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.

	stainless steel sensor	ceramic sensor	DMS	accuracy (FSO)[1]	nominal pressure [bar]	options / special characteristics	pressure port / process connection: inch and NPT thread	inch thread flush	dairy pipe	Clamp (3A-certification)	Varivent® (3A-certification)	flange	DRD flange	certificates	page
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XMP i	•			0.1 %	0 … 0.4 up to 0 … 600	flameproof enclosure, cooling element up to 300°C	•	•				•	•	Ex, HART®	5-9
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[1] according to IEC 60770

XMP i

Precision Pressure Transmitter for the Process Industry with HART®-Communication

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

Optional versions

- IS-version:Ex d = flameproof enclosure
- 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 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 two chamber aluminum die cast case or a stainless field housing.

Preferred areas of use are

- Oil and gas industry
- Chemical and petrochemical industry
- Energy Industry
- Heavy Industry

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

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

Thermal errors / Permissible temperatures			
Tolerance band [4, 5]	≤ 0.2 % FSO x turn-down (in compensated range -20 … 85 °C)		
Permissible temperatures [6]	medium: -40 ... 125 °C for filling fluid silicon 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 silicon oil	overpressure: -40 … 300 °C	low pressure: -40 … 150 °C
	filling fluid food compatible oil	overpressure: -10 … 250 °C	low pressure: -10 … 150 °C

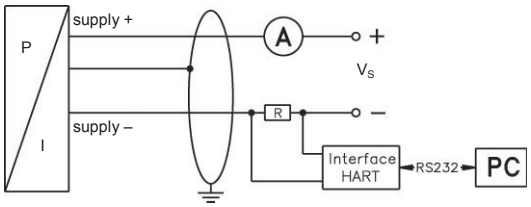
[4] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions
[5] for flange- and DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO
[6] max. temperature of the medium for nominal pressure 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	silicon oil
Options for process connections	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) Halocarbon and others on request
Materials	
Pressure port	stainless steel 1.4404 (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 option: FFKM (min. permissible temperature from -15 °C, possible for nominal pressure ranges P_N ≤ 100 bar); others on request option: welded version for pressure ports according to EN 837 with P_N between 1 and 40 bar DRD and flange: none, not included in the scope of delivery
Diaphragm Standard Options for process connections	stainless steel 1.4435 (316 L) Hastelloy® C-276 (2.4819), Tantalum (possible from 1 bar) on request
Media wetted parts	pressure port, seal, diaphragm

Explosion protection	
Approval AX12-XMP i	IBExU 05 ATEX 1106 X stainless steel field housing: zone 0: II 1G Ex ia IIC T4 Ga / II 1D Ex ia IIIC T85 °C Da aluminium die cast case: zone 1: II 2G Ex ia IIB T4 Gb / 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, C_{GND} = 27 nF
Approval AX17-XMP i (flameproof enclosure)	IBExU 12 ATEX 1045 X aluminium die cast case: 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: -25 ... 70 °C (intrinsically safe version); -20 ... 70 °C (flameproof enclosure)
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
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 (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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [7]

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

Wiring diagram

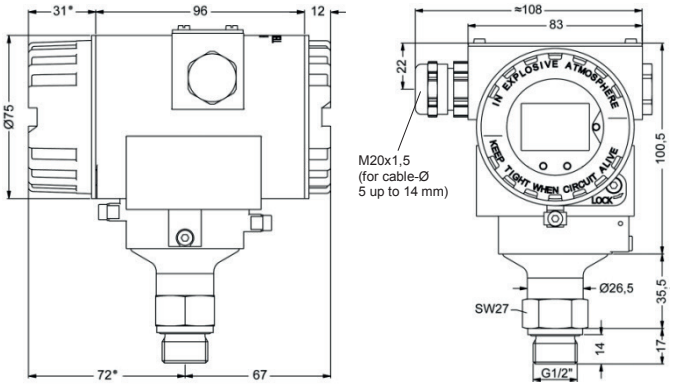


Pin configuration

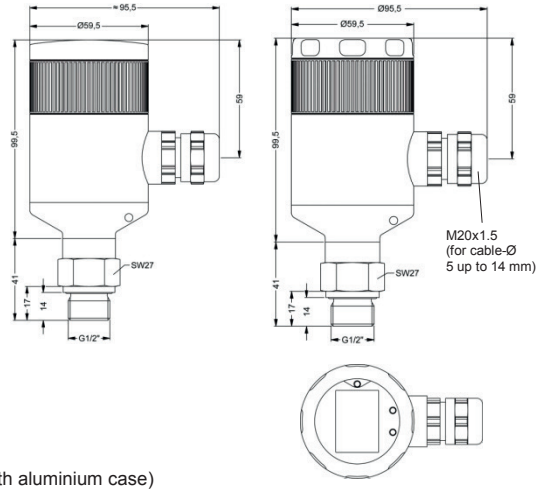
Electrical connections	**aluminium die cast case:** terminal clamps (clamp section: 2.5 mm²)	**stainless steel field housing:** terminal clamps (clamp section: 1.5 mm²)
Supply + Supply – Test	IN+ IN- Test	IN+ IN- -
Shield	⏚	⏚

Housing designs [8] (dimensions in mm)

aluminium die case



stainless steel field housing

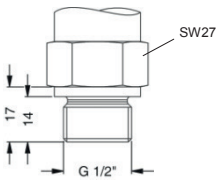


* without display and operating module marked dimensions decrease by 19 mm (with aluminium case)

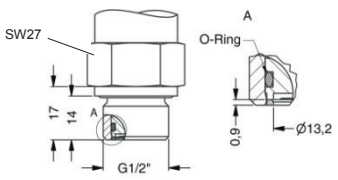
⇨ **for nominal pressure P_N > 400 bar increases the length of devices by 39 mm**

[8] *aluminium case is horizontally rotatable as standard*

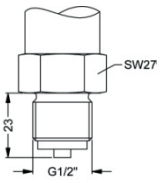
Standard pressure ports (dimensions in mm)



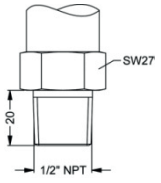
G1/2" DIN 3852



G1/2" flush (DIN 3852) [9]



G1/2" EN 837
M20x1.5

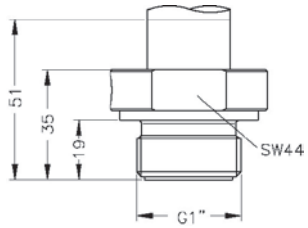


1/2" NPT

[9] *not possible for vacuum and nominal pressure ranges > 40 bar*

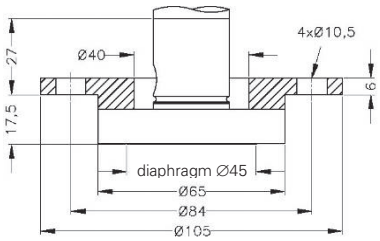
Process connections up to 40 bar (dimensions in mm)

Inch thread (DIN 3852)



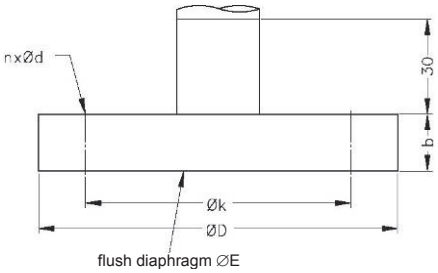
G1" flush
(PN ≤ 400 bar)

DRD [10]



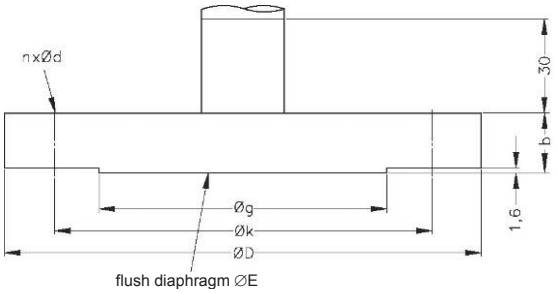
(PN ≤ 25 bar)

Flange (DIN 2501)



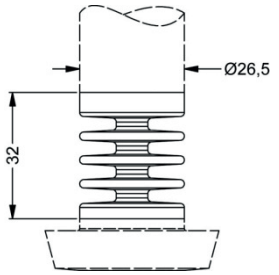
dimensions in mm			
size	DN25/PN40	DN50/PN40	DN80/PN16
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
PN	≤ 40 bar	≤ 40 bar	≤ 16 bar

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
PN	≤ 10 bar	≤ 10 bar

Cooling element



temperature range	300° C

[10] *mounting flange is included in the delivery (already pre-assembled)*
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Windows® is a registered trade mark of Microsoft Corporation

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XMP i

Ordering Code

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 4 … 20 mA / 2-wire with HART®-communication	I	
Intrinsic safety Ex d 4 … 20 mA / 2-wire (flameproof enclosure) with HART®-communication [2]	G	
customer	9	consult
Accuracy		
0.1 %	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" DIN 3852 with flush sensor [3]	F 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	
Flansch DN 2" / 150 lbs (ANSI B16.5) [4]	F 3 2	
Flansch DN 3" / 150 lbs (ANSI B16.5) [4]	F 3 3	
DRD Ø 65 mm [5]	D R D	
Diaphragm		
Stainless steel 1.4435 (316L)	1	
Hastelloy® [6]	H	
Tantal [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		
Silicon oil	1	
food compatible oil [6]	2	
Halocarbon [6]	C	consult
customer	9	consult
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] not possible for vacuum ranges and pressure ranges > 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

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XMP ci

Process Pressure Transmitter with HART®-communication

Ceramic Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 60 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
- IS-version:
  Ex ia = intrinsically safe version
- diaphragm Al_2O_3 99.9 %

Optional versions

- IS-version: Ex d = flameproof enclosure
- 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 aluminum die cast case or a stainless field housing.

Preferred areas of use are

- Oil and gas industry
- Chemical and petrochemical industry

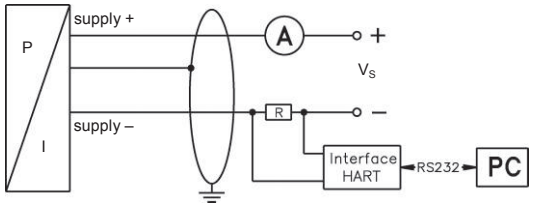
Preferred using in

- Fuel and Oil
- aggressive Media

Pressure ranges [1]									
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10	20
Overpressure	[bar]	2	4	6	8	15	25	35	45
Permissible vacuum	[bar]	-0.2	-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									
Standard Option		2-wire: 4 ... 20 mA intrinsically safe version with HART®-communication / V_S = 12 ... 28 V_{DC} IS version flameproof enclosure / VS = 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 0.06 bar up to 0.4 bar	≤ ± (0.2 + (TD-1) x 0.02) % FSO						
		for nominal pressure ranges: from 1 bar up to 20 bar	≤ ± (0.1 + (TD-1) x 0.01) % FSO						
		with turn-down = nominal pressure range / adjusted range							
Permissible load		R_{max} ≤ [(V_S – $V_{S\,min}$) / 0.02 A] Ω			load during HART®-communication: R_{min} = 250 Ω				
Influence effects		supply: 0.05 % FSO / 10 V			permissible load: 0.05 % FSO / kΩ				
Long term stability		≤ ± 0.1 % FSO / year							
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)							
Shock		100 g / 11 msec							
Materials									
Pressure port Standard Optionally for G1 1/2" flush		 stainless steel 1.4404 (316L) 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 (intrinsically safe version)		IBExU 05 ATEX 1106 X stainless steel field housing: zone 0/1 [4]: II 1/2G Ex ia IIC T4 Ga/Gb / II 1D Ex ia IIIC T85 °C Da aluminium die cast case: zone 1: II 2G Ex ia IIB T4 Gb / II 1D Ex ia IIIC T85 °C Da							
Safety techn. maximum values		U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 27 nF							
Approval AX17-XMP ci (flameproof enclosure)		IBExU 12 ATEX 1045 X aluminium die cast case: 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: -25 ... 70° C (intrinsically safe version); -20 ... 70 °C (flameproof enclosure)							
[4] *The designation depends on the nominal pressure range. Nominal pressure ranges ≤ 60 mbar are marked with „2G“. For nominal pressure ranges > 60 mbar and < 10 bar see note under item 17 in the EC type-examination certificate!*									

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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC

Wiring diagram

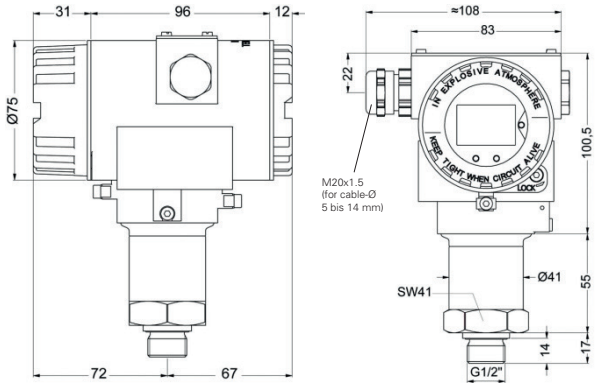


Pin configuration

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	⏚	⏚

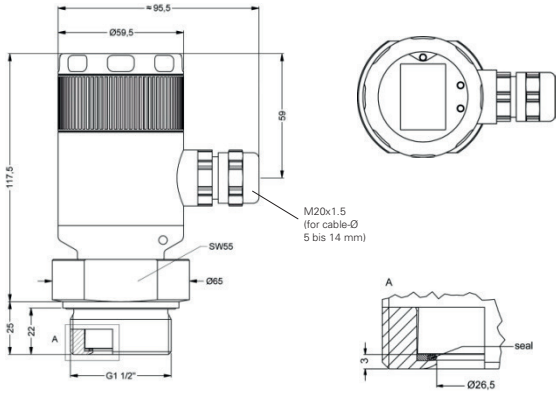
Housing designs [5] (dimensions in mm)

aluminium die cast case with display



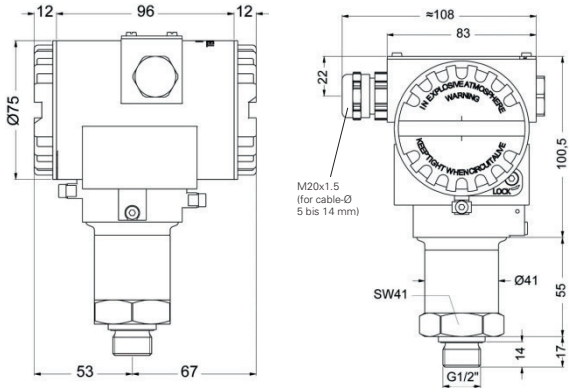
G1/2" DIN 3852

stainless steel field housing with display



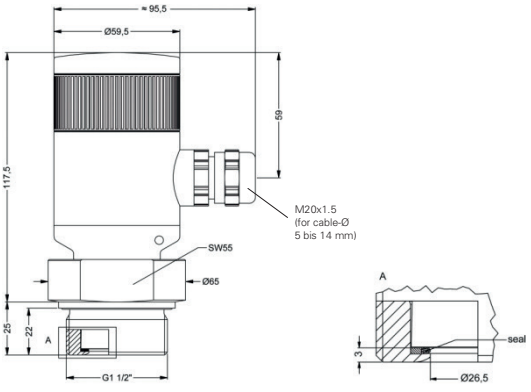
G1 1/2" flush DIN 3852

aluminium die cast case without display



G1/2" DIN 3852

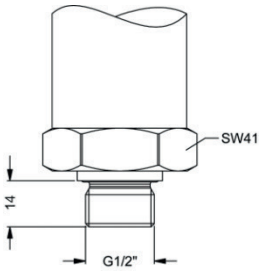
stainless steel field housing without display



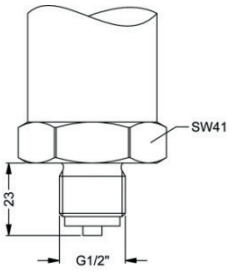
G1 1/2" flush DIN 3852

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

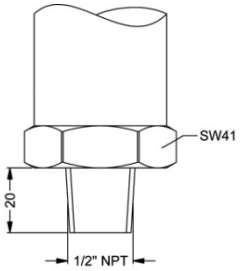
Standard pressure ports (dimensions in mm)



G1/2" DIN 3852



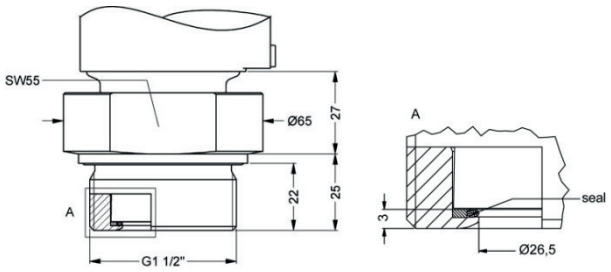
G1/2" EN 837



1/2" NPT

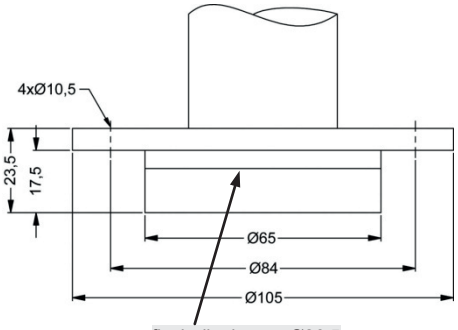
Process connections (dimensions in mm)

Inch thread



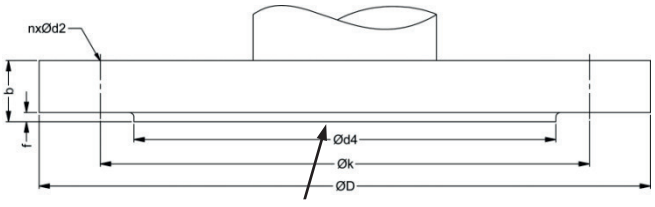
G1 1/2" flush DIN 3852

DRD [6]



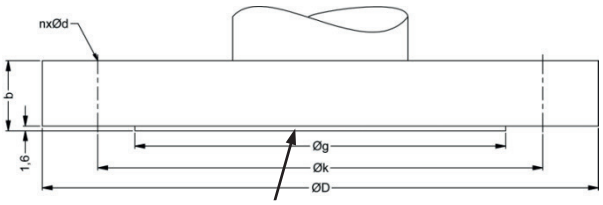
flush diaphragm Ø26,5

Flange (DIN 2501)



flush diaphragm Ø26,5

Flange (ANSI)



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

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

[6] mounting flange is included in the delivery (already pre-assembled)
HART® is a registered trade mark of HART Communication Foundation;
Windows® is a registered trade mark of Microsoft Corporation

XMP ci □□□-□□□□-□□-□-□-□□□-□□□-□-□-□-□□□

Pressure		
gauge	5 1 E	
Input [bar] ⚠		
0.06	0 6 0 0	
0.16	1 6 0 0	
0.4	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 4 … 20 mA / 2-wire with HART®-communication	I	
Intrinsic safety d 4 … 20 mA / 2-wire (flameproof enclosure) with HART®-communication [1]	G	
customer	9	consult
Accuracy		
0.1 %	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	
Flansch DN 2" / 150 lbs (ANSI B16.5) [2]	F 3 2	
Flansch 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, PVDM -30 … 125 °C
HART® is a registered trade mark of HART Communication Foundation; Varivent® is a brand name of GEA Tuchenhagen GmbH

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

x|act i

Precision Pressure Transmitter For Food / Beverage And Pharmaceutical Industry And Biotechnology

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

- IS-version
  Ex ia = intrinsically safe for gases and dust
- 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 / beverage, pharmaceutical industry 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 and Beverage

Pharmaceutical Industry

Material and test certificates

- inspection certificate 3.1 according to EN 10204
- test report 2.2 according to EN 10204

74-05

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

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

Thermal effects (Offset and Span) / 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 silicon 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 silicon oil	overpressure: -40 … 300 °C	vacuum pressure: -40 ... 150 °C
	filling fluid food compatible oil	overpressure: -10 ... 250 °C	vacuum pressure: -10 ... 150 °C

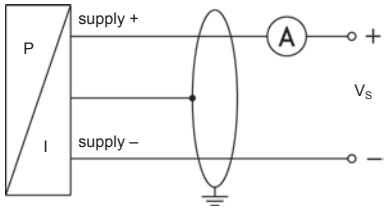
[4] an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions
[5] for flange-, Varivent-, DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO
[6] for vacuum ranges and absolute pressure the 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	silicon oil
Options	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) Halocarbon and others on request
Materials	
Pressure port	G1" cone, Varivent®, dairy pipe und Clamp: stainless steel 1.4435 (316 L) DRD and flange: stainless steel 1.4404 (316L)
Housing	stainless steel 1.4301 (304)
Viewing glass	laminated safety glass
Seals (media wetted)	none, not included in the scope of delivery
Diaphragm Standard Options	 stainless steel 1.4435 (316 L) Hastelloy® C-276 (2.4819) Tantalum (possible from 1 bar on) on request
Media wetted parts	pressure port, diaphragm, seal (if existing)

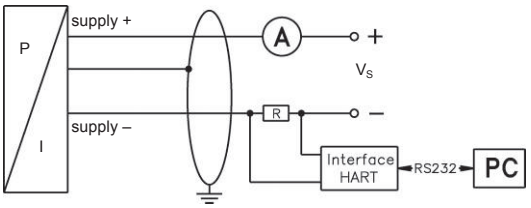
Explosion protection	
Approval AX12-x|act i	IBExU 05 ATEX 1106 X zone 0: II 1G Ex ia IIC T4 Ga / II 1D Ex ia IIIC T85 °C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 0 nF, L_i = 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible 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)	capacitance: signal line/shield also signal line/signal line: 160 pF/m inductance: signal line/shield also signal line/signal line: 1 µH/m
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 ≤ 2 bar have to be specified in the order)
Weight	min. 400 g (depending on mechanical connection)
Operational life	> 100 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC

Wiring diagrams

2-wire-system (current)

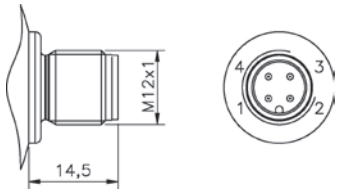


2-wire-system (current) HART®



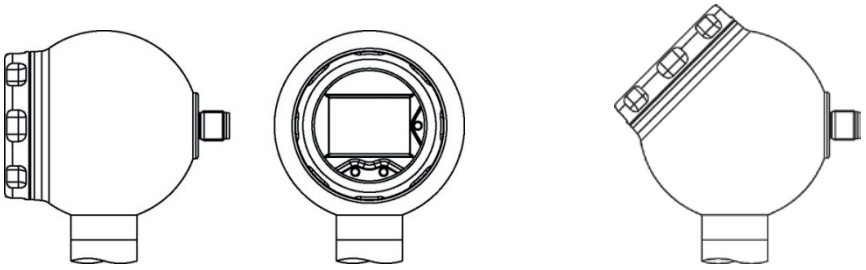
Pin configuration	
Electrical connections	M12x1 (4-pin)
Supply + Supply –	1 3
Shield	plug housing

Electrical connections (dimensions in mm)



M12x1 (4-pin)

Designs [7]



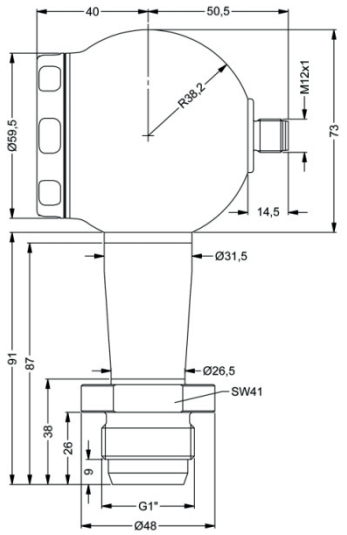
side display

45° display

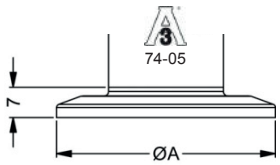
[7] *all designs in combination with G1" cone in horizontal rotatable housing as standard; other mech. connections in rotatable housing on request*

