40 ... 140 °C	•	•			

options / special characteristics	pressure port / process connection							certificates	page
	inch and NPT thread	inch thread flush	dairy pipe	Clamp (3A-certification)	Varivent® (3A-certification)	flange	DRD flange		
flameproof enclosure	•	•		•	•	•	•	Ex, HART®, 3A, EHEDG	8-13
flameproof enclosure	•	•				•	•	Ex, HART®	14-18
Hammer Union, mechanical connection WECO® 2“								Ex	19-23
hygienic version			•	•	•	•	•	Ex, HART®, 3A, EHEDG	24-28
hygienic version		•	•	•	•	•	•	Ex, HART®	29-33
process connections suitable for hygienic application		•	•	•	•			Ex, IEC, IECEx, 3A, EHEDG	34-38
food compatible filling fluid with FDA approval		•						Ex, UL, IEC, IECEx, SIL	39-43
hygienic version		•	•	•	•	•	•	Ex, UL	44-48
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i^2C interface	•	•						UL	64-68
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IO-Link interface	•	•						UL	78-82
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universal applications	•							Ex, UL, IEC, IECEx, SIL	93-97
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welded version	•							EX, UL, IEC, IECEx	107-110

product	sensor			nominal pressure (bar)	accuracy		media temperature	output signal				
	stainless steel sensor	ceramic sensor	DMS		standard	option		2-wire: 4 ... 20	3-wire: 0 ... 10 V	Modbus RTU RS 485	i²C	IO-Link
DMP 304			•	0 ... 2.000 up to 0 ... 6.000	0,5	0,25	-40 ... 85 °C	•	•			
DMK 351		•		0 ... 0,04 up to 0 ... 20	0,35	0,25	-40 ... 125 °C	•	•			
DMK 331		•		0 ... 0,4 up to 0 ... 600	0,5		-40 ... 125 °C	•	•			
DMP 457	•			0 ... 0,1 up to 0 ... 600	0,35	0,25	-40 ... 125 °C	•				
DMK 458		•		0 ... 0,04 up to 0 ... 20	0,25	0,1	-40 ... 125 °C	•				
DMK 456		•		0 ... 0,04 up to 0 ... 20	0,25	0,1	-25 ... 125 °C	•				
DMK 457		•		0 ... 0,4 up to 0 ... 600	0,5		-40 ... 125 °C	•				
18.600 G	•			0 ... 0,1 up to 0 ... 6	0,5		-25 ... 125 °C	•	•			
18.601 G	•			0 ... 0,1 bis 0 ... 6 up to	0,5		-25 ... 125 °C	•	•			
26.600 G		•		0 ... 1 up to 0 ... 400	0,5		-25 ... 125 °C	•	•			
30.600 G		•		0 ... 1,6 up to 0 ... 250	1		-25 ... 125 °C	•	•			
17.609 G	•			0 ... 6 up to 0 ... 60 -1 ... 6 up to -1 ... 60	0,5		-40 ... 125 °C	•	•			
17.600 G	•			0 ... 6 up to 0 ... 600	0,5		-40 ... 125 °C	•	•			
17.620 G	•			0 ... 16 up to 0 ... 1.000	0,5		-40 ... 125 °C	•				

options / characteristics	pressure port / process connection							certificates	page
	inch and NPT thread	inch thread flush	dairy pipe	Clamp (3A-certification)	Varivent® (3A-certification)	flange	DRD flange		
adjustability of span and offset	•							Ex	111-114
diaphragm 99.9% Al2O3, pressure port PVDF	•							EX, UL	115-118
pressure port PVDF for agressive media	•	•						Ex, UL, IEC, IECEx, SIL	119-123
welded version	•							EX, IEC, IECEx, DNV-GL, CCS, LR, ABS	124-128
diaphragm 99.9% Al2O3, seawater resistant pressure port	•					•		EX, DNV-GL, CCS, LR, ABS	129-133
diaphragm 99.9% Al2O3, seawater resistant pressure port	•					•		EX, DNV-GL, CCS, LR, ABS	134-137
seawater resistant pressure port	•							EX, IEC, IECEx, DNV-GL, CCS, LR, ABS	138-142
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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 a 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

- material mill test report 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) - 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	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	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 300°C	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).

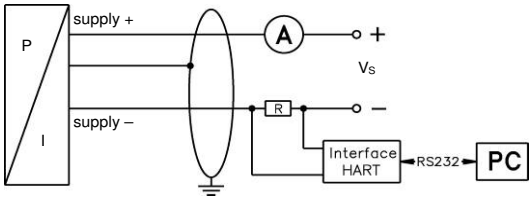
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	5 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 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 options: FFKM (min. permissible temperature from -15 °C, possible for nominal pressure ranges 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	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} = 27 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 d 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		
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)	
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) [7]	
ATEX Directive	2014/34/EU	

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

Wiring diagram

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

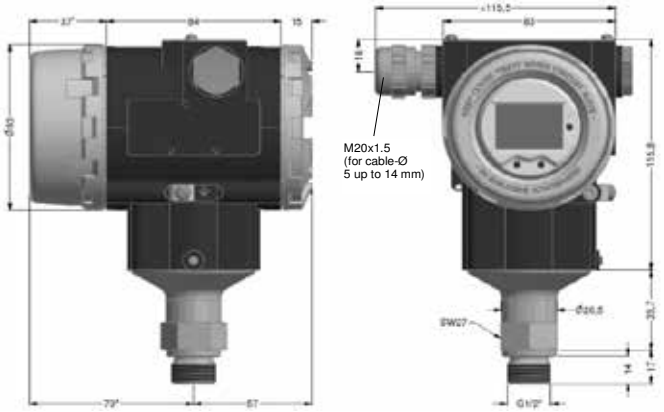


Pin configuration

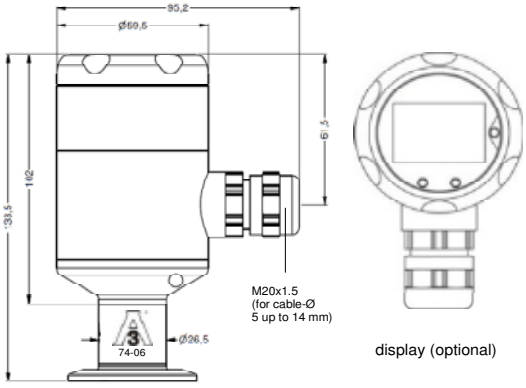
Electrical connections	**aluminium die cast case:** terminal clamps (clamp section: 2.5 mm²)	**stainless steel field housing:** terminal clamps (clamp section: 1.5 mm²)
Supply + Supply – Test	IN+ IN- Test	IN+ IN- -
Shield	⏚	⏚

Housing designs [8] (dimensions in mm)

aluminium die cast case



stainless steel field housing



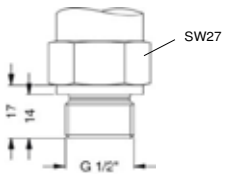
display (optional)

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

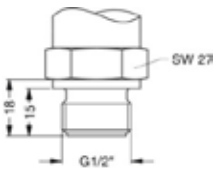
⇨ **for nominal pressure P_N > 400 bar increases the length of devices by 39 mm**

[8] aluminium case is horizontally rotatable as standard

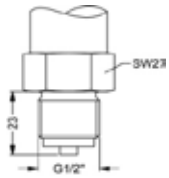
Standard pressure ports (dimensions in mm)



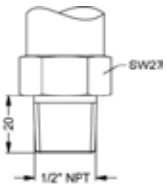
G1/2" DIN 3852



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



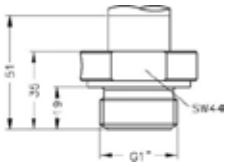
G1/2" EN 837
M20x1.5



1/2" NPT

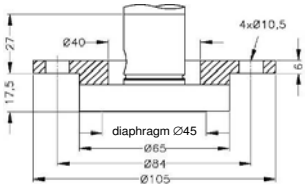
Process connections (dimensions in mm)

Inch thread (DIN 3852)



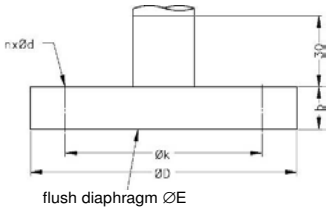
G1" flush
P_N ≤ 400 bar

DRD [9]



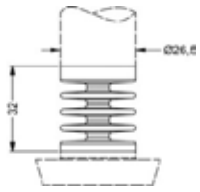
P_N ≤ 25 bar

Flange (DIN 2501)

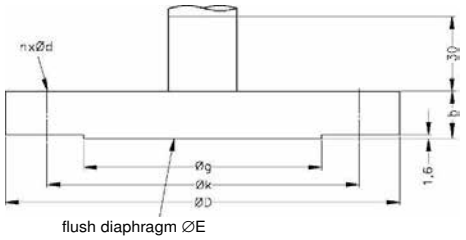


dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
P_N [bar]	≤ 40	≤ 40	≤ 16

Cooling element 300° C

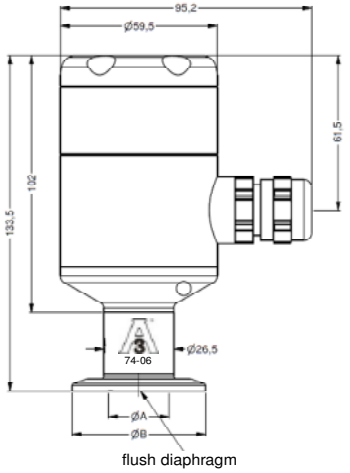


Flange (ANSI B16.5)



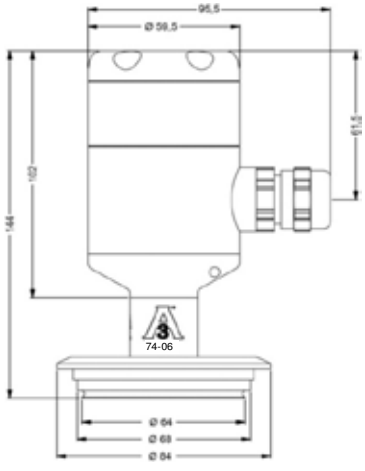
dimensions in mm		
size	2"/150 lbs	3"/150 lbs
D	152.4	190.5
E	86	89
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	4
d	19.1	19.1
P_N [bar]	≤ 10	≤ 10

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



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

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

Ordering code XMP i

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

Option	Code	
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 3 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	
Tantalum [6, 7]	T	consult
Seals		
Inch thread:		
FKM	1	
FFKM [8]	7	
EN 837: without (welded version) [9]	2	
DRD, flange: without	0	
Filling Fluids		
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.

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

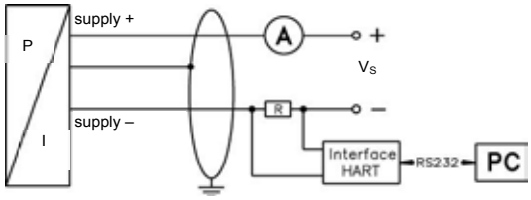
- Fuel and oil
- Aggressive media

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 errors / Permissible temperatures								
Thermal error		≤ ± (0.02 x turn-down) % FSO / 10 K in compensated range -20 ... 80 °C						
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 of PVDF the minimum permissible temperature is -30°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 (permissible temperature: -25 ... 125 °C) EPDM (permissible temperature: -40 ... 125 °C) 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			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} = 27 nF						
Approval AX17-XMP ci		**flameproof enclosure** with aluminium die cast case IBExU 12 ATEX 1045 X zone 1: II 2G Ex d 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

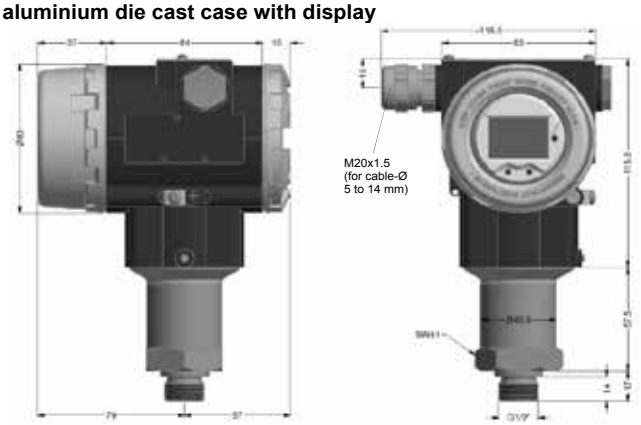


Pin configuration

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	⏚	⏚

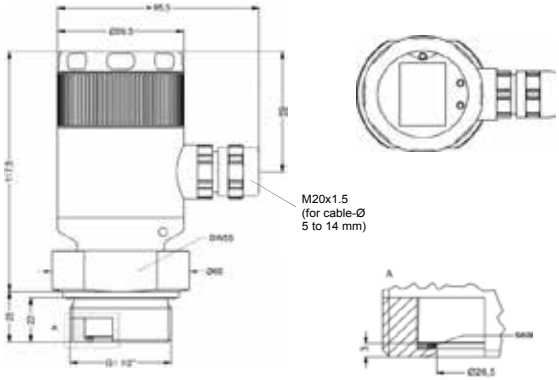
Housing designs [6] (dimensions in mm)

aluminium die cast case with display



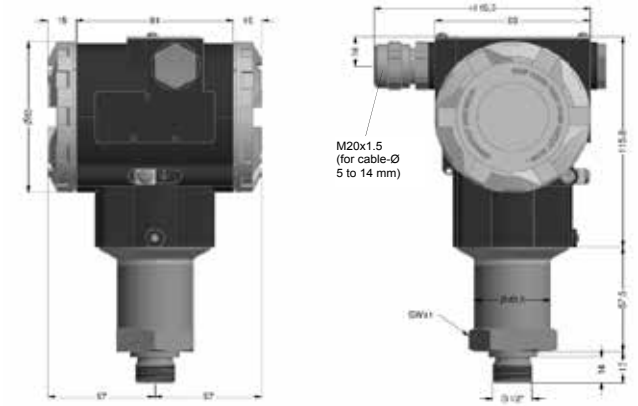
G1/2" DIN 3852

stainless steel field housing with display



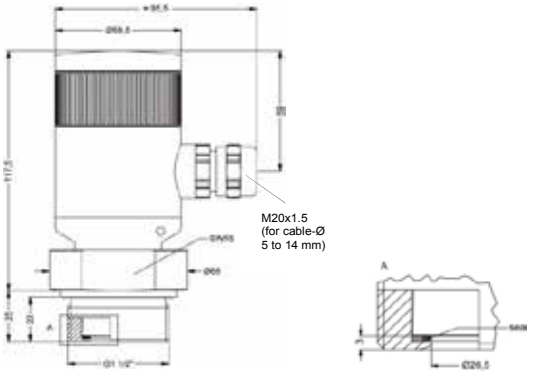
G1 1/2" flush DIN 3852

aluminium die cast case without display



G1/2" DIN 3852

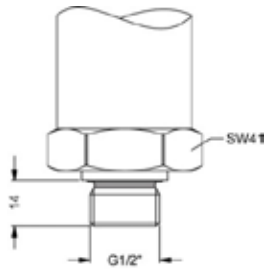
stainless steel field housing without display



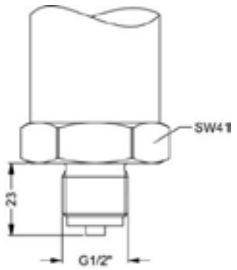
G1 1/2" flush DIN 3852

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

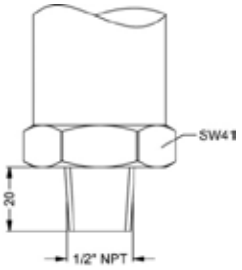
Standard pressure ports (dimensions in mm)



G1/2" DIN 3852



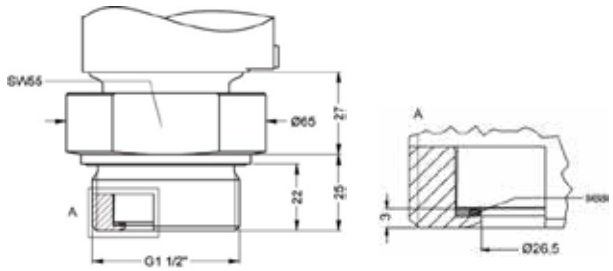
G1/2" EN 837



1/2" NPT

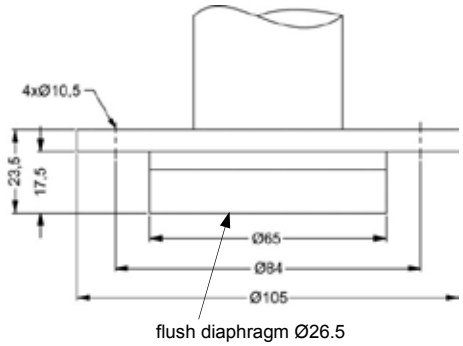
Process connections (dimensions in mm)

Inch thread



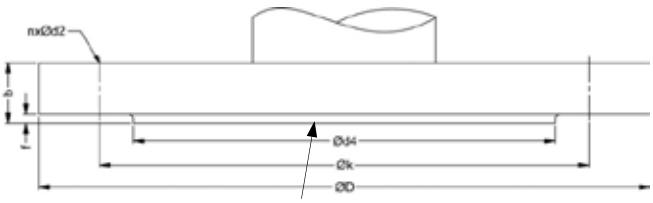
G1 1/2" flush DIN 3852

DRD [7]



flush diaphragm Ø26.5

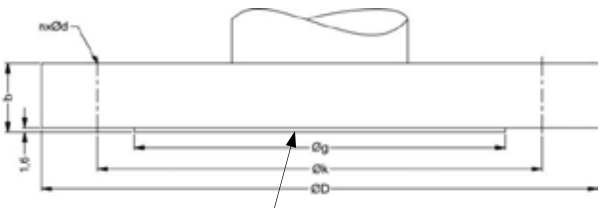
Flange (DIN 2501)



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)

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Windows® is a registered trademark of Microsoft Corporation

Ordering code XMP ci

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

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		
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 [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	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" EN 837	2 0 0	
1/2" NPT	N 0 0	
process connections:		
G 1 1/2" DIN flush (DIN 3852)	M 0 0	
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) [2]	F 3 2	
flange DN 3" / 150 lbs (ANSI B16.5) [2]	F 3 3	
DRD Ø 65 mm [3]	D R D	
customer	9 9 9	consult
Diaphragm		
ceramics Al_2O_3 99,9%	C	
customer	9	consult
Seals		
FKM [4]	1	
EPDM [4]	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	0 0 0	
customer	9 9 9	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 PN ≤ 10 bar
[3] mounting flange is included in the delivery (already pre-assembled)
[4] permissible temperature FKM -25 … 125 °C, EPDM -40 … 125 °C, PVDF -30 … 125 °C

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

HU 300

Hammer Union Pressure Transmitter

special application
petrochemical industry / offshore

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 5 000 psi up to 0 ... 15 000 psi

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 5 V
4-wire: 3 mV/V
others on request

Product characteristics

- extreme robust and stable
- vibration / shock

Optional versions

- IS-version zone 0 / 1
  (only for 4 … 20 mA / 2-wire)
- different output signals

Versions on request

- pressure port in Inconel®
- electrical connection Glenair (4-pin)
- mechanical connection
  WECO®2" (1502, 2002/2202)

The pressure transmitter HU 300 has been especially developed for extreme operating conditions in the petrochemical industry (on- and offshore sites). A high degree of reliability and accuracy is the precondition for a perfect function during cementing and tightening processes (annulus) on wellbores.

A one-piece pressure port, a high quality pressure sensor and precise machining and assembly techniques ensure a small drifting and a high long-term stability. A very high resistance against vibration, shock and pressure peaks without any influence on the measurement characteristics is guaranteed.

Due to the extreme environmental conditions on-site, it is important to offer solutions to different requirements, as an intrinsic-safe version (zone 0/1), an electrical connection with IP 68 or special steel materials.

Preferred areas of use are

Cementing wellbores
Hydraulic fracturing
Intensifying wellbores

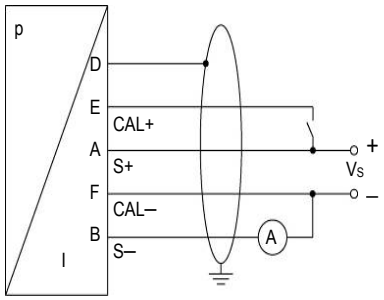
Pressure ranges					
Nominal pressure	[psi]	5 000	6 000	10 000	15 000
Permissible overpressure	[psi]	7 500	9 000	15 000	22 500
Burst pressure ≥	[psi]	10 000	12 000	20 000	30 000

Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 10 … 30 V_{DC} [1]
Ex-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
In preparation (only possible with MIL- / Bendix-connector)	3-wire: 0 ... 5 V / V_S = 14 ... 30 V_{DC} 4-wire: 3 mV/V / V_S = 6 ... 10 V_{DC}
[1] valid for temperature from -40 ... 85 °C; for higher temperatures the supply has to be limited	
Performance	
Accuracy	IEC 60770: ≤ ± 0.5 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S – V_{S\ min}) / 0.02\ A]\ \Omega$ voltage 3-wire: $R_{min} \geq 10\ k\Omega$ voltage 4-wire: $R_{min} \geq 100\ k\Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.5 % FSO per 6 months
Response time	≤ ± 1.5 msec
Thermal effects (Offset and Span)	
Thermal errors	≤ ± 2 % FSO / 100 K in compensated range -5 … 60 °C
Permissible temperatures	
Permissible temperatures	medium / environment: -40 ... 125 °C storage: -55 ... 125 °C
Calibration	
Calibration signal accuracy	≤ ± 0.2 % FSO
Calibration signal	80 % FSO (16.8 mA)
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, 25 Hz … 2 kHz according to DIN EN 60068-2-6 7.5 g_{RMS}, 5 Hz – 1 kHz according to DIN EN 60068-2-64
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Free Fall	1 m (free fall base: steel) according to DIN EN 60068-2-32
Materials	
Pressure port / diaphragm	standard: stainless steel 1.4548 (316L) on request: Inconel X750® Inconel X718®
Housing	stainless steel 1.4404 (316L)
Media wetted parts	pressure port
Explosion protection (only for 4 ... 20 mA / 2-wire)	
Approval DX18 HU300	IBExU08ATEX1127 X zone 0/1: II 1/2 G Ex ia IIC T4 Ga/Gb
Safety technical maximum values	U_i = 28 V, I_i = 100 mA, P_i = 700 mW, C_i = 1 nF, L_i = 5 µH, The supply connections have an inner capacity of max. 27 nF opposite the housing.
Permissible temperatures for medium	-40 ... 70 °C
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1: -25 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 150 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m

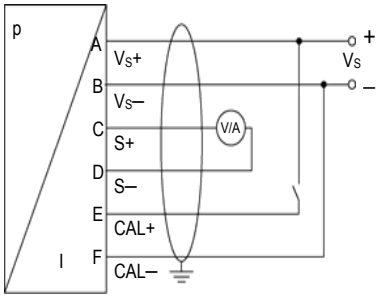
Miscellaneous		
Current consumption	2-wire signal output current: 3-wire signal output voltage: 4-wire signal output voltage:	max. 50 mA approx. 15 mA 29 mA @ 10 V
Installation position	any	
Weight	2.1 kg	
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A)
ATEX Directive	2014/34/EU	

Wiring diagrams

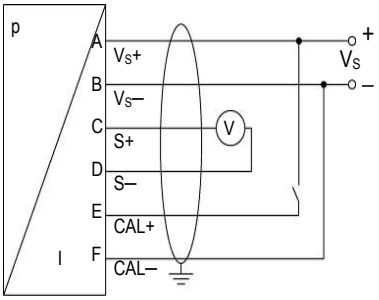
2-wire



3-wire



4-wire

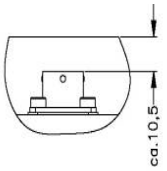


Pin configuration

Electrical connection	MIL-/ Bendix (6-pin)	Glenair (4-pin)	cable colours (IEC 60757)
Supply +	pin A	pin C	wh (white)
Supply –	pin B	pin B	bn (brown)
Calibration +	pin E	pin D	pk (pink)
Calibration –	pin F	pin A	gy (grey)
for 3-wire / 4-wire:			
Signal +	pin C	-	-
Signal –	pin D	-	-
Shield	cable shield / for 2-wire: pin D	plug housing	gnye (green-yellow)

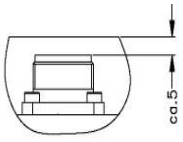
Electrical connections (dimensions in mm)

standard

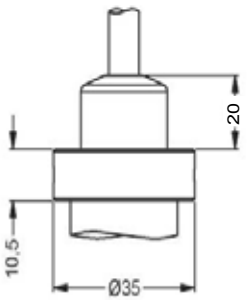


MIL-/ Bendix (6-pin)
PT02_E10-6P-023
(IP 67)

on request



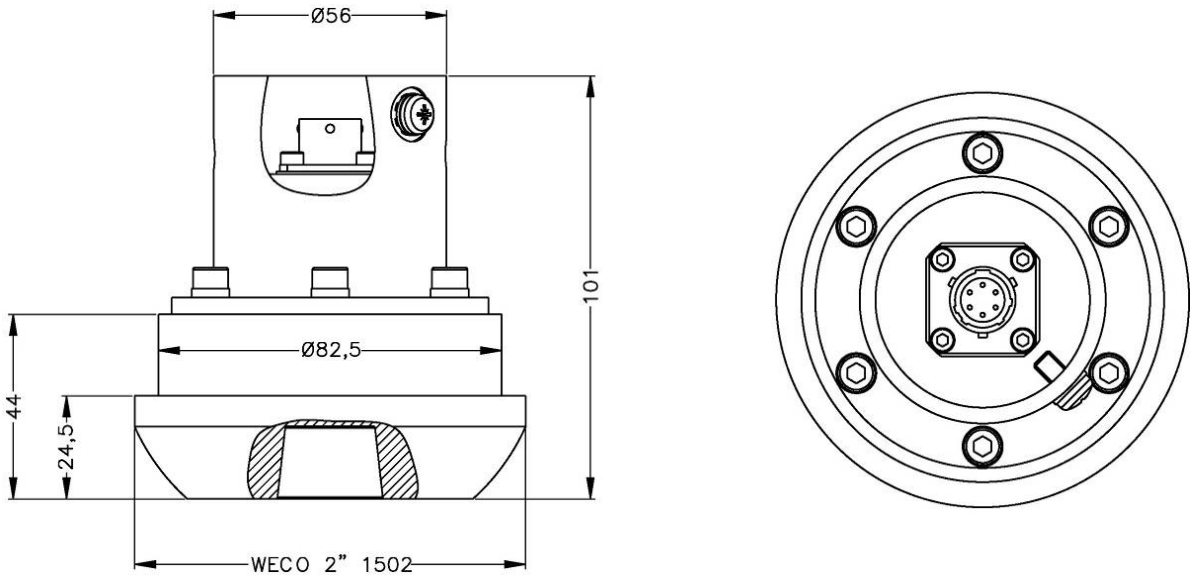
Glenair (4-pin)
GC379-2-14S-2P
(IP 65)



cable outlet
(IP 68)

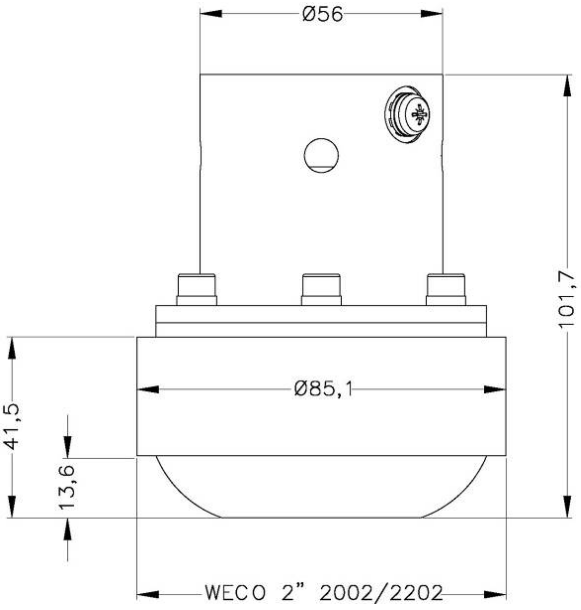
Mechanical connection (dimensions in mm)

standard

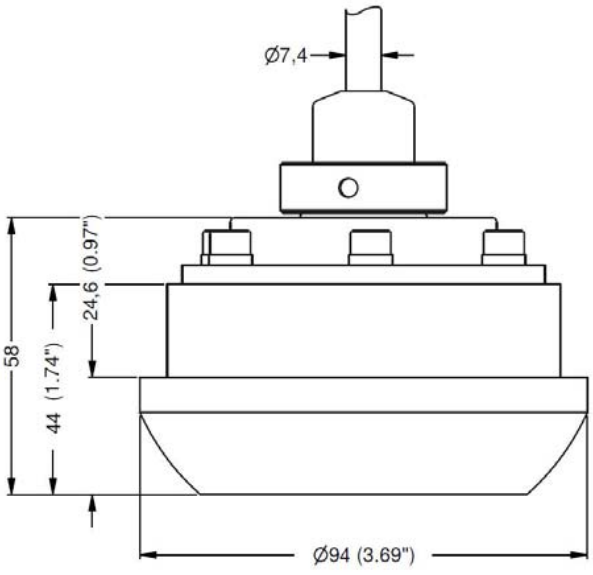


WECO® 2" (1502)

on request



WECO® 2" (2002/2202)



cable outlet

Inconel® is a registered trade mark of Special Metals Corporation.
WECO® is a registered trade mark of FMC Technologies.