Dimensions (in mm)

G1" cone

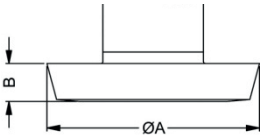


Clamp (DIN 32676)



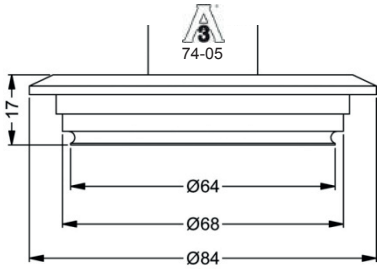
dimensions in mm				
size	¾“	DN25	DN32	DN50
A	25	50.5	50.5	64
P_N [bar]	≤ 8	≤ 16	≤ 16	≤ 16

Dairy pipe [7] (DIN 11851)



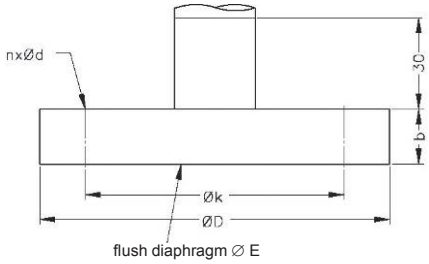
dimensions in mm			
size	DN 25	DN 40	DN 50
A	44	56	68.5
B	10	10	11
P_N [bar]	≤ 40	≤ 40	≤ 40

Varivent®



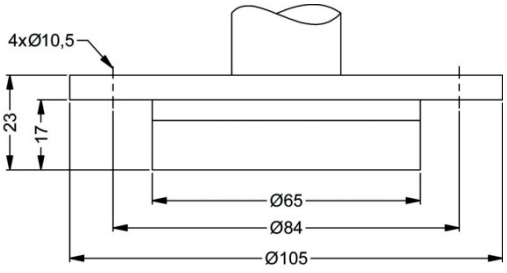
DN 40/50
PN ≤ 25 bar

Flange (DIN 2501)



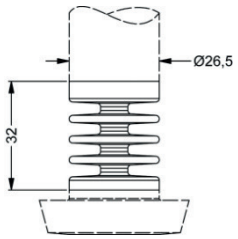
dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
PN [bar]	≤ 40	≤ 40	≤ 16

DRD [8]



PN ≤ 25 bar

Cooling element



temperature range	300 °C

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

	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 4 … 20 mA / 2-wire	E	
Intrinsic safety 4 … 20 mA / 2-wire with HART®-communication	I	
customer	9	consult
Accuracy		
0.1 %	1	
Electrical connection		
Male plug M12x1 (4-pin)	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		
silicon oil	1	
food grade 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	

⚠ **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] tantal diaphragm possible with nominal pressure ranges from 1 bar

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Varivent® is a brand name of GEA Tuchenhagen GmbH

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x|act ci

Precision Pressure Transmitter for Food Industry, Pharmacy + Biotechnology

Ceramic Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 60 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

- IS-version:
  Ex ia = intrinsically safe version
- 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 Industry
- Chemical and Petrochemical Industry
- Laboratory Techniques

Preferred using in

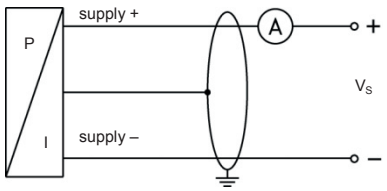
- Viscous and pasty media

Pressure ranges [1]									
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10	20
Overpressure	[bar]	2	4	6	8	15	25	35	45
Permissible vacuum	[bar]	-0.2	-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									
Standard		2-wire: 4 ... 20 mA / V_S = 12 … 30 V_{DC}							
Option IS-protection IS-protection/ HART®		 2-wire: 4 ... 20 mA / V_S = 12 … 28 V_{DC} 2-wire: 4 ... 20 mA with HART® communication / V_S = 12 … 28 V_{DC}							
Current consumption		max. 25 mA							
Performance									
Accuracy [2]		nominal pressure < 1 bar: ≤ ± 0,2 % FSO nominal pressure ≥ 1 bar: ≤ ± 0,1 % FSO							
		for nominal pressure ranges: from 0.06 bar up to 0.4 bar	≤ ± (0.2 + (TD-1) x 0.02) % FSO						
		for nominal pressure ranges: from 1 bar up to 20 bar	≤ ± (0.1 + (TD-1) x 0.01) % FSO						
		with turn-down = nominal pressure range / adjusted range							
Permissible load		R_{max} ≤ [(V_S – $V_{S\,min}$) / 0.02 A] Ω				load during HART® communication: R_{min} = 250 Ω			
Influence effects		supply: 0.05 % FSO / 10 V				permissible load: 0.05 % FSO / kΩ			
Long term stability		≤ ± 0.1 % FSO / year							
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		medium: -25 ... 125 °C			environment: -20 ... 70 °C			storage: -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)							
Shock		100 g / 11 msec							
Materials									
Pressure port		inch thread, DRD and flange version, Varivent®, dairy pipe and clamp: stainless steel 1.4404 (316L) optionally for G1 1/2" flush (DIN 3852): PVDF							
Housing		stainless steel 1.4301 (304)							
Viewing glass		laminated safety glass							
Seals		FKM (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 1/2G Ex ia IIC T4 Ga/Gb / 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							
Permissible temperatures for environment		in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar ab zone 1: -25 ... 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							
[3] The designation depends on the nominal pressure range. Nominal pressure ranges ≤ 60 mbar are marked with „2G“. For nominal pressure ranges > 60 mbar and < 10 bar see note under item 17 in the EC type-examination certificate!									

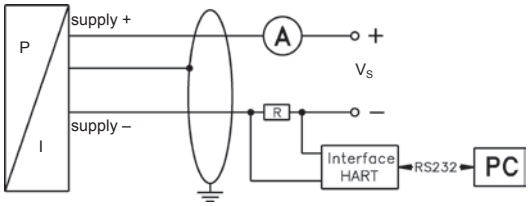
Miscellaneous	
Display	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% ± 1 digit
Ingress protection	IP 67
Installation position	any
Weight	min. 400 g (depending on mechanical connection)
Operational life	> 100 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC

Wiring diagram

2-wire-system (current)



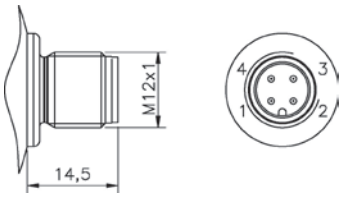
2-wire-system (current) HART®



Pin configuration

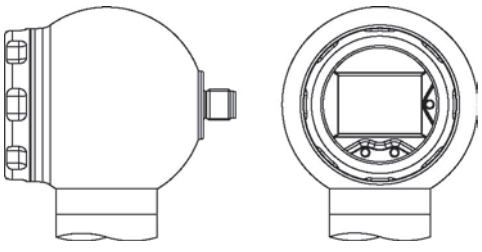
Electrical connections	M12x1 (4-pin)	cable colours (DIN 47100)
Supply + Supply –	1 3	wh (white) bn (brown)
Shield	plug housing	ye/gn (yellow / green)

Electrical connections (in mm)

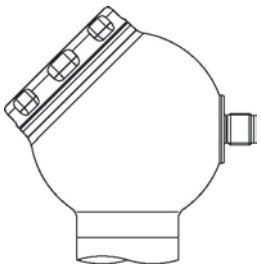


M12x1 (4-pin)

Designs [4]



side display

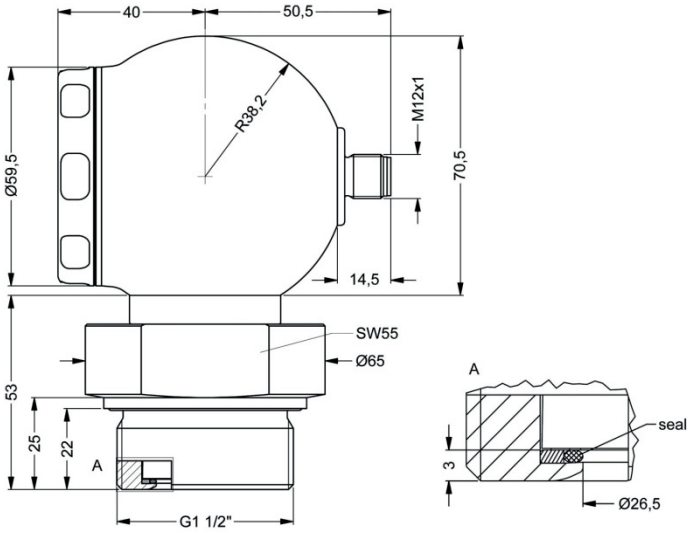


45° display

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

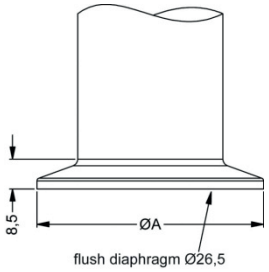
Dimensions (in mm)

Inch thread



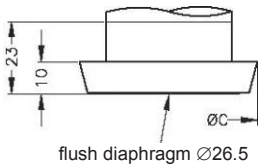
G1 1/2" flush DIN 3852

Clamp (DIN 32676)



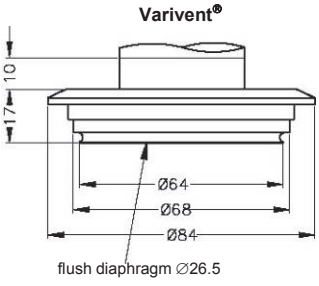
dimensions in mm		
size	DN32	DN50
A	50.5	64
P_N [bar]	≤ 16	≤ 16

Dairy pipe [6] (DIN 11851)



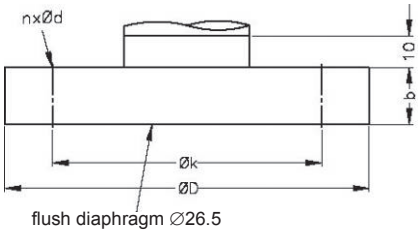
dimensions in mm		
size	DN 40	DN 50
C	56	68.5

Varivent®



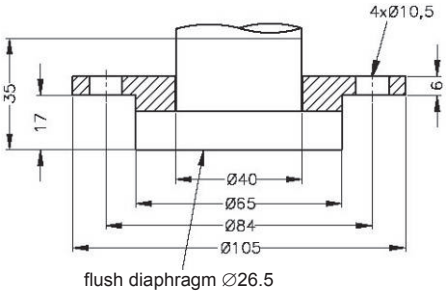
DN 40/50

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	≤ 40 bar	≤ 40 bar	≤ 16 bar

DRD [5]



[5] cup nut for dairy pipe or mounting flang for DRD is included in the delivery (already pre-assembled)
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Varivent® is a trademark of GEA Tuchenhagen GmbH; Windows® is a registered trade mark of Microsoft Corporation

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Pressure		
gauge	5 1 E	
Input [bar] ⚠		
0.06	0 6 0 0	
0.16	1 6 0 0	
0.4	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 4 … 20 mA / 2-wire	E	
Intrinsic safety 4 … 20 mA / 2-wire with HART®-communication	I	
customer	9	consult
Accuracy		
0.1 %	1	
customer	9	consult
Electrical connection		
Male plug M12x1 (4-pin)	M 1 0	
customer	9 9 9	consult
Mechanical connection		
G 1 1/2" DIN flush (DIN 3852)	M 0 0	
Clamp DN 32 / 1 1/2" (DIN 32676)	C 6 2	
Clamp DN 50 / 2" (DIN 32676)	C 6 3	
Dairy pipe DN 40 (DIN 11851) [1]	M 7 5	
Dairy pipe DN 50 (DIN 11851) [1]	M 7 6	
Varivent® DN 40/50	P 4 1	
Flange DN 25 / PN 40 (DIN 2501)	F 2 0	
Flange DN 50 / PN 40 (DIN 2501)	F 2 3	
Flange DN 80 / PN 16 (DIN 2501)	F 1 4	
DRD Ø 65 mm [1]	D R D	
customer	9 9 9	consult
Diaphragm		
Ceramics Al_2O_3 99,9%	C	
customer	9	consult
Seals		
FKM	1	
EPDM	3	
customer	9	consult
Pressure port		
standard: Stainless steel 1.4404 (316L)	1	
option for G 1 1/2" flush: PVDF	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)

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DMP 331Pi

Precision Pressure Transmitter

pressure ports and
process connections with
flush welded stainless steel diaphragm

accuracy according to IEC 60770:
0,1 % FSO

Nominal pressure

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

Output signals

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

Product characteristics

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

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- communication interface for adjustment of offset, span and damping

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

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

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

Preferred areas of use are

- Laboratory techniques
- Food and beverage
- Pharmaceutical industry

Pressure ranges [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] absolut 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-protection	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 ... 30 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] 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 x turn-down) % FSO / year
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	-20 ... 80 °C
TC, average [% FSO / 10 K]	≤ ± (0.035 x turn-down)	in compensated range	-20 ... 80 °C
Permissible temperatures [8]	medium:	-40 ... 125 °C for filling fluid silicon 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 silicon 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	silicon oil
Options	food compatible oil with FDA approval (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request

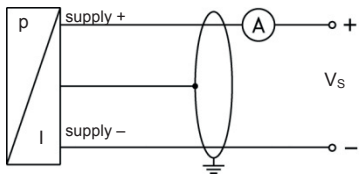
Mechanical stability		
Vibration (DIN EN 60068-2-6)	G 1/2": 20 g RMS (25 ... 2000 Hz);	others except G 1/2": 10 g RMS (25 … 2000 Hz)
Shock (DIN EN 60068-2-27)	G 1/2": 500 g / 1 msec;	others except G 1/2": 100 g / 1 msec

Materials	
Pressure port	stainless steel 1.4404 (316 L) others on request
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4305 (303), cable gland brass, nickel plated others on request
Seals (O-ring)	standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures > 200 °C) others on request clamp and dairy pipe: 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 (only for 4 ... 20 mA / 2-wire)	
Approval DX19-DMP 331Pi	IBExU 10 ATEX 1068 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex iaD 20 T 85 °C
Safety technical max. 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
Max. permissible temperature	-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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC

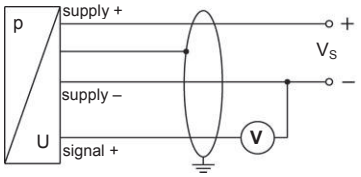
[10] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges P_N ≤1 bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



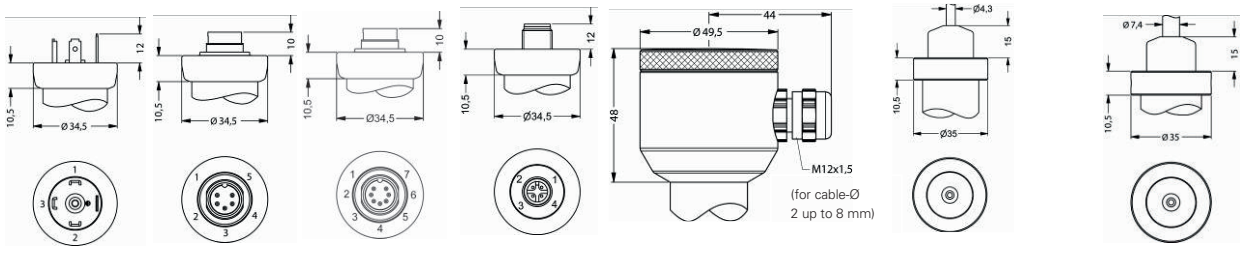
Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/ metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	3	3	IN +	wh (white)
Supply –	2	4	1	1	IN –	bn (brown)
Signal + (only for 3-wire)	3	1	6	-	OUT +	gr (green)
shield	ground pin	5	2	4	⏚	ye/gn yellow / green
Communication interface [11] RxD	-	-	4	-	-	-
TxD	-	-	5	-	-	-
GND	-	-	7	-	-	-

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

Electrical connections (dimensions in mm)

standard **option**

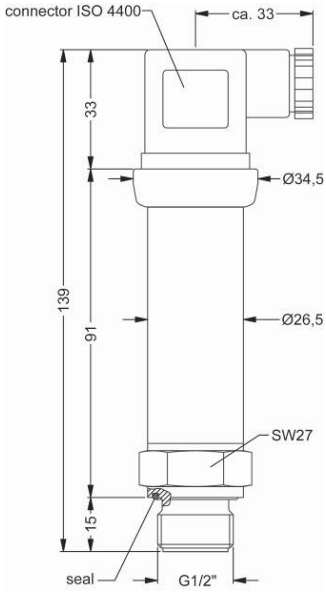


ISO 4400 (IP 65) | Binder 723 5-pin (IP 67) | Binder 723 7-pin (IP 67) | M12x1 4-pin (IP 67) | field housing (IP 67) | cable outlet [12] PVC cable (IP 67) | cable outlet [13], with ventilation tube (IP 68)

[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

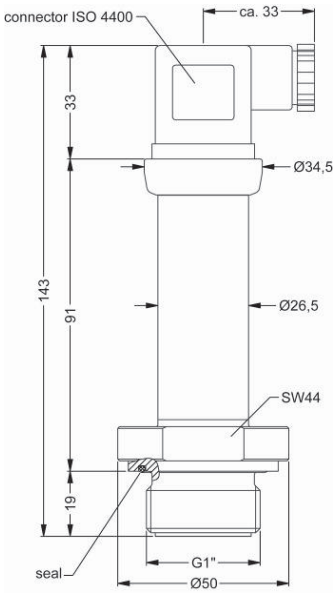
Mechanical connection (dimensions in mm)

standard

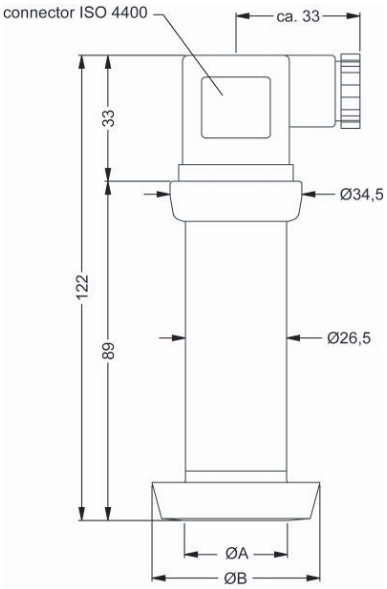


G1/2" flush DIN 3852

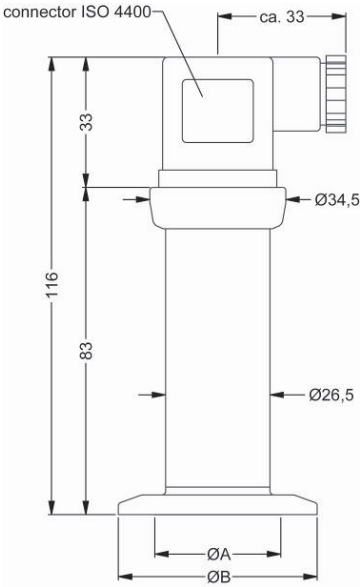
option



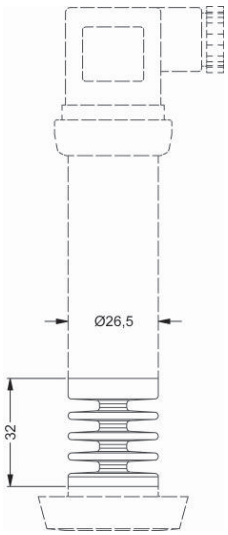
G1" flush DIN 3852



dairy pipe (DIN 11851)



Clamp (DIN 32676)



cooling element up to 300 °C

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

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

⇨ **metric threads and others on request**

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

Pressure		
gauge	5 0 0	
absolute [1]	5 0 1	
Input [bar]		
0.40 [1]	4 0 0 0	
1.0	1 0 0 1	
2.0	2 0 0 1	
4.0	4 0 0 1	
10	1 0 0 2	
20	2 0 0 2	
40	4 0 0 2	
-0.40 … 0.40	S 4 0 0	
-1 … 1	S 1 0 2	
-1 … 2	V 2 0 2	
-1 … 4	V 4 0 2	
-1 … 10	V 1 0 3	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
Intrinsic safety 4 … 20 mA / 2-wire	E	
0 … 10 V / 3-wire	3	
customer	9	consult
Accuracy		
0.1%	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 [3]	T A 0	
Cable outlet [4]	T R 0	
Male plug M12x1 (4-pin) / metal	M 1 0	
Compact field housing stainless steel 1.4305 [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 (DIN 32676)	C 6 1	
Clamp DN 32 (DIN 32676)	C 6 2	
Clamp DN 50 (DIN 32676)	C 6 3	
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	
customer	9 9 9	consult
Diaphragm		
Stainless steel 1.4435 (316L)	1	
Hastelloy® C-276 (2.4819)	H	consult
Tantalum	T	consult
customer	9	consult
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		
silicon oil	1	
food compatible oil	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, price without cable
[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)

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DMP 331i / DMP331i LMP 331 i

Precision Pressure Transmitter / Screw-in 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
- 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 gauges (factory-provided)

The precision pressure transmitter DMP 331i and DMP 333i also the precision screw-in transmitter LMP 331i demonstrate the further development of our industrial pressure transmitters.

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

Preferred areas of use are DMP 331i / DMP 333i

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

Preferred areas of use are LMP 331i

- Chemical / petrochemical industry
- Environmental Engineering (water / sewage / recycling)

Pressure ranges DMP 331 i [1]								
Nominal pressure gauge / absolute	[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] On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.								

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

Pressure ranges DMP 333 i [1]						
Nominal pressure gauge / absolute	[bar]	60	100	200	400	600
Overpressure	[bar]	210	210	600	1000	1000
Burst pressure	[bar]	420	420	1000	1250	1250
[1] On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.						

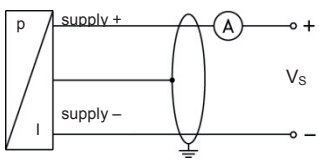
Pressure ranges LMP 331 i [1]								
Nominal pressure gauge / absolute	[bar]	0.4	1	2	4	10	20	40
Level gauge	[mH_2O]	4	10	20	40	100	200	400
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure	[bar]	3	7.5	15	25	80	120	210
[1] On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.								

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Options	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 3): ≤ ± [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] 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 x turn-down) % FSO / year
Response time	approx. 5 msec
Adjustability	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

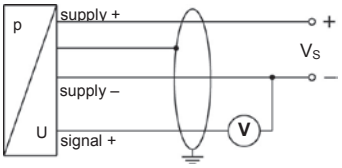
Materials	
Pressure port	stainless steel 1.4404 (316 L)
Housing	stainless steel 1.4404 (316 L)
Seals	DMP 331i / LMP 331i: FKM DMP 333i: NBR optional: welded version [6] others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm
[6] welded version only with pressure ports according to EN 837; welded version not available with pressure ranges ≤ 0.16 bar and > 40 bar	
Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec.
Explosion protection (only for 4 ... 20 mA / 2-wire)	
Approvals DX19-DMP 331i DX19-DMP 333i DX19-LMP 331i	**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 ≈ 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 ... 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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [8]
ATEX Directive	94/4/EG
[7] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges P_N ≤ 1 bar. *[8] This directive is only valid for devices with maximum permissible overpressure > 200 bar*	

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



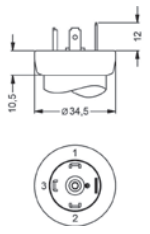
Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/ metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	3	3	IN +	wh (white)
Supply –	2	4	1	1	IN –	bn (brown)
Signal + (only for 3-wire)	3	1	6	-	OUT +	gn (green)
shield	ground pin	5	2	4	⏚	ye/gn (yellow / green)
Communication interface [9] RxD	-	-	4	-	-	-
TxD	-	-	5	-	-	-
GND	-	-	7	-	-	-

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

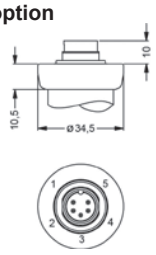
Electrical connections (dimensions in mm)

standard

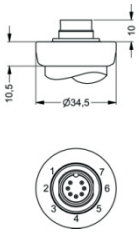


ISO 4400
(IP 65)

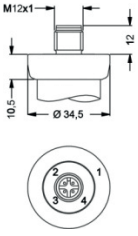
option



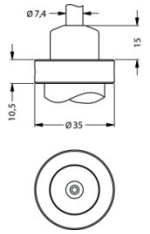
Binder Series 723 5-pin
(IP 67)



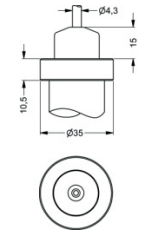
Binder Series 723 7-pin
(IP 67)



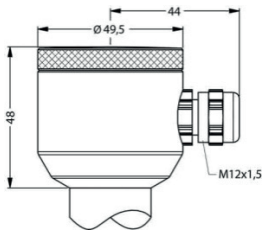
M12x1 4-pin
(IP 67)



cable outlet with ventilation tube
(IP 68) [10]



cable outlet with PVC cable
(IP 67) [11]

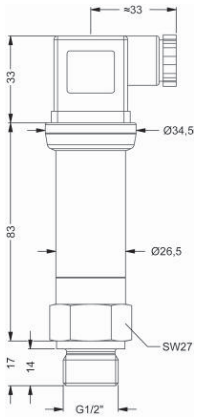


compact field housing
(IP 67)

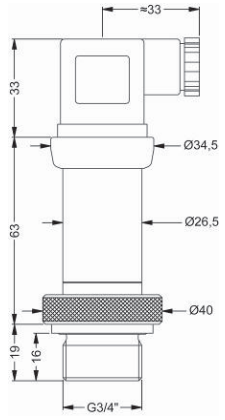
[10] *different cable types and lengths available, permissible temperature depends on kind of cable*
[11] *standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)*

Mechanical connection (dimensions in mm)

standard **DMP 331 i / DMP 333 i *** **LMP 331 i**



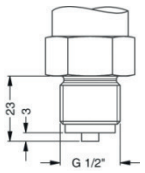
G1/2" DIN 3852



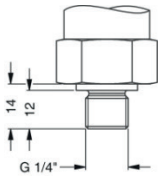
G3/4" DIN 3852

*** for nominal pressure P_N > 400 bar increases the length of DMP 333i without IS-version by 19 mm and of DMP 333i with IS-version by 39 mm**

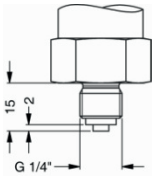
option for DMP 331 i and DMP 333 i



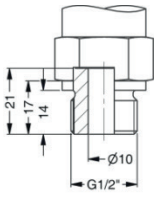
G1/2" EN 837



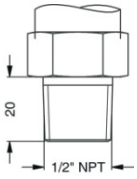
G1/4" DIN 3852



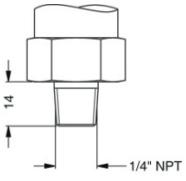
G1/4" EN 837



G1/2" open port



1/2" NPT



1/4" NPT

⇨ **metric threads and others on request**

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DMP 331i / DMP 333i / LMP 331i

Ordering Code

DMP 331i/ DMP 333i/ LMP 331i □□□-□□□□-□-□-□□□-□□□-□-□□□

Option	Code	
Pressure		
For DMP 331i		
gauge	1 1 0	
absolute	1 1 1	
For DMP 333i		
gauge [1]	1 3 0	
absolute	1 3 1	
For LMP 331i		
in bar	4 3 0	
in mH_2O	4 3 1	
Input [mH_2O] [bar]		
For DMP 331i [2] or LMP 331i		
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	
For DMP 333i [2]		
60	6 0 0 2	
100	1 0 0 3	
200	2 0 0 3	
400	4 0 0 3	
600	6 0 0 3	
For DMP 331i		
-0.40 … 0.40	S 4 0 0	
-1 … 1	S 1 0 2	
-1 … 2	V 2 0 2	
-1 … 4	V 4 0 2	
-1 … 10	V 1 0 3	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
Intrinsic safety 4 … 20 mA / 2-wire	E	
0 … 10 V / 3-wire	3	
customer	9	consult
Accuracy (at nominal pressure)		
0.1 %	1	
customer	9	consult
Electrical connection		
Male and female plug ISO 4400	1 0 0	
Male plug Binder series 723 (5-pin)	2 0 0	
Compact field housing stainless steel 1.4404 (316L)	8 5 0	
Male and female plug Binder series 723 (7-pin)	A 0 0	
Male plug M12x1 (4-pin) / metal	M 1 0	
Cable outlet with PVC cable [3]	T A 0	
Cable outlet [4]	T R 0	
customer	9 9 9	consult
Mechanical connection		
For DMP 331i or DMP 333i		
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, 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	
For LMP 331i		
G3/4" DIN 3852 with flush sensor	K 0 0	
customer	9 9 9	consult
Seals		
For DMP 331i or LMP 331i		
FKM	1	
without (welded version) [7]	2	
For DMP 333i		
NBR	5	
customer	9	consult
Special version		
standard	1 1 1	
RS-232 interface [8]	1 2 1	
customer	9 9 9	consult

[1] measurement starts with ambient pressure
[2] pressure ranges ≤ 40 bar as DMP 331i; pressure ranges > 40 bar as DMP 333i
[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C), optionally cable with ventilation tube
[4] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable
[5] Mechanical connection G1/2" DIN 3852 flush impossible for vacuum ranges
[6] only possible for DMP 331i
[7] welded version only with pressure ports according to EN 837; not possible with pressure ranges ≤ 0.16 bar and > 40 bar
[8] RS-232 interface only possible with el. connection Binder serie 723 (7pin)
Software, Interface and cable for DMP 331i, DMP 333i and LMP 331i 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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This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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
- SIL 2 application according to IEC 61508 / IEC 61511
- 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 gases, pressurized air and non-aggressive low viscos oils.

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

Preferred areas of use are

- Plant and Machine Engineering
- Heating and Air Conditioning

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

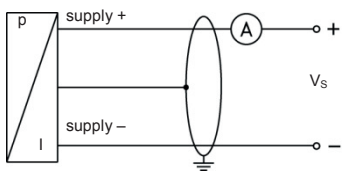
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [1]	standard: ≤ ± 0.35 % FSO nominal pressure ≤ 100 mbar: ≤ ± 0.50 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S – V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	

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

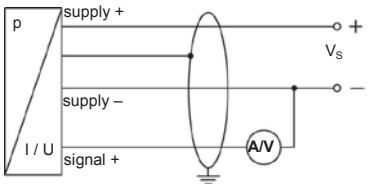
Permissible temperatures	
Permissible temperatures	medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27
Materials	
Pressure port	stainless steel 1.4404 (316L)
Housing	stainless steel 1.4404 (316L)
Seals (media wetted)	FKM
Sensor	stainless steel 1.4404 (316L), silicon, epoxy or RTV, mineral glass
Media wetted parts	pressure port, seals, sensor
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approvals DX19-DMP 343	**IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X** zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF opposite the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -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 SIL 2 application	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
CE-conformity	EMC Directive: 2004/108/EC
ATEX Directive	94/4/EG

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

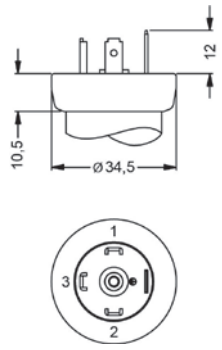


Pin configuration

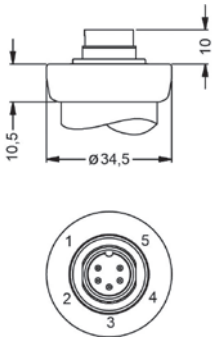
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN -	bn (brown)
Signal + (only for 3-wire)	3	1	3	OUT+	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

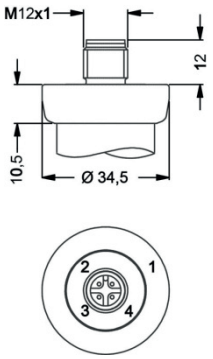
standard **option**



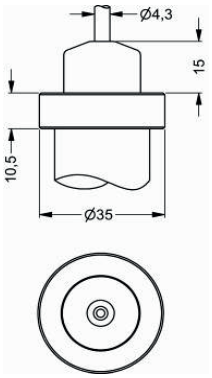
ISO 4400
(IP 65)



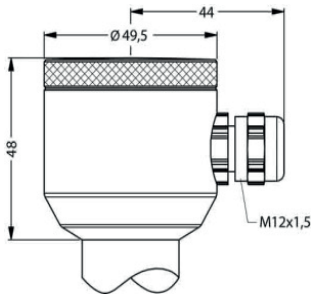
Binder Series 723 5-pin
(IP 67)



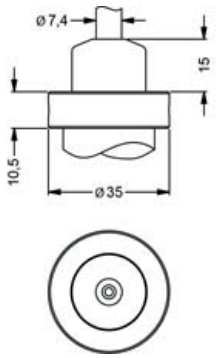
M12x1 4-pin
(IP 67)



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



compact field housing
(IP 67)



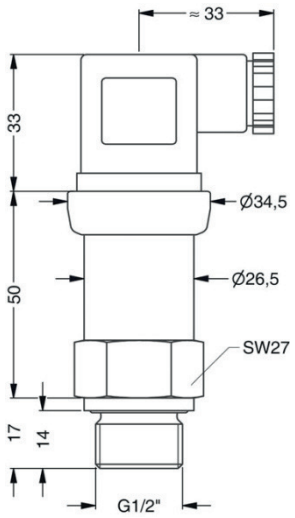
cable outlet, cable with ventilation tube
(IP 68) [3]

⇨ **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*

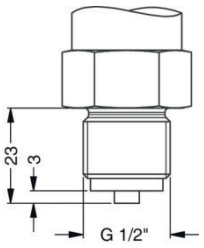
Mechanical connection (dimensions in mm)

standard

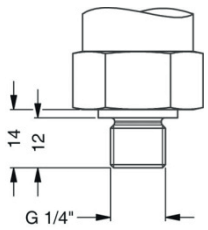


G1/2" DIN 3852
with ISO 4400

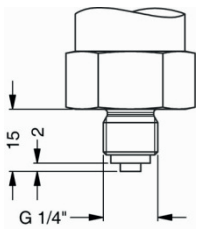
option



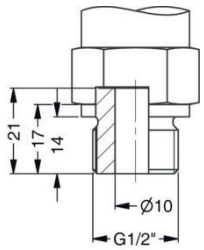
G1/2" EN 837



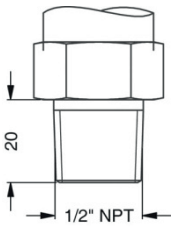
G1/4" DIN 3852



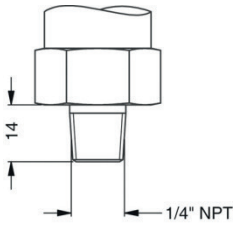
G1/4" EN 837



G1/2" open port



1/2" NPT



1/4" NPT

⇨ metric threads and others on request

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

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 %				3				
standard for P_N ≤ 100 mbar 0.5 %				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 [1]					T A 0			
Cable outlet [2]					T R 0			
Male plug M12x1 (4-pin) / metal					M 1 0			
Compact field housing stainless steel 1.4305					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), optionally cable with ventilation tube
[2] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable
[3] metric threads and others on request

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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 ... 40 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
- pressure sensor welded
- 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 / abs.	[bar]	-1…0	0.10	0.16	0.25	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						

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA /	V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA /	V_S = 10 ... 28 V_{DC}
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:	≤ ± 0.5 % 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:	≤ ± 0.1 % 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
[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 1.4305 (303), cable gland brass, nickel plated	others on request
Seals (media wetted)	standard: FKM options: EPDM NBR welded version [2]	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		

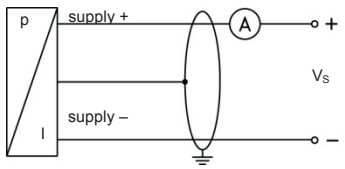
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approvals DX19-DMP 331	**IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X** zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections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

Miscellaneous			
Option SIL[3] 2	according to IEC 61508 / IEC 61511		
Current consumption	signal output current: max. 25 mA	signal output voltage:	max. 7 mA
Weight	approx. 140 g		
Installation position	any[4]		
Operational life	> 100 x 10^6 pressure cycles		
CE-conformity	EMC Directive: 2004/108/EC		
ATEX Directive	94/4/EG		

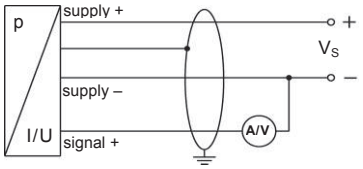
[3] only for 4 … 20 mA / 2-wire, not in combination with the accuracy 0.1%
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $P_N \leq 1$ bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

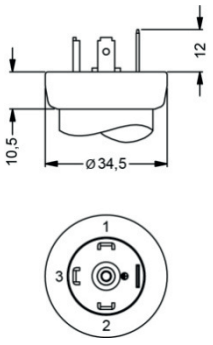


Pin configuration

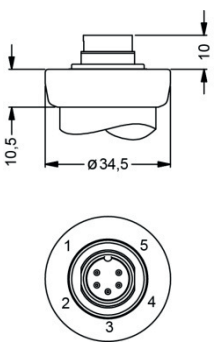
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN -	bn (brown)
Signal + (for 3-wire)	3	1	3	OUT+	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

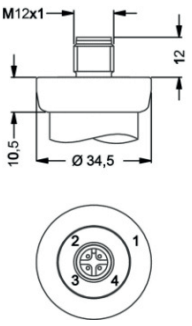
standard **option**



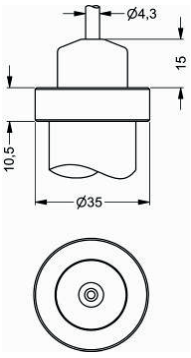
ISO 4400
(IP 65)



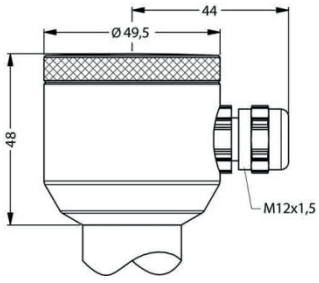
Binder Series 723 5-pin
(IP 67)



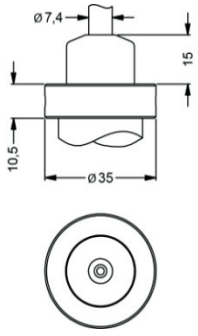
M12x1 4-pin
(IP 67)



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



compact field housing
(IP 67)



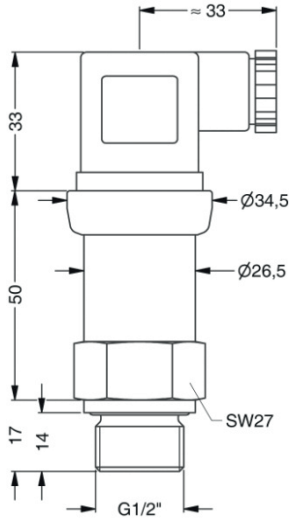
cable outlet, cable with ventilation tube
(IP 68) [6]

⇨ **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

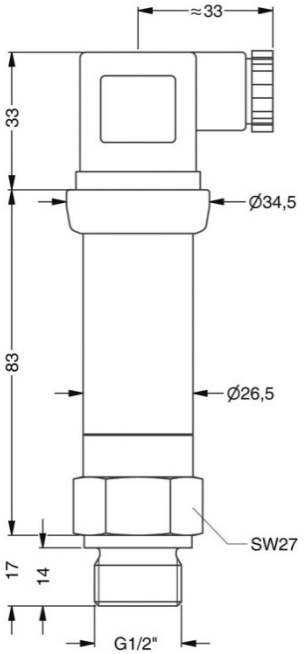
Mechanical connections (dimensions in mm)

standard for accuracy 0.35 / 0.25 %



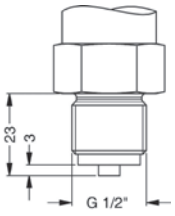
G1/2" DIN 3852
with ISO 4400

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

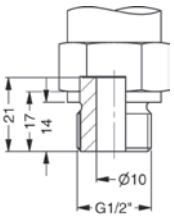


G1/2" DIN 3852
with ISO 4400

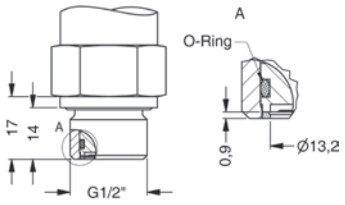
option



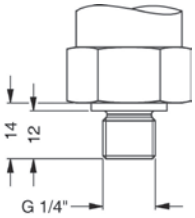
G1/2" EN 837



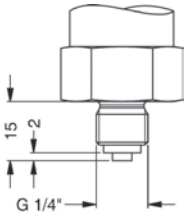
G1/2" open port



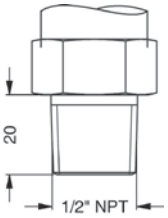
G1/2" DIN 3852
with flush sensor



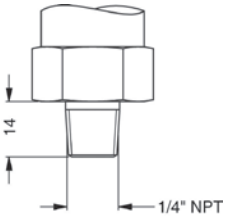
G1/4" DIN 3852



G1/4" EN 837



1/2" NPT



1/4" NPT

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

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

DMP 331

Ordering Code

DMP 331 □□□-□□□□-□-□-□□□-□□□-□-□-□□□

Pressure																							
gauge		1	1	0																			
absolute		1	1	1																			
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															
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 %									3													
standard for $P_N < 0.4$ bar	0.5 %									5													
option 1 for $P_N \geq 0.4$ bar	0.25 %									2													
option 2	0.1 % [1]									1													
customer										9													consult
Electrical connection																							
Male and female plug ISO 4400											1	0	0										
Male plug Binder series 723 (5-pin)											2	0	0										
Cable outlet with PVC cable [2]											T	A	0										
Cable outlet [3]											T	R	0										
Male plug M12x1 (4-pin) / metal											M	1	0										
Compact field housing stainless steel 1.4305											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														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																	3						
NBR																	5						
without (welded version) [4]																	2						
customer																	9						consult
Special version																							
standard																		0	0	0			
customer																		9	9	9			consult

[1] not in combination with SIL

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

[3] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

[4] welded version only with pressure ports according to EN 837

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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 ... 60 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]	60	100	160	250	400	600
Overpressure	[bar]	210	600	600	1000	1000	1000
Burst pressure ≥	[bar]	420	1000	1000	1250	1250	1250
[1] measurement starts with ambient pressure							

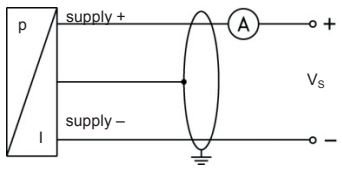
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [2]	standard: ≤ ± 0.35 % FSO option 1: ≤ ± 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} = 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)	
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 1.4305 (303), cable gland brass, nickel plated others on request
Seals (media wetted)	standard: FKM options: EPDM (for P_N ≤ 160 bar) NBR 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: 1µH/m

Miscellaneous			
Option SIL[3] 2	according to IEC 61508 / IEC 61511		
Current consumption	signal output current: max. 25 mA	signal output voltage:	max. 7 mA
Weight	approx. 140 g		
Installation position	any[4]		
Operational life	> 100 x 10^6 pressure cycles		
CE-conformity	EMC Directive: 2004/108/EC	Pressure Equipment Directive: 97/23/EC (module A)[5]	
ATEX Directive	94/4/EG		

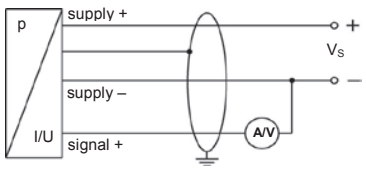
[3] only for 4 … 20 mA / 2-wire, not in combination with the accuracy 0.1%
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down.
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

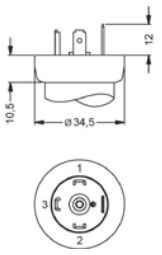


Pin configuration

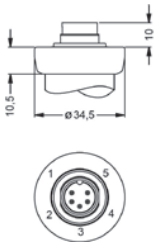
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN –	bn (brown)
Signal + (only for 3-wire)	3	1	3	OUT +	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

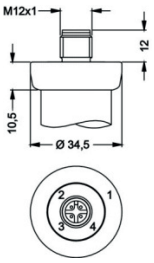
standard **option**



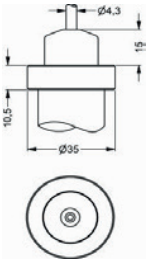
ISO 4400
(IP 65)



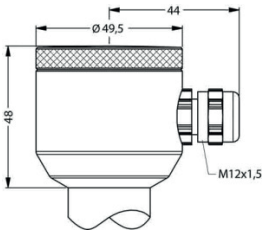
Binder Series 723 5-pin
(IP 67)



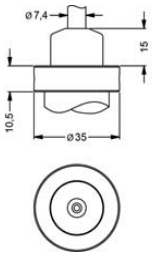
M12x1 4-pin
(IP 67)



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



compact field housing
(IP 67)



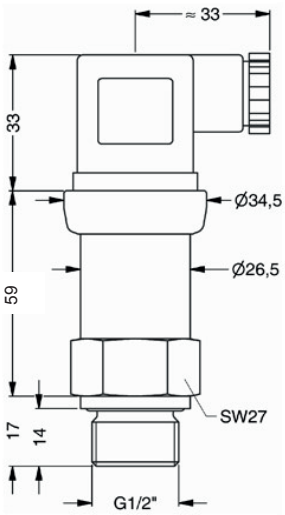
cable outlet,
cable with ventilation tube
(IP 68)[7]

⇨ **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

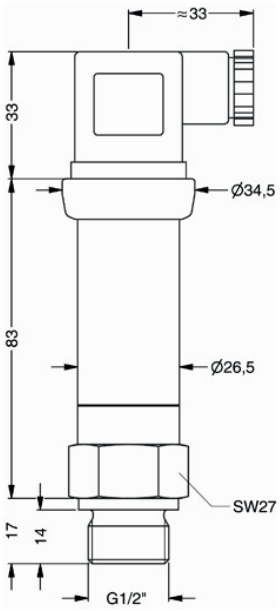
Mechanical connections (dimensions in mm)

standard for accuracy 0.35 / 0.25 %



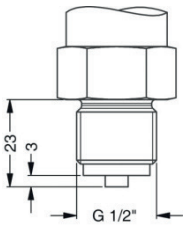
G1/2" DIN 3852
with ISO 4400

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

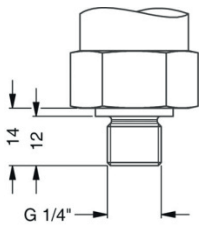


G1/2" DIN 3852
with ISO 4400

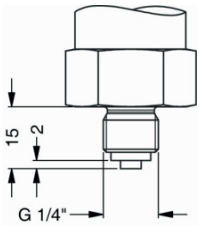
option



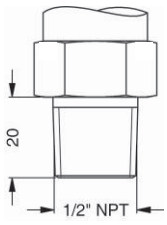
G1/2" EN 837



G1/4" DIN 3852



G1/4" EN 837



1/2" NPT

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

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

DMP 333 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

	Pressure	Input	Output	Accuracy	Electrical connection	Mechanical connection	Seals	Special version	
Pressure									
gauge [1]	1 3 0								
absolute	1 3 1								
Input [bar]									
60		6 0 0 2							
100		1 0 0 3							
160		1 6 0 3							
250		2 5 0 3							
400		4 0 0 3							
600		6 0 0 3							
customer		9 9 9 9							consult
Output									
4 … 20 mA / 2-wire			1						
0 … 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 %				3					
option 1 0.25 %				2					
option 2 0.10 % [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 [3]					T A 0				
Cable outlet [4]					T R 0				
Male plug M12x1 (4-pin) / metal					M 1 0				
Compact field housing stainless steel 1.4305					8 5 0				
customer					9 9 9				consult
Mechanical connection									
G1/2" DIN 3852						1 0 0			
G1/2" EN 837						2 0 0			
G1/4" DIN 3852						3 0 0			
G1/4" EN 837						4 0 0			
1/2" NPT						N 0 0			
customer						9 9 9			consult
Seals									
FKM							1		
EPDM [5]							3		
NBR							5		
customer							9		consult
Special version									
standard								0 0 0	
customer								9 9 9	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), optionally without ventilation tube
[4] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, permissible temperature depends on kind of cable, price without cable
[5] possible for nominal pressure ranges $P_N \leq 160$ bar

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet.
Subject to change without notice.