Ordering code HU 300

HU 300 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐☐-☐☐-☐☐☐

Standard version		
	H U 0	
Input [psi]		
5 000	P 5 K 0	
6 000	P 6 K 0	
10 000	P 1 0 K	
15 000	P 1 5 K	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
intrinsic safety 4 … 20 mA / 2-wire	E	
0 ... 5 V / 3-wire	4	in preparation
3 mV/V / 4-wire	V3	in preparation
customer	9	consult
Accuracy		
0.5 % FSO	5	
customer	9	consult
Electrical connection [1]		
MIL-/ Bendix (6-pin) type PT02_E10-6P-023	B 2 0	
Glenair (4-pin) GC379-2-14S-2P	B Z 0	
cable outlet IP 68 with FEP cable	T R 2	
customer	9 9 9	consult
Mechanical connection		
WECO 2" 1502	H U 0	
WECO 2" 2002/2202	H U 1	consult
customer	9 9 9	consult
Material pressure port		
stainless steel 1.4548 (17-4PH)	7 8	
customer	9 9	consult
Material diaphragm		
stainless steel 1.4548 (17-4PH)	Z 8	
customer	9 9	consult
Special version		
standard	0 0 0	
customer	9 9 9	consult

[1] only male plugs

WECO® is a registered trade mark of FMC Technologies

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

- material mill test report according to DIN EN 10204-3.1.
- specific test report according to DIN EN 10204-2.2.

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	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	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 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) / 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	
	environment:	-20 ... 70 °C	
	storage:	-30 ... 80 °C	
Permissible temperature medium for cooling element 300°C	filling fluid silicone oil	overpressure: -40 … 300 °C	vacuum pressure: -40 ... 150 °C
	filling fluid food compatible oil	overpressure: -10 ... 250 °C	vacuum pressure: -10 ... 150 °C

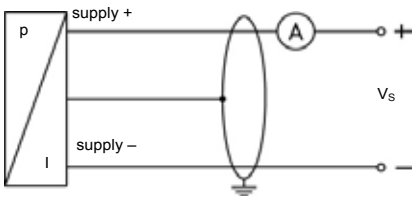
[4] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions
[5] for flange-, Varivent-, DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO
[6] for vacuum ranges and absolute pressure the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

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)

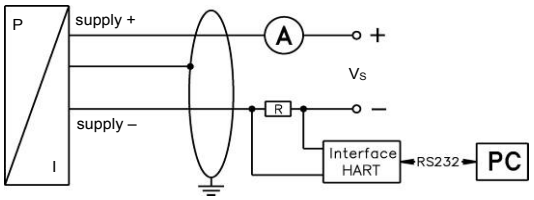
Explosion protection	
Approvals AX12-x|act i AX2 - x|act i (with SIL2)	IBExU 05 ATEX 1106 X (with SIL2: IBExU 05 ATEX1105 X) zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, the supply connections 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)	capacitance: signal line/shield also signal line/signal line 160 pF/m inductance: signal line/shield also signal line/signal line 1 µH/m
Option	
SIL2-version	according to IEC 61508 / IEC 61511
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 (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)
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)

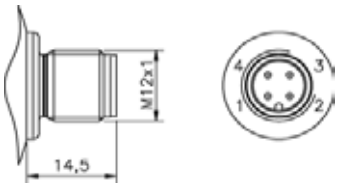


2-wire-system (current) HART® - communication



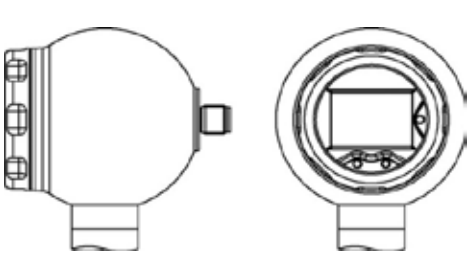
Pin configuration	
Electrical connections	M12x1 (4-pin), metal
Supply + Supply –	1 3
Shield	plug housing

Electrical connections (dimensions in mm)

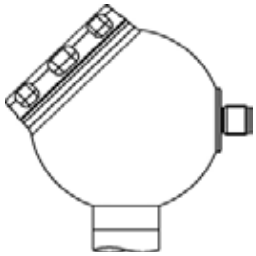


M12x1 (4-pin)

Designs [7]



side display

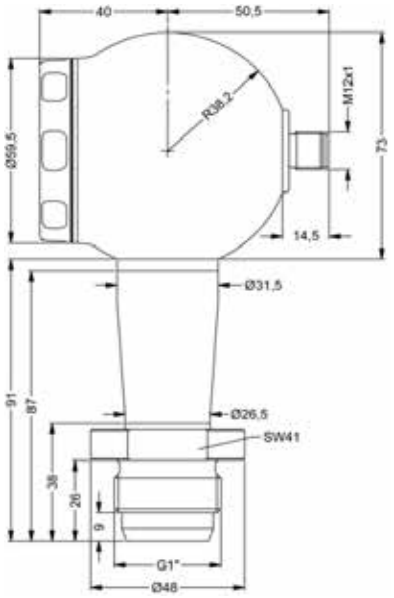


45° display

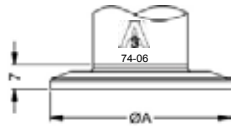
[7] *all designs in combination with G1" cone in horizontal rotatable housing as standard; other mech. connections in rotatable housing on request*

Dimensions (in mm)

G1" cone

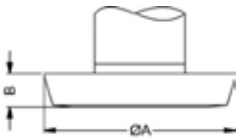


Clamp (DIN 32676)



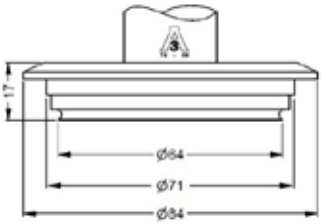
dimensions in mm				
size	3/4"	DN 25	DN 32	DN 50
A	25	50.5	50.5	64
P_N [bar]	≥ 4 ≤ 8	≥ 0,25 ≤ 16	≤ 16	≤ 16

dairy pipe [8] (DIN 11851)



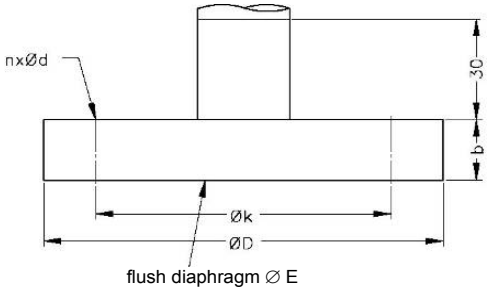
dimensions in mm			
size	DN 25	DN 40	DN 50
A	44	56	68,5
B	10	10	11
P_N [bar]	≥ 0.25 ≤ 40	≥ 0.25 ≤ 40	≥ 0.25 ≤ 25

Varivent®



DN40/50
P_N ≤ 25 bar

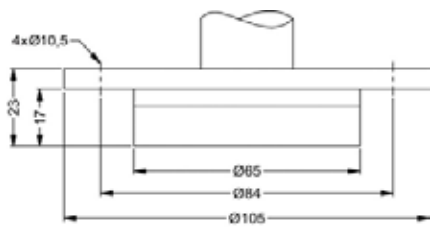
flange (DIN 2501)



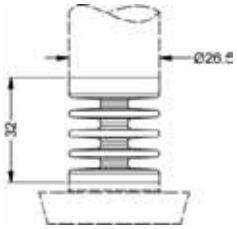
flush diaphragm ∅ E

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 [8] (for P_N ≤ 25 bar)



cooling element 300 °C



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

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

Ordering code x|act i

x|act i ☐☐☐ - ☐☐☐☐ - ☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐ - ☐ - ☐☐☐

Option	Code	
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 3 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) [2]	M 7 3	
dairy pipe DN 40 (DIN 11851) [2]	M 7 5	
dairy pipe DN 50 (DIN 11851) [2]	M 7 6	
Varivent® DN 40/50 / 3A	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 [2]	D R D	
Diaphragm		
stainless steel 1.4435 (316L)	1	
Hastelloy® C-276 (2.4819)	H	
tantalum [3]	T	consult
Seals		
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).

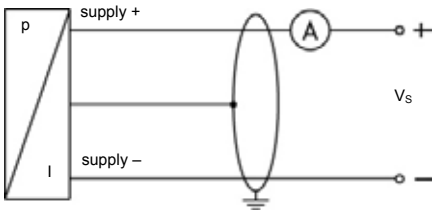
Output signal / Supply			
2-wire: 4 ... 20 mA	standard: options:	analogue signal intrinsic safety (ia) intrinsic safety (ia) with HART®-communication	V_S = 12 … 30 V_{DC} V_S = 12 … 28 V_{DC} V_S = 12 … 28 V_{DC}
Current consumption	max. 25 mA		
Performance			
Accuracy [2]	nominal pressure < 1 bar: nominal pressure ≥ 1 bar: for nominal pressure ranges: from 0.16 bar up to 0.4 bar for nominal pressure ranges: from 1 bar up to 20 bar with turn-down = nominal pressure range / adjusted range	≤ ± 0.2 % FSO ≤ ± 0.1 % FSO ≤ ± (0.2 + (TD-1) x 0.02) % FSO ≤ ± (0.1 + (TD-1) x 0.01) % 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 % FSO / year at reference conditions		
Response time	200 msec – without consideration of electronic damping		measuring rate 5/sec
Adjustability	electronic damping: offset: turn-down of span:	0 … 100 sec 0 ... 80 % FSO max. 1:5 (span min. 0.02 bar)	
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal errors / Permissible temperatures			
Thermal error	≤ ± (0.02 x turn-down) % FSO / 10 K in compensated range -20 … 80 °C		
Permissible temperatures	medium: environment: storage:	-25 ... 125 °C -20 ... 70 °C -30 ... 80 °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: optionally for G1 1/2" flush (DIN 3852):	stainless steel 1.4404 (316L) PVDF	
Housing	stainless steel 1.4301 (304)		
Viewing glass	laminated safety glass		
Seals	FKM (permissible temperature: -25 ... 125 °C) 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 [3]: 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: in zone 1 or higher:	-20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar -40 ... 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	

[3] 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!

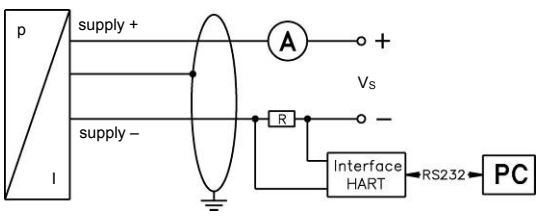
Miscellaneous	
Display	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% ± 1 digit
Ingress protection	IP 67
Installation position	any
Weight	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)

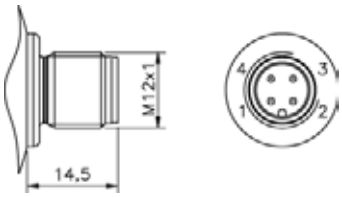


2-wire-system (current) HART®



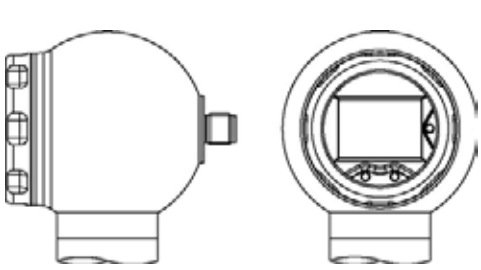
Pin configuration	
Electrical connections	M12x1 (4-pin), metal
Supply + Supply –	1 3
Shield	plug housing

Electrical connections (in mm)

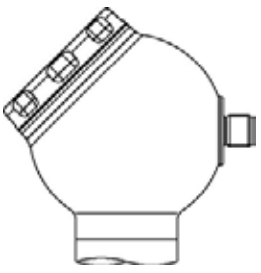


M12x1 (4-pin)

Designs [4]



side display

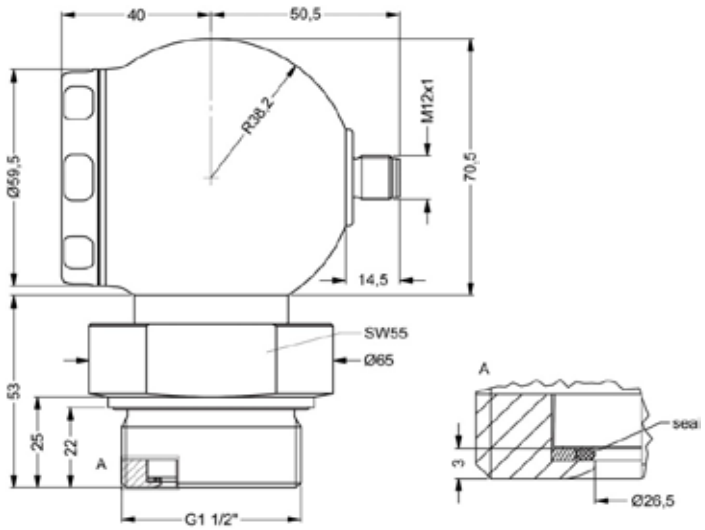


45° display

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

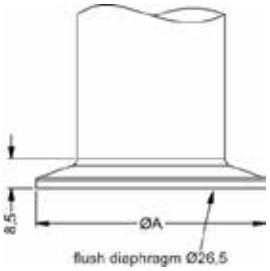
Dimensions (in mm)

Inch thread



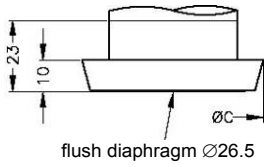
G1 1/2" flush DIN 3852

Clamp (DIN 32676)



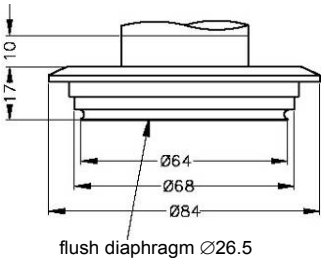
dimensions in mm		
size	DN32	DN50
A	50.5	64
P_N [bar]	≤ 16	≤ 16

Dairy pipe [6] (DIN 11851)



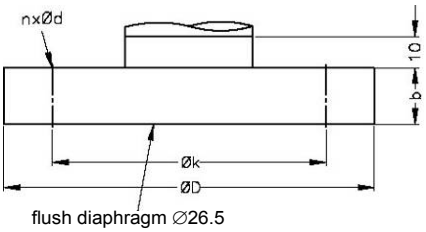
dimensions in mm		
size	DN 40	DN 50
C	56	68.5

Varivent®



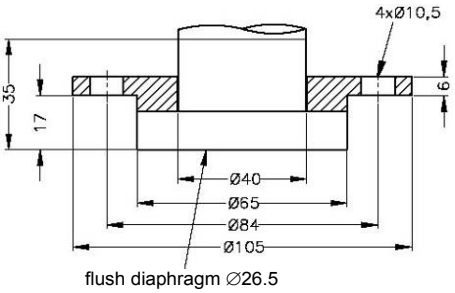
DN 40/50
P_N ≤ 10 bar

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 [5]



[5] 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 ☐☐☐-☐☐☐☐-☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Section / Option		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	
$P_N \geq$ 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 ($P_N \leq$ 10 bar)		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		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)

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

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
- Turn-Down 1:10
- processing of the sensor signal using digital electronics
- process connections suitable for hygienic application
- vacuum resistant

Optional versions

- communication interface for adjustment of offset, span and damping
- IS-version (on request)

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

74-06

Pressure ranges [1]							
Nominal pressure gauge / absolute [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
Vacuum resistance	P_N ≥ 1 bar: unlimited vacuum resistance			P_N < 1 bar: on request			

[1] On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.
[2] absolute pressure permissible from 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}
Options	2-wire: 4 ... 20 mA with communication interface [3] 3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC} 0 ... 10 V with communication interface [3]

[3] only possible with el. connection Binder series 723 (7-pin)

Performance	
Accuracy [4] performance after turn-down - TD ≤ 1:5 - TD > 1:5	IEC 60770: ≤ ± 0.1 % FSO no change of accuracy [5] for calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 5): ≤ ± [0.1 + 0.015 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 1:10 following accuracy is calculated: ≤ ± (0.1 + 0.015 x 10) % FSO i.e. accuracy is ≤ ± 0.25 % 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 x turn-down) % FSO / year at reference conditions
Response time	< 5 msec
Adjustability	configuration of following parameters possible (interface / software necessary [6]): electronic damping: 0 ... 100 sec offset: 0 ... 90 % FSO turn down of span: max. 1:10

[4] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)
[5] except nominal pressure ranges ≤ 0.40 bar; for these calculation of accuracy is as follows:
≤ ± (0.1 + 0.02 x turn-down) % FSO e.g. turn-down of 1:3: ≤ ± (0.1 + 0.02 x 3) % FSO i.e. accuracy is ≤ ± 0.16 % FSO
[6] software, interface, and cable have to be ordered separately (software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP)

Thermal effects [7] (Offset and Span) / Permissible temperatures			
Tolerance band [% FSO]	≤ ± (0.35 x turn-down)	in compensated range 0 ... 80 °C	
TC, average [% FSO / 10 K]	≤ ± (0.035 x turn-down)	in compensated range 0 ... 80 °C	
Permissible temperatures [8]	medium:	-40 ... 125 °C for filling fluid silicone oil -10 ... 125 °C for filling fluid food compatible oil	
	electronics / environment:	-25 ... 85 °C	
	storage:	-40 ... 100 °C	
Permissible temperature medium for cooling element 300°C	filling fluid silicone oil	overpressure: -40 … 300 °C	vacuum: -40 ... 150 °C [9]
	filling fluid food compatible oil	overpressure: -10 ... 250 °C	vacuum: -10 ... 150 °C [9]

[7] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions.
[8] max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C
[9] also for P_{abs} ≤ 1 bar

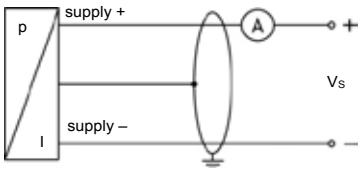
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Filling fluids	
Standard	silicone oil
Options	food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request
Mechanical stability	
Vibration (DIN EN 60068-2-6)	G 1/2": 20 g RMS (25 ... 2000 Hz); others except G 1/2": 10 g RMS (25 … 2000 Hz)
Shock (DIN EN 60068-2-27)	G 1/2": 500 g / 1 msec; others except G 1/2": 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 > 200 °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 (on request 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 T85°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
Ambient temperature range	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -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	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 200 g
Installation position	any [10]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

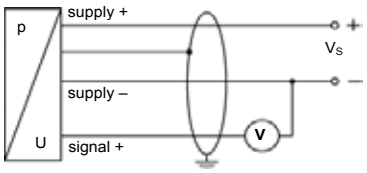
[10] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges P_N ≤1 bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



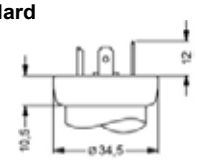
Pin configuration

Electrical connections		ISO 4400	Binder 723 (5-pin)	Binder 723 (7-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	3 1 6	1 2 3	IN + IN – OUT +	WH (white) BN (brown) GN (green)
shield		ground pin ⏚	5	2	4	⏚	GNYE (green-yellow)
Communication interface [11]	RxD TxD GND	- - -	- - -	4 5 7	- - -	- - -	- - -

[11] may not be connected directly with the PC (the suitable adapter is available as accessory)

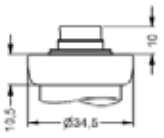
Electrical connections (dimensions in mm)

standard

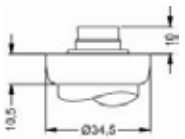


ISO 4400
(IP 65)

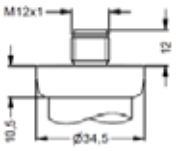
options



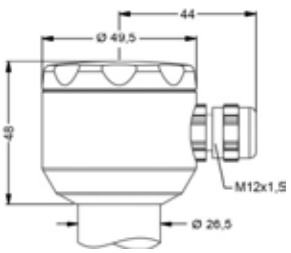
Binder series 723 5-pin
(IP 67)



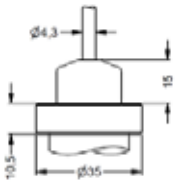
Binder series 723 7-pin
(IP 67)



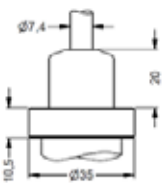
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet with PVC cable
(IP 67) [12]

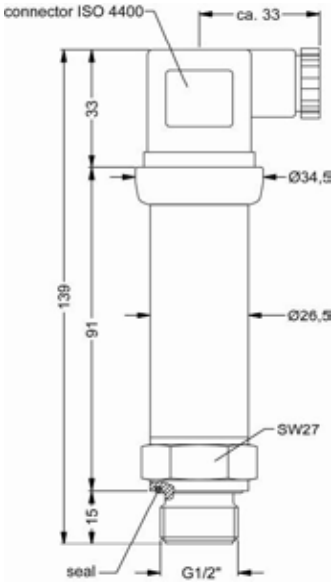


cable outlet, cable with ventilation tube (IP 68) [13]

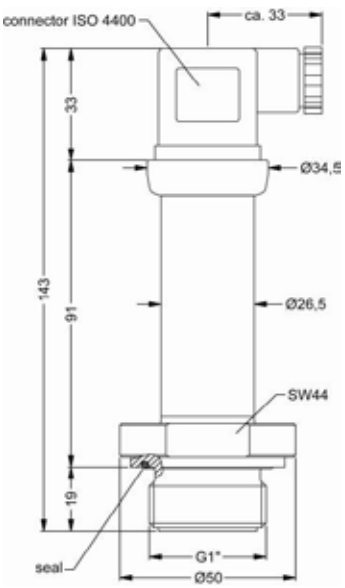
[12] standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)
[13] different cable types and lengths available, permissible temperature depends on kind of cable

Mechanical connection (dimensions in mm)

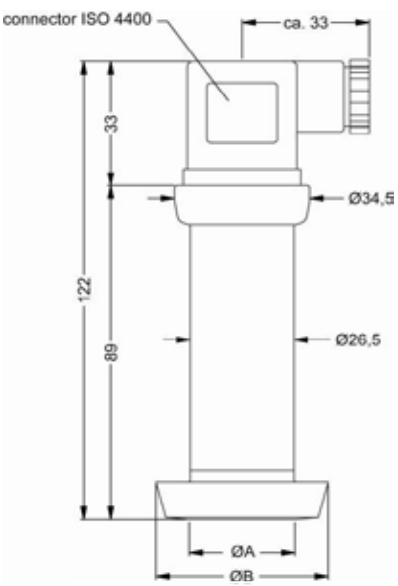
standard **option**



G1/2" flush DIN 3852

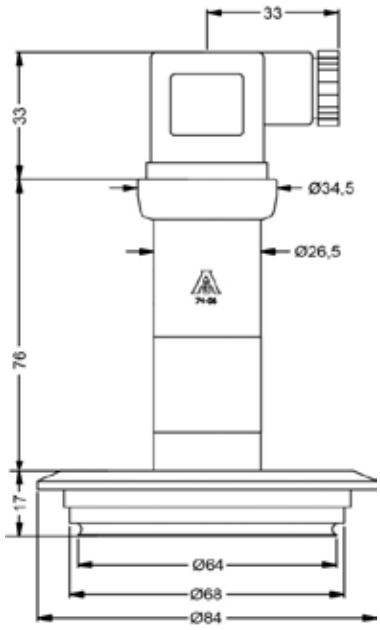


G1" flush DIN 3852

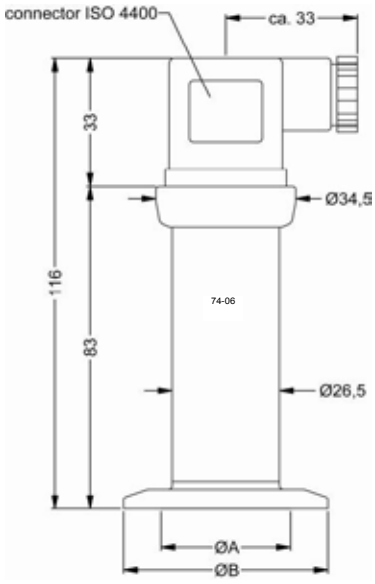


dairy pipe (DIN 11851)

dimensions in mm			
size	DN 25	DN 40	DN 50
A	23	32	45
B	44	56	68.5
P_N [bar]	≤ 40	≤ 40	≤ 25