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:

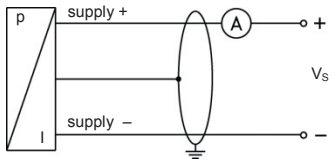
- Plant and Machine Engineering
  - especially conveyor plants and dosing systems
- Hydraulics

Input pressure range [1]							
Nominal pressure gauge / abs.	[bar]	60	100	160	250	400	600
Overpressure	[bar]	210	210	600	600	1050	1050
Burst pressure ≥	[bar]	300	300	1100	1100	1500	1500
[1] Nominal pressure P_N < 60 bar on request							

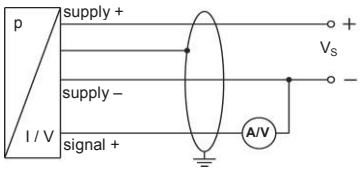
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [2]	≤ ± 0.35 % FSO
Permissible load	current 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
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (Offset and Span)	
Tolerance band	≤ ± 1 % FSO
in compensated range	-20 ... 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 1.4305 (303), cable gland brass, nickel plated others on request
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
Permissible temperatures for environment	-20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m
Miscellaneous	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 120 g
Installation position	any [3]
Operational life	> 100 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [4]
ATEX Directive	94/4/EG
[3] Pressure transmitters are calibrated in a vertical position with the pressure connection down. *[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar*	

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

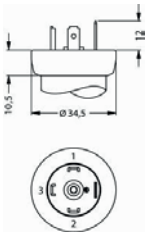


Pin configuration

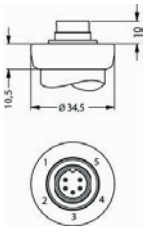
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / Metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN –	bn (brown)
Signal + (for 3-wire)	3	1	3	OUT +	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

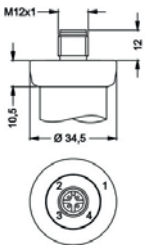
standard **option**



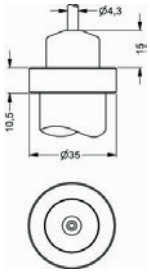
ISO 4400
(IP 65)



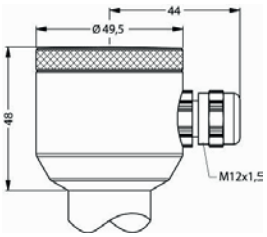
Binder Series 723
5-pin (IP 67)



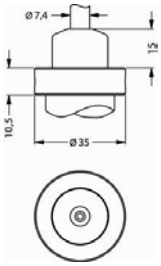
M12x1
4-pin (IP 67)



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



compact field housing
(IP 67)

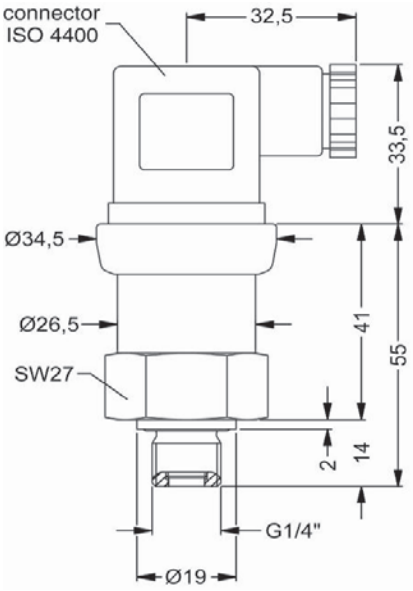


cable outlet,
cable with ventilation tube (IP 68)[6]

⇨universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 metal (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)



G1/4" flush DIN 3852

DMP 339 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Option	Code	
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	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 %	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 [2]	T A 0	
Cable outlet [3]	T R 0	
Male plug M12x1 (4-pin) / metal	M 1 0	
Compact field housing stainless steel 1.4305 (303)	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] 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

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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 stainless steel welded pressure sensor without fluid.

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

Bevorzugte Anwendungsgebiete

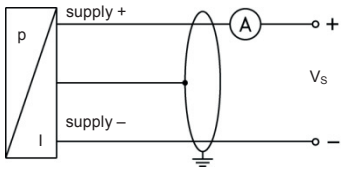
- Medical Technology
- Plant and Machine Engineering
- Mobile Hydraulics
- Refrigeration
- Oxygen application

Input pressure range												
Nominal pressure gauge	[bar]	6	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	14	35	35	70	140	140	350	350	700	1200	1200
Burst pressure ≥	[bar]	35	85	85	175	350	350	850	850	1750	2100	2100
Vacuum resistance		unlimited										

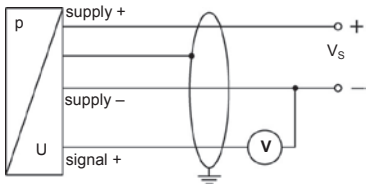
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-version	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Option 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [1]	≤ ± 0.5 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ 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 1.4305 (303), cable gland brass, nickel plated others on request
Seals (media wetted)	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 bei p_{atm} 0.8 bar up to 1.1 bar in zone 1: -20 ... 70 °C
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [2]
ATEX Directive	94/4/EG
[2] This directive is only valid for devices with maximum permissible overpressure > 200 bar	

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)

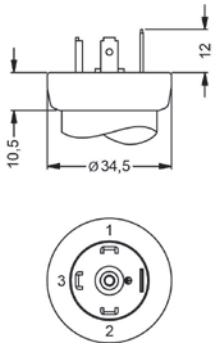


Pin configuration

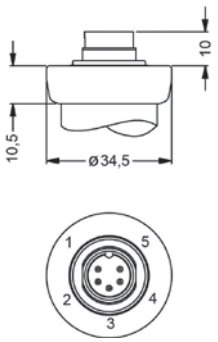
Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN –	bn (brown)
Signal + (only for 3-wire)	3	1	3	OUT +	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

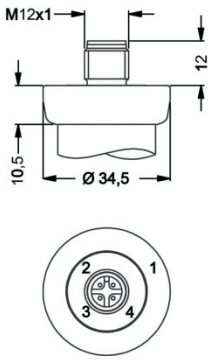
standard **option**



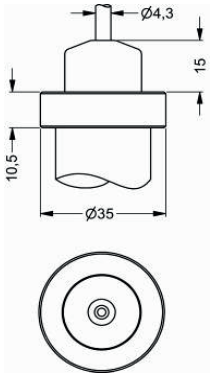
ISO 4400
(IP 65)



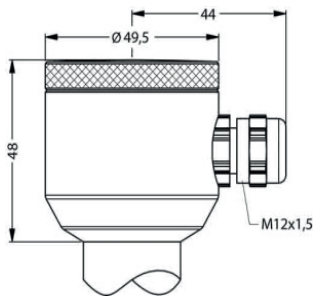
Binder series 723 5-pin
(IP 67)



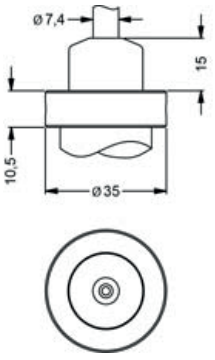
M12x1 4-pin
(IP 67)



cable outlet with PVC cable
(IP67) [3]



compact field housing
(IP 67)



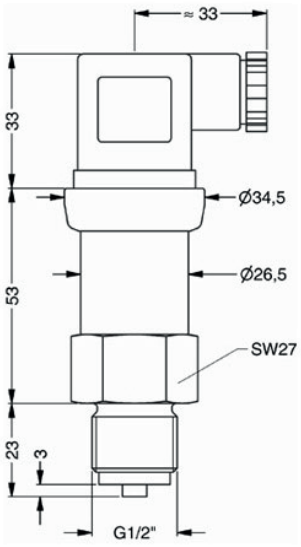
cable outlet,
cable with ventilation tube
(IP 68) [4]

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

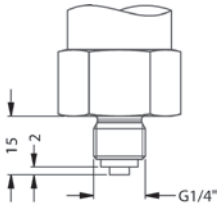
[3] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)*
[4] *different cable types and lengths available, permissible temperature depends on kind of cable*

Mechanical connections (dimensions in mm)

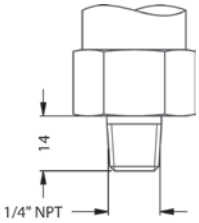
standard **option**



G1/2" EN 837



G1/4" EN 837



1/4" NPT

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

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

DMP 335

Ordering Code

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 %									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 [1]										T	A	0							
Cable outlet with cable [2]										T	R	0							
Male plug M12x1 (4-pin) / metal										M	1	0							
Compact field housing stainless steel 1.4305										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] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, permissible temperature depends on kind of cable; price without cable

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 tp 0 ... 2200 bar

Analogue output

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

Special characteristics

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

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, that is welded with the pressure port and meets high demands of and reliability.

All of characteristics and the excellent mesurement 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.

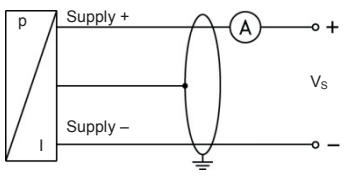
Preferred areas of use are

- Plant and Machine Engineering
- Commercial Vehicles and Mobile Hydraulics

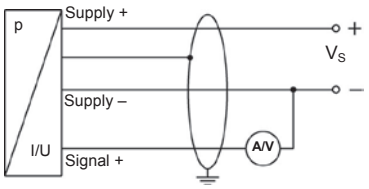
Input pressure range						
Nominal pressure gauge	[bar]	600 [1]	1000	1600	2000	2200
Overpressure	[bar]	800	1400	2200	2800	2800
[1] only available with pressure port G1/2“ EN 837						
Output signal / Supply						
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}					
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}					
Option 3-wire	3-wire: 0 ...10 V / V_S = 14 ... 36 V_{DC}					
Performance						
Accuracy	≤ ± 0.35 % FSO IEC 60770 [2]					
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					
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: -25 ... 85 °C		storage: -40 ... 100 °C	
Electrical protection						
Short-circuit protection	permanent					
Reverse polarity protection	no damage, but also no function					
Electromagnetic compatibility	emission and immunity according to EN 61326					
Mechanical stability						
Vibration	10 g RMS (20 ... 2000 Hz)					
Shock	100 g / 11 msec.					
Materials						
Pressure port	stainless steel 1.4542 (17-4 PH)					
Housing	standard: stainless steel 1.4404 (316L) field housing: stainless steel 1.4404 (316L), cable gland: brass, nickel plated					
Seals (media wetted)	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)						
Approval DX13-DMP 334	TÜV 03 ATEX 2006 X zone 0: II 1G EEx ia IIC T4 zone 20: II 1D EEx tD A20 IP65 T 85°C					
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≤ 1nF, L_i ≤ 10 µH					
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -25 ... 70 °C					
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance:signal line/shield also signal line/signal line: 1µH/m					
Miscellaneous						
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA					
Weight	approx. 200 g					
Installation position	any					
CE-conformity	EMC Directive: 2004/108/EC			Pressure Equipment Directive: 97/23/EC (module A)		

Wiring diagrams

2-wire-system (current)



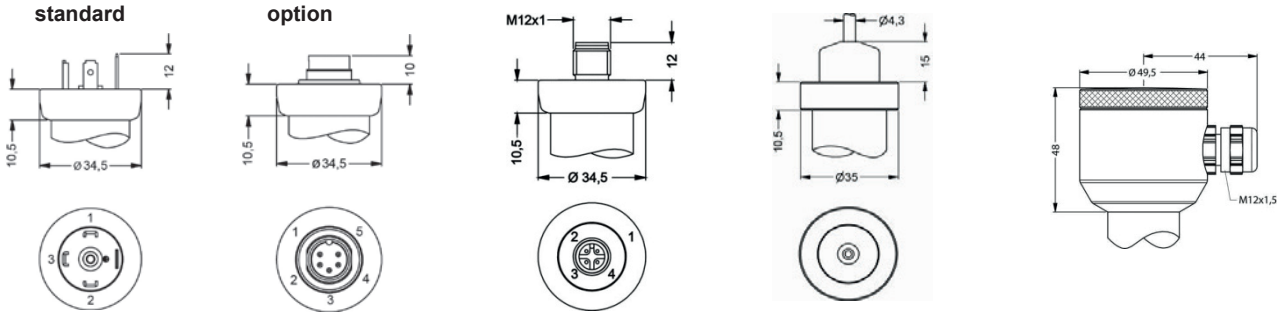
3-wire-system (current / voltage)



Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	Field housing	Cable colours (DIN 47100)
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	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

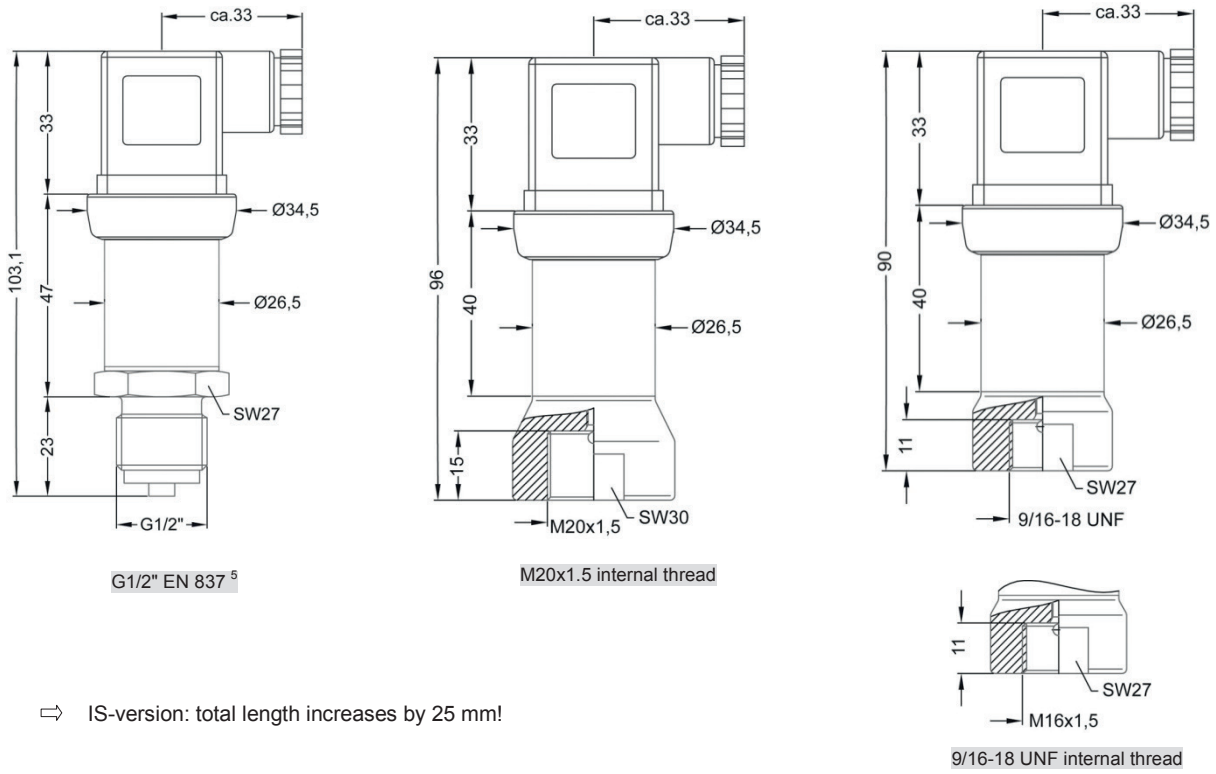


ISO 4400 (IP 65) | Binder series 723 (IP 67) | M12x1 4-pin (IP 67) | cable outlet (IP 67) [3] with PVC cable | compact field housing(IP 67)

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

Mechanical connection (dimensions in mm)

standard [4] **option [4]**



G1/2" EN 837 [5] | M20x1.5 internal thread

⇨ IS-version: total length increases by 25 mm!

9/16-18 UNF internal thread

[4] *adjustable version is not possible in combination with IS-version, compact field housing and cable outlet*
[5] *According to EN 837, the pressure port and the complement at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of R_P > 260 N/mm² in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!*

DMP 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 %	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 [2, 3]	T A 0	
Male plug M12x1 (4-pin) / metal	M 1 0	
Comapct field housing stainless steel 1.4404 (316L)	8 5 0	
customer	9 9 9	consult
Mechanical connection		
G1/2" EN 837 [4]	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) [5]	0 4 1	
only for IS version	0 0 0	
customer	9 9 9	consult

[1] only available with pressure port G1/2" EN 837
[2] different cable types and lengths deliverable
[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C), optionally cable with ventilation tube
[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!
[5] 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 (on request)

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 = intrinsically safe for gases
- 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 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

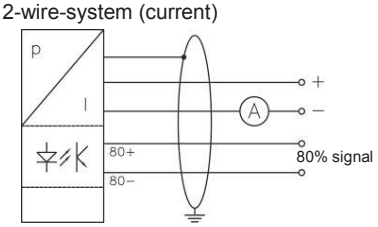
- hydraulic circuits
- water jet torching
- high pressure applications in chemical and petrochemical industry

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

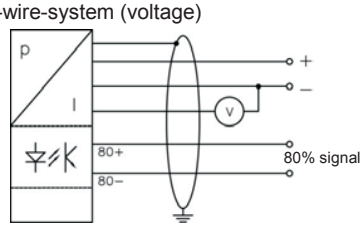
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 10 ... 30 V_{DC}
IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Option 3-wire (on request)	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}
Performance	
Accuracy[1]	standard: ≤ ± 0.50 % FSO option: ≤ ± 0.25 % FSO (on request)
Permissible 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
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	standard: stainless steel 1.4301 (304)
Seals (media wetted)	none (welded version)
Media wetted parts	pressure port, diaphragm
IS-protection (only for 4 ... 20 mA / 2-wire)	
Approval DX17-DMP 304	zone 0: II 1G Ex ia IIC T4
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW
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
Installation position	any
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A)

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



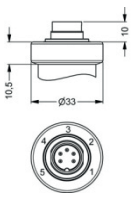
Pin configuration

Electrical connections	Binder 723 (5-pin)	M12x1 (4-pin)	ISO 4400	cable colours (DIN 47100)
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	gn/ye (green / yellow)

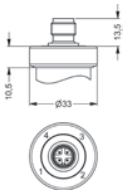
Pin configuration MIL / Bendix plug (optional)

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 +

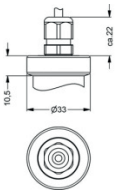
Electrical connections (dimensions in mm)



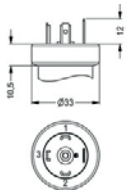
Binder series 723 (IP 67)



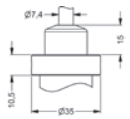
M12x1 4-pin (IP 67)



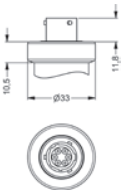
cable outlet with PVC-cable (IP 67)[2]



ISO 4400 (IP 65)



cable outlet (IP 67)[3]

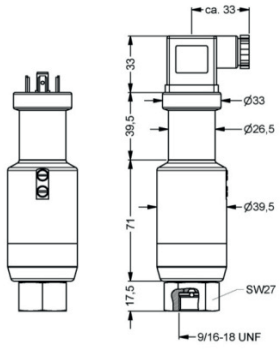


MIL / Bendix plug (Typ PT 02 A 10-6 P)

[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*

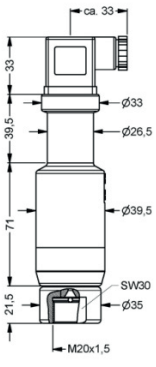
Mechanical connections (dimensions in mm)

Standard

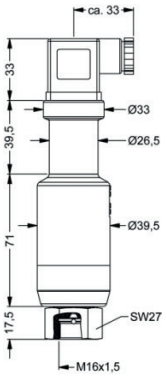


9/16“ UNF internal thread

Option



M20x1,5 internal thread



M16x1,5 internal thread

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DMP 304

Ordering Code

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										consult
	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 (Typ 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

[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
  Ex ia = intrinsically safe for gases and dusts
- 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

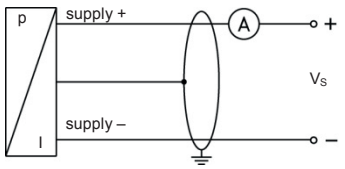
- Fuel and Oil
- Water

Pressure ranges																
Nominal pressure	[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
Low pressure	[bar]	-0.2		-0.3		-0.5				-1						

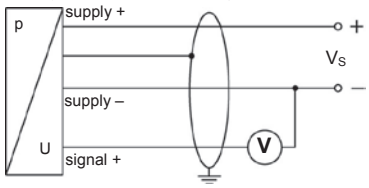
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}	
Option IS-protection	2-wire : 4 ... 20 mA / V_S = 14 ... 28 V_{DC} Option 3-wire: 0 ... 10 V / V_S = 12.5 ... 32 V_{DC}	
Performance		
Accuracy [1]	standard: ≤ ± 0.35 % FSO option for P_N ≥ 0.6 bar: ≤ ± 0.25 % FSO	
Permissible load	current 2-wire $R_{max} = [(V_S - V_{Smin}) / 0.02\ A]\ \Omega$	voltage 3-wire: R_{min} = 10 k Ω
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.1 % FSO / year	
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, hysterisis, 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	stainless steel 1.4404 (316L)	
Housing	stainless steel 1.4404 (316L)	
Option compact field housing	stainless steel 1.4305 (303) with cable gland brass, nickel plated	others on request
Seal (media wetted)	FKM EPDM	
Diaphragm	standard: ceramics Al_2O_3 96 % option: ceramics Al_2O_3 99.9 %	
Media wetted parts	pressure port, seals, diaphragm	
IS-protection (only for 4 … 20 mA / 2-wire)		
Approval DX 14-DMK 351	IBExU 05 ATEX 1070 X Male (connector)-version: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex iaD 20 T 85°C cable-version: zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex iaD 20 T 85°C	
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	
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	
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		
Installation position	any	
Current consumption	signal output current: max. 21 mA	signal output voltage: max. 5 mA
Weight	min. 200 g	
Operational life	> 100 x 10^6 loading cycles	
CE-conformity	EMC-directive: 2004/108/EC	
ATEX Directive	94/9/EC	

Wiring diagram

2-wire-system (current)



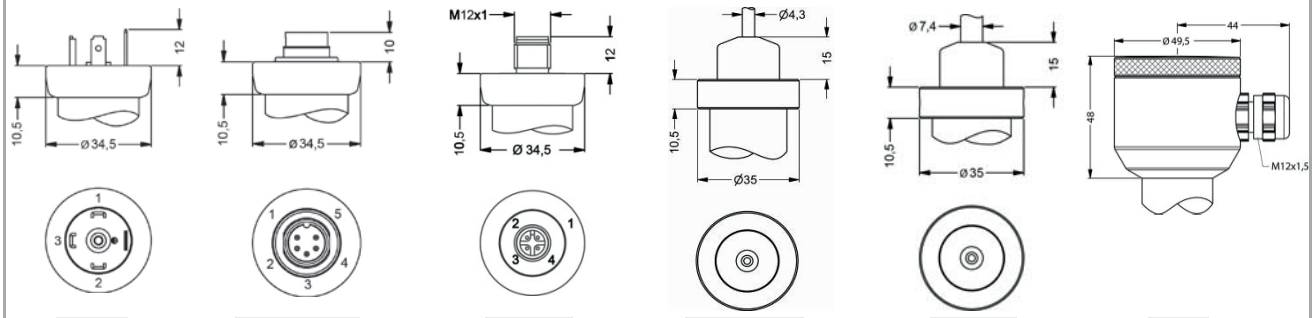
3-wire-system (current / voltage)



Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	field housing	cable colours (DIN 47100
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN –	bn (brown)
Signal +	3	1	3	OUT +	gn (green)
Shield	ground contact	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

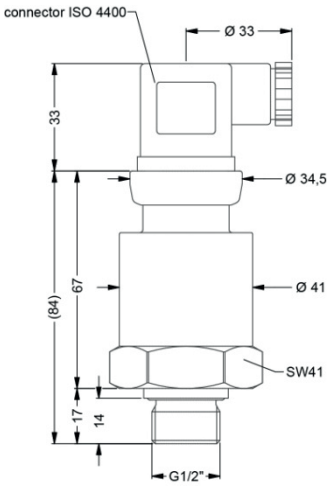


ISO 4400 (IP 65) | Binder series 723 (IP 67) | M12x1 4-pin (IP 67) | cable outlet with PVC-cable (IP 67) [2] | cable outlet, cable with ventilation tube (IP 68) [3] | compact field housing (IP 67)

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

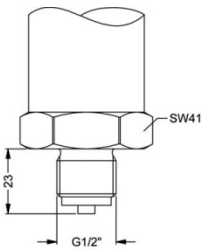
Dimensions (in mm)

standard

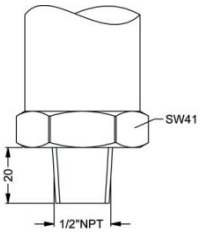


G1/2" DIN 3852

option



G1/2" EN 837



1/2" NPT

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

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

Option		Code	
Pressure			
in bar, gauge		2 9 0	
in bar, absolute		2 9 1	
in bar, sealed gauge			consult
in mH_2O, gauge		2 9 2	
in mH_2O, absolute		2 9 3	consult
in mH_2O, sealed gauge			consult
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	
Intrinsic safety 4 … 20 mA / 2-wire		E	
customer		9	consult
Accuracy			
standard	0.35 %	3	
option für $P_N \geq 0.6$ bar:	0.25 %	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 [1]		T A 0	
Cable outlet with cable		T R 0	
Male plug M12x1 (4-pin) / metal		M 1 0	
compact field housing stainless steel 1.4305		8 5 0	
customer		9 9 9	consult
Mechanical connection			
G1/2" DIN 3852		1 0 0	
G1/2" EN 837		2 0 0	
1/2" NPT		N 0 0	
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] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C), optionally cable with ventilation tube

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet.
Subject to change without notice.

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[2]
Nominal pressure abs.	[bar]	-	-	0.6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600[2]
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					

[1] PVDF pressure port possible for nominal pressure ranges up to 60 bar
[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-protection	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]	≤ ± 0.5 % 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

[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: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C

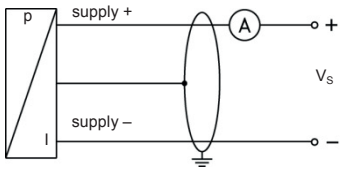
[4] for pressure port of PVDF the minimun temperature is -30 °C

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 1.4305 (303) with cable gland brass, nickel plated others on request
Seals (media wetted)	standard: FKM options: EPDM (for P_N ≤ 160 bar), NBR 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 Ga zone 21: II 2D 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	
Option SIL[5] 2	according to IEC 61508 / IEC 61511
Option oxygen application	for P_N ≤ 15 bar: O-ring in 70 EPDM 281 (with BAM-approval); permissible maximum values are 15 bar / 60° C and 10 bar / 90° C 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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [6]
ATEX Directive	94/4/EG

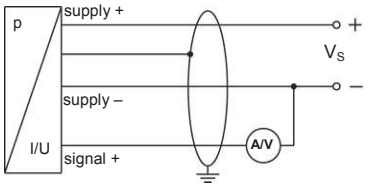
[5] only for 4 … 20 mA / 2-wire
[6] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

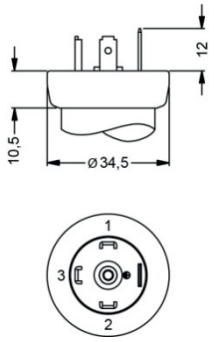


Pin configuration

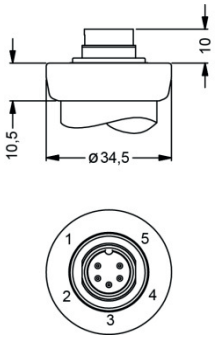
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN -	bn (brown)
Signal + (only for 3-wire)	3	1	3	OUT+	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

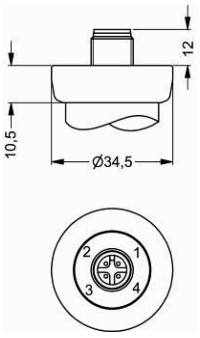
standard **option**



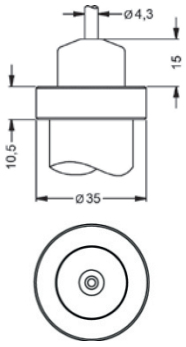
ISO 4400
(IP 65)



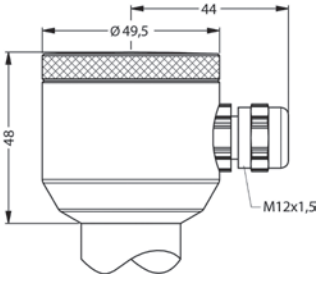
Binder Series 723 5-pin
(IP 67)



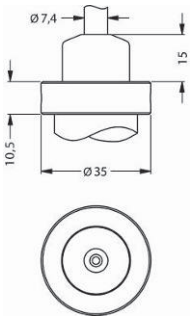
M12x1 4-pin
(IP 67)



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



compact field housing
(IP 67)



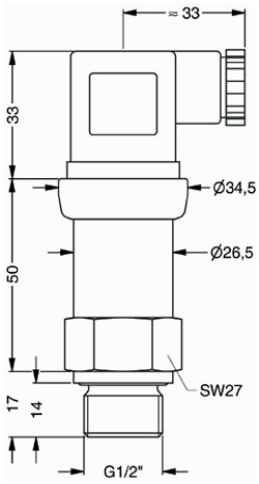
cable outlet,
cable with ventilation tube
(IP 68) [8]

⇨ **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*

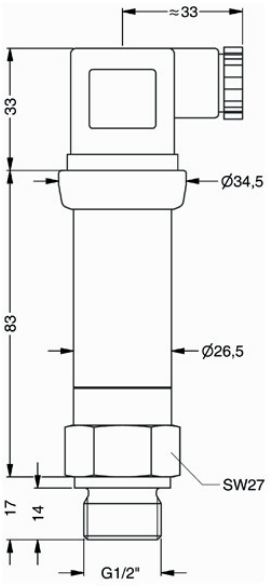
Mechanical connection (dimensions in mm)

standard



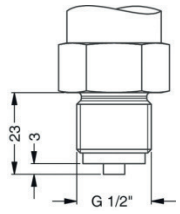
G1/2" DIN 3852
with ISO 4400

standard for SIL- and SIL-IS-version

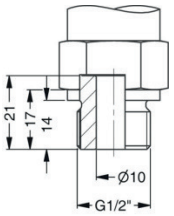


G1/2" DIN 3852
with ISO 4400

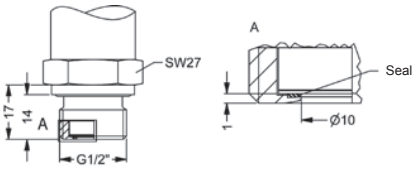
option



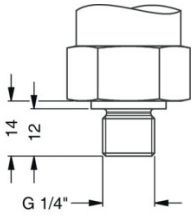
G1/2" EN 837



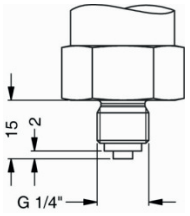
G1/2" open port



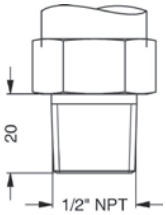
G1/2" semi-flush DIN 3852; M20x1.5 [9]



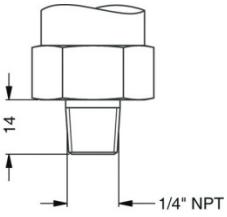
G1/4" DIN 3852



G1/4" EN 837



1/2" NPT



1/4" NPT

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

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

DMK 331 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Option	Code	
Pressure		
gauge	2 5 0	
absolute	2 5 1	
Input [bar]		
0.40	4 0 0 0	
0.60	6 0 0 0	
1.0	1 0 0 1	
1.6	1 6 0 1	
2.5	2 5 0 1	
4.0	4 0 0 1	
6.0	6 0 0 1	
10	1 0 0 2	
16	1 6 0 2	
25	2 5 0 2	
40	4 0 0 2	
60	6 0 0 2	
100	1 0 0 3	
160	1 6 0 3	
250	2 5 0 3	
400	4 0 0 3	
600	6 0 0 3	
-1 … 0	X 1 0 2	
customer	9 9 9 9	consult
Output		
4 … 20 mA / 2-wire	1	
0 … 20 mA / 3-wire	2	
0 … 10 V / 3-wire	3	
Intrinsic safety 4 … 20 mA / 2-wire	E	
SIL2 4 … 20 mA / 2-wire	1S	
SIL2 with Intrinsic safety 4 … 20 mA / 2-wire	ES	
customer	9	consult
Accuracy		
0.5 %	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 [1]	T A 0	
Cable outlet with cable	T R 0	
Male plug M12x1 (4-pin) / metal	M 1 0	
compact field housing stainless steel 1.4404 (316L)	8 5 0	
customer	9 9 9	consult
Mechanical connection [2]		
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 [3]	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 [4]	3	
NBR	5	
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)
[2] metric threads and others on request
[3] possible for nominal pressure ranges $P_N \leq 25$ bar; absolute pressure ranges 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 and with EPDM-seal up to 15 bar possible

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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

- shipping approvals
  GL (Germanischer Lloyd),
  DNV (Det Norske Veritas) and
  CCS (China Classification Society)
- flush pressure port
  G 1/2" from 100 mbar
- excellent thermal behavior

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 Germanischer Lloyd (GL), Det Norske Veritas (DNV) and China Classification Society (CCS) approvals.

Preferred areas of use are

Diesel Engines, Drives
Compressors, Pumps
Boiler
Hydraulic and Pneumatic Control Systems

Fuel and Oil

Input pressure range [1]											
Nominal pressure gauge	[bar]	-1 ... 0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure abs.	[bar]	-	0.10	0.16	0.25	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-protection	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] Ω		
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 - Germanischer Lloyd (GL) - Det Norske Veritas (DNV)		
Mechanical stability			
Vibration	4 g (according to GL: curve 2 / according to DNV: Class B / 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	for cable outlet	for submersible version	permissible temperatures
	PVC - cable	-	-5 … 70 °C
	PUR - cable	PUR - probe cable	-25 … 70 °C
		FEP - probe cable	-25 … 70 °C
		TPE - probe cable	-25 … 125 °C
Seals (media wetted)	standard: FKM option: NBR, 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*			
IS-protection			
Approvals DX 19-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, C_i = 105 nF, L_i = 5 µH, the supply connections have an inner capacity of max. 140 nF to the housing		
Permissible temperatures for environment	in zone 0: -20 ... 60 °C bei p_{atm} 0.8 bar bis 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		

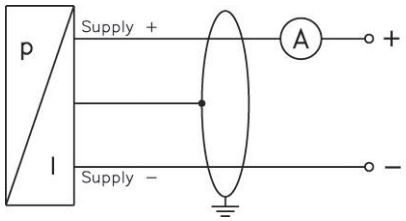
This document contains product specifications; properties are not guaranteed. Subject to change without notice.

Miscellaneous	
Current consumption	max. 25 mA
Weight	approx. 140 g (with ISO 4400)
Installation position	any [4]
Operational life	> 100 x 10^6 pressure cycles
CE-confomity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [5]
ATEX Directive	94/9/EC

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

Wiring diagram

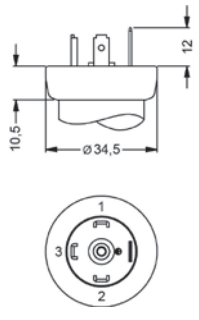
2-wire-system (current)



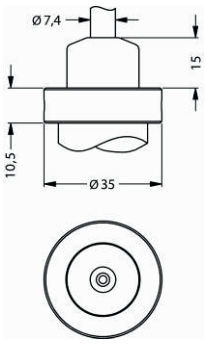
Pin configuration

Electrical connection	ISO 4400	field housing	cable colours (DIN 47100)
Supply +	1	IN +	wh (white)
Supply –	2	IN –	bn (brown)
Shield	ground pin	⏚	ye/gn (yellow / green)

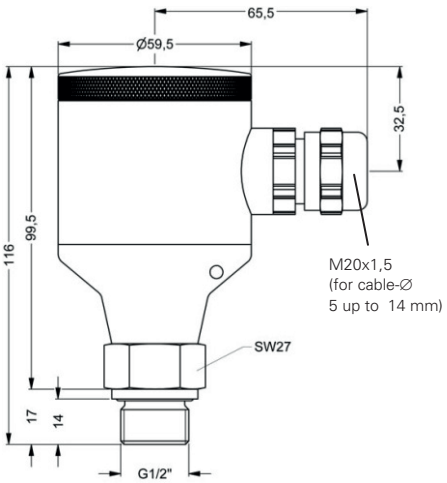
Electrical connections [6] (dimensions in mm)



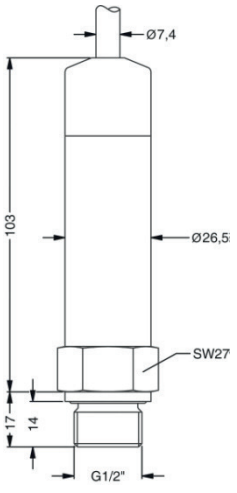
ISO 4400
(IP 65)



cable outlet
cable with air tube [7, 8] (IP 68)



universal field housing
(IP 67)

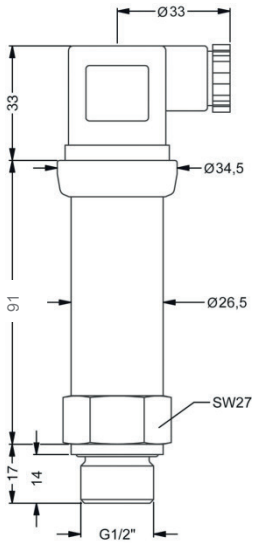


submersible version (IP 68) [8]

[6] Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.
[7] tested at 4 bar or 40 mH_2O for 24 hours
[8] different cable types and lengths available,permissible temperature depends on kind of cable, see cable connection

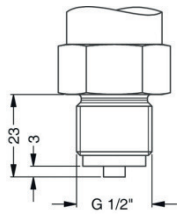
Mechanical connection (dimensions in mm)

Standard

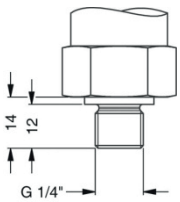


G1/2" DIN 3852

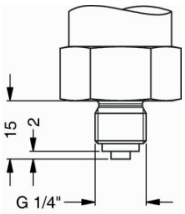
Option



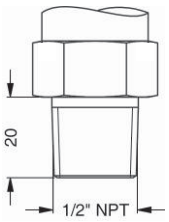
G1/2" EN 837



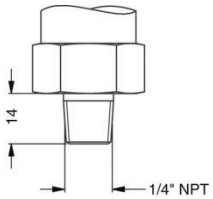
G1/4" DIN 3852



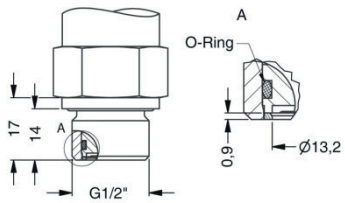
G1/4" EN 837



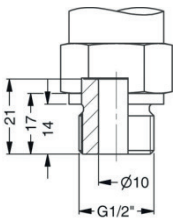
1/2" NPT



1/4" NPT



G1/2" flush DIN 3852
(up to 40 bar)



G1/2" open port DIN 3852
(up to 40 bar)

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

DMP 457 ☐☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐☐☐

		Code	
Pressure			
in bar, gauge [1]		6 0 0	
in bar, absolute		6 0 1	
in mH_2O, gauge [1]		6 0 2	
in mH_2O, absolute		6 0 3	
Input [mH_2O]	**[bar]**		
1	0.1	1 0 0 0	
1.6	0.16	1 6 0 0	
2.5	0.25	2 5 0 0	
4	0.4	4 0 0 0	
6	0.6	6 0 0 0	
10	1	1 0 0 1	
16	1.6	1 6 0 1	
25	2.5	2 5 0 1	
40	4	4 0 0 1	
60	6	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 %	3	
standard for $P_N < 0{,}4$ bar	0.50 %	5	
option for $P_N \geq 0{,}4$ bar	0.25 %	2	
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, 3] (for cable Ø 10...14 mm)		G 0 0	
Male and female plug ISO 4400 GL [2, 3] (for cable Ø 4,5...11 mm)		G 0 1	
Cable outlet [2, 4]		T R 0	
Field housing stainless steel		8 8 0	
Submersible version (1.4404 / 316L) with PUR cable [2, 4]		T T 1	
customer		9 9 9	consult
Mechanical connection			
G1/2" DIN 3852		1 0 0	
G1/2" EN 837		2 0 0	
G1/4" DIN 3852		3 0 0	
G1/4" EN 837		4 0 0	
G 1/2" DIN 3852 with flush sensor [5]		F 0 0	
G1/2" DIN 3852 open pressure port [5]		H 0 0	
1/2" NPT		N 0 0	
1/4" NPT		N 4 0	
customer		9 9 9	consult
Seals			
FKM		1	
NBR		5	
without (welded version) [6]		2	
customer		9	consult
Special version			
standard		0 0 0	
customer		9 9 9	consult

[1] from 60 bar: measurement starts with ambient pressure
[2] Shielded cable has to be used! Cable versions are delivered with shielded cable.
[3] female plug is GL-approbated
[4] different cable types and lengths deliverable
[5] possible up to 40 bar
[6] welded version only with pressure ports according to EN 837; possible with pressure ranges $P_N \leq 40$ bar

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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

- GL-shipping approval (Germanischer Lloyd)
- DVN-certificate (Det Norske Veritas)
- CCS-certificate (China Classification Society)
- high overpressure resistance
- excellent long term stability

Optionale Ausführungen

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

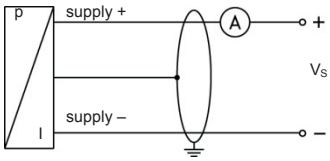
- Monitoring of pressure during loading and unloading processes
- Monitoring of a ship´s position and draught
- Use in anti-heeling systems
- Level measurement in ballast and storage tanks

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, sealed gauge and absolute; nominal pressure ranges sealed gauge and 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	
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 and Germanischer Lloyd (GL)	
Mechanical stability		
Vibration	4 g (according to GL: curve 2 / basis: DIN EN 60068-2-6)	
Materials		
Pressure port	standard: stainless steel 1.4404 (316 L) option for threaded connections: CuNi10Fe1Mn - on request	
Housing	stainless steel 1.4404 (316 L)	
Cable sheath for version cable outlet	PUR	
Cable gland for version field housing	absolute, sealed gauge: brass, nickel plated gauge: polyamide (with integrated pressure reference)	others on request
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	
IS protection		
Approval DX14A-DMK 458	IBExU 07 ATEX 1180 X field housing zone 0: II 1G Ex ia IIC T4 ISO 4400, M12x1, cable outlet: zone 0: II 1G Ex ia IIB T4	
Safety technical maximum values	U_i = 28 V; I_i = 93 mA; P_i = 660 mW field housing: C_i = 52.3 nF; L_i = 5 µH; 90.2 nF opposite GND ISO 4400, M12x1, cable outlet: C_i = 105 nF; L_i = 5 µH; 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	IP65, IP 67, IP68	
Installation position	any	
Current consumption	max. 21 mA	
Weight	min. 400 g (depending on housing and mechanical connection)	
Operational life	> 100 x 10^6 cycles	
CE conformity	EMC Directive: 2004/108/EC	
ATEX Directive	94/9/EC	

Wiring diagram

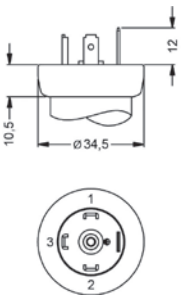
2-wire-system (current)



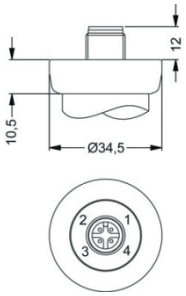
Pin configuration

Electrical connections	ISO 4400	field housing (clamp section: 2.5 mm²)	M12x1 (4-pin) metal	cable colours (DIN 47100)
Supply +	1	VS+	1	wh (white)
Supply –	2	VS-	2	bn (brown)
Shield	ground contact	⏚	4	ye/gn (yellow / green)

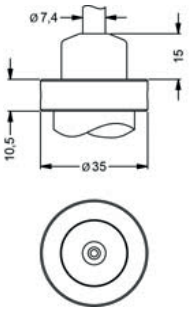
Electrical connections (dimensions in mm)



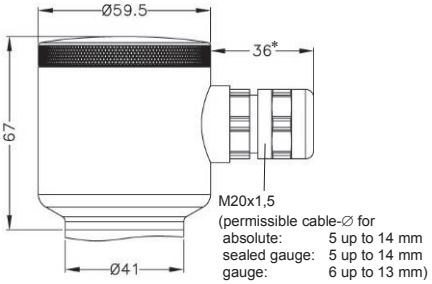
ISO 4400
(IP 65)



M12x1 4-pin
(IP 67)



cable outlet
with PUR-cable without
air tube [4] (IP 68)



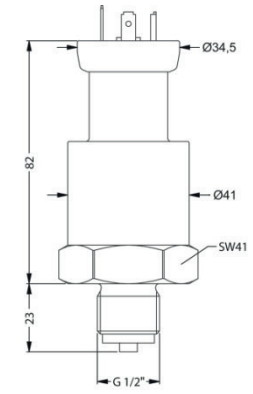
field housing
(IP 67)

* for gauge pressure ranges with field housing the marked dimension increases by 8 mm

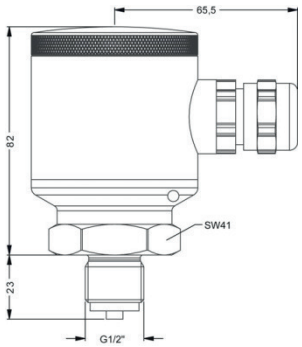
[4] cable versions are delivered with shielded cable (different cable types and lengths available);
for gauge pressure cable with ventilation tube required; tested at 4 bar or 40 mH_2O for 24 hours

Dimensions (in mm)

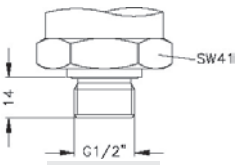
Inch thread



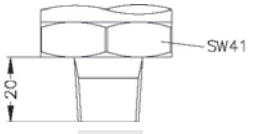
G1/2" EN 837
with plug version and cable outlet



G1/2" EN 837
with field housing



G1/2" DIN 3852

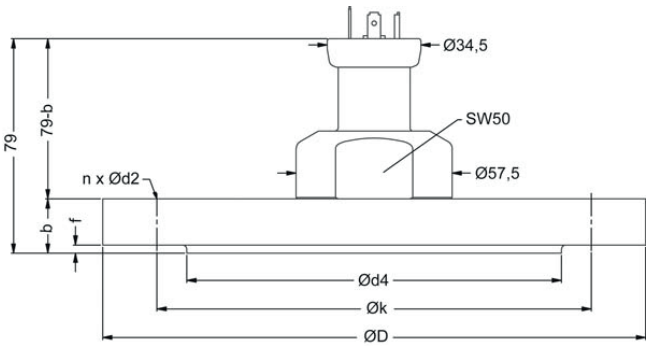


1/2" NPT

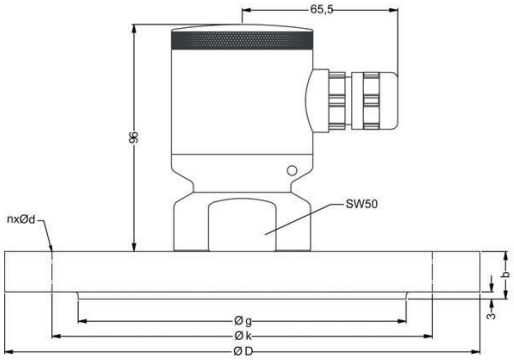
⇨ For version field housing with pressure port in CuNi10Fe1Mn, total length increases by 27 mm!