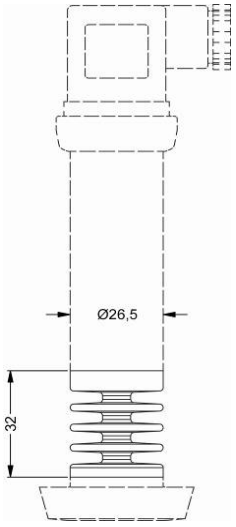


Varivent®
P_N ≤ 25 bar



Clamp (DIN 32676)

dimensions in mm			
size	DN 25	DN 32	DN 50
A	23	32	45
B	50.5	50.5	64
P_N [bar]	≤ 16	≤ 16	≤ 16



cooling element up to 300 °C

⇨ **metric threads and others on request**

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Ordering code DMP 331Pi

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

Section	Option	Code	Note
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	consult
	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 Binder series 723 (7-pin) [2]	A 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	
	compact field housing stainless steel 1.4301 (304) [5]	8 5 0	
	customer	9 9 9	consult
Mechanical connection			
	G1/2" with flush welded diaphragm (DIN 3852) [6]	Z 0 0	
	G1" with flush welded diaphragm (DIN 3852)	Z 3 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) [5]	M 7 3	
	dairy pipe DN 40 (DIN 11851) [5]	M 7 5	
	dairy pipe DN 50 (DIN 11851) [5]	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	
	tantalum	T	consult
	customer	9	consult
Seals			
	for clamp or dairy pipe: without	0	
	for inch thread - standard: FKM	1	
	for inch thread - option: FFKM	7	
	customer	9	consult
Filling Fluids			
	silicone oil	1	
	food compatible oil (FDA) / 3A	2	
	customer	9	consult
Special version			
	standard	1 1 1	
	RS-232 interface [7]	1 2 1	
	with cooling element up to 300 °C	2 1 1	
	RS-232 interface and cooling element up to 300 °C [7]	2 2 1	
	customer	9 9 9	consult

[1] absolut pressure possible from 1 bar
[2] cable socket is included in delivery
[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C), others on request
[4] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available
[5] 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.
[6] possible only for $P_N \geq 1$ bar
[7] RS-232 interface only possible with el. connection Binder series 723 (7-pin)
Software, Interface and cable for DMP 331 Pi with option RS-232 have to be order separately
(Ordering code: CIS-G; Software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and XP)

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

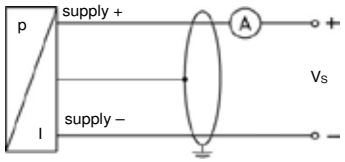
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 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] / Permissible temperatures		
Thermal error	≤ ± 0.2 % FSO / 10 K	
In compensated range	-20 ... 85°C	
Permissible temperatures [3]	medium: -40 ... 125 °C for filling fluid silicone oil -10 ... 125 °C for filling fluid food compatible oil electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C	
Permissible temperature medium for cooling element 300°C	filling fluid silicone oil	overpressure: -40 … 300 °C vacuum: -40 ... 150 °C
	filling fluid food compatible oil	overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C
[2] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions. *[3] max. temperature of the medium for overpressure > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °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
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	stainless steel 1.4435 (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 (recommended for medium temperatures ≤ 200 °C) option: FFKM [4] (recommended for medium temperatures > 200 °C) others on request	
Diaphragm	stainless steel 1.4435 (316 L)	
Media wetted parts	pressure port, seals, diaphragm	
[4] 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 T 85°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: -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 [5]	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) [6]
ATEX Directive	2014/34/EU

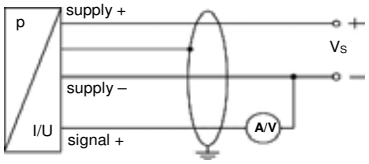
[5] only for 4 … 20 mA / 2-wire
[6] this directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

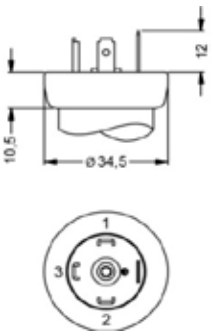


Pin configuration

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

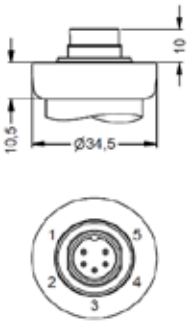
Electrical connection (dimensions in mm)

standard

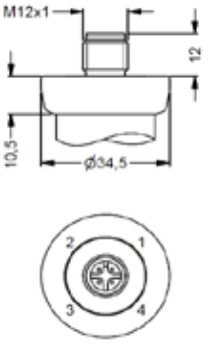


ISO 4400
(IP 65)

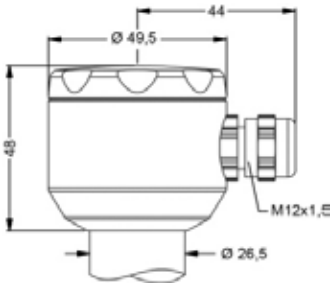
options



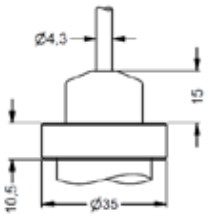
Binder Series 723 5-pin
(IP 67)



M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



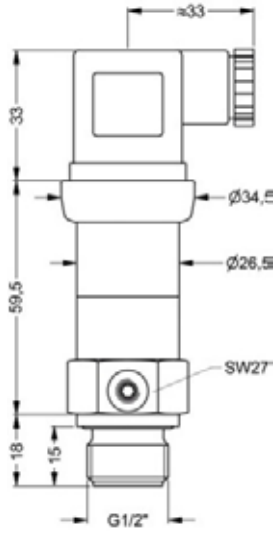
cable outlet with PVC cable
(IP 67) [7]

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

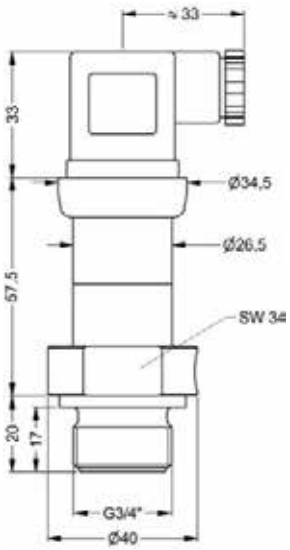
[7] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C)

Mechanical connection (dimensions in mm)

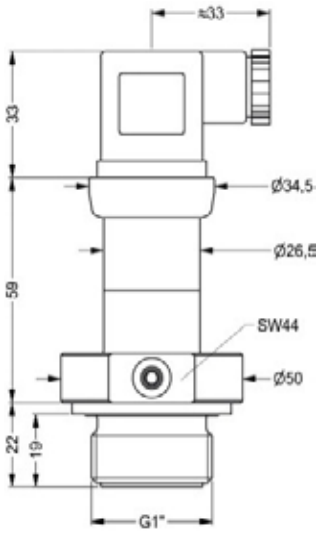
standard **options**



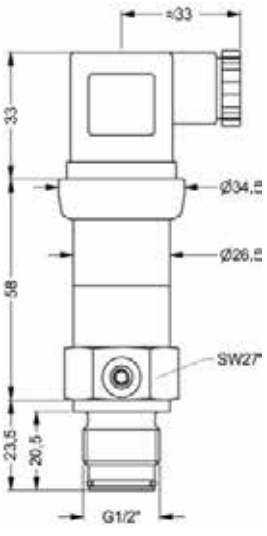
G1/2" flush DIN 3852



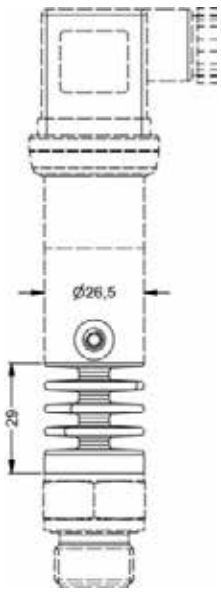
G3/4“ flush DIN 3852



G1“ flush DIN 3852



G1/2“ flush
with radial o-ring



cooling element
300 °C [8]

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

[8] possible for nominal pressure ranges $P_N \leq 160$ bar

Ordering code DMK 351P

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

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 ($P_N \leq 10$ bar)		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
Seals			
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
[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

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

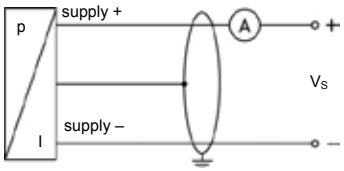
- Paint and varnish
- Viscous and pasty media

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	[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						

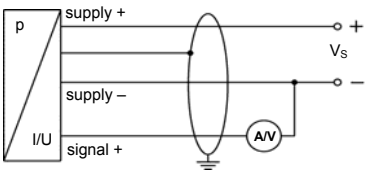
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Option 3-wire	3-wire: 0 … 10 V / V_S = 12.5 ... 32 V_{DC}
Performance	
Accuracy [1]	standard: ≤ ± 0.35 % FSO option for P_N ≥ 0.6 bar: ≤ ± 0.25 % FSO
Long term 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
[1] accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability	
Thermal errors (offset and span) / -Permissible temperatures	
Thermal error	≤ ±0.1 % 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 (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 T85 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 27 nF, L_i = 5 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)	capacity: signal line / shield also signal line / signal line: 160 pF/m inductance: signal line / shield also signal line / signal line: 1 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)

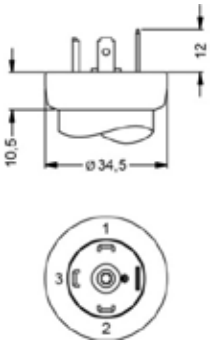


Pin configuration

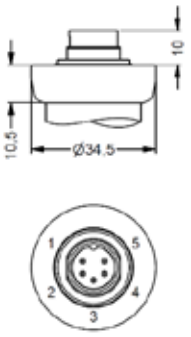
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	compact field housing	cable colours (IEC 60757)
Supply +	1	3	1	IN +	WH (white)
Supply –	2	4	2	IN –	BN (brown)
Signal + (only 3-wire)	3	1	3	OUT +	GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

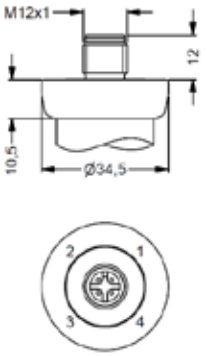
standard **options**



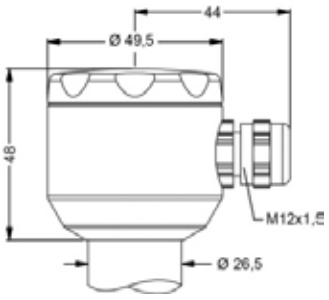
ISO 4400
(IP 65)



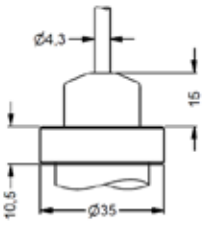
Binder series 723 5-pin
(IP 67)



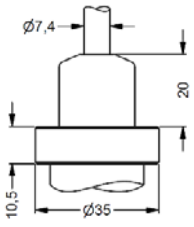
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



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



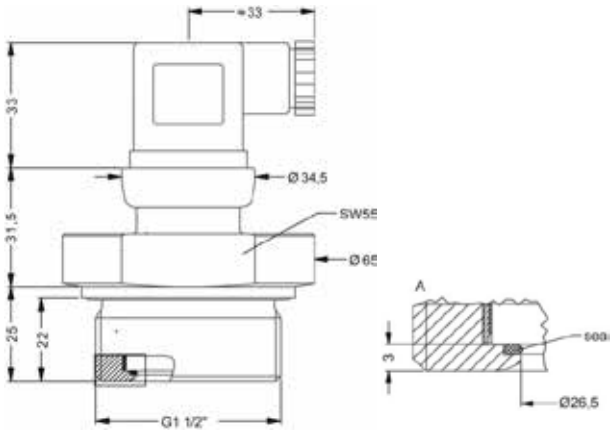
cable outlet, cable with
ventilation tube (IP 68) [3]

⇨ **universal stainless steel field housing 1.4404 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

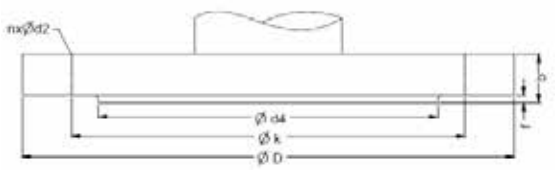
Mechanical connections (dimensions in mm)

standard



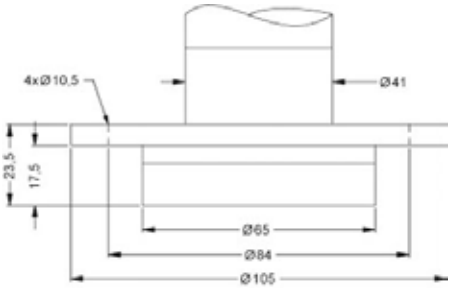
G1 1/2" DIN 3852

options

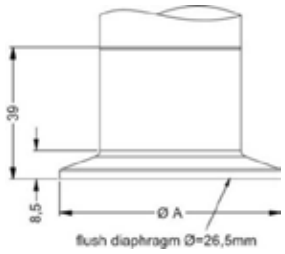


flange (DIN 2501)

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 [bar]	≤ 40	≤ 40	≤ 16

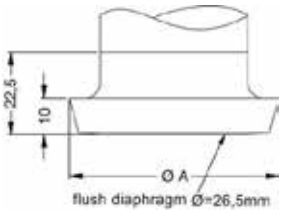


flange DRD [4]



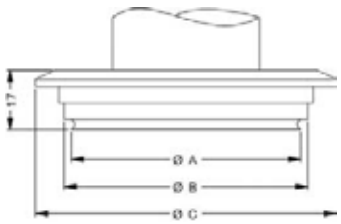
Clamp (DIN 32676)

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



dairy pipe (DIN 11851)

dimensions in mm		
size	DN40	DN50
A	56	68.5



Varivent®
P_N ≤ 10 bar

dimensions in mm	
size	DN40/50
A	64
B	68
C	84

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

Ordering code DMK 351P

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

Pressure				
gauge			2 9 5	
absolute [1]			2 9 6	
Input	**[mH$_2$O]**	**[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 ≥ 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_N ≤ 10 bar)			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
Seals				
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
[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

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

74-06

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 abs.	[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
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 fitting 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] **/ Permissible temperatures**			
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
Permissible temperatures [4]	medium: -40 ... 125 °C for filling fluid silicone oil -10 ... 125 °C for filling fluid food compatible oil electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C		
Permissible temperature medium for cooling element 300°C	filling fluid silicone oil	overpressure: -40 … 300 °C	vacuum: -40 ... 150 °C [5]
	filling fluid food compatible oil	overpressure: -10 ... 250 °C	vacuum: -10 ... 150 °C [5]

[3] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions.
[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] also for P_{abs} ≤ 1 bar

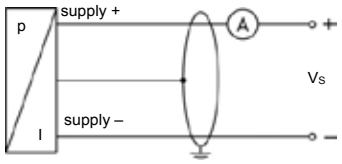
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration according to DIN EN 60068-2-6	G 1/2": 20 g RMS (25 ... 2000 Hz) others: 10 g 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
Options	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 > 200 °C) others on request Clamp, dairy pipe, Varivent®: without
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 T 85°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
Ambient temperature range	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: 1µH/m
Miscellaneous	
Option SIL2 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; 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

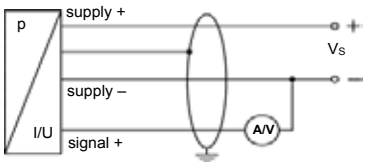
[6] only for 4 … 20 mA / 2-wire

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

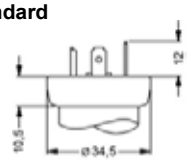


Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
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)

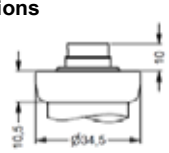
Electrical connections (dimensions in mm)

standard

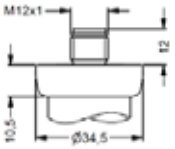


ISO 4400
(IP 65)

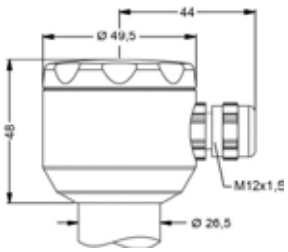
options



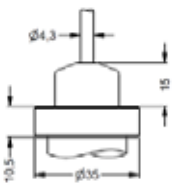
Binder series 723 5-pin
(IP 67)



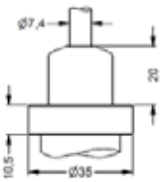
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet with PVC cable
(IP 67) [7]



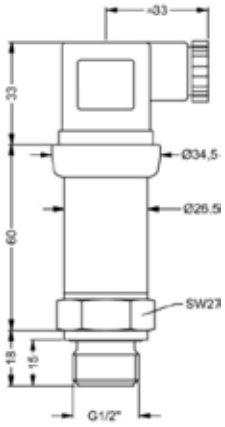
cable outlet, cable with
ventilation tube (IP 68) [8]

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

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

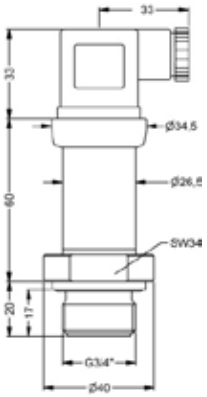
Mechanical connection (dimension in mm)

standard

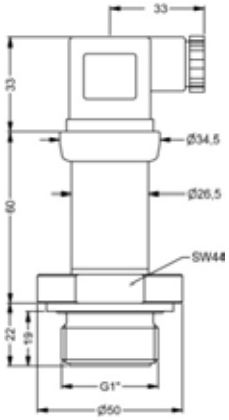


G1/2" flush DIN 3852 [9]

options

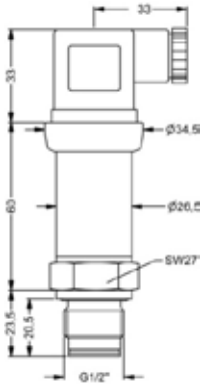


G 3/4" flush DIN 3852
with ISO 4400

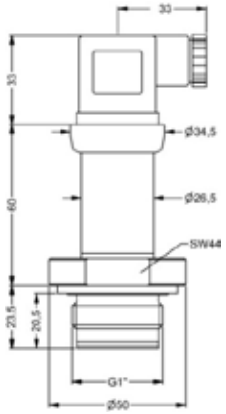


G1" flush DIN 3852
with ISO 4400

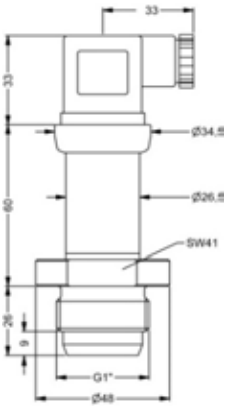
options



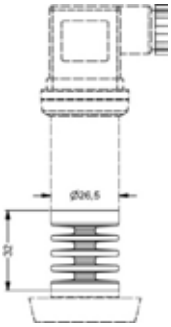
G1/2" flush
with radial o-ring [9]



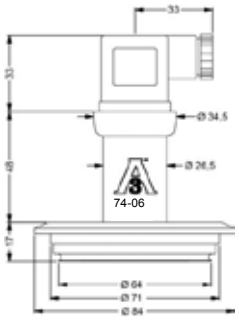
G1" flush
with radial o-ring ($P_N \leq 2$ bar)



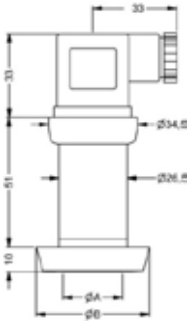
G1" cone
with ISO 4400



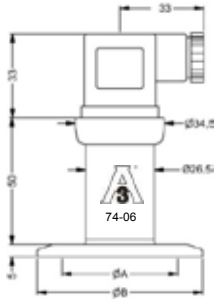
cooling element 300 °C



Varivent®
$P_N \leq 25$ bar



dairy pipe (DIN 11851)
with ISO 4400



Clamp (DIN 32676)
with ISO 4400

dimension in mm			
size	DN 25	DN 40	DN 50
A	23	32	45
B	44	56	68.5
P_N [bar]	≥ 0.25 ≤ 40	≥ 0.25 ≤ 40	≥ 0.25 ≤ 25

dimension in mm				
size	3/4″	DN 25	DN 32	DN 50
A	14	23	32	45
B	25	50.5	50.5	64
P_N [bar]	≥ 4 ≤ 8	≥ 0.25 ≤ 16	≤ 16	≤ 16
** higher pressure ranges on request*				

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

[9] *possible only for $P_N \geq 1$ bar*

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 3 0	
G1" with flush welded diaphragm (DIN 3852)	Z 3 1	
G1" DIN 3852 with rad. o-ring and flush diaphragm [6]	Z 5 7	
G1/2" DIN 3852 with rad. o-ring and flush diaphragm [5]	Z 6 1	
G 1" cone	K 3 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	
customer	9	consult
Seals		
for clamp, dairy pipe, Varivent®: without	0	
for inch thread - standard: FKM	1	
for inch thread - option: FFKM	7	
customer	9	consult
Filling Fluids		
silicone oil	1	
food grade 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
6 possible only for $P_N \leq 2$ bar

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

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
- Turn-Down 1:10
- communication interface for adjusting of offset, span and damping

Optional versions

- IS-versions
  Ex ia = intrinsically safe
  for gases and dusts
- adjustment of nominal pressure ranges (factory-provided)

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 [1]								
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 [1]				
Nominal pressure gauge / absolute [bar]	100	200	400	600
Overpressure [bar]	210	600	1000	1000
Burst pressure [bar]	420	1000	1250	1250

[1] On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.

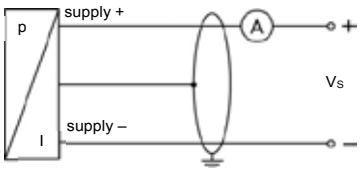
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Options analogue signal	2-wire: 4 ... 20 mA with communication interface [2] 3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC} 0 ... 10 V with communication interface [2]
[2] only possible with el. connection Binder series 723 (7-pin)	
Performance	
Accuracy	IEC 60770 [3]: ≤ ± 0.1 % FSO
performance after turn-down - TD ≤ 1:5 - TD > 1:5	 no change of accuracy [4] for calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 4): ≤ ± [0.1 + 0.015 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 1:10 following accuracy is calculated: ≤ ± (0.1 + 0.015 x 10) % FSO i.e. accuracy is ≤ ± 0.25 % 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 x turn-down) % FSO / year at reference conditions
Response time	approx. 5 msec
Adjustability (with option communication interface RS232)	configuration of following parameters possible (interface / software necessary [5]): 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) *[4] except nominal pressure ranges ≤ 0 .40 bar; for these calculation of accuracy is as follows:* *≤ ± (0.1 + 0.02 x turn-down) % FSO e.g. turn-down of 1:3: ≤ ± (0.1 + 0.02 x 3) % FSO i.e. accuracy is ≤ ± 0.16 % FSO* *[5] software, interface, and cable have to be ordered separately (software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP)*	
Thermal effects (Offset and Span) / Permissible temperatures	
Tolerance band [% FSO]	≤ ± (0.2 x turn-down) in compensated range -20 ... 80 °C
TC, average [% FSO / 10 K]	± (0.02 x turn-down) 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 [6] others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seal, diaphragm
[6] welded version only with pressure ports according to EN 837; 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 T 85°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: -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 [7]
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

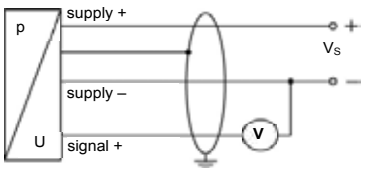
[7] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $P_N \leq 1$ bar.
[8] This directive is only valid for devices with maximum permissible overpressure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

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



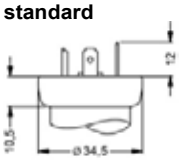
Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/metal (4-pin)	Bayonet MIL-C-26482 (10-6) 2-wire	Bayonet MIL-C-26482 (10-6) 3-wire	compact field housing	cable colours (IEC 60757)
supply +	1	3	3	1	A	A	IN +	WH (white)
supply –	2	4	1	2	B	D	IN –	BN (brown)
signal + (only for 3-wire)	3	1	6	3	-	B	OUT +	GN (green)
shield	ground pin ⏚	5	2	4	pressure port		⏚	GNYE (green-yellow)
Communication interface RS232 [9] RxD	-	-	4	-	-		-	-
TxD	-	-	5	-	-		-	-
GND	-	-	7	-	-		-	-

[9] may not be transmitted directly with the PC (the suitable adapter is available as accessory)

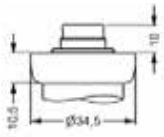
Electrical connections (dimensions in mm)

standard

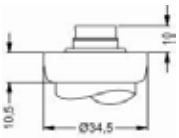


ISO 4400
(IP 65)

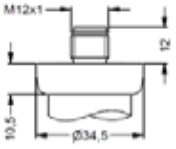
options



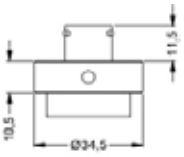
Binder series 723 5-pin
(IP 67)



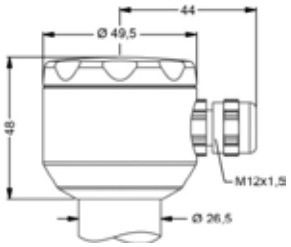
Binder series 723 7-pin
(IP 67)



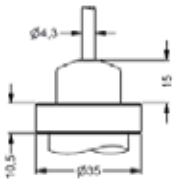
M12x1 4-pin
(IP 67)



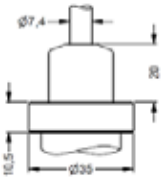
Bayonet MIL-C-26482 (10-6)
(IP 67)



compact field housing
(IP 67)



cable outlet with PVC cable
(IP 67) [10]



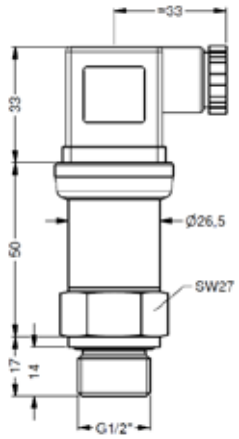
cable outlet, cable with
ventilation tube (IP 68) [11]

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

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

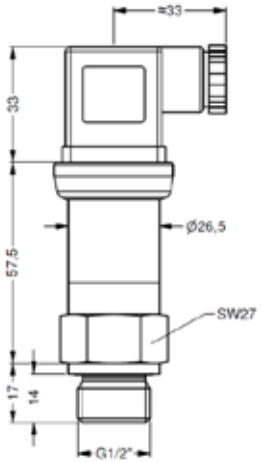
Mechanical connections (dimensions in mm)

DMP331i [12]



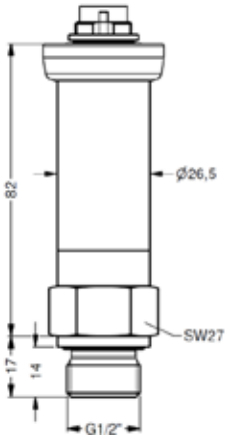
G1/2" DIN 3852

DMP 333i [12, 13]



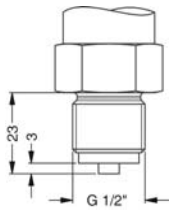
G1/2" DIN 3852

DMP 331i with communication interface RS232

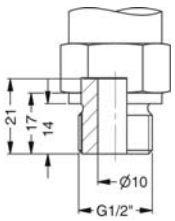


G1/2" DIN 3852

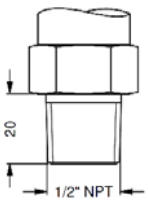
Optional



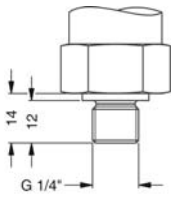
G1/2" EN 837



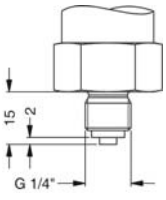
G1/2" DIN 3852
open port, $P_N \leq 40$ bar



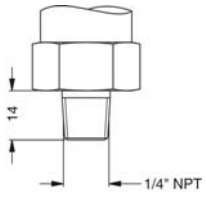
1/2" NPT



G1/4" DIN 3852



G1/4" EN 837



1/4" NPT

⇨ **metric threads and others on request**

[12] *with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm*
[13] *for nominal pressure PN > 400 bar increases the length without IS-version by 19 mm and with IS-version by 39 mm*
Windows® is a registered trade mark of Microsoft Corporation

Ordering code DMP 331i / DMP 333i

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

Pressure	Code	
For DMP 331i		
gauge	1 1 0	
absolute	1 1 1	
For DMP 333i		
gauge [1]	1 3 0	
absolute	1 3 1	

Input	[mH_2O]	[bar]	Code	
For DMP 331i [2]				
	4	0.40	4 0 0 0	
	10	1.0	1 0 0 1	
	20	2.0	2 0 0 1	
	40	4.0	4 0 0 1	
	100	10	1 0 0 2	
	200	20	2 0 0 2	
	400	40	4 0 0 2	
	600	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	Code	
4 … 20 mA / 2-wire	1	
intrinsic safety 4 … 20 mA / 2-wire	E	
0 … 10 V / 3-wire	3	
customer	9	consult

Accuracy (at nominal pressure)	Code	
0.1 % FSO	1	
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 and female plug Binder series 723 (7-pin)	A 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	Code	
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

Seals	Code	
For DMP 331i		
FKM	1	
without (welded version) [5, 6]	2	
For DMP 333i		
FKM	1	
NBR	5	
customer	9	consult

Special version	Code	
standard	1 1 1	
communication interface RS232 [7]	1 2 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 ≤ 40 bar
[6] welded version only with pressure ports according to EN 837
[7] Communication interface RS232 only possible with el. connection Binder serie 723 (7pin)
Software, Interface and cable for DMP 331i and DMP 333i with option RS-232 have to be order separately
(Ordering code: CIS-G; Software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and XP

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DCT 531

Industrial Pressure Transmitter with RS485 Modbus RTU

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 ... 400 bar

output signal

RS485 with Modbus RTU protocol

Special characteristic

- perfect thermal behaviour
- excellent long term stability

Optional versions

- pressure port
  G 1/2" flush up to max. 40 bar
- pressure sensor welded
- customer specific versions

The DCT 531 with RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master slave architecture with which up to 247 slaves can be questioned by a master – the data will transfer in binary form.