Dimensions (in mm)

Flange [5] (DIN 2501)



with plug version and cable outlet

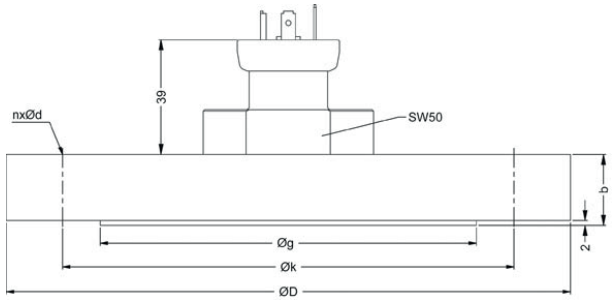


with field housing

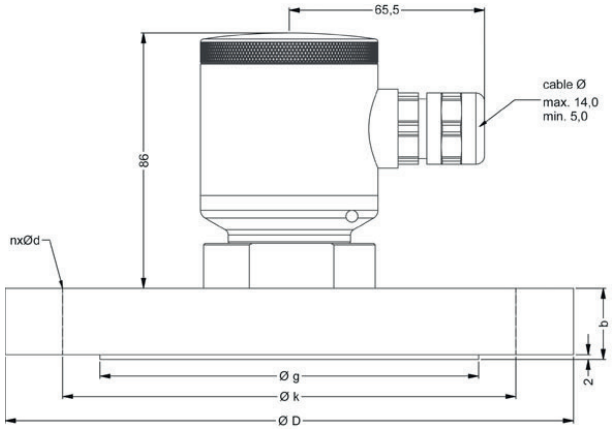
dimensions in mm				
Maß	DN25/PN40	DN40/PN40	DN50/PN40	DN80/PN16
D	115	150	165	200
k	85	110	125	160
d4	68	88	102	138
b	18	18	20	20
f	2	3	3	3
n	4	4	4	8
d2	14	18	18	18

dimensions in mm				
Maß	DN25/PN40	DN40/PN40	DN50/PN40	DN80/PN16
D	115	150	165	200
k	85	110	125	160
g	68	88	102	138
b	18	18	20	20
n	4	4	4	8
d	14	18	18	18

Flange [5] (ANSI)



with plug version and cable outlet



with field housing

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

⇨For version field housing with pressure port in CuNi10Fe1Mn, total length increases by 27 mm!

[5] DN80/PN16 possible for nominal pressure ranges P_N ≤16 bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges P_N ≤ 10 bar

DMK 458 ___-____-_-_-___-___-_-_-_-___

Pressure		
in bar, gauge	5 9 A	
in bar, absolute [1]	5 9 B	
in bar, sealed gauge [1]	5 9 E	consult
in mH_2O, gauge	5 9 C	
in mH_2O, absolute [1]	5 9 D	consult
in mH_2O, sealed gauge [1]	5 9 F	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%	2	
option for P_n > 0.6 bar: 0.1%	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 PUR-cable (with ventilation tube)	T R 1	
Field housing, absolute, sealed gauge	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	
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)	F 3 2	
Flange DN 3" / 150 lbs (ANSI B 16.5)	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 and sealed gauge from 1 bar
[2] female plug is GL-approbated
[3] DN80/PN16 possible for nominal pressure ranges PN ≤ 16 bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges PN≤ 10 bar
[4] CuNi10Fe1Mn only possible in combination with inch thread

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet.
Subject to change without notice.

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

- shipping approvals
  GL (Germanischer Lloyd),
  DNV (Det Norske Veritas) and
  CCS (China Classification Society)
- pressure port 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.

The DMK 457 is approved by Germanischer Lloyd (GL), Det Norske Veritas (DNV) and China Classification Society (CCS).

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																	

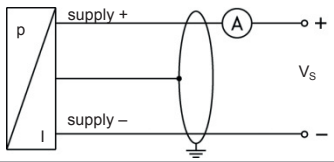
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Performance	
Accuracy[1]	IEC 60770: ≤ ± 0.5 % FSO
Permissible load	R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
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: -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 - Germanischer Lloyd (GL) - Det Norske Veritas (DNV)
Mechanical stability	
Vibration	4 g (according to GL: curve 2 / according to DNV: Class B / basis: IEC 60068-2-6)
Materials	
Pressure port	Standard: stainless steel 1.4404 (316L) option [2]: CuNi10Fe1Mn (sea water resistant) - for P_N ≤ 400 bar with mech. 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
Housing	standard: stainless steel 1.4404 (316L) option [2]: CuNi10Fe1Mn (sea water resistant) - in combination with pressure port in CuNi10Fe1Mn option field housing: stainless steel 1.4404 (316L); with cable gland
Cable sheath	for cable outlet: PVC - cable, PUR - cable for submersible version: -, PUR - probe cable, FEP - probe cable, TPE - probe cable permissible temperatures: -5 … 70 °C, -25 … 70 °C, -25 … 70 °C, -25 … 125 °C
Seals (media wetted)	standard: FKM option: NBR, 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	
IS-protection (only for 4 … 20 mA / 2-wire)	
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, C_i = 105 nF, L_i = 5 µH, the supply connections have an inner capacity of max. 140 nF to the housing
Permissible media temperature	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 $P_N \leq 25$ 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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [3]
ATEX-directive	94/9/EC

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

Wiring diagram

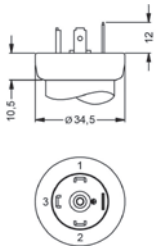
2-wire-system (current)



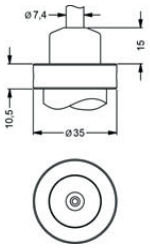
Pin configuration

Electrical connection	ISO 4400	Field housing	Cable colours (DIN 47100)
Supply + Supply –	1 2	IN + IN -	wh (white) bn (brown)
Shield	ground pin	⏚	ye/gn (yellow / green)

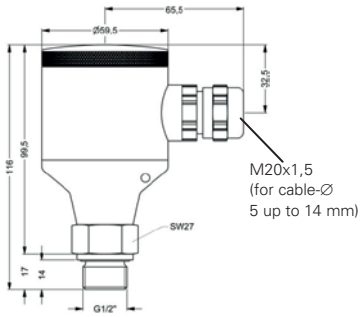
Electrical connections [4] (dimensions in mm)



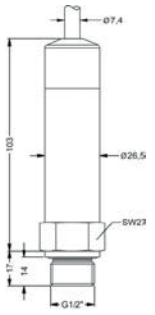
ISO 4400
(IP 65)



cable outlet
cable with air tube[5, 6] (IP 68)



universal field housing
(IP 67)

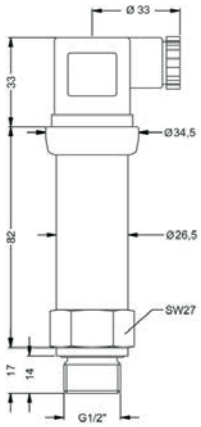


submersible version [6]
(IP 68)

[4] *Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.*
[5] *tested at 4 bar or 40 mH_2O for 24 hours*
[6] *different cable types and lengths available, permissible temperature depends on kind of cable, see cable connection*

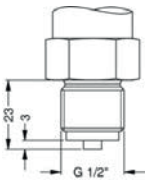
Mechanical connection (dimensions in mm)

standard

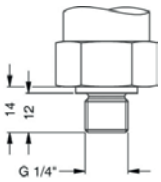


G1/2" DIN 3852

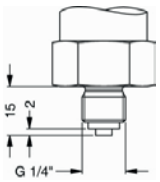
option



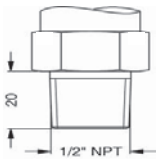
G1/2" EN 837



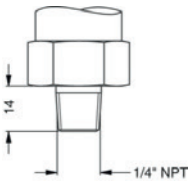
G 1/4" DIN 3852



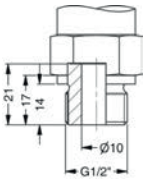
G1/4" EN 837



1/2" NPT



1/4" NPT



G ½“ open port
DIN 3852 (≤ 40 bar)

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

DMK 457 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

			Code	
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]**		
	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 %	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 [1, 3]	T R 0	
		Field housing stainless steel	8 8 0	
		Submersible version (1.4404 / 316L) with PUR cable [1, 3]	T T 1	
		Submersible version (CuNiFe) with PUR cable [1, 3]	T S 1	
		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	
option		NBR [5]	5	
		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 different cable types and lengths deliverable, permissible temperature depends on kind of cable
4 only for $P_N \leq 40$ bar possible
5 only for $P_N \leq 100$ bar possible
6 optionally for nominal pressure ranges up to 400 bar and mechanical connections G1/2" DIN 3852, G1/2" EN 837, G1/2" open port, G1/4" DIN 3852, G1/4" EN837 in combination with housing in CuNi10Fe1Mn
7 oxygen application with FKM seal possible up to 25 bar

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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
  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 behavior 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

74-05

Input pressure range [1]								
Nominal pressure gauge / abs.	[bar]	-1…0	0.10	0.16	0.25	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}
Option IS-protection	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 [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 silicon 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 silicon 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*

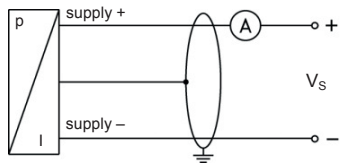
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration according to DIN EN 60068-2-6	G 1/2": 20 g RMS (25 ... 2000 Hz) others: 10 g 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	silicon oil
Options	food compatible oil with FDA approval (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request
Materials	
Pressure port	stainless steel 1.4404 (316 L) others on request
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4305 (303), cable gland brass, nickel plated others on request
Seals (media wetted) Standard Optional	 FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request Clamp, dairy pipe, Varivent®: without
Diaphragm Standard Optional	 stainless steel 1.4435 (316 L) 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 DX 19-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
Max. 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[6] 2	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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC
ATEX Directive	94/4/EG

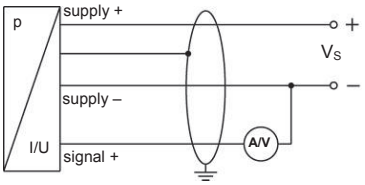
[6] *only for 4 … 20 mA / 2-wire*

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

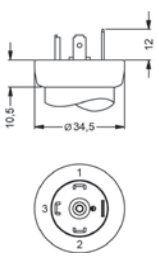


Pin configuration

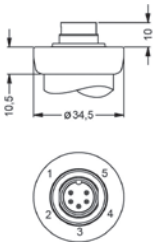
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN -	bn (brown)
Signal (only 3-wire)	3	1	3	OUT+	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

Electrical connections (dimensions in mm)

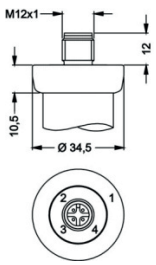
standard **option**



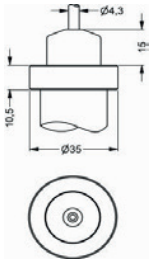
ISO 4400
(IP 65)



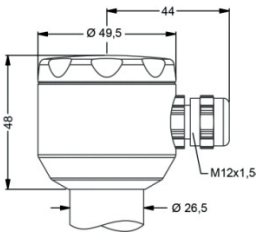
Binder Series 723
(IP 67)



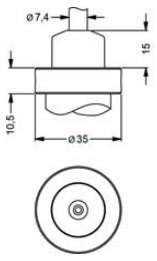
M12x1 4-pin
(IP 67)



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



compact field housing
(IP 67)



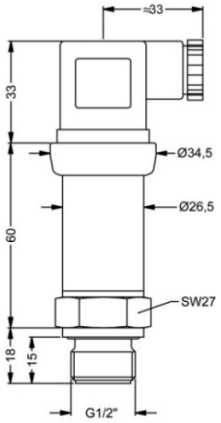
cable outlet, cable with ventilation tube
(IP 68) [8]

⇨ **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*

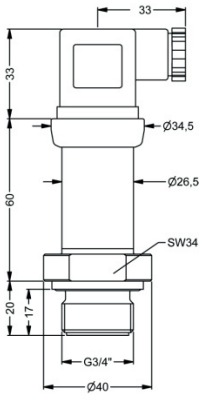
Mechanical connection (dimension in mm)

Standard

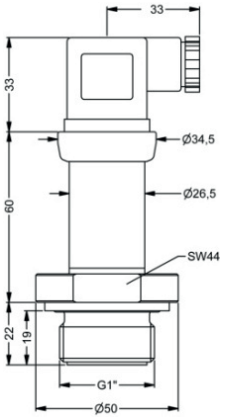


G1/2" flush DIN 3852[9]

Option

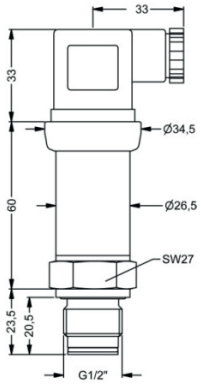


G 3/4" flush DIN 3852
with ISO 4400

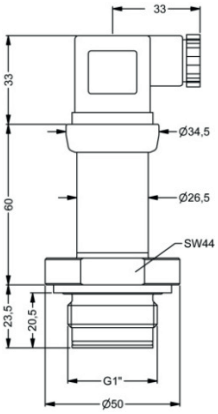


G1" flush DIN 3852
with ISO 4400

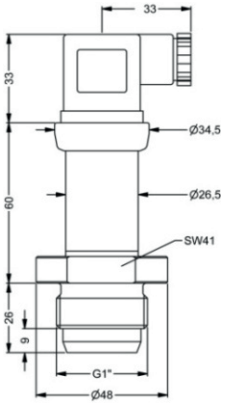
Option



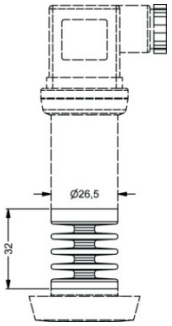
G1/2" flush
with radial o-ring [9]



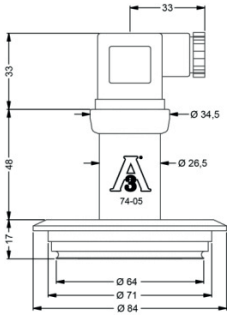
G1" flush
with radial o-ring ($P_N \leq 2$ bar)



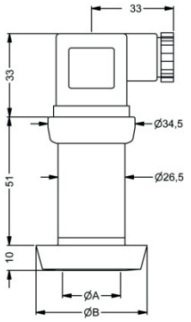
G1" cone
with ISO 4400



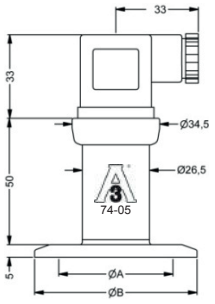
cooling element 300 °C



Varivent®
PN ≤ 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]	≤ 40	≤ 40	≤ 25

dimension in mm				
size	¾“	DN 25	DN 32	DN 50
A	14	23	32	45
B	25	50.5	50.5	64
P_N [bar]	≤ 8	≤ 16	≤ 16	≤ 16

⇨ **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*

DMP 331P

Ordering Code

DMP 331P □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure																							
gauge		5	0	0																			
absolute		5	0	1																			
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															
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 %									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 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										
Compact field housing stainless steel stainless steel 1.4305 [3]											8	5	0										
customer											9	9	9										consult
Mechanical connection																							
G1/2" with flush welded diaphragm (DIN 3852) [4]														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 [5]														Z	5	7							
G1/2" DIN 3852 with rad. o-ring and flush diaphragm [4]														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) [3]														M	7	3							
Dairy pipe DN 40 (DIN 11851) [3]														M	7	5							
Dairy pipe DN 50 (DIN 11851) [3]														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																							
silicon 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] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C), others on request

[2] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

[3] 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.

[4] possible only for $P_N \geq 1$ bar

[5] 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.

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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]	120	250	500	500	650

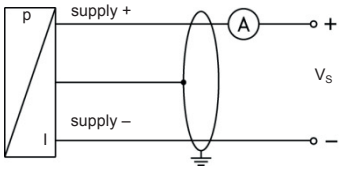
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [1]	≤ ± 0.5 % FSO
Permissible load	current 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 silicon 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 silicon 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	silicon oil
Options	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request
Materials	
Pressure port	stainless steel 1.4404 (316 L)
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4305 (303) with cable gland brass, nickel plated — others on request
Seals (media wetted) Standard Option	 FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) 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 DX 19 - 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, IP65
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH
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[4] 2	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 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [5]
ATEX Directive	94/4/EG

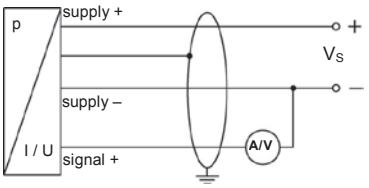
[4] only for 4 … 20 mA / 2-wire
[5] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

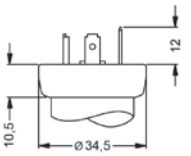


Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
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	⏚	ye/gn (yellow / green)

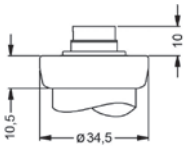
Electrical connection (dimensions in mm)

standard

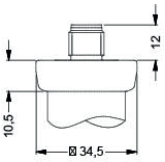


ISO 4400
(IP 65)

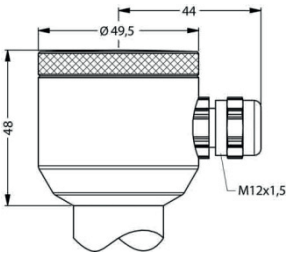
option



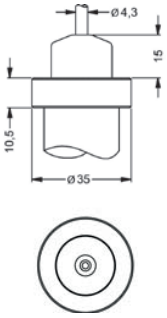
Binder Series 723 5-pin
(IP 67)



M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



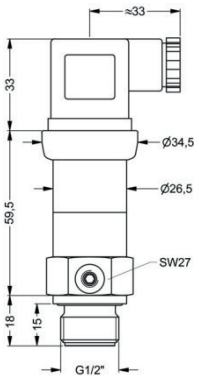
cable outlet with PVC cable
(IP 67) [6]

⇨ **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)

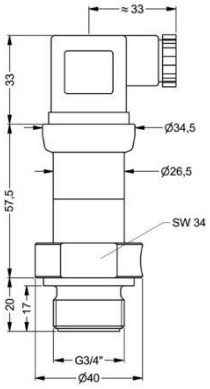
Mechanical connection (dimensions in mm)

standard

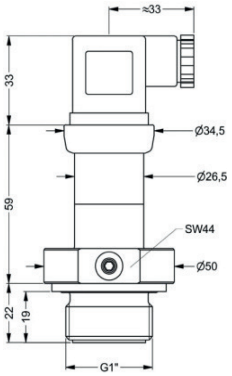


G1/2" flush DIN 3852

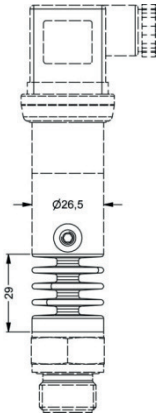
option



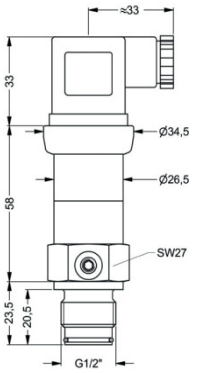
G3/4“ flush DIN 3852



G1“ flush DIN 3852



cooling element
300 °C [7]



G1/2“ flush
with radial o-ring

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

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

DMK 331P

Ordering Code

DMK 331P ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure	
gauge	5 0 5
absolute	5 0 6
Input [bar]	
60	6 0 0 2
100	1 0 0 3
160	1 6 0 3
250	2 5 0 3
400	4 0 0 3
customer	9 9 9 9 consult
Output	
4 … 20 mA / 2-wire	1
0 … 20 mA / 3-wire	2
0 … 10 V / 3-wire	3
Intrinsic safety 4 … 20 mA / 2-wire	E
SIL2 4 … 20 mA / 2-wire	1S
SIL2 with Intrinsic safety 4 … 20 mA / 2-wire	ES
customer	9 consult
Accuracy	
0.5 %	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 [1]	T A 0
Male plug M12x1 (4-pin) / metal	M 1 0
compact field housing stainless steel 1.4305	8 5 0
customer	9 9 9 consult
Mechanical connection	
G1/2" DIN 3852 with flush diaphragm	Z 0 0
G3/4" DIN 3852 with flush diaphragm	Z 3 0
G1" DIN 3852 with flush diaphragm	Z 3 1
G 1/2" DIN 3852 with rad. o-ring and flush diaphragm	Z 6 1
customer	9 9 9 consult
Diaphragm	
Stainless steel 1.4435 (316L)	1
customer	9 consult
Seals	
FKM	1
FFKM [2]	7
customer	9 consult
Filling Fluids	
Silicon oil	1
food compatible oil	2
customer	9 consult
Special version	
standard	0 0 0
with cooling element up to 300°C [3]	2 0 0
customer	9 9 9 consult

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

[2] only for $P_N \leq 100$ bar possible

[3] only for $P_N \leq 160$ bar possible

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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

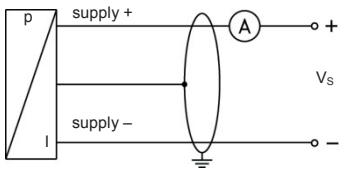
- Paint and Varnish
- Viscous and Pasty Media

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 absolut	[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						

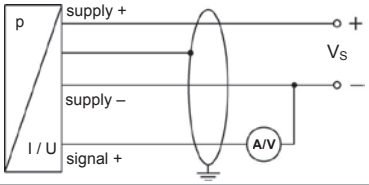
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Option 3-wire	3-wire: 0 … 10 V / V_S = 12.5 ... 32 V_{DC}
Performance	
Accuracy [1] Standard Option	 ≤ ± 0.35 % FSO ≤ ± 0.25 % FSO
Long term stability	≤ ± 0.1 % FSO / year
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, hysterisis, 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
Housing Standard compact field housing	 stainless steel 1.4404 stainless steel 1.4435
Seal (media wetted)	FKM EPDM others on request
Diaphragm Standard Option	 ceramic Al_2O_3 96 % ceramic Al_2O_3 99.9 %
Media wetted parts	pressure port, seals, diaphragm
IS-protection (only for 4 … 20 mA / 2-wire)	
Approval DX 14-DMK 351 P	male (connector)-version: zone 0: II 1 G Ex ia IIC T4 zone 20: II 1 D Ex IP6X T=85°C cable-version: zone 0: II 1 G EEx ia IIB T4 zone 20: II 1 D EEX IP6X T=85°C
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 27 nF, L_i = 5 µH
Max. permissible temperature for environment	zone 0: -20 ... 60 °C for p_{atm} 0.8 bar up to 1.1 bar zone 1: -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 x 10^6 loading cycles
CE-conformity	EMC-directive: 2004/108/EC

Wiring diagram

2-wire-system (current)



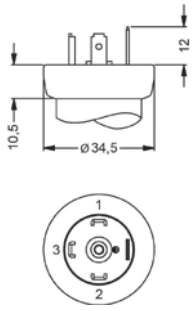
3-wire-system (current / voltage)



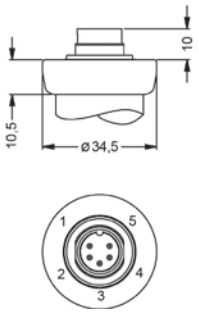
Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	field housing	cable colour (DIN 47100)
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	⏚	ye/gn (yellow / green)

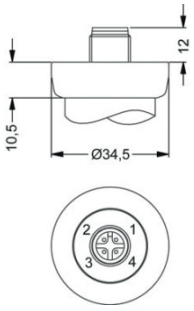
Electrical connections (dimensions in mm)



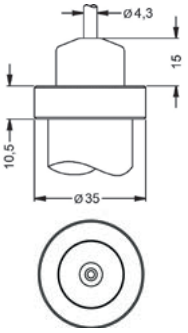
ISO 4400 (IP 65)



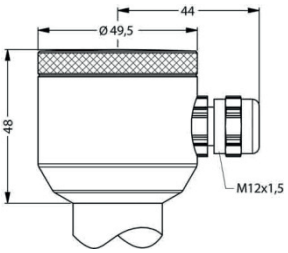
Binder series 723 (IP 67)



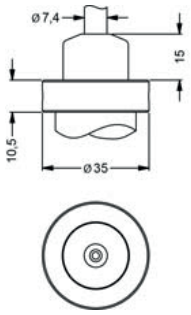
M12x1 4-pin (IP 67)



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



compact field housing (IP 67)

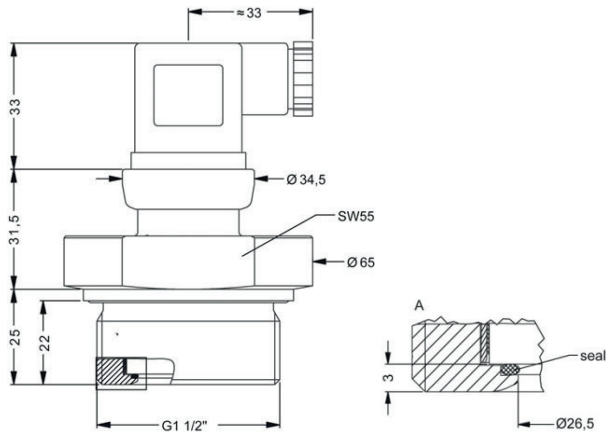


cable outlet, cable with ventilation tube (IP 68) [3]

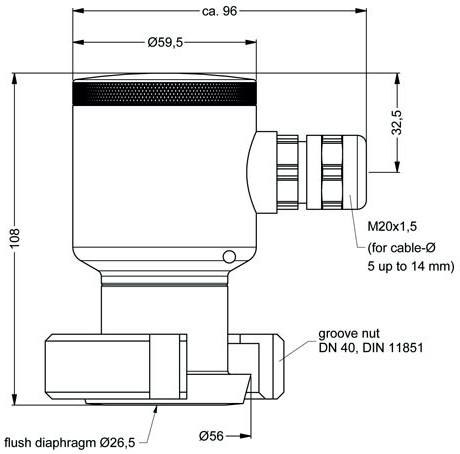
⇨universal stainless steel field housing 1.4404 with cable gland M20x1.5 (ordering code 880) and other versions on request

[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

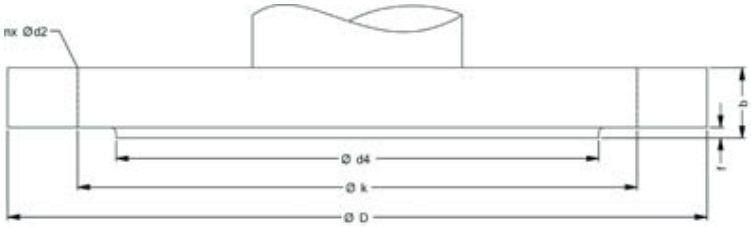
Dimensions (in mm)



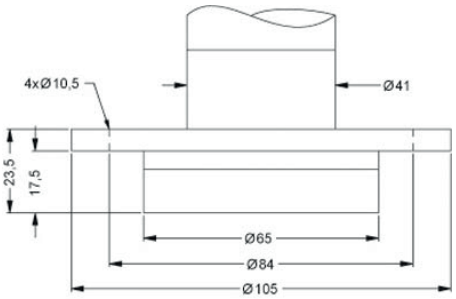
G1 1/2" EN 837



field housing
with dairy pipe (DIN 11851)

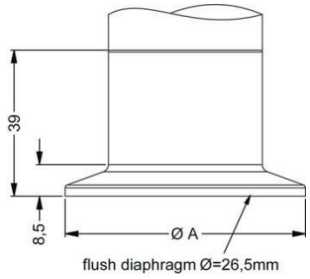


flange (DIN 2501)

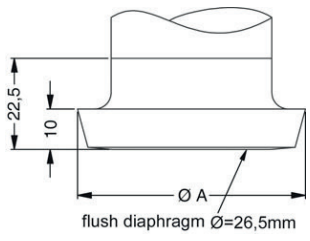


flange DRD[4]

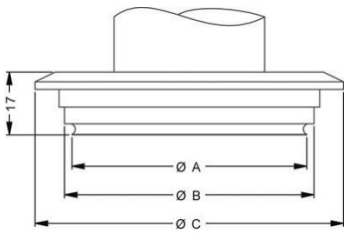
dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
k	85	125	160
d4	68	102	138
b	18	20	20
f	2	3	3
n	4	4	8
d2	14	18	18
P_N [bar]	≤ 40	≤ 40	≤ 16



Clamp (DIN 32676)



dairy pipe (DIN 11851)



Varivent

dimensions in mm		
size	DN32	DN50
A	50,5	64
P_N [bar]	≤ 16	≤ 16

dimensions in mm			
size	DN25	DN40	DN50
A	44	56	68,5

dimensions in mm		
size	P41	P63
A	64	91
B	68	96,5
C	84	113

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

DMK 351P

Ordering Code

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

Pressure			
	gauge	295	
	absolute [1]	296	
Input	**[mH_2O]**	**[bar]**	
	0.4	0.04	0400
	0.6	0.06	0600
	1.0	0.10	1000
	1.6	0.16	1600
	2.5	0.25	2500
	4.0	0.40	4000
	6.0	0.60	6000
	10	1.0	1001
	16	1.6	1601
	25	2.5	2501
	40	4.0	4001
	60	6.0	6001
	100	10	1002
	160	16	1602
	200	20	2002
	customer		9999 consult
Output			
	4 … 20 mA / 2-wire		1
	0 … 10 V / 3-wire		3 consult
Intrinsic safety	4 … 20 mA / 2-wire		E
	customer		9 consult
Accuracy			
standard	0.35 %		3
option	0.25 %		2
	customer		9 consult
Electrical connection			
	Male and female plug ISO 4400		100
	Cable outlet with PVC cable [2]		TA0
	Binder series 723		200
	Compact field housing		850
	Cable outlet		TR0
	Male plug M12x1 (4-pin) / metal		M10
	customer		999 consult
Mechanical connection			
	G 1 1/2" DIN flush (DIN 3852)		M00
	Clamp DN 32 (DIN 32676)		C62
	Clamp DN 50 (DIN 32676)		C63
	Dairy pipe DN 40 (DIN 11851) [3]		M75
	Dairy pipe DN 50 (DIN 11851) [3]		M76
	Varivent® DN 40/50		P41 consult
	Flange DN 25 / PN 40 (DIN 2501)		F20 consult
	Flange DN 50 / PN 40 (DIN 2501)		F23 consult
	Flange DN 80 / PN 16 (DIN 2501)		F14 consult
	customer		999 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		000
	customer		999 consult

[1] absolute pressure from 0.04 bar up to 0.25 bar on request

[2] standard: 2 m PVC cable without ventilation tube

[3] 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

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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

Output signal / Supply				
Standard	2-wire:	4 ... 20 mA	/	V_S = 8 ... 32 V_{DC}
Option	3-wire:	0 ... 10 V	/	V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	0.5 … 4.5 V	/	V_S = 5 ± 0.5 V_{DC}
Performance				
Accuracy [1]	≤ ± 0.5 % FSO			
Permissible load	2-wire:	$R_{max} = [(V_S - V_{Smin}) / 0.02\ A]\ \Omega$		
	3-wire:	$R_{min} = 10\ k\Omega$		
Influence effects	supply:	0.05 % FSO / 10 V	load:	0.05 % FSO / kΩ
Response time	2-wire:	≤ 10 msec	3-wire:	≤ 3 msec
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

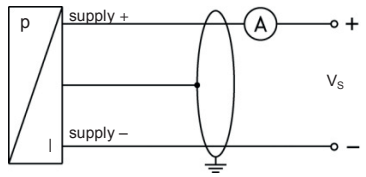
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

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

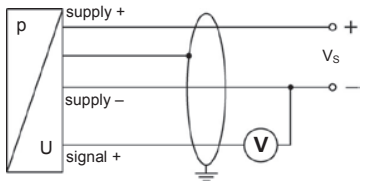
Materials	
Pressure port / housing	stainless steel 1.4301 (304)
Seals	FKM
Sensor	stainless steel 1.4404 (316L), silicon, glass, epoxy or RTV
Media wetted parts	pressure port, seals, sensor
Miscellaneous	
Permissible media	pressurized air, non-aggressive gases
Current consumption	2-wire: max. 25 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)
CE-conformity	EMC Directive: 2004/108/EC

Wiring diagrams

2-wire-system (current)



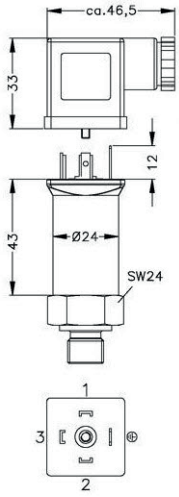
3-wire-system (voltage)



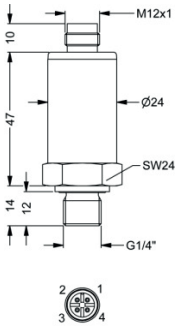
Pin configuration

Electrical connections	ISO 4400	M12x1 (4-pin)	cable colours (DIN 47100)
Supply +	1	1	wh (white)
Supply –	2	2	bn (brown)
Signal + (for 3-wire)	3	3	gn (green)
Shield	ground pin	4	ye/gn (yellow / green)

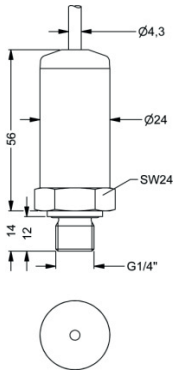
Electrical connections (dimensions in mm)



ISO 4400
(IP 65)



M12x1, 4-pin
(IP 67)

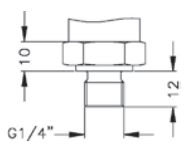


cble outlet with
PVC-cable (IP 67) [2, 3]

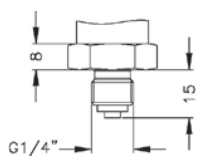
[2] *standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 ... 70 °C)*
[3] *different cable types and lengths available, permissible temperatur depends on kind of cable*

Mechanical connection (dimensions in mm)

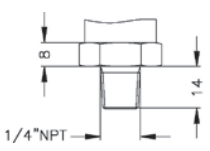
standard **option** [4]



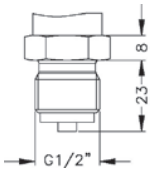
G1/4" DIN 3852



G1/4" EN 837



G1/4" NPT



G1/2" EN 837

[4] *other mechanical connections on request*

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

18.600 G

Ordering Code

18.600 G -[ ][ ][ ][ ]-[ ]-[ ]-[ ]-[ ][ ][ ]-[ ][ ][ ]-[ ]-[ ][ ][ ]

Input	**[bar]**																		
	0.10	1	0	0	0														
	0.25	2	5	0	0														
	0.40	4	0	0	0														
	0.60	6	0	0	0														
	1.0	1	0	0	1														
	1.6	1	6	0	1														
	2.5	2	5	0	1														
	4.0	4	0	0	1														
	6.0	6	0	0	1														
	-1 … 0	X	1	0	2														
	customer	9	9	9	9														consult
Pressure																			
	gauge					R													
Output																			
	4 … 20 mA / 2-wire						1												
	0 … 10 V / 3-wire						3												
	0.5 ... 4.5 V / 3-wire ratiometric						R												
	customer						9												consult
Accuracy																			
	0.5 % FSO							5											
	customer							9											consult
Electrical connection																			
	Male and female plug ISO 4400								1	0	0								
	Male plug M12x1 (4-pin), plastic								M	0	0								
	Cable outlet with PVC-cable [1]								T	A	0								
	customer								9	9	9								consult
Mechanical connection																			
	G1/4" DIN 3852											3	0	0					
	G1/4" EN 837											4	0	0					
	1/4" NPT											N	4	0					
	customer											9	9	9					consult
Seals																			
	FKM														1				
	customer														9				consult
Special version																			
	standard															0	0	0	
	customer															9	9	9	consult

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

18.601 G

OEM Pressure Transmitter Low Pressure

Applications

- general industrial applications

Characteristics

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

Technical Data

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

Output signal / Supply		
Standard	2-wire:	4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Options 3-wire	3-wire:	0 ... 10 V / V_S =14 ... 30 V_{DC}
	3-wire ratiometric:	V_{Sig} = 0.5 … 4.5 V / V_S = 5 ± 0.5 V_{DC}
Performance		
Accuracy [1,2]	≤ ± 0.5 % FSO	
Permissible load	2-wire:	R_{max} = [(V_S – $V_{S\ min}$) / 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
Measuring rate	1 kHz	

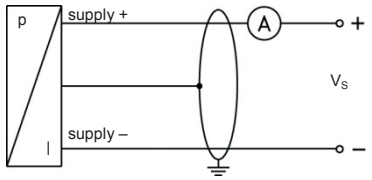
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)
[2] for pressure ranges ≤ 160 mbar accuracy is ≤ ± 1% FSO

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	

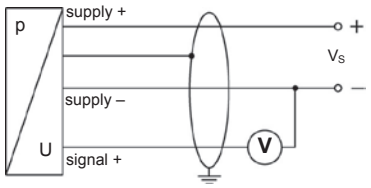
Materials	
Pressure port / housing	stainless steel 1.4301 (304)
Seals	FKM
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
Miscellaneous	
Weight	approx. 120 g
Current consumption	2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)
CE-conformity	EMC Directive: 2004/108/EC

Wiring diagrams

2-wire-system (current)



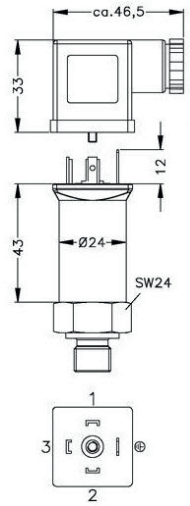
3-wire-system (voltage)



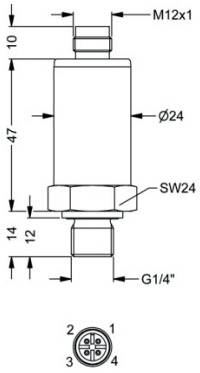
Pin configuration

Electrical connection	ISO 4400	M12x1 (4-pin)	cable colours (DIN 47100)
Supply +	1	1	wh (white)
Supply –	2	2	bn (brown)
Signal + (for 3-wire)	3	3	gn (green)
Shield	ground pin	4	ye/gn (yellow / green)

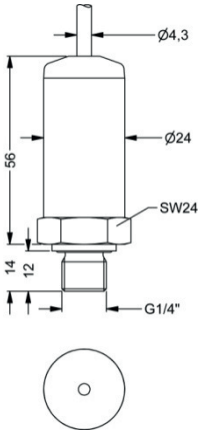
Electrical connections (dimensions in mm)



ISO 4400
(IP 65)



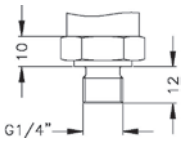
M12x1, 4-pin
(IP 67)



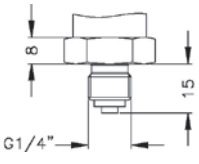
cable outlet
with PVC-cable (IP 67) [3,4]

[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*

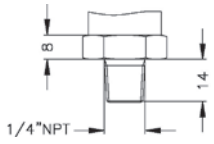
Mechanical connection (dimensions in mm)



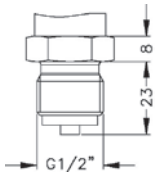
G1/4“ DIN 3852



G1/4“ EN 837



1/4“ NPT



G1/2“ EN 837

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

18.601 G - ☐☐☐☐ - ☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐☐☐

Option	Input	Pressure	Output	Accuracy	Electrical connection	Mechanical connection	Seals	Special version	
Input [bar]									
0.10 [1]	1 0 0 0								
0.16 [1]	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						
0.5 ... 4.5 V / 3-wire ratiometric			R						
customer			9						consult
Accuracy									
0.5 % FSO				5					
customer				9					consult
Electrical connection									
Male and female plug ISO 4400					1 0 0				
Male plug M12x1 (4-pin), plastic					M 0 0				
Cable outlet with 2 m PVC cable [2]					T A 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] for pressure ranges ≤ 160 mbar accuracy is ≤ ± 1 % FSO
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C)

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet.
Subject to change without notice.

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	15	15	25	70	70	150	150	250	500	500	700
Vacuum resistance		unlimited														
[1] for this pressure range accuracy is ≤ 1 % FSO IEC 60770																

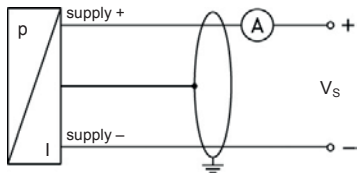
Output signal / Supply			
Standard	2-wire:	4 ... 20 mA	/ V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V	/ V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	V_{Sig} = 0.5 … 4.5 V	/ V_S = 5 ± 0.5 V_{DC}
Performance			
Accuracy [2]	≤ ± 0.5 % FSO		
Permissible load	2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$		3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V		load: 0.05 % FSO / kΩ
Response time	2-wire: ≤ 10 msec		3-wire: ≤ 3 msec
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 $P_N \leq 15$ bar: O-ring in 70 EPDM 281 (with BAM-approval); permissible maximum values are 15 bar / 60° C and 10 bar / 90° C 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)
Long term stability	≤ ± 0.3 % FSO / year at reference conditions
Operational life	> 100 x 10^6 cycles
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) [3]

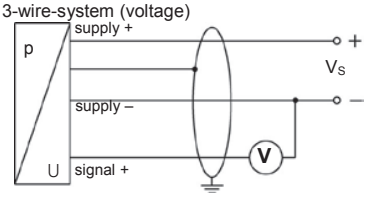
[3] *This directive is only valid for devices with maximum permissible overpressure > 200 bar*

Wiring diagrams

2-wire-system (current)



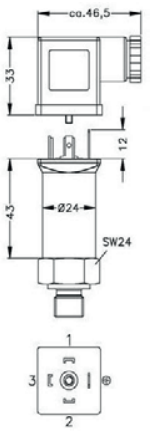
3-wire-system (voltage)



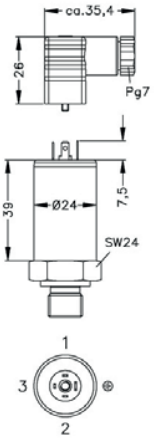
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), plastic	cable colours (DIN 47100)
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	ye/gn (yellow / green)

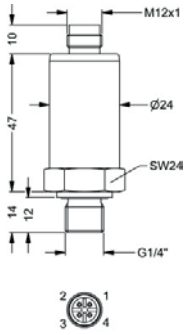
Electrical connections (dimensions in mm)



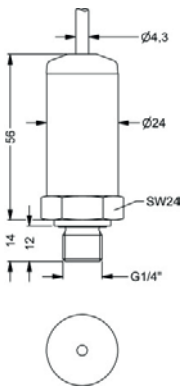
ISO 4400 (IP 65)



Micro, contact distance 9.4 mm (IP 65)



M12x1, 4-pin (IP 67)

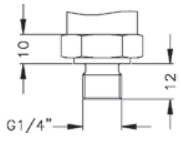


cable outlet with PVC-cable (IP 67) [4,5]

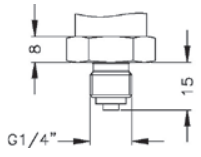
* pressure range P_N = 400 bar: total length increases by12 mm.