Due to the usage of high quality materials and components, the DCT 531 is suitable for almost every industrial application, if the medium is compatible with stainless steel 316L.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 531 to different conditions on-site.

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
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250
Vacuum resistance		P_N ≥ 1 bar: unlimited vacuum resistance P_N < 1 bar: on request								

Output signal	
Digital (pressure)	RS 485 with Modbus RTU protocol
Supply	
Direct current	V_S = 9 … 32 V_{DC}
Performance	
Accuracy [1]	standard for P_N ≥ 0.4 bar: ≤ ± 0.35 % FSO standard for P_N < 0.4 bar: ≤ ± 0.5 % FSO option for P_N ≥ 0.4 bar: ≤ ± 0.25 % FSO
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Measuring rate	500 Hz
Delay time	500 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	
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 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 / housing	stainless steel 1.4404 (316 L)
Seals (media wetted)	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, seal, diaphragm
[2] welded version only with pressure ports according to EN 837, P_N ≤ 40 bar	

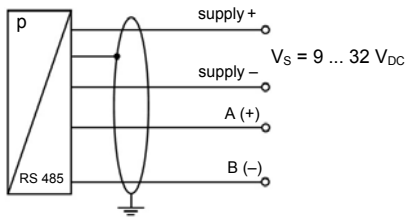
Miscellaneous	
Weight	approx. 210 g
Current consumption	typ. 7 mA
Operational life	100 million load cycles
Installation position	any [3]
Operational life	> 100 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]

[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

RS 485 / Modbus RTU



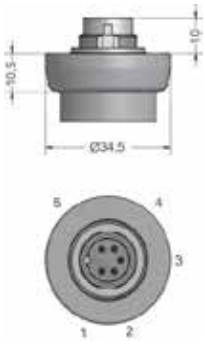
Pin configuration

Electrical connection	M12x1 / metal (4-pin)	Binder 723 (5-pin)	cable colour (IEC 60757)
Supply +	1	1	WH (white)
Supply –	3	3	BN (brown)
A (+)	2	2	GN (green)
B (–)	4	4	YE (yellow)
Shield	plug housing	plug housing	GNYE (green-yellow)

Electrical connections (dimensions in mm)

standard **option**

M12x1 4-pin
(IP 67)



Binder Series 723 5-pin
(IP 67)

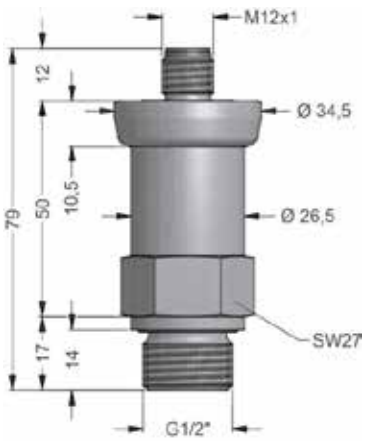
cable outlet with PVC cable
(IP 67) [5] (on request)

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

Mechanical connections (dimensions in mm)

standard

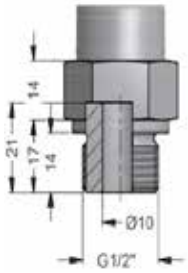


G1/2" DIN 3852
with M12x1

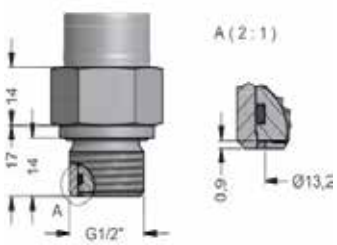
Mechanical connections (dimensions in mm)

option

G1/4" DIN 3852



G1/2" DIN 3852 open port,
$P_N \leq 40$ bar



G1/2" DIN 3852
with flush sensor, $P_N \leq 40$ bar

G1/2" EN 837

G1/4" EN 837

1/2" NPT

1/4" NPT

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

Configuration Modbus RTU					
Standard configuration	001	-	1	-	1
Address					
Address	001				
	…				
	247				
Baud Rate					
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity					
None					0
Odd					1
Even					2

Configuration code (to specify with order)		-		-	

Ordering code DCT 531

DCT 531 [ ][ ][ ] - [ ][ ][ ][ ] - [ ] - [ ] - [ ][ ][ ] - [ ][ ][ ] - [ ] - [ ][ ][ ]

Pressure			
gauge		D C 7	
absolute [1]		D C 8	
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	
	-1 … 0	X 1 0 2	
	customer	9 9 9 9	consult
Output			
RS485 Modbus RTU		L5	
Accuracy			
standard for $P_N \geq 0.4$ bar	0.35 % FSO	3	
standard for $P_N < 0.4$ bar	0.5 % FSO	5	
option for $P_N \geq 0.4$ bar	0.25 % FSO	2	
	0.1 % FSO	1	consult
	customer	9	consult
Electrical connection			
male plug M12x1 (4-pin) / metal		M 1 3	
male plug Binder series 723 (5-pin)		2 0 7	
cable outlet with PVC cable (IP67) [2]		T A 0	
cable outlet, cable with ventilation tube (IP68) [3]		T R 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 [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
Seals			
FKM		1	
EPDM		3	
without (welded version) [5]		2	consult
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, possible for $P_N \leq 40$ bar

DCT 532

Industrial Pressure Transmitter with i²C interface

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 ... 400 bar

Digital output signal

- i²C
- bus frequency max. 400 kHz
- configuration of data format
- interrupt signal

Special characteristic

- ► perfect thermal behaviour
- ► excellent long term stability

Optional versions

- ► pressure port
  G 1/2" flush up to 40 bar
- ► welded sensor
- ► customer specific versions

Contrary to the industrial pressure transmitter with analogue signal, the DCT 532 has a digital i²C-interface. i²C has a master-slave topology, whereby you can use up to 127 devices at one master. In addition to the typical settings, as slave address, data format, etc., it is possible to do special parametrisation for pressure unit and more.

Due to the usage of high quality materials and components, the DCT 532 is suitable for almost every industrial application, if medium is compatible with stainless steel 316L.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the pressure transmitter to different conditions on-site.

Preferred areas of use are

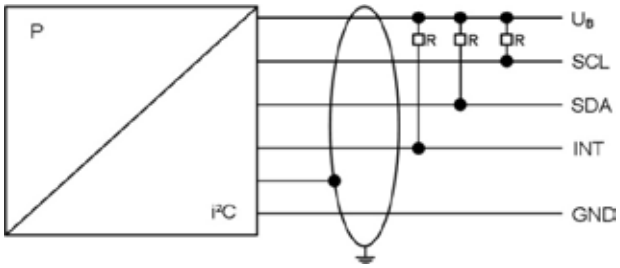
- Plant and machine engineering
- Energy industry

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
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250
Vacuum resistance		P_N ≥ 1 bar: unlimited vacuum resistance P_N < 1 bar: on request								

Output signal / Supply			
i²C	V_S = 3.5 ... 5.5 V_{DC}		
Performance			
Accuracy [1]	standard for P_N ≥ 0.4 bar: ≤ ± 0.35 % FSO standard for P_N < 0.4 bar: ≤ ± 0.5 % FSO option for P_N ≥ 0.4 bar: ≤ ± 0.25 % FSO		
Max. I/O current	10 mA		
Long term stability	≤ ± 0.1 % FSO / year at reference conditions		
Response time	1.5 msec + transmission time (depending on bus frequency)		
Measuring rate	500 Hz		
[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			
Permissible temperatures	medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 85 °C		
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	by exchanged supply connections no damage, but also no function by exchanged communication with signal lines it can come according to constellation to damages.		
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 / Housing	stainless steel 1.4404 (316 L)		
Seals (media wetted)	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, seal, diaphragm		
[2] welded version only with pressure ports according to EN 837, P_N ≤ 40 bar			
Miscellaneous			
Current consumption	< 15 mA		
Weight	approx. 140 g		
Ingress protection	IP 67 / IP 68 for cable with ventilation tube		
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]		
[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



Pin configuration

Electrical connection	M12x1 / metal (5-pin)	Binder 723 (5-pin)	cable colour (IEC 60757)
Supply +	1	1	WH (white)
Supply –	3	3	BN (brown)
SDA	2	2	YE (yellow)
SCL	4	4	GN (green)
INT	5	5	PK (pink)
Shield	housing	housing	GNYE (green-yellow)

Electrical connections (dimensions in mm)

Standard

M12x1 5-pin
(IP 67)

Optional

Binder Serie 723 5-pin
(IP 67)

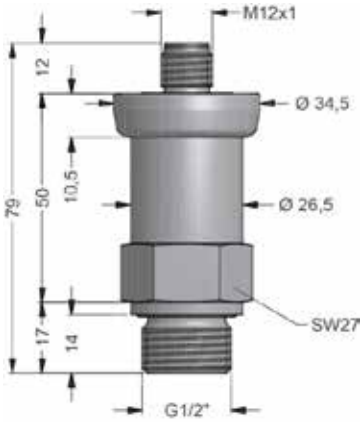
cable outlet with PVC cable
(IP 67) [5] (on request)

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

Mechanical connections (dimensions in mm)

standard

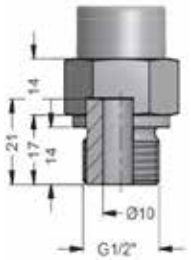


G1/2" DIN 3852
with ISO 4400

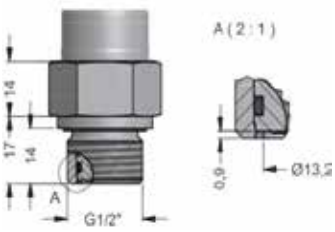
Mechanical connections (dimensions in mm)

option

G1/4" DIN 3852



G1/2" DIN 3852 open port,
$P_N \leq 40$ bar



G1/2" DIN 3852
with flush sensor, $P_N \leq 40$ bar

G1/2" EN 837

G1/4" EN 837

1/2" NPT

1/4" NPT

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

Configuration i²C-interface																	
Stand configuration	0	5	0	-	0	-	0	-	0	-	0	-	0	0	0	0	1
Slave address																	
address	0	0	1														
		…															
	1	2	7														
Type of result register																	
32bit IEEE float					0												
16bit Integer					1												
Byte order of values																	
Low byte first							0										
High byte first							1										
Mode of result register																	
Value									0								
Percent of nominal									1								
Restore of address pointer																	
No restore											0						
To last set address on next start											1						
Digital meaning																	
Count of result													0	0	0	0	1
															…		
													1	0	0	0	0

Configuration code (has to be defined with the order)				-		-		-		-		-					

Ordering code DCT 532

DCT 532 ☐☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐☐☐

		Code	
Pressure			
gauge		D C 0	
absolute [1]		D C 1	
Input	**[bar]**		
	0.1 [1]	1 0 0 0	
	0.16 [1]	1 6 0 0	
	0.25 [1]	2 5 0 0	
	0.4	4 0 0 0	
	0.6	6 0 0 0	
	1	1 0 0 1	
	1.6	1 6 0 1	
	2.5	2 5 0 1	
	4	4 0 0 1	
	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	
	-1 … 0	X 1 0 2	
	customer	9 9 9 9	consult
Output			
	i²C	IC	
Accuracy			
standard for $P_N \geq 0.4$ bar	0.35 %	3	
standard for $P_N < 0.4$ bar	0.5 %	5	
option for $P_N \geq 0.4$ bar	0.25 %	2	
	0.1 %	1	consult
	customer	9	consult
Electrical connection			
Male plug M12x1 (5-pin) / metal		N 1 7	
Male plug Binder series 723 (5-pin)		2 0 7	
Cable outlet with PVC cable [2]		T A 0	
Cable outlet (IP68) [3]		T R 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 [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
Seals			
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] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

[4] not possible for nominal pressure $P_N > 40$ bar

[5] welded version only with pressure ports according to EN 837, possible for $P_N \leq 40$ bar

DCT 533

Industrial Pressure Transmitter with IO-Link Interface

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 ... 400 bar

Digital output signals

- IO-Link according to specification V 1.1
- Data transfer 38.4 kbit/s
- Smart sensor profile

Special characteristic

- ► perfect thermal behaviour
- ► excellent long term stability

Optional versions

- ► pressure port
  G 1/2" flush up to 40 bar
- ► welded sensor
- ► customer specific versions

IO-Link is a digital interface for sensors and actuators, which is worldwide standardized by IEC 61131-9. IO-Link does not have a bus topology, but it is a powerful point-to-point communication, where the device can be parametrized, and the measured values transferred. The integration to the master is easy by using the IODD-file.

The sensor technology of the DCT 533 is the same as those of the proven pressure transmitter DMP 331 / DMP 333, whereby the DCT 533 is suitable for almost every industrial application, if medium is compatible with stainless steel 316L.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 533 to different conditions on-site.

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
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250
Vacuum resistance		P_N ≥ 1 bar: unlimited vacuum resistance				P_N < 1 bar: on request				

Output signal / Supply	
Standard	IO-Link (measured value transmission) V_S = 18 ... 30 V_{DC} SIO (switching output)
IO-Link	V 1.1 / Slave / Smart Sensor Profile
Data transfer	COM 2 38.4 kbit/s
Mode	SIO / IO-Link
Standard	IEC 61131-9
Performance	
Accuracy [1]	standard for P_N ≥ 0.4 bar: ≤ ± 0.35 % FSO standard for P_N < 0.4 bar: ≤ ± 0.5 % FSO option for P_N ≥ 0.4 bar: ≤ ± 0.25 % FSO
Switching current (SIO-Mode)	max. 200 mA
Switching frequency	max. 200 Hz
Switching cycles	> 100 x 10^6
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Turn-on time	SIO-Modus: approx. 20 msec
Response time	SIO-Modus: < 4 msec
Measuring rate	400 Hz
[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

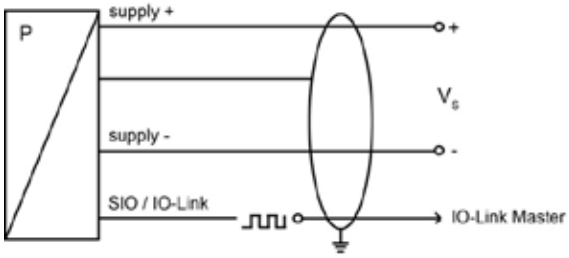
Permissible temperatures	
Permissible temperatures	medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 85 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g 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 / housing	stainless steel 1.4404 (316 L)
Seals (media wetted)	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, seal, diaphragm
[2] welded version only with pressure ports according to EN 837, P_N ≤40 bar	

Miscellaneous	
Current consumption	< 20 mA
Weight	approx. 140 g
Installation position	any [3]
Protection class	IP 67
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]

[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



Pin configuration

Electrical connection	M12x1 / metal (4-pin)	cable colour (IEC 60757)
Supply + Supply – SIO / IO Link	1 3 4	WH (white) BN (brown) GN (green)
Shield	housing	GNYE (green-yellow)

Electrical connections (dimensions in mm)

standard

M12x1 4-pin
(IP 67)

option

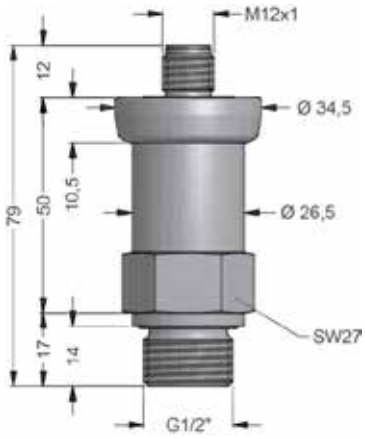
cable outlet with PVC cable
(IP 67) [5]

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

[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*

Mechanical connection (dimensions in mm)

standard

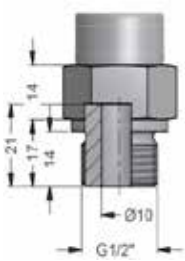


G1/2" DIN 3852
with M12x1

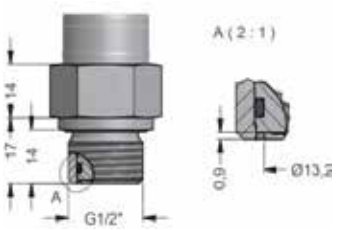
Mechanical connections (dimensions in mm)

option

G1/4" DIN 3852

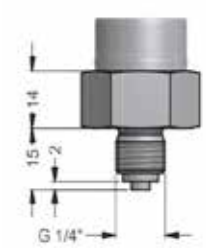


G1/2" DIN 3852 open port,
$P_N \leq 40$ bar



G1/2" DIN 3852
with flush sensor, $P_N \leq 40$ bar

G1/2" EN 837



G1/4" EN 837

1/2" NPT

1/4" NPT

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

Ordering code DCT 533

DCT 533 [ ][ ][ ] - [ ][ ][ ][ ] - [ ] - [ ] - [ ][ ][ ] - [ ][ ][ ] - [ ] - [ ][ ][ ]

Pressure			
gauge		D C 2	
absolute [1]		D C 3	
Input	[bar]		
	0.1 [1]	1 0 0 0	
	0.16 [1]	1 6 0 0	
	0.25 [1]	2 5 0 0	
	0.4	4 0 0 0	
	0.6	6 0 0 0	
	1	1 0 0 1	
	1.6	1 6 0 1	
	2.5	2 5 0 1	
	4	4 0 0 1	
	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	
	-1 … 0	X 1 0 2	
	customer	9 9 9 9	consult
Output			
IO-Link / SIO		IO	
Accuracy			
standard for $P_N \geq 0.4$ bar	0.35 %	3	
standard for $P_N < 0.4$ bar	0.5 %	5	
option for $P_N \geq 0.4$ bar	0.25 %	2	
customer		9	consult
Electrical connection			
Male plug M12x1 (4-pin) / metal		M 1 7	
Cable outlet with PVC cable [2]		T A 0	
Cable outlet (IP68) [3]		T R 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 [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
Seals			
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] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

[4] not possible for nominal pressure $P_N > 40$ bar

[5] welded version only with pressure ports according to EN 837, possible for $P_N \leq 40$ bar

DCT 561

Industrial Pressure Transmitter with RS485 Modbus RTU

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

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

Output signal

RS485 with Modbus RTU protocol

Special characteristic

- good thermal behaviour
- good long term stability

Optional versions

- pressure port G 1/2" open port PVDF for aggressive media (up to 60 bar)
- oxygen application

The DCT 561 with RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master slave architecture with which up to 247 slaves can be questioned by a master – the data will transfer in binary form.

The sensor technology of the DCT 561 is the same as those of the proven pressure transmitter DMK 331, whereby the DCT 561 is suitable for pasty, polluted and aggressive media as well as for low-pressure oxygen applications.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 561 to different conditions on-site.

Preferred areas of use are

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

Input pressure range [1]										
Nominal pressure gauge	[bar]	-1…0 [2]	0.6	1	1.6	2.5	4	6	10	16
Nominal pressure abs.	[bar]	-	0.6	1	1.6	2.5	4	6	10	16
Overpressure	[bar]	3	2	3	5	5	12	12	20	50
Burst pressure ≥	[bar]	4	4	4	7	7.5	15	18	30	70

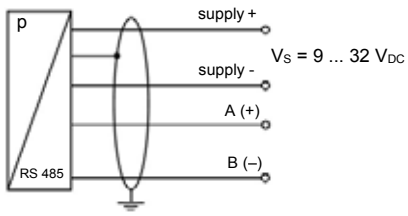
Nominal pressure gauge / abs.	[bar]	25	40	60	100	160	250	400	600
Overpressure	[bar]	50	120	120	200	400	400	650	800
Burst pressure ≥	[bar]	75	150	180	300	500	750	1000	1100
Vacuum resistance		unlimited vacuum resistance							

[1] PVDF pressure port possible for nominal pressure ranges up to 60 bar
[2] accuracy ≤ 1 % FSO

Output signal	
Digital (pressure)	RS485 with Modbus RTU protocol
Supply	
Direct current	V_S = 9 … 32 V_{DC}
Performance	
Accuracy [3]	≤ ± 0.5 % FSO
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Measuring rate	500 Hz
Delay time	500 msec
[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	-25 ... 85 °C
Permissible temperatures [4]	medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 80 °C
[4] for pressure port of PVDF the minimum temperature is -30 °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 with nominal pressure range up to 60 bar: PVDF others on request
Housing	stainless steel 1.4404 (316L)
Seals	standard: FKM options: EPDM (for P_N ≤ 160 bar) others on request
Diaphragm	ceramic Al_2O_3 96 %
Media wetted parts	pressure port, seal, diaphragm
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. 7 mA
Weight	approx. 210 g
Installation position	any
Protection class	IP 67
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [5]
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar	

Wiring diagrams

RS 485 / Modbus RTU

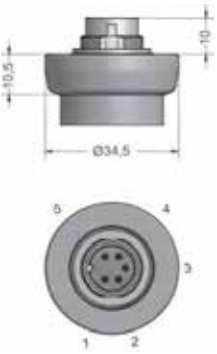


Pin configuration			
Electrical connection	M12x1 / metal (4-pin)	Binder 723 (5-pin)	cable colours (IEC 60757)
Supply +	1	1	WH (white)
Supply –	3	3	BN (brown)
A +	2	2	GN (green)
B –	4	4	YE (yellow)
Shield	plug housing	plug housing	GNYE (green-yellow)

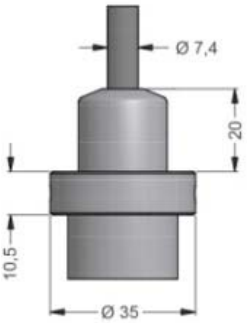
Electrical connections (dimensions in mm)

standard **option**

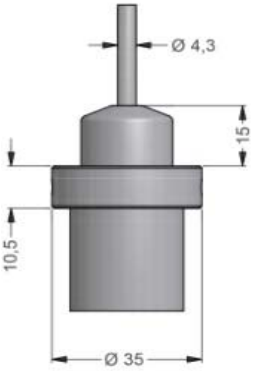
M12x1, 4-pin
(IP 67)



Binder Series 723, 5-pin
(IP 67)



cable outlet with PVC cable
(IP 67) [6]
on request

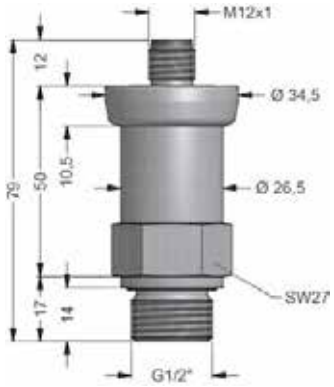


cable outlet,
cable with ventilation tube
(IP 68) [7]
on request

[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*

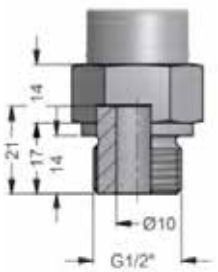
Mechanical connections (dimensions in mm)

standard **options**

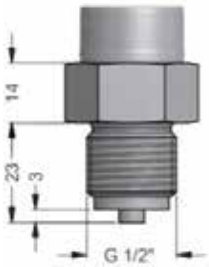


G1/2" DIN 3852
with M12x1

G1/4" DIN 3852



G1/2" open port



G1/2"EN 837

G1/4" EN 837

1/2" NPT

1/4" NPT

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

Ordering code DCT 561

DCT 561 □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure																									
gauge	2	5	0																						
absolute	2	5	1																						
Input	**[bar]**																								
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																									
RS485 Modbus RTU								L5																	
Accuracy																									
0,5 % FSO									5																
customer									9																consult
Electrical connection																									
male plug M12x1 (4-pin) / metal											M	1	3												
male plug Binder series 723 (5-pin)											2	0	7												
cable outlet with PVC cable (IP67) [1]											T	A	0												
cable outlet, cable with ventilation tube (IP68) [2]											T	R	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 open pressure port														H	0	0									
1/2" NPT														N	0	0									
1/4" NPT														N	4	0									
customer														9	9	9									consult
Seals																									
FKM																	1								
EPDM [4]																	3								
customer																	9								consult
Pressure port																									
stainless steel 1.4404 (316L)																		1							
PVDF [5]																		B							
customer																		9							consult
Diaphragm																									
ceramics Al_2O_3 96%																			2						
customer																			9						consult
Special version																									
standard																				0	0	0			
oxygen application [6]																				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 range $P_N \leq 160$ bar
[5] PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar), minimum permissible temperature is -30 °C
[6] oxygen application with FKM-seal up to 25 bar

DCT 563

Industrial Pressure Transmitter with IO-Link Interface

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

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

Digital output signal

- IO-Link according to specification V 1.1
- data transfer 38.4 kbit/s
- smart sensor profile

Special characteristic

- ► good thermal behaviour
- ► good long term stability

Optional versions

- ► pressure port G 1/2" flush for pasty media (up to 25 bar)
- ► pressure port G 1/2" open port PVDF for aggressive media (up to 60 bar)
- ► oxygen application

IO-Link is a digital interface for sensors and actuators, which is worldwide standardized by IEC 61131-9. IO-Link does not have a bus topology, but it is a powerful point-to-point communication, where the device can be parameterized and the measured values transferred. The integration to the master is easy by using the IODD-file.