[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*

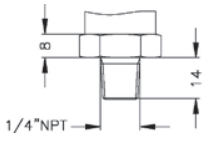
Mechanical connection (dimensions in mm)



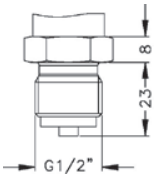
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" EN 837

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26.600 G

Ordering Code

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 [1]		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												
0.5 ... 4.5 V / 3-wire ratiometric							R												
customer							9												consult
Accuracy																			
0.5 % FSO								5											
customer								9											consult
Electrical connection																			
Male and female plug ISO 4400									1	0	0								
Male and female plug Micro									C	1	0								
Male plug M12x1 (4-pin), plastic									M	0	0								
Cable outlet with PVC cable [2]									T	A	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 [3]																0	0	7	
oil and grease free																0	0	8	
customer																9	9	9	consult

Prices EXW Thierstein, excluding package

[1] for nominal pressure range -1 ... 0 bar accuracy is 1 % FSO

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

[3] oxygen application with FKM seal up to 25 bar or with EPDM seal up to 15 bar posible

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	15	15	25	70	70	150	150	250	500	500
Vacuum resistance		unlimited											

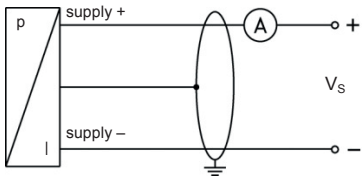
Output signal / Supply			
Standard	2-wire:	4 ... 20 mA	/ V_S = 8 ... 32 V_{DC}
Options	3-wire:	0 ... 10 V	/ V_S = 14 ... 30 V_{DC}
	3-wire ratiometric:	V_{Sig} = 0.5 … 4.5 V	/ V_S = 5 ± 0.5 V_{DC}
Performance			
Accuracy [1]	≤ ± 1 % FSO		
Permissible load	2-wire:	$R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	
	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	
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 voltage: max. 7 mA (short circuit current: max. 20 mA)	3-wire ratiometric: typ. 1.5 mA
Long term stability	≤ ± 0.3 % FSO / year at reference conditions	
Operational life	> 100 x 10^6 cycles	
CE-conformity	EMC Directive: 2004/108/EC	Pressure Equipment Directive: 97/23/EC (module A) [2]

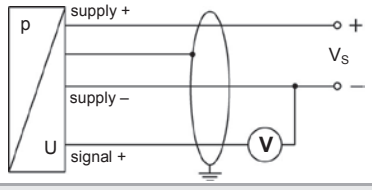
[2] *This directive is only valid for devices with maximum permissible overpressure > 200 bar*

Wiring diagrams

2-wire-system (current)



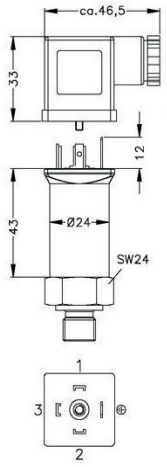
3-wire-system (voltage)



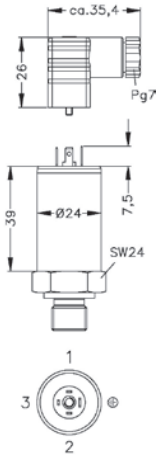
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), plastic	cable colours (DIN 47100)
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	ye/gn (yellow / green)

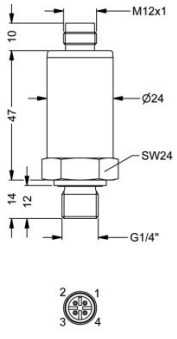
Electrical connections (dimensions in mm)



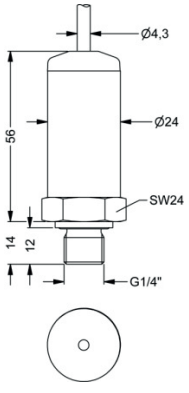
ISO 4400
(IP 65)



Micro, contact-distance 9.4 mm (IP 65)



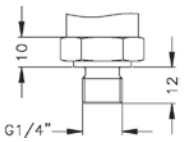
M12x1, 4-pin
(IP 67)



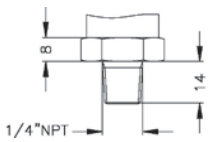
cable outlet
with PVC-cable (IP 67) [3,4]

[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

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

30.600 G

Ordering Code

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												
	0.5 ... 4.5 V / 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), plastic								M	0	0								
	Cable outlet with PVC cable [1]								T	A	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

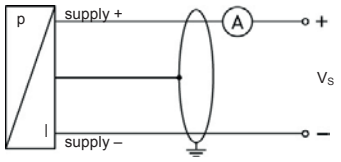
Pressure ranges							
Nominal pressure gauge	[bar]	6	10	16	25	40	60
Overpressure	[bar]	14	35	35	70	140	140
Burst pressure ≥	[bar]	28	70	70	140	280	280
Vacuum resistance		unlimited					

Vacuum ranges							
Nominal pressure gauge	[bar]	-1 ... 6	-1 ... 10	-1 ... 16	-1 ... 25	-1 ... 40	-1 ... 60
Overpressure	[bar]	14	35	35	70	140	140
Burst pressure	[bar]	28	70	70	140	280	280
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:	V_{Sig} = 0.5 … 4.5 V	/ V_S = 5 ± 0.5 V_{DC}			
Performance							
Accuracy [1]		≤ ± 0.5 % FSO					
Permissible load		2-wire: R_{max} = [(V_S – V_S 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		
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			

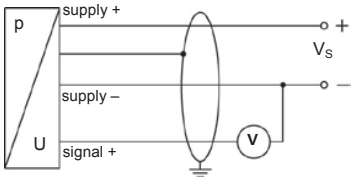
Materials	
Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304)
Seal of sensor	none (welded)
Diaphragm	stainless steel 1.4542 (630)
Media wetted parts	pressure port, diaphragm
Miscellaneous	
Mechanical connection	7/16"-20 UNF
Weight	approx. 120 g
Current consumption	2-wire: max. 25 mA 3-wire ratiometric: typ. 3 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA)
Long term stability	≤ ± 0.3 % FSO / year at reference conditions
Operational life	> 100 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2004/108/EC

Wiring diagrams

2-wire-system (current)



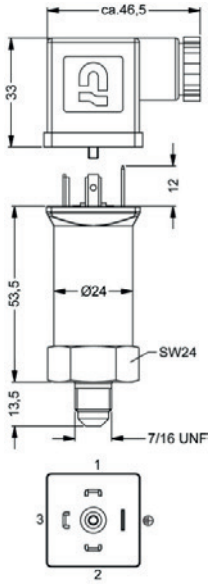
3-wire-system (voltage)



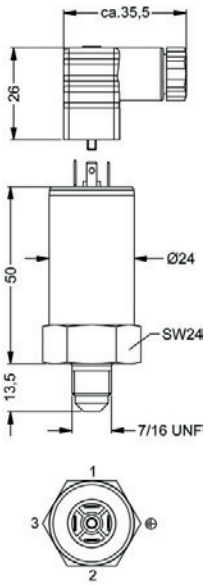
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), plastic	cable colours (DIN 47100)
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	ye/gn (yellow / green)

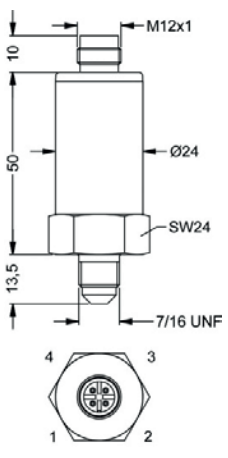
Dimensions (in mm)



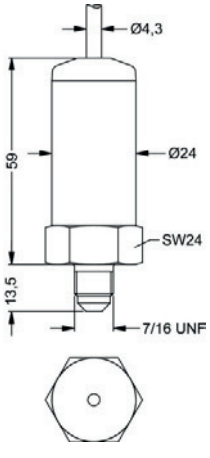
ISO 4400
(IP 65)



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*

This document contains product specifications; properties are not guaranteed. Subject to change without notice.

17.609 G

Ordering Code

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												
0.5 ... 4.5 V / 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), plastic								M	0	0								
Cable outlet with PVC-cable								T	A	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]	14	35	35	70	140	140	350	350	700	1 200	1 200
Burst pressure ≥	[bar]	28	70	70	140	280	280	700	700	1 400	1 500	1 500
Vacuum resistance		unlimited										

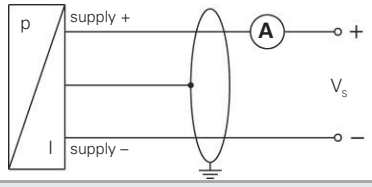
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}
Options	3-wire: 0 ... 10 V / V_S = 14 ... 30 V_{DC} 3-wire ratiometric: V_{Sig} = 0.5 … 4.5 V / V_S = 5 ± 0.5 V_{DC}
Performance	
Accuracy [1]	≤ ± 0.5 % FSO
Permissible load	2-wire: R_{max} = [(V_S – V_S min) / 0.02 A] Ω 3-wire: 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
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: 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
Long term stability	≤ ± 0.3 % FSO / year	
Operational life	> 100 x 10^6 pressure cycles	
CE-conformity	EMC Directive: 2004/108/EC	Pressure Equipment Directive: 97/23/EC (module A) [2]

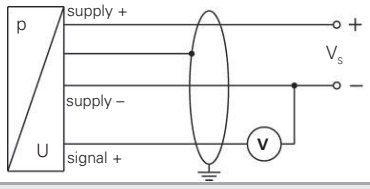
[2] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



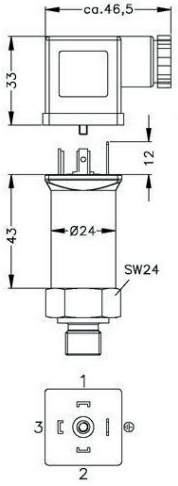
3-wire-system (voltage)



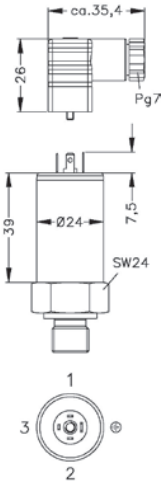
Pin configuration

Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), plastic	cable colour (DIN 47100)
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	ye/gn (yellow / green)

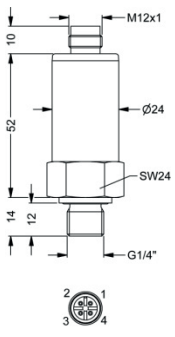
Electrical connections (dimensions in mm)



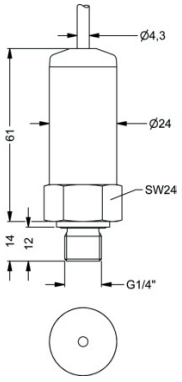
ISO 4400
(IP 65)



Micro, contact
distance 9.4 mm (IP 65)



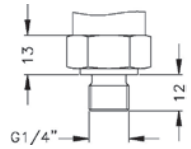
M12x1, 4-pin
(IP 67)



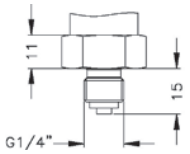
cable outlet with
2 m PVC-cable (IP 67) [3,4]

[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

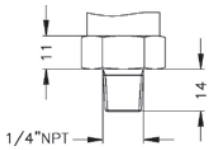
Mechanical connection (dimensions in mm)



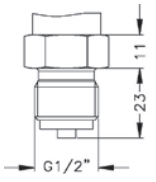
G1/4" DIN 3852
(not for oxygen)



G1/4" EN 837



1/4" NPT



G1/2" EN 837

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17.600 G

Ordering Code

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										
	0.5 ... 4.5 V / 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), plastic								M	0	0						
	Cable outlet with PVC-cable [1]								T	A	0						
	customer								9	9	9						consult
Mechanical connection / Seal																	
	G1/4" DIN 3852 / on pressure port: FKM											3	0	0	P		
	G1/4" EN 837 / without											4	0	0	2		
	1/4" NPT / without											N	4	0	2		
	G1/2" EN 837 / without											2	0	0	2		
	customer											9	9	9	9		consult
Special version																	
	standard															0	0	0
	oxygen application [2]															0	0	7
	oil and grease free															0	0	8
	customer															9	9	9	consult

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

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

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

- GL-certificate (Germanischer Lloyd)
- DVN-certificate (Det Norske Veritas)
- CCS-certificate
  (China Classification Society)
- stainless steel field housing
- IS-version (temperature class T6)
  Ex ia = intrinsically safe for
  gases and dusts
- 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. It has been certified by Germanischer Lloyd (GL) and is therefore predestined 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

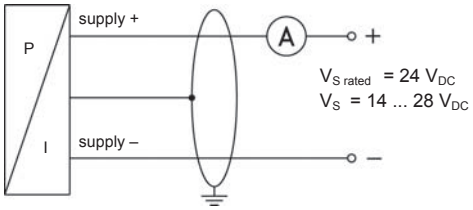
- Monitoring of the pressure during loading and unloading processes
- Monitoring of a ship's position and draught
  Use in anti-heeling systems
- Level measurement in ballast and storage tanks
- Monitoring of the internal pressure in liquid gas cargo tanks

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, sealed gauge and absolute; nominal pressure ranges sealed gauge and absolute from 1 bar

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA IS-version / V_S = 14 ... 28 V_{DC}	$V_{S\ rated}$ = 24 V_{DC}
Performance		
Accuracy [2]	standard: ≤ ± 0.25 % FSO options: P_N ≥ 0.6 bar [3]: ≤ ± 0.1 % FSO	
Permissible load	$R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$	
Long term stability	≤ ± 0.1 % FSO / year	
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 and Germanischer Lloyd (GL)	
Mechanical stability		
Vibration	4 g (according to GL: curve 2 / basis: DIN EN 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	
IS protection		
Approval DX14A-DMK 456	IBExU07ATEX1180 X zone 0: II 1G Ex ia IIC T6	
Safety techn. maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 52.3 nF, L_i = 5 µH, the supply connections have an inner capacity of max. 90,2 nF opposite the enclosure	
Permissible temperatures for environment	-20 ... 60 °C	in zone 0: with p_{atm} 0.8 up to 1.1 bar
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 x 10^6 cycles	
CE conformity	EMC Directive: 2004/108/EC	
ATEX Directive	94/9/EC	
Wiring diagram		

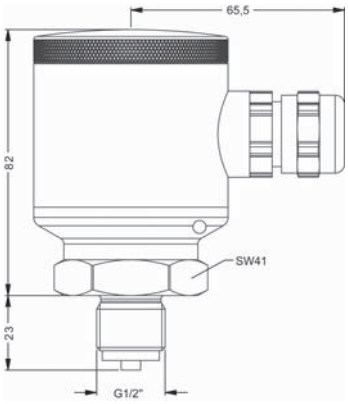
2-wire-system (current)



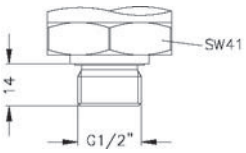
Pin configuration	
Electrical connections	field housing (clamp section: 2.5 mm²)
Supply + Supply –	IN+ IN-
Ground	⏚

Dimensions (in mm)

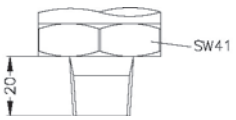
Inch thread



G1/2" EN 837

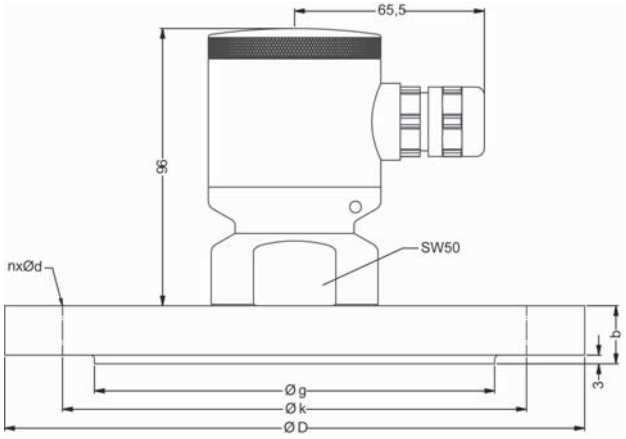


G1/2" DIN 3852



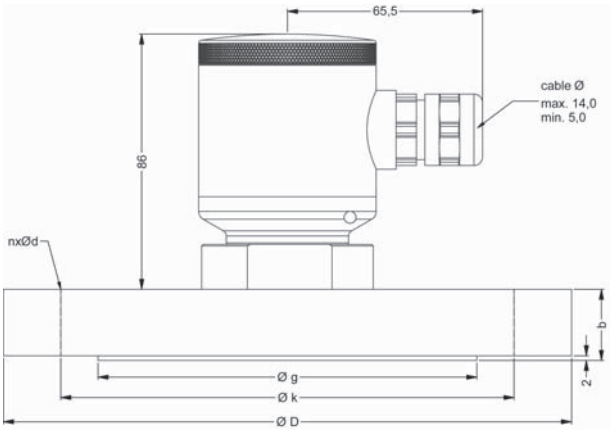
1/2" NPT

Flange (DIN 2501)



dimensions in mm			
Maß	DN25	DN50	DN80
D	115	165	200
k	85	125	160
g	68	102	138
b	18	20	20
n	4	4	8
d	14	18	18
P_N [bar]	≤ 40	≤ 40	≤ 16

Flange (ANSI)



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 [bar]	≤ 10	≤ 10

* for gauge pressure ranges, the marked dimension increases by 8 mm!

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

Pressure			
in bar, gauge		5 9 5	
in bar, absolute [1]		5 9 6	consult
in mH_2O, gauge		5 9 7	
in mH_2O, absolute [1]		5 9 8	consult
Input [mH_2O]	[bar]		
0.40	0.04	0 4 0 0	
0.60	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			
Intrinsic safety 4 … 20 mA / 2-wire		E	
customer		9	consult
Accuracy			
standard	0.25 %	2	
option for PN ≥ 0,6 bar:	0.1 %	1	
customer		9	consult
Electrical connection			
Field housing		8 8 0	
customer		9 9 9	consult
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	
Flansch DN 2" / 150 lbs (ANSI B16.5) [2]		F 3 2	
Flansch DN 3" / 150 lbs (ANSI B16.5) [2]		F 3 3	
customer		9 9 9	consult
Seals			
FKM		1	
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] nominal pressure ranges absolute from 1 bar; sealed gauge on request
[2] 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges P_N ≤ 10 bar

This document contains product specifications; properties are not guaranteed. Detailed information about options are defined in the datasheet. Subject to change without notice.

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" (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 f. ex. an intrinsic-safe version (zone 0), an electrical connection with IP 68 or special steel materials.

Preferred areas of use are

cementing wellbores
hydraulic fracturing
intensifying wellbores

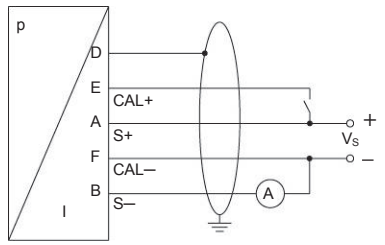
Pressure ranges					
Nominal pressure	[psi]	5 000	6 000	10 000	15 000
Permissible overpressure	[psi]	7 500	9 000	15 000	22 500
Burst pressure ≥	[psi]	10 000	12 000	20 000	30 000

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} [1]
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	20g, 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 DX 18-HU 300	IBExU08ATEX1127 X zone 0/1: II 1/2 G Ex ia IIC T4
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

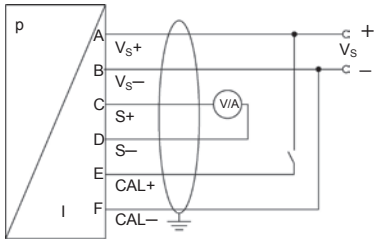
Miscellaneous	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 150 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Current consumption	2-wire signal output current: max. 50 mA 3-wire signal output voltage: approx. 15 mA 4-wire signal output voltage: 29 mA @ 10 V
Installation position	any
Weight	2.1 kg

Wiring diagrams

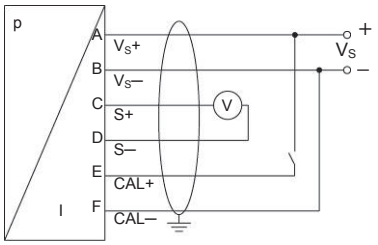
2-wire



3-wire



4-wire

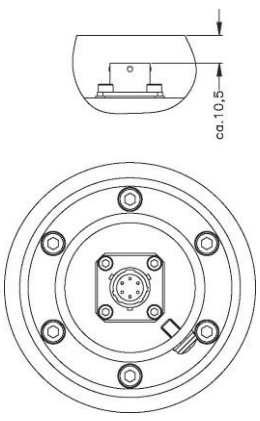


Pin configuration

Electrical connection	MIL-/ Bendix (6-pin)	Glenair (4-pin)	cable colours (DIN 47100)
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	ye/gn (yellow / green)

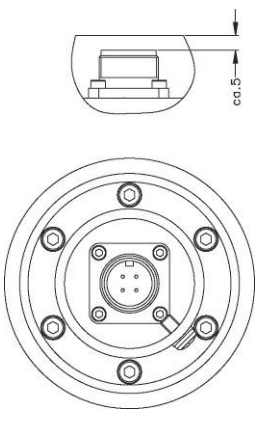
Electrical connections (dimensions in mm)

standard

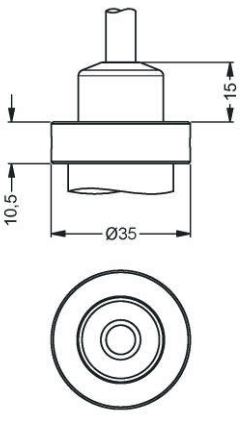


MIL-/ Bendix (6-pin)
PT02_E10-6P-023
(IP 67)

on request



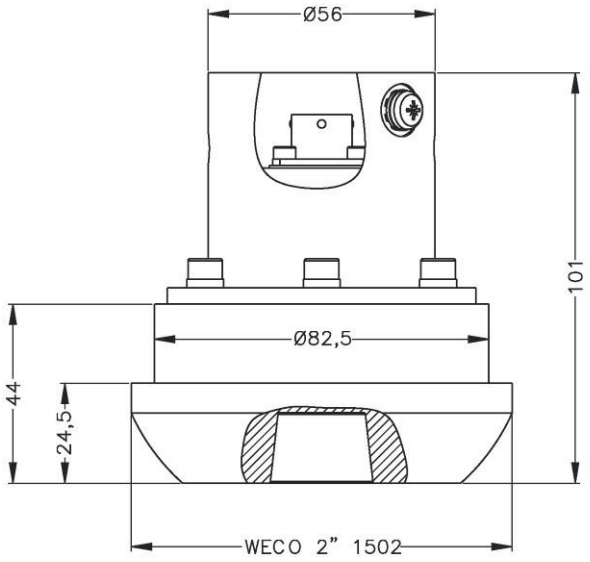
Glenair (4-pin)
GC379-2-14S-2P
(IP 65)

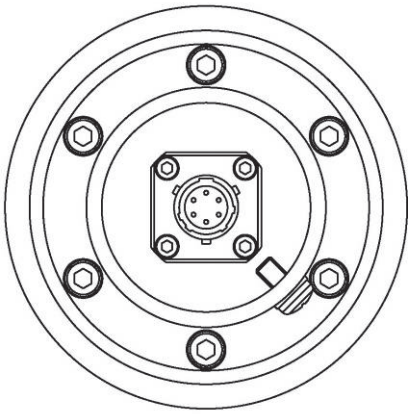


cable outlet
(IP 68)

Mechanical connection (dimensions in mm)

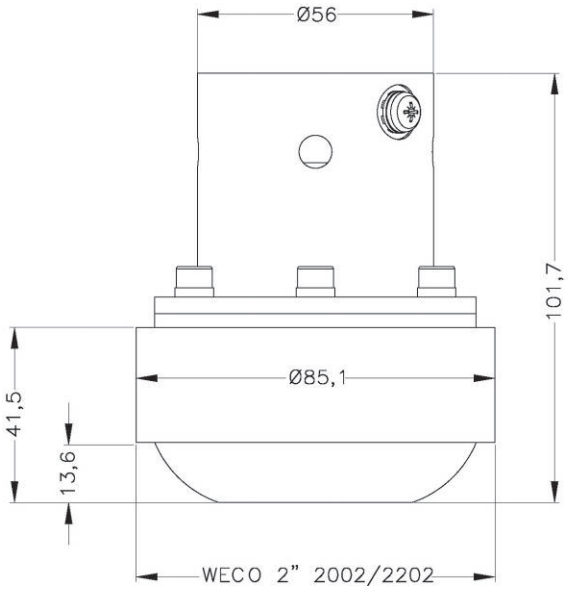
standard



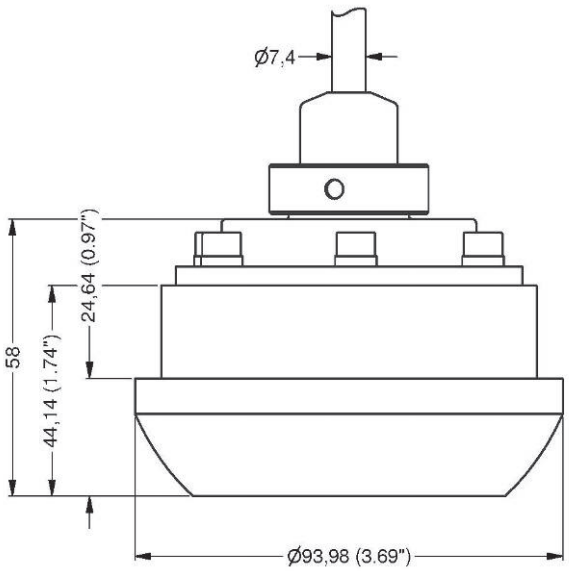


WECO® 2" (1502)

on request



WECO® 2" (2002/2202)



cable outlet

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HU 300 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐☐-☐☐-☐☐☐

	Code	
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 %	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

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NOTES

COMPETENCE

Industrial pressure measurement technology from 0.1 mbar up to 6000 bar

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

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