The sensor technology of the DCT 563 is the same as those of the proven pressure transmitter DMK 331, whereby the DCT 563 is suitable for pasty, polluted and aggressive media as well as for low-pressure oxygen applications.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 563 to different conditions on-site.

Preferred areas of use are

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

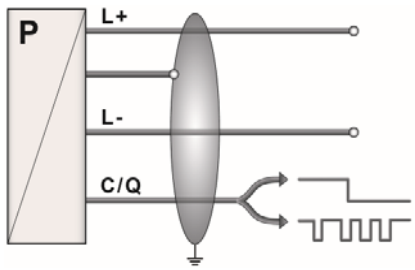
Input pressure range [1]										
Nominal pressure gauge	[bar]	-1…0 [2]	0.6	1	1.6	2.5	4	6	10	16
Nominal pressure abs.	[bar]	-	0.6	1	1.6	2.5	4	6	10	16
Overpressure	[bar]	3	2	3	5	5	12	12	20	50
Burst pressure ≥	[bar]	4	4	4	7	7.5	15	18	30	70

Nominal pressure gauge / abs.	[bar]	25	40	60	100	160	250	400	600
Overpressure	[bar]	50	120	120	200	400	400	650	800
Burst pressure ≥	[bar]	75	150	180	300	500	750	1000	1100
Vacuum resistance		unlimited vacuum resistance							

[1] PVDF pressure port possible for nominal pressure ranges up to 60 bar
[2] accuracy ≤ 1 % FSO

Output signal / Supply	
Standard	IO-Link (measured value / status transmission) / V_S = 18 ... 30 VDC SIO (switching output)
IO-Link	V 1.1 / slave / smart sensor profile
Data transfer	COM2 38.4 kbit/s
Mode	SIO / IO-Link (COMx)
Standard	IEC 61131-2, IEC 61131-9
Performance	
Accuracy [3]	≤ ± 0.5 % FSO
Switching current (SIO-Mode)	max. 200 mA
Switching frequency	max. 200 Hz
Switching cycles	> 100 x 10^6
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Turn-on time	SIO modus: approx. 20 msec
Response time	SIO modus: < 4 msec
Measuring rate	400 Hz
[3] 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	-25 ... 85 °C
Permissible temperatures [4]	medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 80 °C
[4] for pressure port of PVDF the minimum temperature is -30 °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 with nominal pressure range up to 60 bar: PVDF others on request
Housing	stainless steel 1.4404 (316L)
Seals (media wetted)	standard: FKM options: EPDM (for P_N ≤ 160 bar) others on request
Diaphragm	ceramic Al_2O_3 96 %
Media wetted parts	pressure port, seal, diaphragm
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. 20 mA
Weight	approx. 140 g
Installation position	any
Protection class	IP 67
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [5]
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar	

Wiring diagram



Pin configuration

Electrical connection		M12x1 / metal (4-pin)	cable colour (IEC 60757)
(L+)	Supply +	1	WH (white)
(L-)	Supply –	3	BN (brown)
(C/Q)	SIO / IO Link (COMx)	4	GN (green)
	Shield	housing	GNYE (green-yellow)

Electrical connections (dimensions in mm)

standard

M12x1, 4-pin
(IP 67)

option

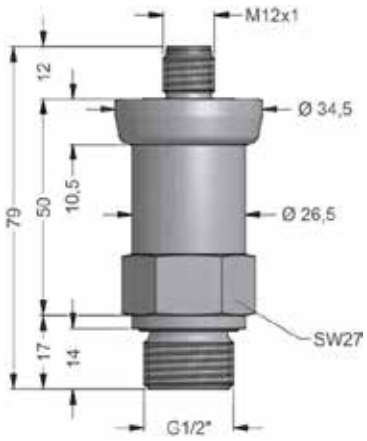
cable outlet with PVC cable
(IP 67) [6]

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

[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*

Mechanical connections (dimensions in mm)

standard

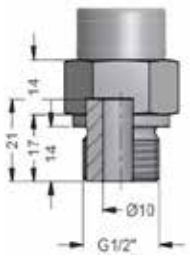


G1/2" DIN 3852
with M12x1

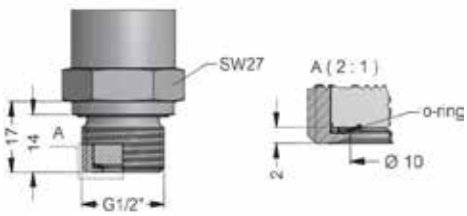
Mechanical connections (dimensions in mm)

option

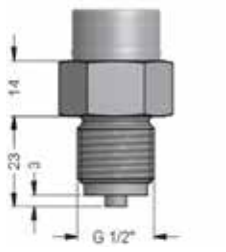
G1/4" DIN 3852



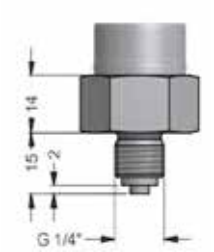
G1/2" open port



G1/2" DIN 3852
with flush sensor [8]



G1/2" EN 837



G1/4" EN 837

1/2" NPT

1/4" NPT

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

[8] *possible for nominal pressure ranges P_N ≤ 25 bar; absolute pressure ranges on request*

Ordering code DCT 563

DCT 563 □□□ - □□□□ - □ - □ - □□□ - □□□ - □ - □ - □ - □□□

	Code	
Pressure		
gauge	DC5	
absolute	DC6	
Input [bar]		
0.6	6000	
1.0	1001	
1.6	1601	
2.5	2501	
4.0	4001	
6.0	6001	
10	1002	
16	1602	
25	2502	
40	4002	
60	6002	
100	1003	
160	1603	
250	2503	
400	4003	
600	6003	
-1 … 0	X102	
customer	9999	consult
Output		
IO-Link (COMx) / SIO	IO	
Accuracy		
0.5 % FSO	5	
customer	9	consult
Electrical connection		
male plug M12x1 (4-pin) / metal	M17	
cable outlet with PVC cable (IP67) [1]	TA0	
cable outlet, cable with ventilation tube (IP68) [2]	TR0	
customer	999	consult
Mechanical connection [3]		
G1/2" DIN 3852	100	
G1/2" EN 837	200	
G1/4" DIN 3852	300	
G1/4" EN 837	400	
G1/2" DIN 3852 with semi-flush sensor [4]	F00	
G1/2" DIN 3852 open pressure port	H00	
1/2" NPT	N00	
1/4" NPT	N40	
customer	999	consult
Seals		
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	000	
oxygen application [7]	007	
customer	999	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 $P_N \leq 25$ bar; absolute pressure ranges on request
[5] possible for nominal pressure range $P_N \leq 160$ bar
[6] PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar), minimum permissible temperature is -30 °C
[7] oxygen application with FKM-seal up to 25 bar

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.

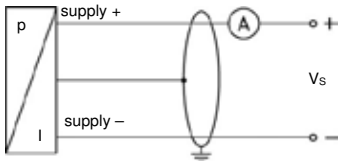
The DMP 343 features excellent thermal behaviour and outstanding long term stability. A variety of standard output signals as well as mechanical and electrical connections make the DMP 343 covering a wide field of applications.

Preferred areas of use are

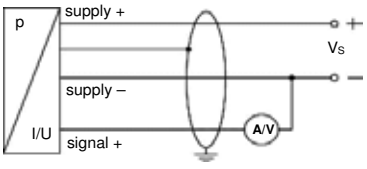
- Plant and machine engineering
- Heating and air conditioning

Input pressure range						
Nominal pressure gauge	[bar]	600 [1]	1000	1600	2000	2200
Overpressure	[bar]	800	1400	2200	2800	2800
Burst pressure ≥	[bar]	3000	4000	6000	6000	6000
[1] only available with pressure port G1/2" EN 837						
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 [2]		≤ ± 0.35 % 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		≤ ± 0.2 % FSO / year at reference conditions				
Response time		< 5 msec				
Adjustability		Adjustment of offset is possible within the range of ± 5 % of the nominal pressure range, without an influence of characteristic curve and accuracy.				
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (Offset and Span) / Permissible temperatures						
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 T 85°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: -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)

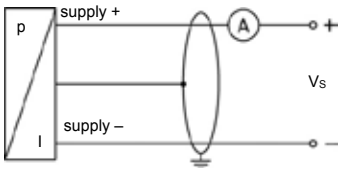


3-wire-system (current / voltage)

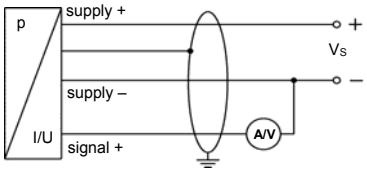


Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

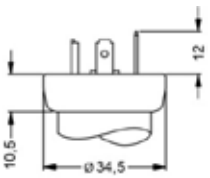


Pin configuration

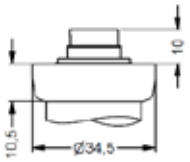
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
Supply + Supply – Signal + (only for 3-wire)	1 2 3	3 4 1	1 2 3	IN + IN - OUT+	WH (white) BN (brown) GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

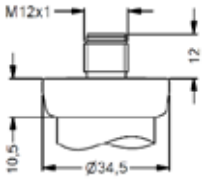
standard **options**



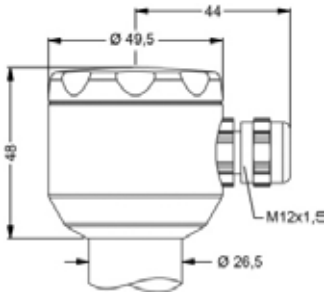
ISO 4400
(IP 65)



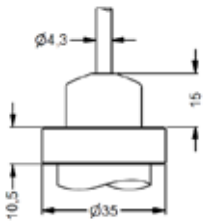
Binder Series 723 5-pin
(IP 67)



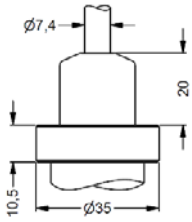
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



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



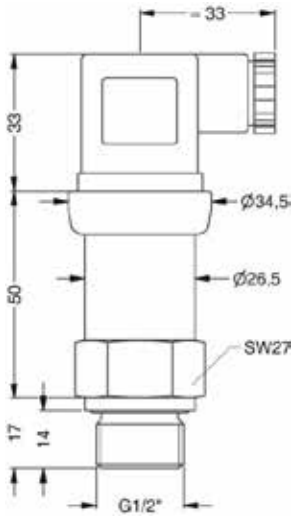
cable outlet, cable with ventilation tube (IP 68) [3]

⇨ **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

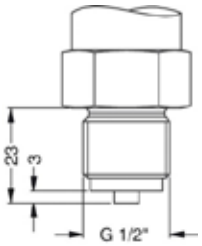
Mechanical connection (dimensions in mm)

standard

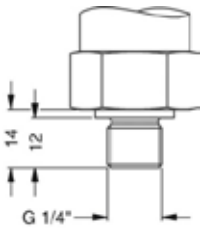


G1/2" DIN 3852
with ISO 4400

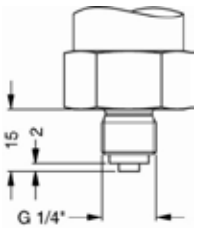
options



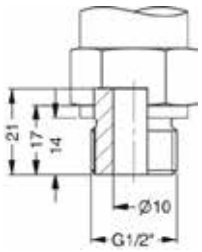
G1/2" EN 837



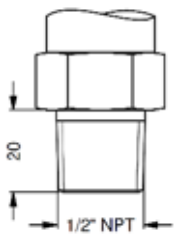
G1/4" DIN 3852



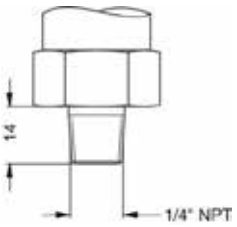
G1/4" EN 837



G1/2" open port



1/2" NPT



1/4" NPT

⇨ **metric threads and others 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 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 bar

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 abs.	[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: ≤ ± 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	
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, P_N ≤ 40 bar	

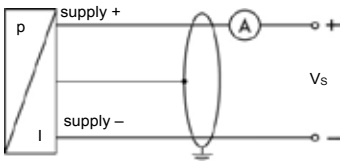
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approvals DX19-DMP 331	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections 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: -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	

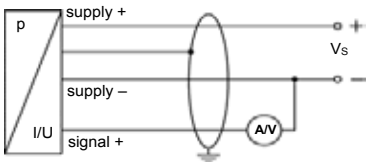
[3] only for 4 … 20 mA / 2-wire, not in combination with accuracy 0.1 %
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $P_N \leq 1$ bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

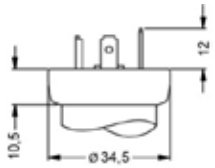


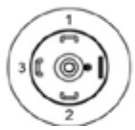
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1/ metal (4-pin)	Bayonet MIL-C-26482 (10-6)		compact field housing	cable colours (IEC 60757)
				2-wire	3-wire		
Supply +	1	3	1	A	A	IN +	WH (white)
Supply –	2	4	2	B	D	IN –	BN (brown)
Signal + (for 3-wire)	3	1	3	-	B	OUT +	GN (green)
Shield	ground pin ⏚	5	4	pressure port		⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

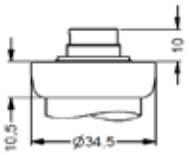
standard



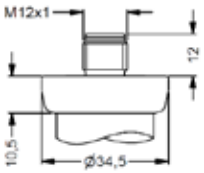


ISO 4400
(IP 65)

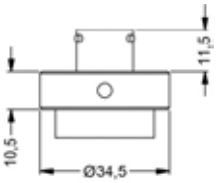
options



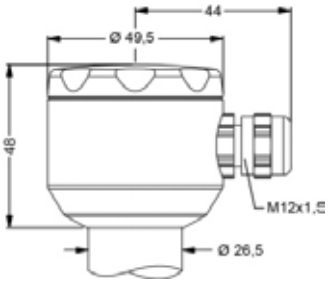
Binder series 723 5-pin
(IP 67)



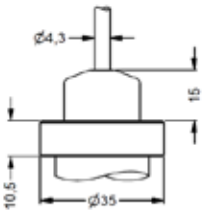
M12x1 4-pin
(IP 67)



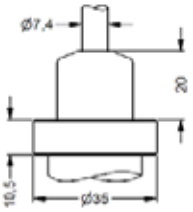
Bayonet MIL-C-26482 (10-6)
(IP 67)



compact field housing
(IP 67)



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



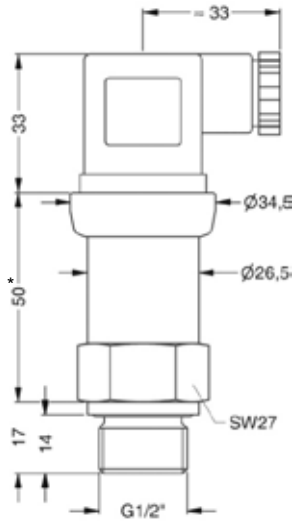
cable outlet, cable with ventilation tube (IP 68) [6]

⇨ **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

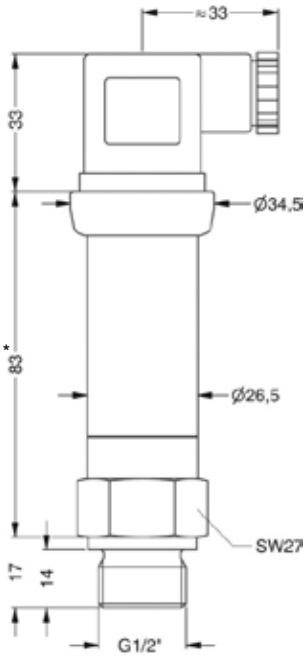
Mechanical connections (dimensions in mm)

standard



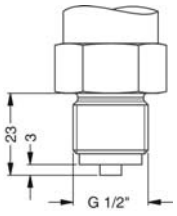
G1/2" DIN 3852
with ISO 4400

SIL- and SIL-IS-version

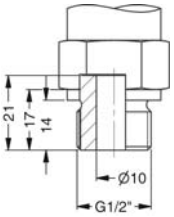


G1/2" DIN 3852
with ISO 4400

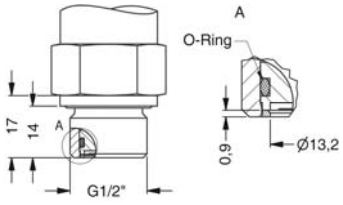
option



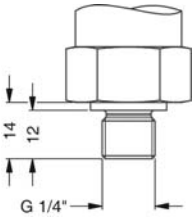
G1/2" EN 837



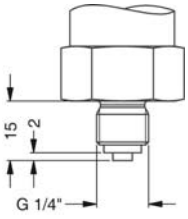
G1/2" DIN 3852 open port, $P_N \leq 40$ bar



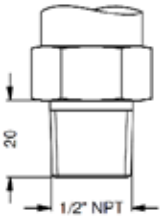
G1/2" DIN 3852
with flush sensor, $P_N \leq 40$ bar



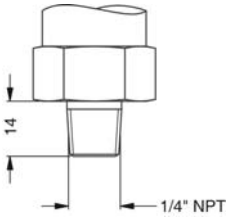
G1/4" DIN 3852



G1/4" EN 837



1/2" NPT



1/4" NPT

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

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

Ordering code DMP 331

DMP 331 □□□-□□□□-□-□-□□□-□□□-□-□□□

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
Seals																					
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

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 [1] / abs.	[bar]	100	160	250	400	600
Overpressure	[bar]	210	600	1000	1000	1000
Burst pressure ≥	[bar]	1000	1000	1250	1250	1800
[1] measurement starts with ambient pressure						

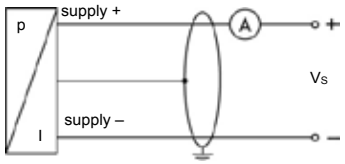
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC} SIL-version: V_S = 14 … 28 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC} SIL-version: V_S = 14 … 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [2]	standard: ≤ ± 0.35 % FSO option 1: ≤ ± 0.25 % FSO option 2: ≤ ± 0.1 % 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
[2] 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	
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 T 85°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: -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. 140 g	
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	

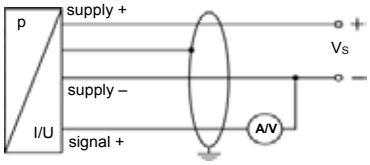
[3] only for 4 … 20 mA / 2-wire, not in combination with accuracy 0.1 %
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down.
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

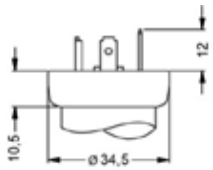


Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1/ metal (4-pin)	Bayonet MIL-C-26482 (10-6)		compact field housing	cable colours (IEC 60757)
				2-wire	3-wire		
Supply +	1	3	1	A	A	IN +	WH (white)
Supply –	2	4	2	B	D	IN –	BN (brown)
Signal + (for 3-wire)	3	1	3	-	B	OUT +	GN (green)
Shield	ground pin ⏚	5	4	pressure port		⏚	GNYE (green-yellow)

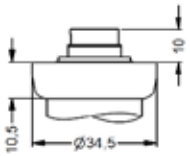
Electrical connections (dimensions in mm)

standard

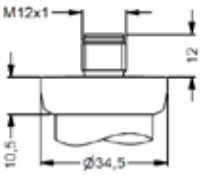


ISO 4400
(IP 65)

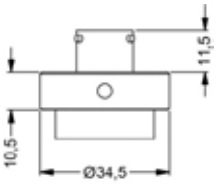
options



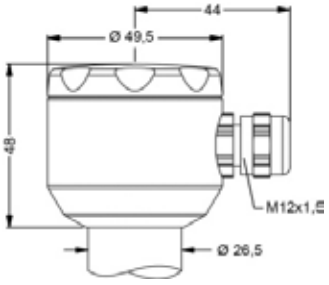
Binder series 723 5-pin
(IP 67)



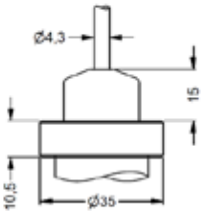
M12x1 4-pin
(IP 67)



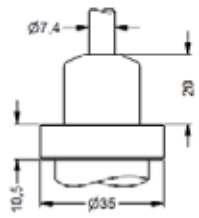
Bayonet MIL-C-26482 (10-6)
(IP 67)



compact field housing
(IP 67)



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



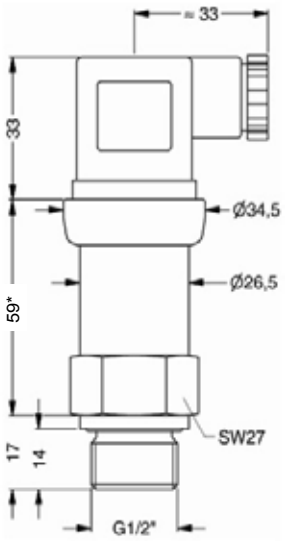
cable outlet, cable with ventilation tube (IP 68) [7]

⇨ **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

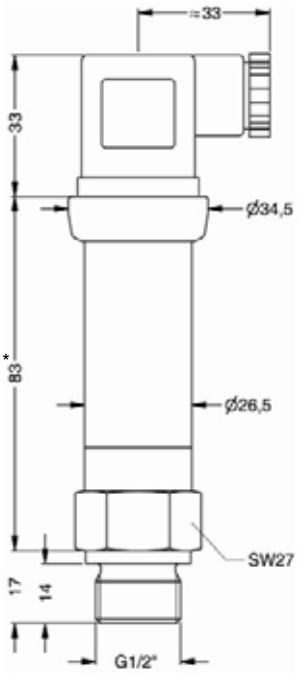
Mechanical connections (dimensions in mm)

standard for accuracy 0.35 / 0.25 %



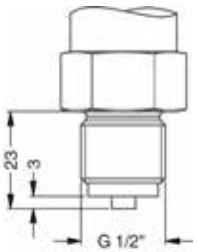
G1/2" DIN 3852
with ISO 4400

**standard for accuracy 0.1 %;
SIL- and SIL-IS-version**

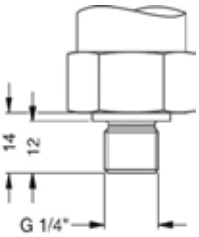


G1/2" DIN 3852
with ISO 4400

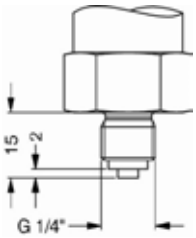
option



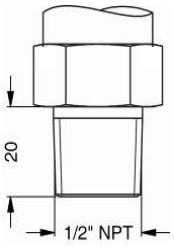
G1/2" EN 837



G1/4" DIN 3852



G1/4" EN 837



1/2" NPT

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

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

Ordering code DMP 333

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

Pressure								
gauge [1]	130							
absolute	131							
Input [bar]								
100		1003						
160		1603						
250		2503						
400		4003						
600		6003						
customer		9999						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 [2]				1				
customer				9				consult
Electrical connection								
male and female plug ISO 4400					100			
male plug Binder series 723 (5-pin)					200			
cable outlet with PVC cable (IP67) [3]					TA0			
cable outlet, cable with ventilation tube (IP68) [4]					TR0			
male plug M12x1 (4-pin) / metal					M10			
Bayonet MIL-C-26482 (10-6); 2 wire					BG0			
Bayonet MIL-C-26482 (10-6); 3 wire					BG4			
compact field housing stainless steel 1.4301 (304)					850			
customer					999			consult
Mechanical connection								
G1/2" DIN 3852						100		
G1/2" EN 837						200		
G1/4" DIN 3852						300		
G1/4" EN 837						400		
1/2" NPT						N00		
customer						999		consult
Seals								
FKM							1	
EPDM [5]							3	
customer							9	consult
Special version								
standard								000
customer								999 consult

[1] measurement starts with ambient pressure
[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] possible for nominal pressure ranges $P_N \leq 160$ bar

DMP 339

Industrial Pressure Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
0.35 % FSO

Nominal pressure

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

Output signals

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

Special characteristics

- mechanical connection:
  G ¼“ flush
- suitable for viscous
  and pasty media

Optional versions

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

The DMP 339 industrial pressure transmitter features a G ¼" flush 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, as only a small dead space is created.

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

The DMP 339 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 [1]							
Nominal pressure gauge / abs.	[bar]	60	100	160	250	400	600 [2]
Overpressure	[bar]	210	210	600	600	1050	1050
Burst pressure ≥	[bar]	300	300	750	750	1200	1400

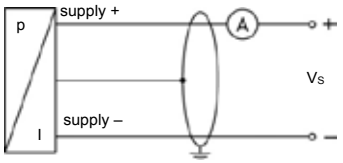
[1] nominal pressure P_N < 60 bar on request
[2] nominal pressure 600 bar without UL certification

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 [3]	≤ ± 0.35 % FSO	
Permissible load	current 2-wire: R_{max} = [(V_S – $V_{S\ min}$) / 0.02 A] Ω 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
[3] 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 ... 85 °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 (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 1.4548 (17-4 PH ERS) for G1/4" flush (DIN 3852)	
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; others on request	
Diaphragm	stainless steel 1.4435 (316 L)	
Media wetted parts	pressure port, diaphragm	
Explosion protection (only for 4 ... 20 mA / 2-wire)		
Approvals DX19-DMP 339	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 85°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, C_{iGND} ≈ 27 nF	
Ambient temperature range	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		
Current consumption	signal output current: max. 25 mA	signal output voltage: max. 7 mA
Weight	approx. 120 g	
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	

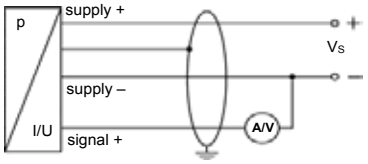
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down.
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



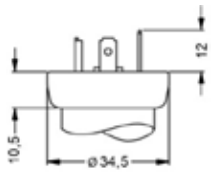
3-wire-system (current / voltage)

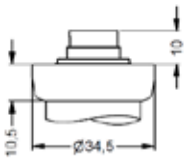


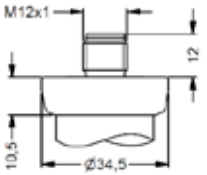
Pin configuration					
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / Metal (4-pin)	compact field housing	cable colours (IEC 60757)
Supply + Supply – Signal + (for 3-wire)	1 2 3	3 4 1	1 2 3	IN + IN – OUT +	WH (white) BN (brown) GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

standard **options**



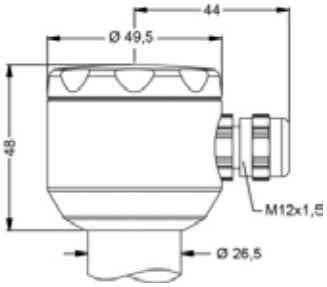




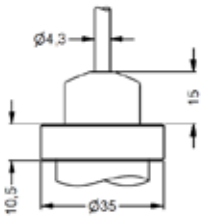
ISO 4400
(IP 65)

Binder series 723 5-pin
(IP 67)

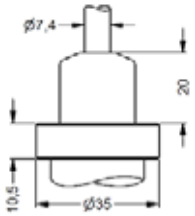
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



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

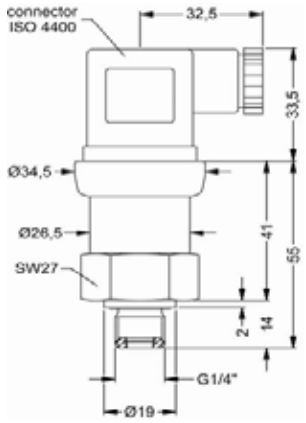


cable outlet, cable with
ventilation tube (IP 68) [7]

⇨ **universal field housing in 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*

Mechanical connections (dimensions in mm)



G1/4" flush DIN 3852

Ordering code DMP 339

DMP 339 ___-____-_-_-___-___-_-___

Pressure		
gauge	1 3 5	
absolute	1 3 6	
Input [bar] [1]		
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 [2]	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	
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) [3]	T A 0	
cable outlet, cable with ventilation tube (IP68) [4]	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		
G1/4" DIN 3852 with flush sensor	F 0 2	
customer	9 9 9	consult
Seals		
FKM	1	
customer	9	consult
Special version		
standard	0 0 0	
customer	9 9 9	consult

[1] nominal pressure gauge P_N < 60 bar on request
[2] nominal pressure 600 bar without UL certification
[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

DMP 335

Industrial Pressure Transmitter

Welded, Dry
Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 6 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

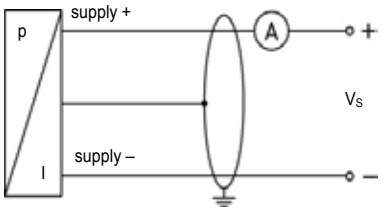
- Medical technology
- Plant and machine engineering
- Commercial vehicles and mobile hydraulics
- Refrigeration
- Oxygen application

Input pressure range												
Nominal pressure gauge	[bar]	6	10	16	25	40	60	100	160	250	400	600
Overpressure	[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										

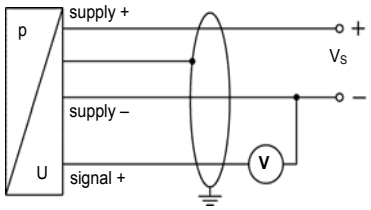
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Option 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [1]	≤ ± 0.5 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S – V_{S\,min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.2 % 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	
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 T 85°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: -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 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)

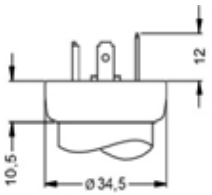


Pin configuration

Electrical connections	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 for 3-wire)	3	1	3	OUT +	GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

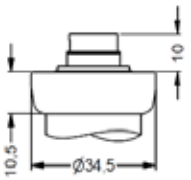
Electrical connections (dimensions in mm)

standard

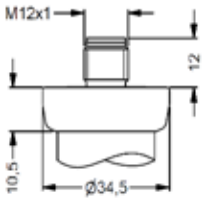


ISO 4400
(IP 65)

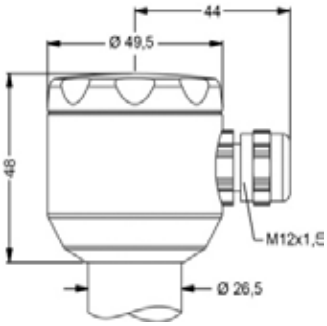
options



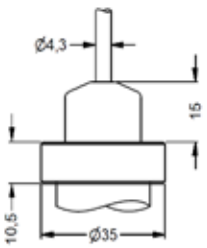
Binder series 723 5-pin
(IP 67)



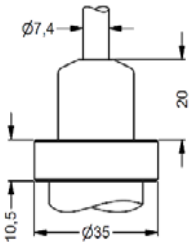
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



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



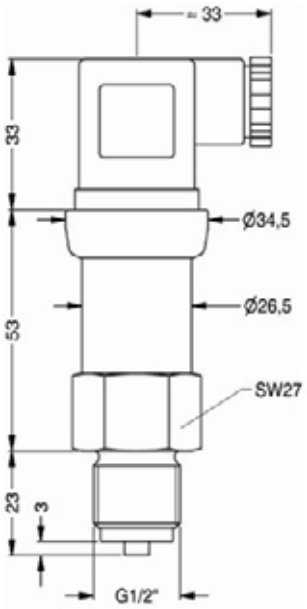
cable outlet, cable with
ventilation tube (IP 68) [4]

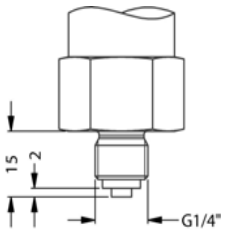
⇨ **universal field housing in stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

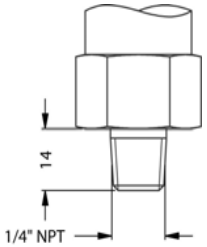
[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[4] different cable types and lengths available, permissible temperature depends on kind of cable

Mechanical connections (dimensions in mm)

standard **options**







G1/2" EN 837 G1/4" EN 837 1/4" NPT

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

Ordering code DMP 335

DMP 335 □□□-□□□□-□-□-□□□-□□□-□-□□□

Pressure																					
gauge	2	1	0																		
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
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
Seals																					
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 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.

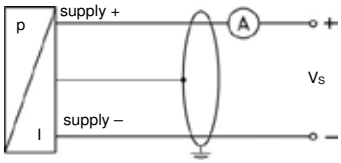
Preferred areas of use are

- Plant and machine engineering
- Commercial vehicles and mobile hydraulics

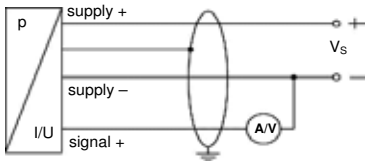
Input pressure range						
Nominal pressure gauge	[bar]	600 [1]	1000	1600	2000	2200
Overpressure	[bar]	800	1400	2200	2800	2800
Burst pressure ≥	[bar]	3000	4000	6000	6000	6000
[1] only available with pressure port G1/2" EN 837						
Output signal / Supply						
Standard		2-wire: 4 ... 20 mA / V_S = 12 ... 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 [2]		≤ ± 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		Adjustment of offset is possible within the range of ± 5 % of the nominal pressure range, without an influence of characteristic curve and accuracy.				
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (Offset and Span) / Permissible temperatures						
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 T 85°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: -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)



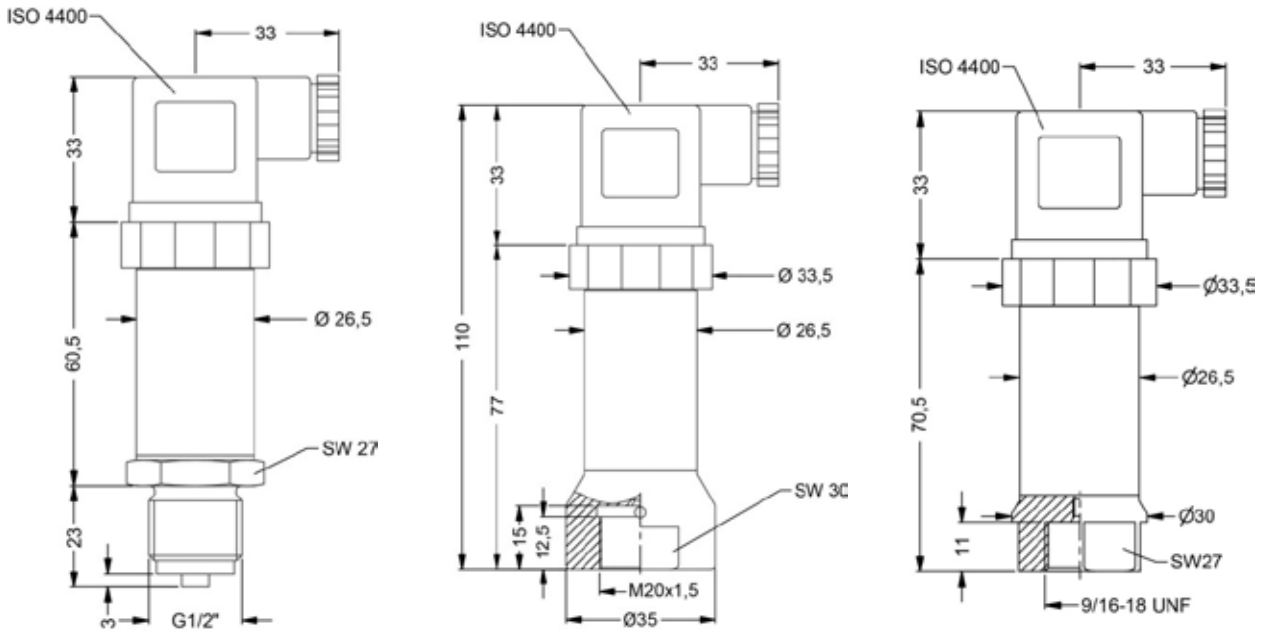
3-wire-system (current / voltage)



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	IN + IN - OUT+	WH (white BN (brown) GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Mechanical connection (dimensions in mm) - drawings of standard version (adjustable), with plastic grip ring -

standard [3] **options** [3]

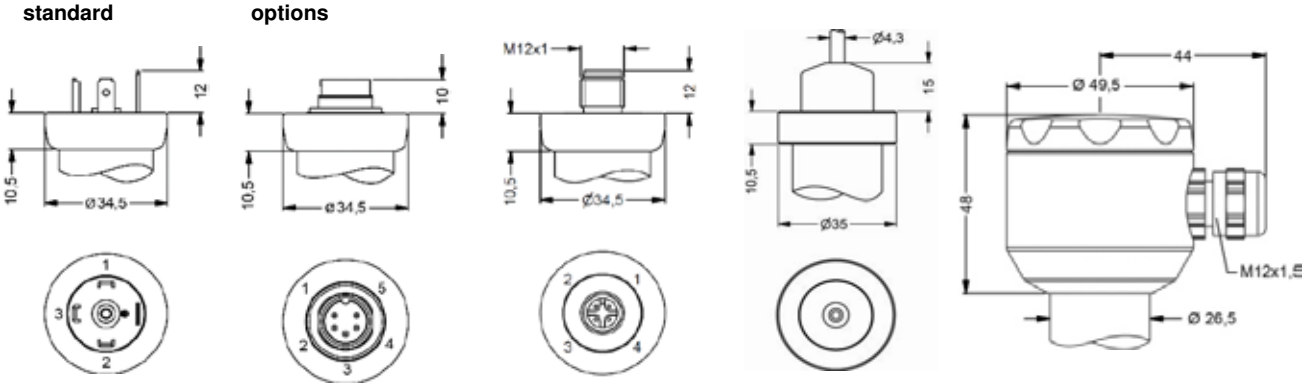


G1/2" EN 837 [4] | M20x1.5 internal thread | 9/16-18 UNF internal thread

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

Electrical connections (dimensions in mm) - drawings of IS-version / cable outlet with stainless steel grip ring -

standard **options**



ISO 4400 (IP 65) | Binder series 723 5-pin (IP 67) | M12x1 4-pin (IP 67) | cable outlet with PVC cable (IP 67) [5] | compact field housing (IP 67)

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

Ordering code DMP 334

DMP 334 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure		
gauge	1 4 0	
Input [bar]		
600 [1]	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) [2]	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 [3]	2 0 0	
M20x1.5 internal thread	D 2 8	
9/16 UNF internal thread	V 0 0	
customer	9 9 9	consult
Seals		
without (welded version)	2	
customer	9	consult
Special version		
standard (adjustable) [4]	0 4 1	
IS version, cable outlet, field housing	0 0 0	
customer	9 9 9	consult

[1] only available with pressure port G1/2" EN 837

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

[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!

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

DMP 304

Industrial Pressure Transmitter for Ultra High Pressure

accuracy according to IEC 60770:
standard: 0.5 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 2 000 bar up to 0 ... 6 000 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 10 V

Special characteristics

- adjustability of offset and span via front sided potentiometers
- pressure port 9/16" UNF
- 80 % calibration signal with MIL / Bendix plug

Optional versions

- IS-version: Ex ia
- accuracy according to IEC 60770: 0.25 % FSO
- pressure port M20x1.5 and M16x1.5

The ultra-high-pressure transmitter type DMP 304 has been especially designed for applications with highest demand on precision and reliability. DMP 304 series is based on a compensated strain gauge, bonded onto a hardened stainless steel diaphragm.

Due to the rugged stainless steel housing usage under extreme conditions and in IS-required areas is no problem.

Preferred areas of use are

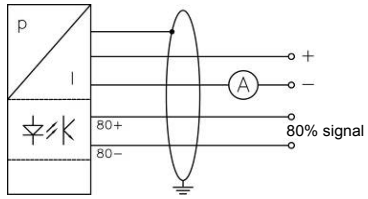
- High pressure hydraulic circuits
- Water jet cutting
- High pressure applications in chemical and petrochemical industry

Input pressure range					
Nominal pressure gauge	[bar]	2 000	4 000	5 000	6 000
Overpressure	[bar]	3 000	5 000	6 000	7 000
Burst pressure	[bar]	4 000	8 000	10 000	10 000

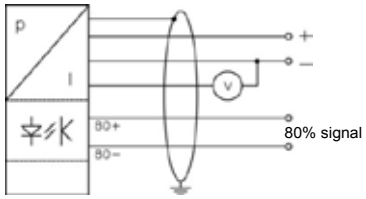
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 10 ... 30 V_{DC}
IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Option 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}
Performance	
Accuracy [1]	standard: ≤ ± 0.50 % FSO option: ≤ ± 0.25 % FSO (on request)
Permissible load	current 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	≤ ± 0.2 % FSO / year at reference conditions
Response time	< 2.5 msec
Adjustability	Via a front sided potentiometer is an adjustment of the offset possible within the range of ± 5 % of the nominal pressure range, without an influence of characteristic curve and accuracy.
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Calibration (only with MIL / Bendix plug)	
Calibration signal accuracy	≤ ± 0.25 % FSO
Calibration	80 % FSO calibration (e.g. for 4 ... 20 mA / 2-wire: signal = 0.8*16 mA + 4 mA = 16.8 mA)
Thermal effects (Offset and Span)	
Thermal error	≤ ± 0.2 % FSO / 10 K in compensated range -20 ... 85 °C
Permissible temperatures	
Permissible temperatures	medium: -40 ... 85 °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 RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec
Materials	
Pressure port / diaphragm	stainless steel 1.4548 (17-4 PH)
Housing	stainless steel 1.4301 (304)
Seals (media wetted)	none (welded version)
Media wetted parts	pressure port, diaphragm
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approval DX17-DMP 304	IBExU 09 ATEX 1144 X zone 0: II 1G Ex ia IIC T4
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 zone 1 and higher: -25 ... 70 °C
Connecting cables (by factory)	cable capacity: signal line/shield as well as signal line/signal line: 160 pF/m cable inductance: signal line/shield as well as signal line/signal line: 1 µH/m
Miscellaneous	
Insulation strength / resistance	standard: insulation strength 100 MΩ @ 35 V IS-version: insulation resistance 100 MΩ @ 35 V_{DC} 100 MΩ @ 500 V_{AC} (relative to housing)
Current consumption	2-wire signal output current: max. 28 mA 3-wire signal output voltage: max. 15 mA
Weight	approx. 260 g
Operational life	10 million load cycles
Installation position	any
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 (voltage)



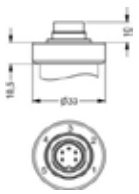
Pin configuration

Electrical connections	Binder 723 (5-pin)	M12x1 (4-pin)	ISO 4400	cable colour (IEC 60757)
Supply +	3	1	1	wh (white)
Supply –	4	2	2	bn (brown)
Signal + (only for 3-wire)	1	3	3	gn (green)
Shield	5	4	pin	gnye (green-yellow)

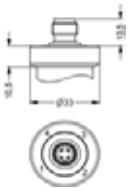
Pin configuration MIL-/ Bendix plug (optional)

Version	Pin A	Pin B	Pin C	Pin D	Pin E	Pin F
2-wire current signal 4 ... 20 mA	supply +/ signal +	supply -/ signal -	-	-	calibration +	calibration -
3-wire	signal +	supply - / signal - / calibration -	supply +	-	-	calibration +

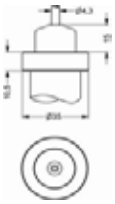
Electrical connections (dimensions in mm)



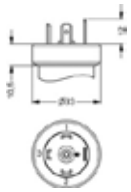
Binder series 723 (IP 67)



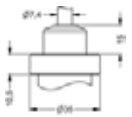
M12x1 4-pin (IP 67)



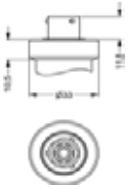
cable outlet
with PVC-cable (IP 67) [2]



ISO 4400 (IP 65)



cable outlet (IP 68) [3]

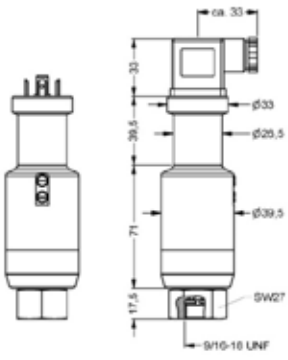


MIL-/ Bendix plug
(type PT 02 A 10-6 P)

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

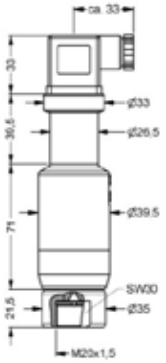
Mechanical connections (dimensions in mm)

Standard

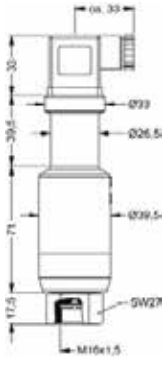


9/16″ UNF internal thread

Options



M20x1.5 internal thread



M16x1.5 internal thread

Ordering code DMP 304

DMP 304 ☐☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐☐☐

Pressure								
gauge	2 2 0							
Input [bar]								
2 000		2 0 0 4						
4 000		4 0 0 4						
5 000		5 0 0 4						
6 000		6 0 0 4						
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								
standard 0.5 %				5				
option 0.25 %				2				consult
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 [1]					T A 0			
Cable outlet [2]					T R 0			
Male plug M12x1 (4-pin), metal					M 1 0			
MIL-/Bendix (type PT 02 A 10-6 P)					B G 0			consult
customer					9 9 9			consult
Mechanical connection								
9/16" UNF internal thread						V 0 0		
M16x1.5 internal thread						P 0 0		
M20x1.5 internal thread						D 2 8		
customer						9 9 9		consult
Special version								
adjustable							0 4 1	
customer							9 9 9	consult

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

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

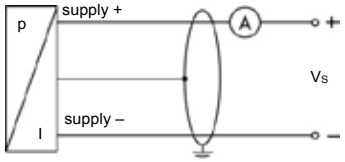
- Fuel and oil
- Water

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																

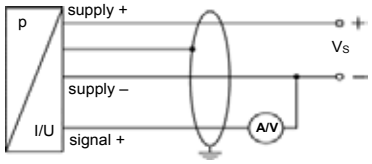
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	
Option 3-wire	3-wire: 0 ... 10 V / V_S = 12.5 ... 32 V_{DC}	
Performance		
Accuracy [2]	standard: ≤ ± 0.35 % FSO	option for P_N ≥ 0.6 bar: ≤ ± 0.25 % FSO
Permissible 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 errors (Offset and Span)		
Tolerance band	≤ ± 0.1 % FSO / 10 K	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	standard: stainless steel 1.4404 (316L)	option [3]: PP, PVDF
Housing	standard: stainless steel 1.4404 (316L)	option [3]: PP, 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	
[3] only with mech. connection G1/2" DIN 3852 open port, bore 12 mm, P_N ≤ 10 bar, min. permissible temperature -30 °C and without IS-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 T85 °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 ≤ 27 nF, L_i ≤ 5 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: 160 pF/m cable inductance: signal line / shield also signal line / signal line: 1 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)



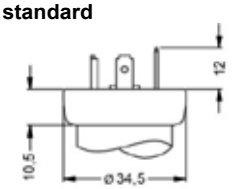
3-wire-system (current / voltage)



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

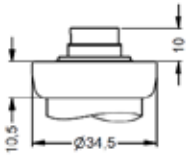
Electrical connections (dimensions in mm)

standard

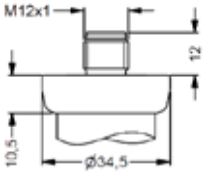


ISO 4400
(IP 65)

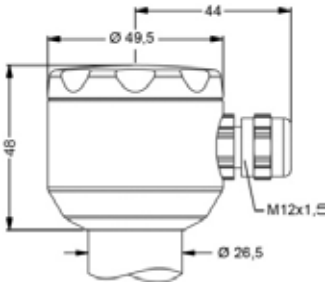
options



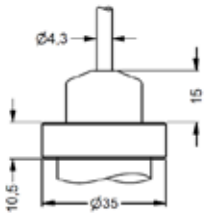
Binder series 723 5-pin
(IP 67)



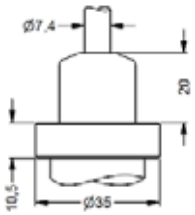
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



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

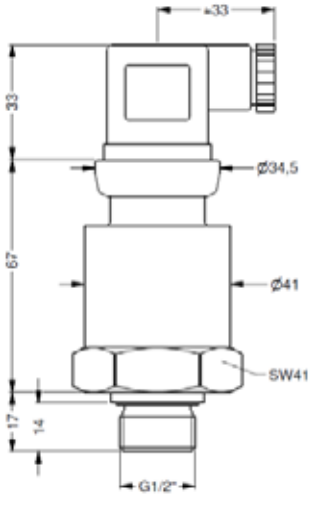


cable outlet, cable
with ventilation tube (IP 68) [5]

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

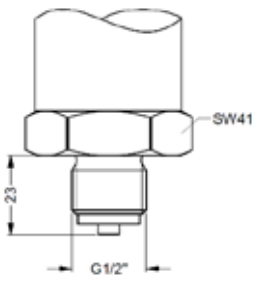
Mechanical connection (dimensions in mm)

standard

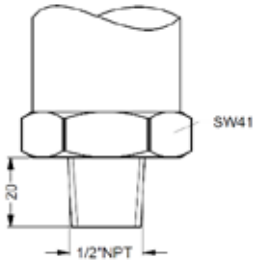


G1/2" DIN 3852

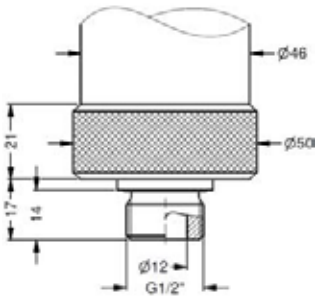
options



G1/2" EN 837



1/2" NPT



PP / PVDF
G1/2" DIN 3852 open port,
bore 12 mm, $P_N \leq 10$ bar

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

Seals	Code	
FKM	1	
EPDM	3	
customer	9	consult

Pressure port	Code	
stainless steel 1.4404 (316L)	1	
PP [4]	E	
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
[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 / PVDF possible only with G1/2" DIN 3852 open pressure port, $P_N \leq 10$ bar, min. permissible temperature -30 °C and without explosion protection

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.

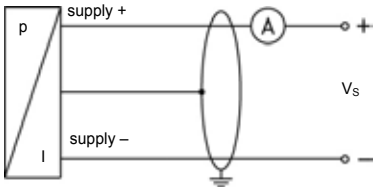
Preferred areas of use are

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

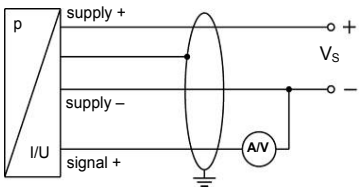
Input pressure range [1]																			
Nominal pressure gauge [bar]	-1…0	0.4	0.6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600	
Nominal pressure abs. [bar]	-	-	0.6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600	
Overpressure [bar]	4	1	2	2	4	4	10	10	20	40	40	100	100	200	400	400	600	800	
Burst 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] Ω voltage 3-wire: R_{min} = 10 kΩ													current 3-wire: R_{max} = 240 Ω					
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) / Permissible temperatures																			
Thermal error	≤ ± 0.2 % FSO / 10 K																		
in compensated range	-25 ... 85 °C																		
Permissible temperatures [3]	medium: -40 ... 125 °C							electronics / environment: -40 ... 85 °C								storage: -40 ... 100 °C			
[3] for pressure port of PVDF the minimum temperature is -30 °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 with nominal pressure range up to 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 T 85°C Da plastic pressure port: zone 1: II 2G Ex ia IIC T4 Gb zone 21: II 2D Ex ia IIIC T 85°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: -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 ≤ 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)

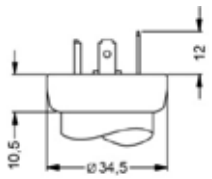


Pin configuration

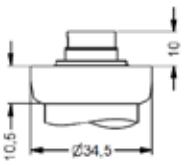
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colour (IEC 60757)
Supply +	1	3	1	IN +	WH (white)
Supply –	2	4	2	IN -	BN (brown)
Signal + (only for 3-wire)	3	1	3	OUT+	GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

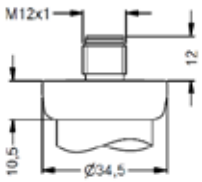
standard **options**



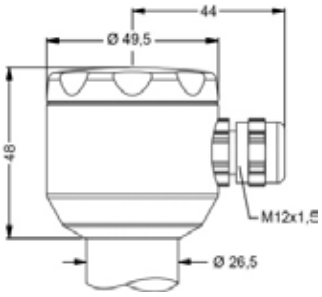
ISO 4400
(IP 65)



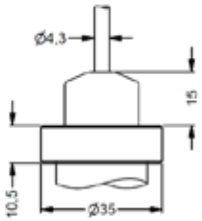
Binder Series 723 5-pin
(IP 67)



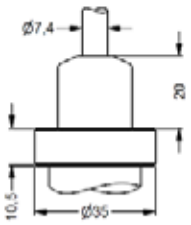
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



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



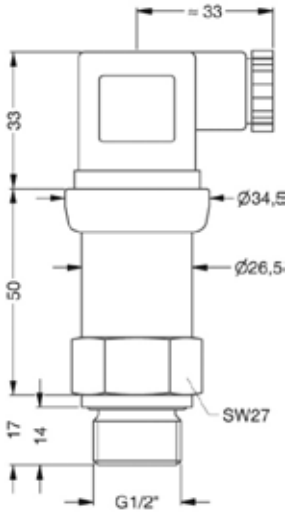
cable outlet, cable with
ventilation tube (IP 68) [7]

⇨ **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*

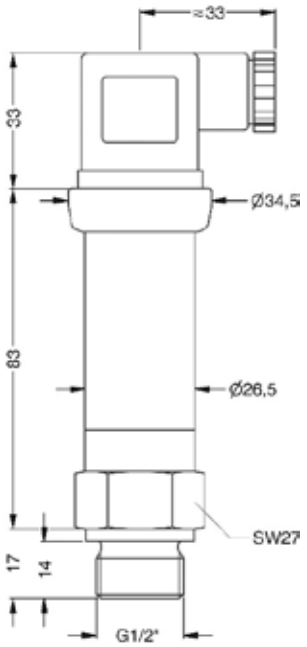
Mechanical connection (dimensions in mm)

standard



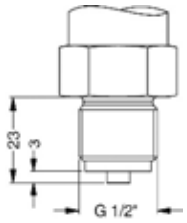
G1/2" DIN 3852
with ISO 4400

standard for SIL- and SIL-IS-version

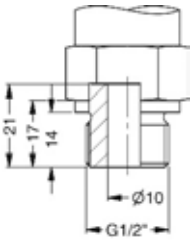


G1/2" DIN 3852
with ISO 4400

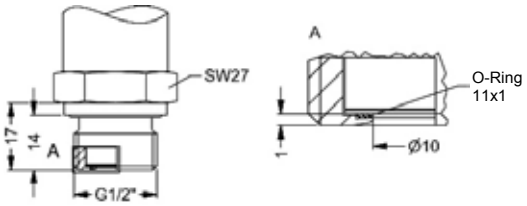
options



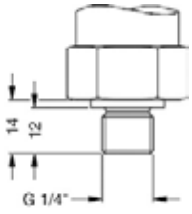
G1/2" EN 837



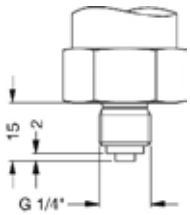
G1/2" open port



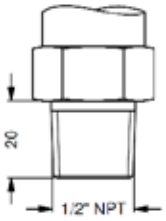
G1/2" semi-flush DIN 3852; M20x1.5 [8]



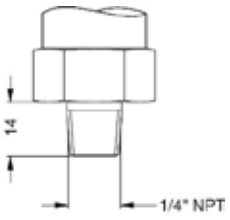
G1/4" DIN 3852



G1/4" EN 837



1/2" NPT



1/4" NPT

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

[8] *possible for nominal pressure ranges $P_N \leq 25$ bar; absolute pressure ranges on request*

Ordering code DMK 331

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

Option	Code	
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 air 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
Seals		
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 $P_N \leq 25$ bar; absolute pressure ranges on request
[5] possible for nominal pressure range $P_N \leq 160$ bar
[6] PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar), minimum permissible temperature is -30 °C
[7] oxygen application with FKM-seal up to 25 bar possible

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▪GL Type Approval (Det Norske Veritas ▪ Germanischer Lloyd)
- 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 ▪ Germanischer Lloyd (DNV▪GL) 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 abs. [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

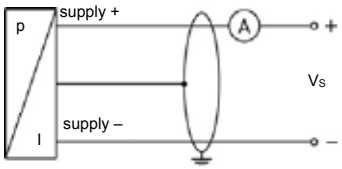
Output signal / Supply			
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}		
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}		
Performance			
Accuracy [2]	standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO option: nominal pressure ≥ 0.4 bar: ≤ ± 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) / Permissible temperatures			
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▪GL (Det Norske Veritas ▪ Germanischer Lloyd)		
Mechanical stability			
Vibration	4 g (according to DNV▪GL: 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; 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 ▪ Germanischer Lloyd (DNV▪GL)	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 T 85°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: -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

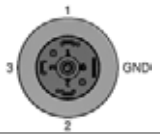
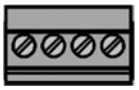
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar.
[5] This directive is only valid for devices with maximum permissible overpressure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

Wiring diagram

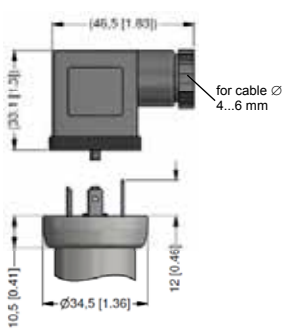
2-wire-system (current)



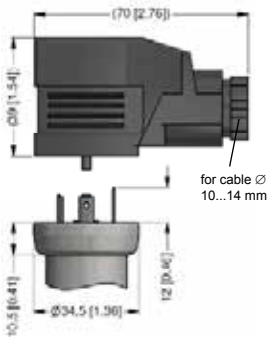
Pin configuration

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

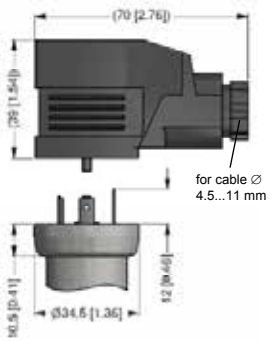
Electrical connections [6] (dimensions mm / in)



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



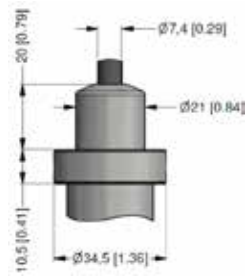
ISO 4400 - **Code G00**
(IP 65)



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

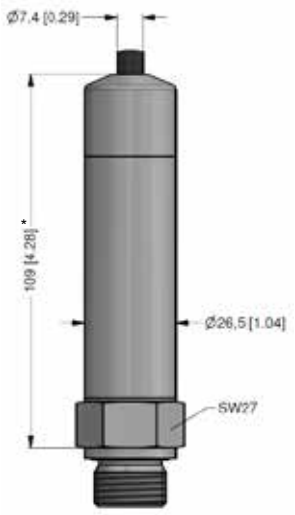
[6] Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.

Electrical connections [6] (dimensions mm / in)



cable outlet [7, 8]
(IP 68)

universal field housing
(IP 67)

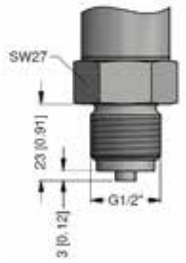


submersible version [8]
(IP 68)

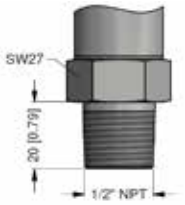
[6] Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.
[7] tested at 4 bar or 40 mH₂O for 24 hours
[8] shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed); different lengths available
** total lengths increase by 9 mm for p_N ≥ 100 bar with the optional accuracy ≤ ± 0.25 % FSO*

Mechanical connections (dimensions mm / in)

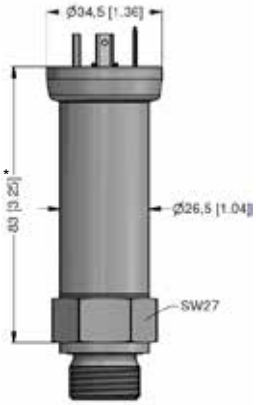
G1/2" DIN 3852

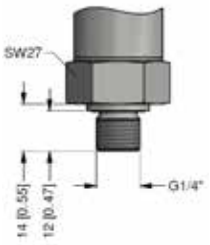


G1/2" EN 837

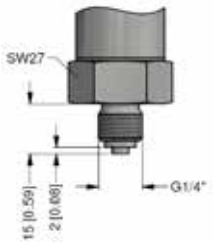


1/2" NPT



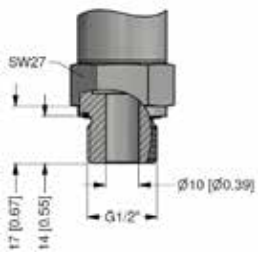


G1/4" DIN 3852

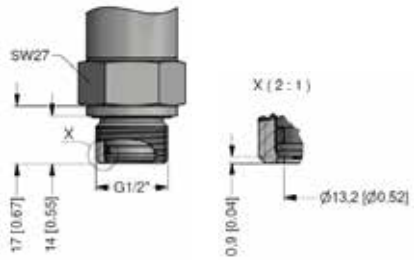


G1/4" EN 837

1/4" NPT



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



G1/2" flush DIN 3852
(p_N ≤ 40 bar)

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

Ordering code DMP 457

DMP 457 □□□-□□□□-□-□-□□□-□□□-□-□□□

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 [3] (for cable Ø 4...6 mm)	G 1 0		
male and female plug ISO 4400 GL [3, 4] (for cable Ø 10...14 mm)	G 0 0		
male and female plug ISO 4400 GL [3, 4] (for cable Ø 4,5...11 mm)	G 0 1		
cable outlet (TPE-U-cable) [5]	T R 3		
field housing stainless steel (316L)	8 8 0		
submersible version (1.4404 / 316L) with TPE-U-cable [5]	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 [6]	F 0 0		
G1/2" DIN 3852 open pressure port [6]	H 0 0		
1/2" NPT	N 0 0		
1/4" NPT	N 4 0		
customer	9 9 9		consult
Seals			
FKM	1		
without (welded version) [7]	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 Shielded cable has to be used! Cable versions are delivered with shielded cable.
4 female plug is GL-approbated
5 cable with integrated air tube for atmospheric pressure reference; different lengths deliverable
6 possible up to 40 bar
7 welded version only with pressure ports according to EN 837; possible with pressure ranges $p_N \leq 40$ 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▪GL Approval (Det Norske Veritas ▪ Germanischer Lloyd)
- 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 CuNiFe

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

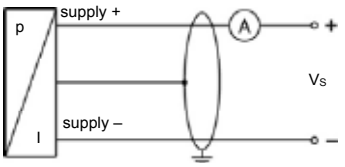
- Monitoring of pressure during loading and unloading processes
- Monitoring of a ship´s position and draught
- Use in anti-heeling systems
- Level measurement in ballast and storage tanks

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																

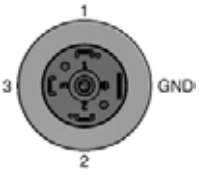
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}	$V_{S\ rated}$ = 24 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	$V_{S\ rated}$ = 24 V_{DC}
Performance		
Accuracy [2]	standard: ≤ ± 0.25 % FSO	option for P_N ≥ 0.6 bar [3]: ≤ ± 0.1 % FSO
Permissible load	R_{max} = [(V_S – $V_{S\ min}$) / 0.02 A] Ω	
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		
Thermal error	≤ ± 0.1 % FSO / 10 K	in compensated range -20 … 80 °C
Permissible temperatures		
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▪GL (Det Norske Veritas ▪ Germanischer Lloyd)
Mechanical stability		
Vibration	4 g (according to DNV▪GL: Class B, curve 2 / basis: IEC 60068-2-6)	
Materials		
Pressure port	standard: stainless steel 1.4404 (316 L) option for inch thread G1/2" open pressure port (not possible with field housing): CuNi10Fe1Mn	
Housing	stainless steel 1.4404 (316 L)	
Option field housing	stainless steel 1.4404 (316 L) cable gland: absolute, sealed gauge: brass, nickel plated gauge: polyamide (with integrated pressure reference); others on request	
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 ▪ Germanischer Lloyd (DNV▪GL)	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

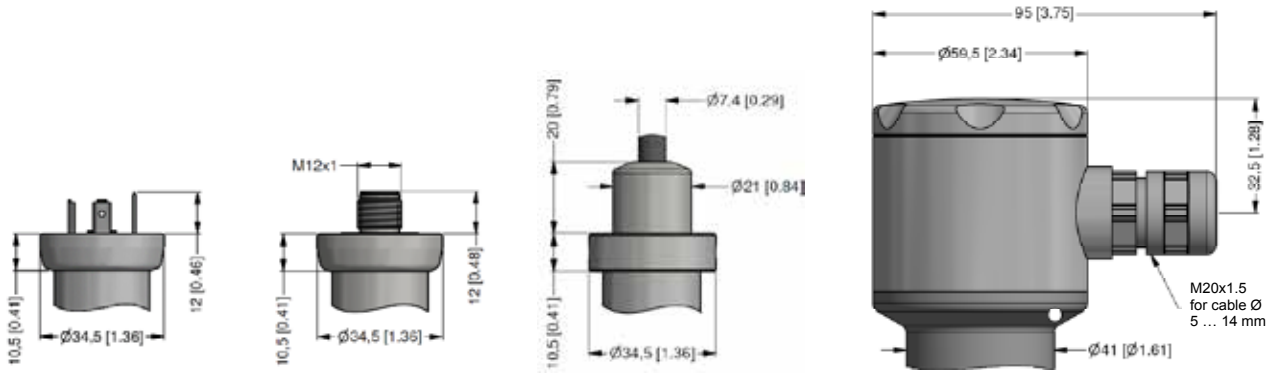
2-wire-system (current)



Pin configuration

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

Electrical connections (dimensions mm / in)

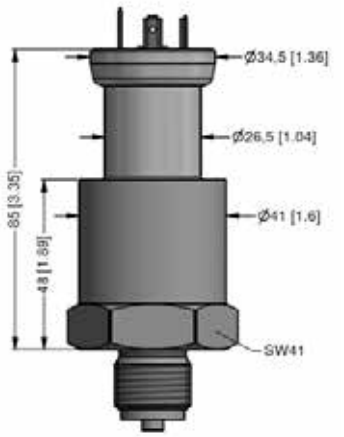


ISO 4400 (IP 65) | M12x1 4-pin (IP 67) | cable outlet [5] (IP 68) | field housing (IP 67)

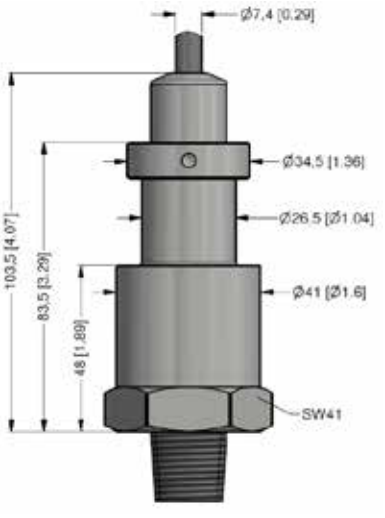
[5] *cable versions are delivered with shielded cable (different lengths available); for gauge pressure cable with ventilation tube required; tested at 4 bar or 40 mH_2O for 24 hours*

Dimensions (mm / in)

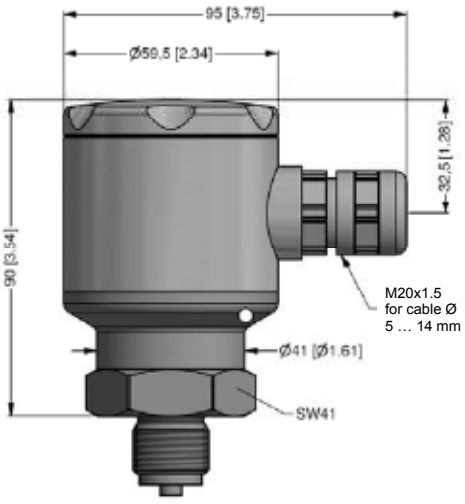
plug versions



cable outlet

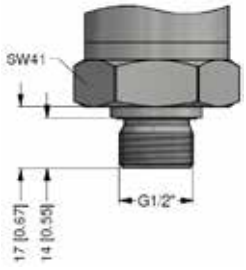


field housing

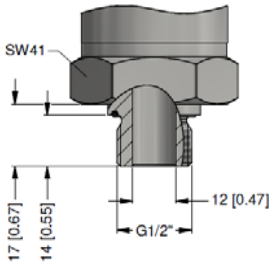


Mechanical connections (dimensions mm / in)

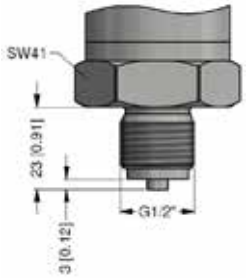
inch thread



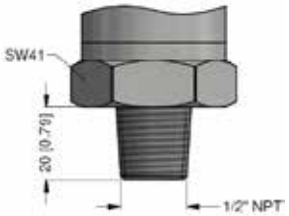
G1/2" 3852



G1/2" 3852
open port

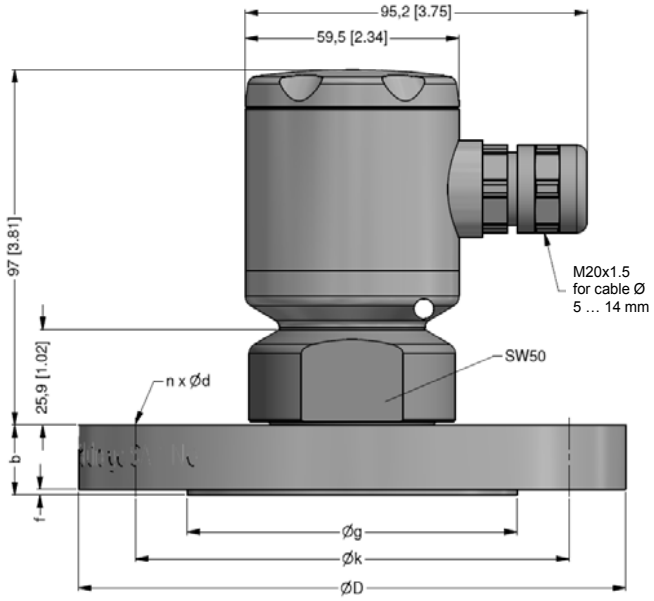


G1/2" EN 837

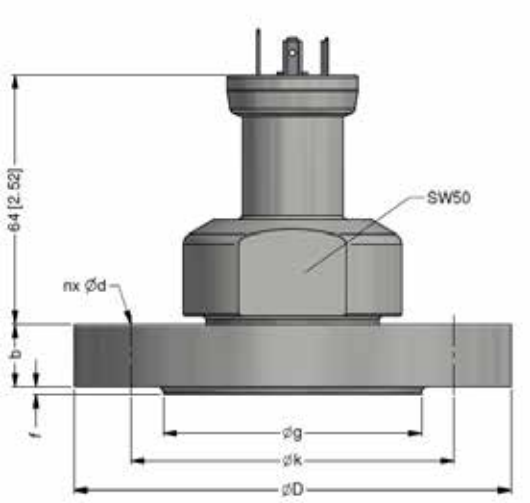


1/2" NPT

flange



flange with field housing



flange with plug version and cable outlet

dimensions in mm						
size	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

Ordering code DMK 458

DMK 458 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure			
in bar, gauge		5 9 A	
in bar, absolute [1]		5 9 B	
in mH_2O, gauge		5 9 C	
in mH_2O, absolute [1]		5 9 D	consult
Input [mH_2O]	**[bar]**		
0.4	0.04	0 4 0 0	
0.6	0.06	0 6 0 0	
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	
200	20	2 0 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:	0.25 % FSO	2	
option for $p_N \geq 0.6$ bar:	0.1 % FSO	1	
	customer	9	consult
Electrical connection			
male and female plug ISO 4400 [2] (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	
male plug M12x1 (4-pin) / metal version		M 1 0	
cable outlet with TPE-U-cable (with ventilation tube)		T R 3	
field housing stainless steel 1.4404 (316L)		8 8 0	
customer		9 9 9	consult
Mechanical connection			
G 1/2" DIN 3852		1 0 0	
G 1/2" EN 837		2 0 0	
1/2" NPT		N 0 0	
G1/2" DIN 3852 open pressure port		H 0 0	
flange DN 25 / PN 40 (DIN 2501)		F 2 0	
flange DN 40 / PN 40 (DIN 2501)		F 2 2	
flange DN 50 / PN 40 (DIN 2501)		F 2 3	
flange DN 80 / PN 16 (DIN 2501) [3]		F 1 4	
flange DN 2" / 150 lbs (ANSI B 16.5) [3]		F 3 2	
flange DN 3" / 150 lbs (ANSI B 16.5) [3]		F 3 3	
customer		9 9 9	consult
Seals			
FKM		1	
andere		9	consult
Pressure port			
stainless steel 1.4404 (316L)		8	
copper-nickel-alloy (CuNi10Fe1Mn) [4]		K	consult
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] nominal pressure ranges absolute from 1 bar
[2] female plug is GL-approbated
[3] DN80/P_N16 possible for nominal pressure ranges $P_N \leq 16$ bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges $P_N \leq 10$ bar
[4] CuNi10Fe1Mn only in combination with G 1/2" open pressure port (code H00); not possible with field housing (code 880)

DMK 456

Pressure Transmitter with Stainless Steel Field Housing

Special application:
Marine and Offshore

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▪GL Approval (Det Norske Veritas ▪ Germanischer Lloyd)
- ABS-certificate (American Bureau of Shipping)
- CCS-certificate (China Classification Society)
- stainless steel field housing
- IS-version (temperature class T6) Ex ia = intrinsically safe for gases
- high overpressure resistance

Optional versions

- diaphragm Al_2O_3 99.9 %
- different inch threads and flush versions

The pressure transmitter DMK 456 has been developed for measuring the pressure in systems and the level in tanks and is certificated for shipbuilding and offshore applications.

Due robust stainless steel field housing and the possibility to use the device in intrinsic safe areas (temperature class T6) enable to measure the pressure of aggressive gases and fluids under extreme operating conditions. The basis for the DMK 456 is a capacitive ceramic sensor element designed by BD|SENSORS, which offers a high overload resistance and medium compatibility.

Preferred areas of use are

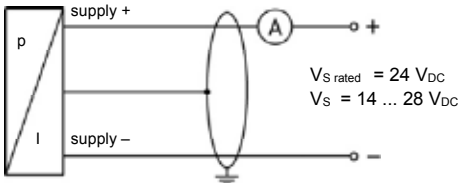
- Monitoring of the pressure during loading and unloading processes
- Monitoring of a ship's position and draught
- Use in anti-heeling systems
- Level measurement in ballast and storage tanks
- Monitoring of the internal pressure in liquid gas cargo tanks

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
Permissible 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																

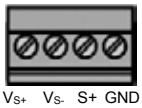
Output signal / Supply		
Standard	IS-version 4 ... 20 mA / 2-wire	V_S = 14 ... 28 V_{DC} $V_{S\ rated}$ = 24 V_{DC}
Performance		
Accuracy [2]	standard: ≤ ± 0.25 % FSO option for $P_N \geq 0.6$ bar [3]: ≤ ± 0.1 % FSO	
Permissible load	$R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$	
Long term stability	≤ ± 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 decreased to ≤ ± 0.25 % FSO*		
Thermal effects / Permissible temperatures		
Thermal error	≤ ± 0.1 % FSO / 10 K	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 - DNV▪GL (Det Norske Veritas ▪ Germanischer Lloyd)	
Mechanical stability		
Vibration	4 g (according to DNV▪GL: class B, curve 2 / basis: IEC 60068-2-6)	
Materials		
Pressure port	stainless steel 1.4404 (316 L)	
Housing	stainless steel 1.4404 (316 L)	
Cable gland	brass, nickel plated	others on request
Seals	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, EMV4	number of certificate: 13/20055
Det Norske Veritas ▪ Germanischer Lloyd (DNV▪GL)	temperature: D humidity: B vibration: B electromagnetic compatibility: B enclosure: D	number of certificate: TAA00001GR
Explosion protection		
Approval DX14A-DMK 456	IBExU07ATEX1180 X zone 0: II 1G Ex ia IIC T6 Ga	
Safety techn. maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 52.3 nF, L_i = 0 µH, the supply connections have an inner capacity of max. 90.2 nF opposite the enclosure	
Permissible temperatures for environment	-20 ... 60 °C	
Miscellaneous		
Ingress protection	IP 67	
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)

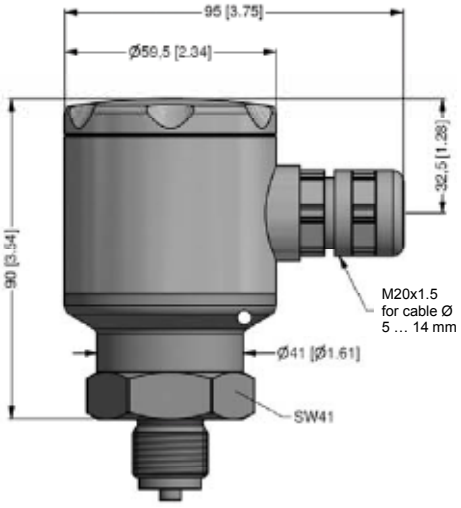


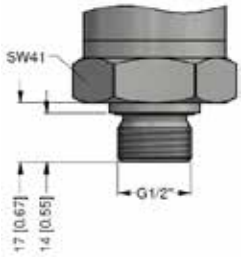
Pin configuration

Electrical connections	field housing (clamp section: 2.5 mm²)
	
Supply +	VS+
Supply –	VS-
Ground	GND

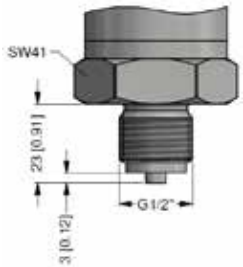
Dimensions (mm / in)

inch thread

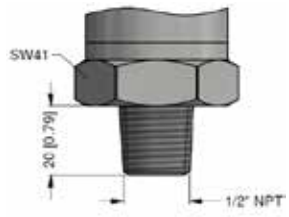




G1/2" 3852

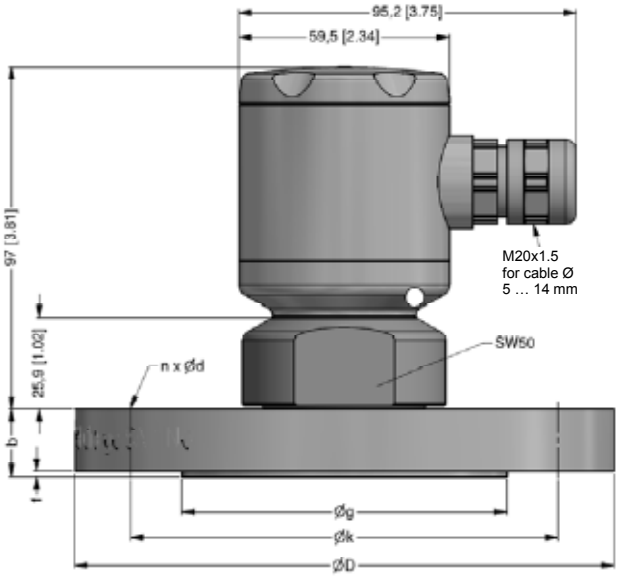


G1/2" EN 837



1/2" NPT

flange



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

Ordering code DMK 456

DMK 456 ☐☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐ - ☐ - ☐☐☐

Section	Option		Code
Pressure			
	in bar, gauge		5 9 5
	in bar, absolute [1]		5 9 6
	in mH_2O, gauge		5 9 7
	in mH_2O, absolute [1]		5 9 8
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
Output			
	intrinsic safety 4 … 20 mA / 2-wire		E
	customer		9
Accuracy			
	standard	0.25 % FSO	2
	option for $P_N \geq 0,6$ bar:	0.10 % FSO	1
	customer		9
Electrical connection			
	field housing stainless steel 1.4404 (316L)		8 8 0
	customer		9 9 9
Mechanical connection			
	G1/2" DIN 3852		1 0 0
	G1/2" EN 837		2 0 0
	1/2" NPT		N 0 0
	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) [2]		F 1 4
	flange DN 2" / 150 lbs (ANSI B16.5) [2]		F 3 2
	flange DN 3" / 150 lbs (ANSI B16.5) [2]		F 3 3
	customer		9 9 9
Seals			
	FKM		1
	customer		9
Pressure port			
	stainless steel 1.4404 (316L)		1
	customer		9
Diaphragm			
	ceramics Al_2O_3 96 %		2
	ceramics Al_2O_3 99,9 %		C
	customer		9
Special version			
	standard		0 0 0
	customer		9 9 9

[1] nominal pressure ranges absolute from 1 bar

[2] DN80/PN16 possible for nominal pressure ranges $p_N \leq 16$ bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges $p_N \leq 10$ bar

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▪GL Approval (Det Norske Veritas ▪ Germanischer Lloyd)
- 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																	

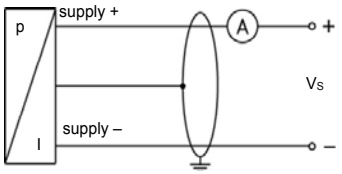
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	
Performance		
Accuracy [1]	IEC 60770: ≤ ± 0.5 % FSO	
Permissible load	R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω	
Influence effects	supply: 0.05 % FSO / 10 V 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) / Permissible temperatures		
Thermal error	≤ ± 0.2 % FSO / 10 K	in compensated range: -25 ... 85 °C
Permissible temperatures	medium: electronics / environment: storage:	-40 ... 125 °C -40 ... 85 °C -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▪GL (Det Norske Veritas ▪ Germanischer Lloyd)	
Mechanical stability		
Vibration	4 g (according to DNV•GL: class B, curve 2 / basis: IEC 60068-2-6)	
Materials		
Pressure port	Standard: option [2]:	stainless steel 1.4404 (316L) 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: option [2]: option field housing:	stainless steel 1.4404 (316L) CuNi10Fe1Mn (sea water resistant) - in combination with pressure port in CuNi10Fe1Mn - 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: option:	FKM 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 ▪ Germanischer Lloyd (DNV▪GL)	temperature: D humidity: B vibration: B electromagnetic compatibility: B enclosure: D	number of certificate: TAA00001GR
[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 T 85°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: -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

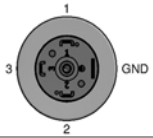
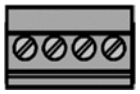
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram

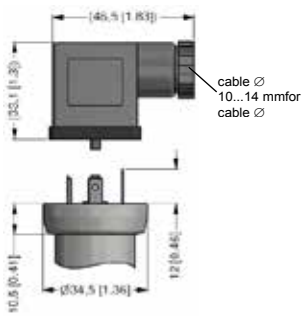
2-wire-system (current)



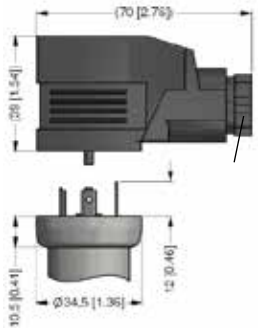
Pin configuration

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

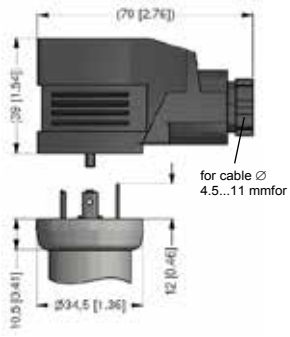
Electrical connections [5] (dimensions mm / in)



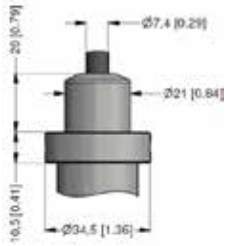
ISO 4400 - **Code G10**
(IP 65)



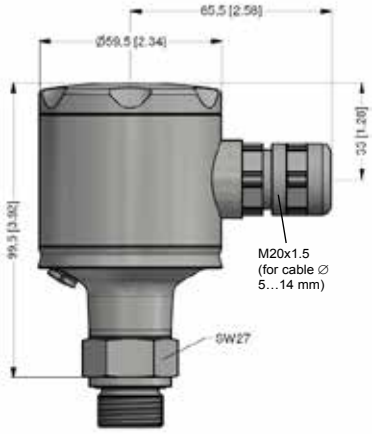
ISO 4400 - **Code G00**
(IP 65)



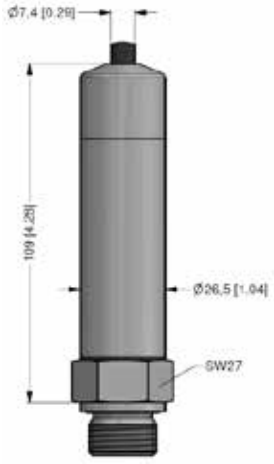
ISO 4400 - **Code G01**
(IP 65)



cable outlet [6, 7]
(IP 68)



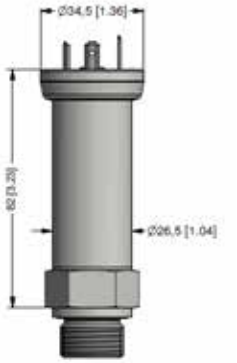
universal field housing
(IP 67)



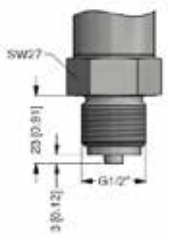
submersible version [7]
(IP 68)

[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 mH₂O 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

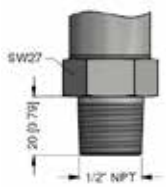
Mechanical connection (dimensions mm / in)



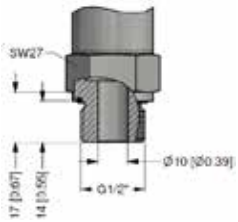
G1/2" DIN 3852



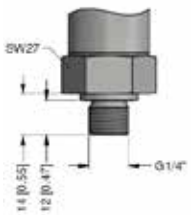
G1/2" EN 837



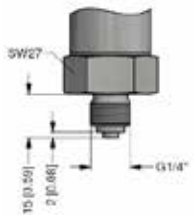
1/2" NPT



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			
in bar, gauge		5 9 0	
in bar, absolute		5 9 1	
in mH_2O, gauge		5 9 2	
in mH_2O, absolute		5 9 3	

Input [mH_2O]	[bar]	Code	
4	0.4	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 [1, 2] (for cable Ø 10...14 mm)	G 0 0	
male and female plug ISO 4400 GL [1, 2] (for cable Ø 4.5...11 mm)	G 0 1	
cable outlet (TPE-U-cable) [3]	T R 3	
field housing stainless steel	8 8 0	
submersible version (1.4404 / 316L) with TPE-U-cable [3]	T T 3	
submersible version (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] Shielded cable has to be used! Cable versions are delivered with shielded cable.
[2] female plug is GL-approbated
[3] cable with integrated air tube for atmospheric pressure reference; different lengths deliverable
[4] only for $P_N \le 40$ bar possible
[5] only for $P_N \le 100$ 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 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

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

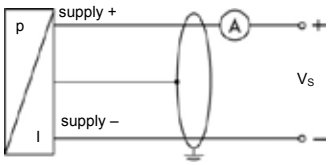
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

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

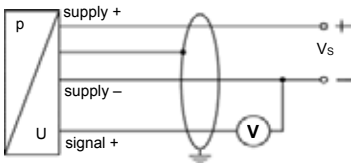
Materials	
Pressure port / housing	stainless steel 1.4301 (304)
Seals	FKM
Sensor	stainless steel 1.4404 (316L), silicon, glass, epoxy or RTV
Media wetted parts	pressure port, seals, sensor
Miscellaneous	
Weight	approx. 120 g
Permissible media	pressurized air, non-aggressive gases
Current consumption	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)



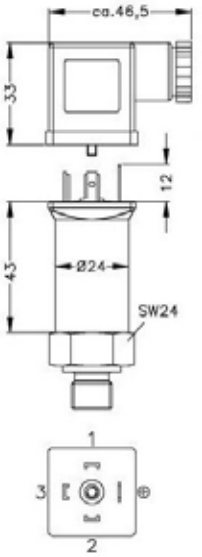
3-wire-system (voltage)



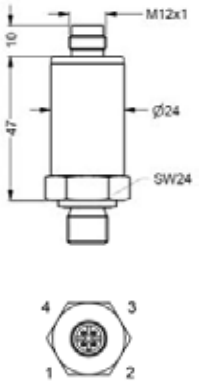
Pin configuration

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)

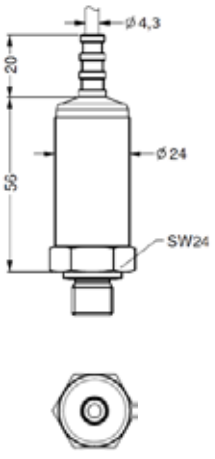
Electrical connections (dimensions in mm)



ISO 4400
(IP 65)



M12x1, 4-pin
(IP 67)

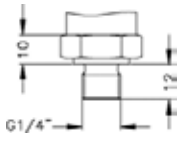


cable outlet with
PVC-cable (IP 67) [2, 3]

[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*

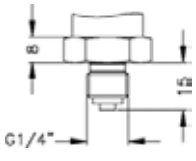
Mechanical connection (dimensions in mm)

standard

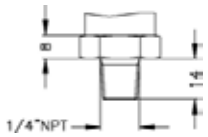


G1/4" DIN 3852

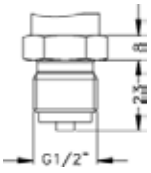
option [4]



G1/4" EN 837



1/4" NPT



G1/2" EN 837

[4] *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															
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													
Accuracy																				
	0.5 % FSO							5												
	customer							9												
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									
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						
Seals																				
	FKM														1					
	customer														9					
Special version																				
	standard															0	0	0		
	customer															9	9	9		

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

18.601 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

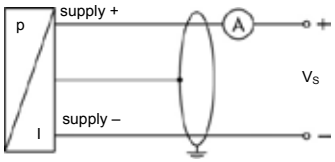
Input pressure range											
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6
Overpressure	[bar]	1	1	1	1	3	3	6	10	10	21
Burst pressure ≥	[bar]	1.5	1.5	1.5	1.5	5	5	10	17.5	17.5	35
Vacuum resistance		unlimited									

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		

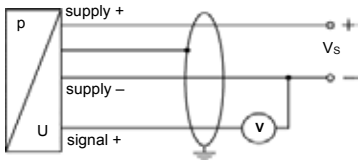
Materials	
Pressure port / housing	stainless steel 1.4301 (304)
Seals	FKM
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
Miscellaneous	
Weight	approx. 120 g
Current consumption	2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: max. 7 mA (short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

Wiring diagrams

2-wire-system (current)



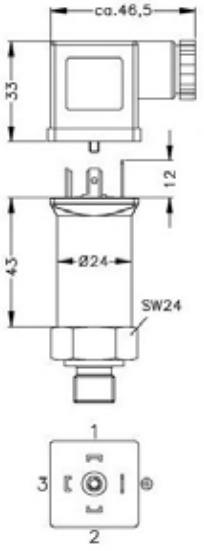
3-wire-system (voltage)



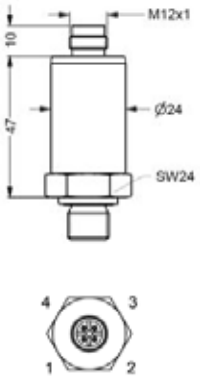
Pin configuration

Electrical connection	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)

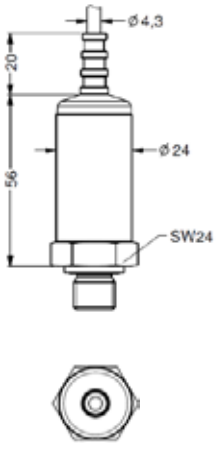
Electrical connections (dimensions in mm)



ISO 4400
(IP 65)



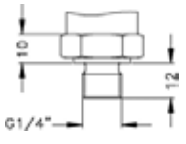
M12x1, 4-pin
(IP 67)



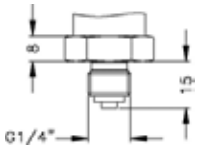
cable outlet
with PVC-cable (IP 67) [2, 3]

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

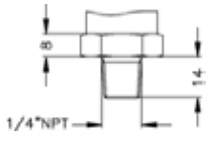
Mechanical connection (dimensions in mm)



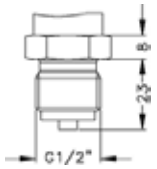
G1/4“ DIN 3852



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	consult

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

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																

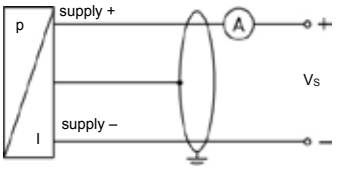
Output signal / Supply			
Standard	2-wire:	4 ... 20 mA /	V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V /	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 ... 90 % of V_S /	V_S = 2.7 ... 5 V_{DC}
Performance			
Accuracy [2]	≤ ± 0.5 % FSO		for p_N -1…0 bar: ≤ 1 % FSO
Permissible load	2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$		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: -25 … 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]

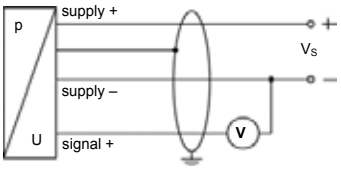
[3] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



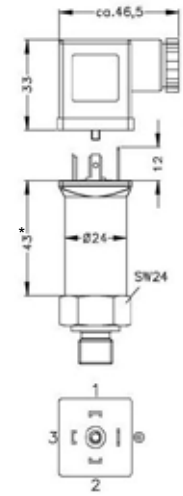
3-wire-system (voltage)



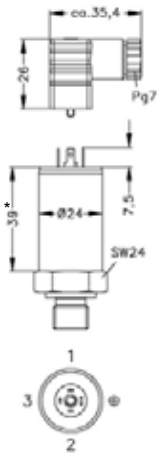
Pin configuration

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)

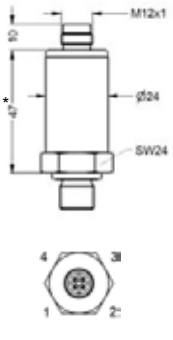
Electrical connections (dimensions in mm)



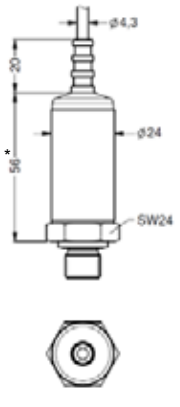
ISO 4400
(IP 65)



Micro, contact
distance 9.4 mm (IP 65)



M12x1, 4-pin
(IP 67)

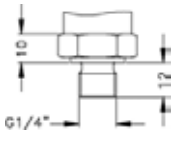


cable outlet with
PVC-cable (IP 67) [4,5]

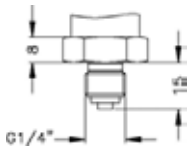
* pressure range p_N = 400 bar: total length increases by 12 mm

[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

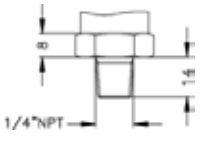
Mechanical connection (dimensions in mm)



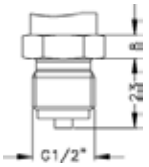
G1/4" DIN 3852



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											

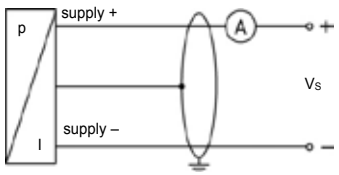
Output signal / Supply				
Standard	2-wire:	4 ... 20 mA	/	V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V	/	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	10 … 90 % of V_S	/	V_S = 2.7 ... 5 V_{DC}
Performance				
Accuracy [1]	≤ ± 1 % FSO			
Permissible load	2-wire:	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	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	-25 ... 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 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) [2]

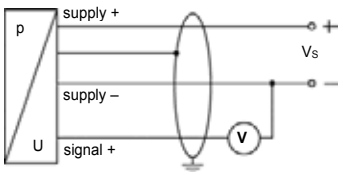
[2] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



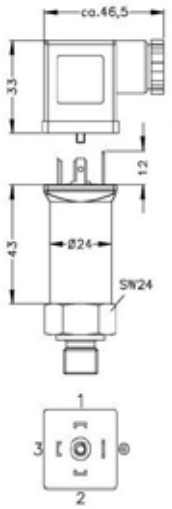
3-wire-system (voltage)



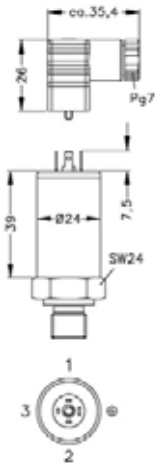
Pin configuration

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)

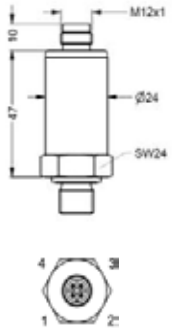
Electrical connections (dimensions in mm)



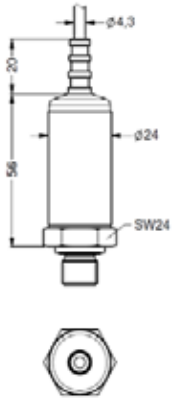
ISO 4400
(IP 65)



Micro, contact-
distance 9.4 mm (IP 65)



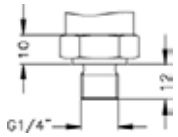
M12x1, 4-pin
(IP 67)



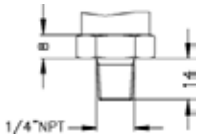
cable outlet
with PVC-cable (IP 67) [3,4]

[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 in mm)



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)

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

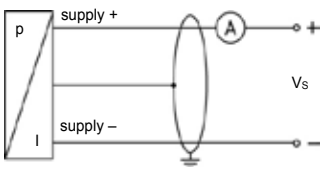
Pressure ranges							
Nominal pressure gauge	[bar]	6	10	16	25	40	60
Overpressure	[bar]	12	20	32	50	80	120
Burst pressure ≥	[bar]	30	50	80	125	200	300
Vacuum resistance		unlimited					
Vacuum ranges							
Nominal pressure gauge	[bar]	-1 ... 6	-1 ... 10	-1 ... 16	-1 ... 25	-1 ... 40	-1 ... 60
Overpressure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

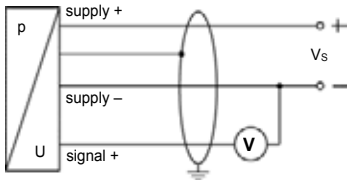
Mechanical stability		
Vibration	20 g, 25 Hz … 2 kHz	according to DIN EN 60068-2-6
Shock	500 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4571 (316Ti)	
Housing	stainless steel 1.4301 (304)	
Seal of sensor	none (welded)	
Diaphragm	stainless steel 1.4542 (630)	
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)



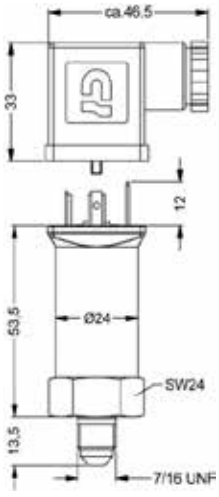
3-wire-system (voltage)

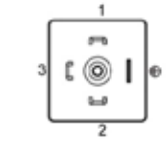


Pin configuration

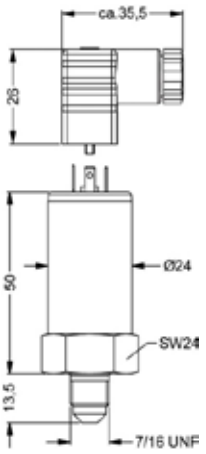
Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), metal	cable colours (IEC 60757)
Supply +	1	1	1	WH (white)
Supply –	2	2	2	BN (brown)
Signal + (for 3-wire)	3	3	3	GN (green)
Shield	ground pin ⏚	ground pin ⏚	4	GNYE (green-yellow)

Dimensions (in mm)

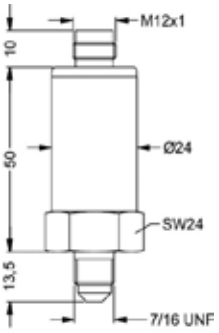




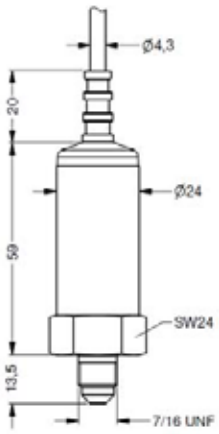
ISO 4400
(IP 65)



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)

17.600 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										

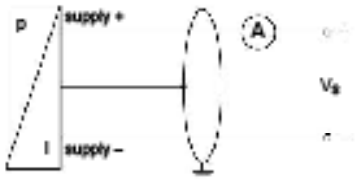
Output signal / Supply				
Standard	2-wire:	4 … 20 mA	/ V_B =	8 … 32 V_{DC}
Options	3-wire:	0 … 10 V	/ V_B =	14 … 30 V_{DC}
	3-wire ratiometric:	10 … 90% of V_B	/ V_B =	2.7 … 5 V_{DC}
Performance				
Accuracy [1]	≤ ± 0.5 % FSO			
Permissible load	2-wire: R_{max} = [(V_B – V_B min) / 0.02 A] Ω			
	3-wire: 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 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	Pressure Equipment Directive: 2014/68/EU (module A)[3]

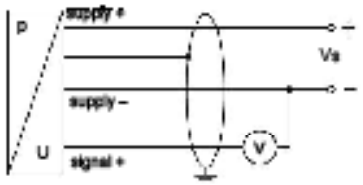
[3] *This directive is only valid for devices with maximum permissible overpressure > 200 bar*

Wiring diagrams

2-wire system (current)



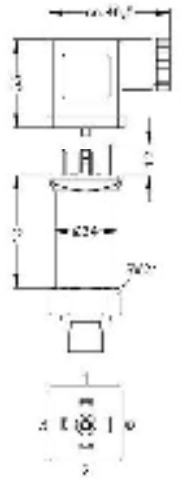
3-wire system (voltage)



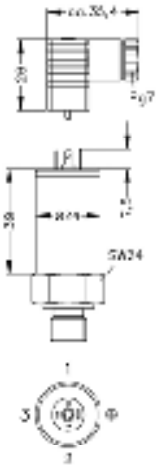
Pin configuration

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 in mm)

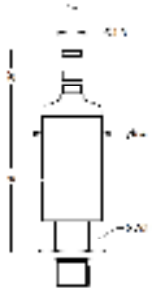


ISO 4400
(IP 65)



Micro, contact
distance 9.4 mm (IP 65)

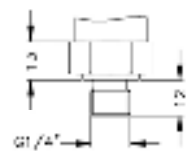
M12x1, 4-pin
(IP 67)



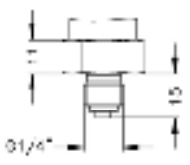
cable outlet with
2 m PVC-cable (IP 67) [4]

[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*

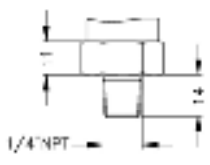
Mechanical connection (dimensions in mm)



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				
	B1/4" EN 837 / without											**4**	**0**	**0**	**2**				
	1/4" NPT / without											N	4	0	2				
	B1/2" 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: 2m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)
[2] not possible with B1/4" EN 837

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
[1] only for static pressures											

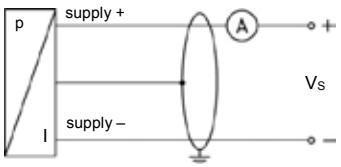
Output signal / Supply		
2-wire	4 ... 20 mA	V_S = 10 ... 30 V_{DC}
3-wire ratiometric	10 … 90% of V_S	V_S = 2.7 … 5 V_{DC}
Performance		
Accuracy [2]	≤ ± 0.5 % FSO	
Permissible load	2 wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	3 wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 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	
[2] 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	FKM: G 1/4" DIN 3852	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	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A) [3]

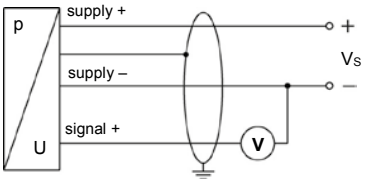
[3] *This directive is only valid for devices with maximum permissible overpressure > 200 bar*

Wiring diagrams

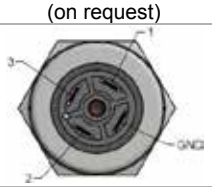
2-wire-system (current)



3-wire-system (voltage)

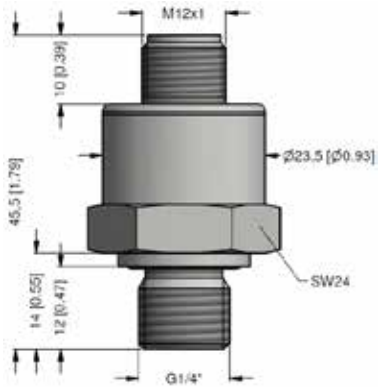


Pin configuration

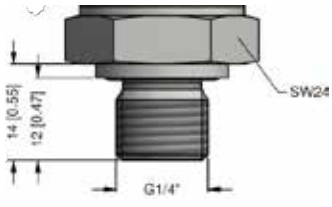
Electrical connection	male plug M12x1 (4-pin), metal	male plug Micro (contact distance 9.4 mm) (on request)
		
Supply +	1	1
Supply –	3	3
Signal + (for 3-wire)	2	2
Shield	housing	ground pin ⏚

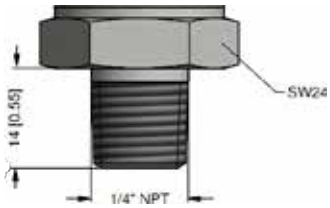
Dimensions (mm / in)

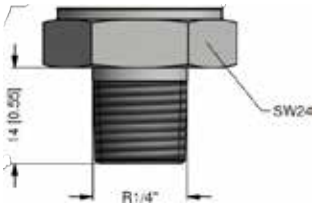
standard



Mechanical connections (mm / in)







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 IEC							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	9	consult

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