PRODUCT CATALOGUE PRESSURE TRANSMITTER





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.



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 customerspecific applications, underlining the competence and flexibility of BDISENSORS. 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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35-104 35-75
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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.

		ı							press			on	ı		
	stainless steel sensor	ceramic sensor	DMS	accuracy (FSO)¹	nominal pressure [bar.]	options / special characteristics	inch and NPT thraed	inch thread flush	dairy pipe	Clamp (3A-certification)	Varivent® (3A-certification)	flange	DRD flange	certificates	page
precision															
XMP i				0.1 %	0 0.4 up to 0 600	flameproof enclosure,	•					•	•	Ex, HART®	5-9
XMP ci		•		0.1 %	0 0.06 up to 0 20	cooling element up to 300°C flameproof enclosure	•	•				•	•	Ex, HART®	10-14
x act i				0.1 %	0 0.4 up to 0 40	hygienic version,								Ex, HART®, 3A	15-19
•					·	cooling element up to 300°C					_		_		
x act ci		•		0.1 %	0 0.06 up to 0 20	hygienic version communication interface for adjustment		•	•	•	•	•	•	Ex, HART®	20-24
DMP 331Pi	•			0.1 %	0 0.4 up to 0 40	of offset, span end damping		•	•	•				Ex	25-29
DMP 331i	•			0.1 %	0 0.4 up to 0 40	communication interface for adjustment of offset, span end damping	•							Ex	
DMP 333i	•			0.1 %	0 60 up to 0 600	communication interface for adjustment of offset, span end damping	•							Ex	30-34
industry															
DMP 343	•			0.35 %	0 0.01 up to 0 1	for non-aggressive gases	•							Ex, SIL, UL	35-39
DMP 331				0.35 %	0 0.01 up to 0 1	universal applications	•	•						Ex, SIL, UL	40-44
DMP 333				0.35 %	0 60 up to 0 600	universal applications	•							Ex, SIL, UL	45-49
DMP 339	•			0.35 %	0 60 up to 0 600	G 1/2" flush		•						Ex	50-53
DMP 335				0.5 %	0 6 up to 0 600	welded version	•							Ex, UL	54-58
DMP 334	•			0.35 %	0 600 up to 0 2.200	adjustability of span and offset	•							Ex, UL	59-62
DMP 304			•	0.5 %	0 2,000 up to 0 6,000	adjustability of span and offset	•							Ex	63-66
DMK 351		•		0.35 %	0 0.04 up to 0 20	diaphragm 99.9% Al2O3, pressure port PVDF	•							Ex	67-70
DMK 331		•		0.5 %	0 0.4 up to 0 600	pressure port PVDF for agressive media	•							Ex, SIL, UL	71-75
DMP 457				0.35 %	0 0.1 up to 0 600		•	•						EX, DNV, GL, CCS	76-80
DMK 458		•		0.25 %	0 0.04 up to 0 20	diaphragm 99.9% Al2O3, seawater resistant pressure port	•							EX, DNV, GL, CCS	81-85
DMK 457		•		0.5 %	0 0.4 up to 0 600	seawater resistant pressure port	•							EX, DNV, GL, CCS	86-89
DMP 331 P	•			0.35 %	0 0.1 up to 0 40	hygienic version, cooling element up to 300°C		•	•	•				Ex, SIL, UL, 3A	90-94
DMK 331 P		•		0.5 %	0 60 up to 0 400	filling fluid with FDA approval, cooling element up to 300°C		•						Ex, SIL, UL	95-99
DMK 351 P		•		0.35 %	0 0.04 up to 0 20	diaphragm 99.9% Al2O3		•	•	•	•	•		Ex	100-104
OEM															
18.600 G				0.5 %	0 0.1 up to 0 6	for non-aggressive gases	•							UL	105-107
18.601 G	•			0.5 %	0 0.1 up to 0 6		•							UL	108-110
26.600 G		•		0.5 %	0 1 up to 0 400	oil and grease free version	•							UL	111-113
30.600 G		•		1 %	0 1.6 up to 0 250		•							UL	114-116
17.609 G	•			0.5 %	0 6 up to 0 60	welded version	•							UL	117-119
17.600 G	•			0.5 %	0 6 up to 0 600	welded version, suitable for oxygen	•							UL	120-122
special versions															
DMK 456		•		0.25 %	0 0.04 up to 0 20	diaphragm 99.9% Al2O3, seawater resistant pressure port	•					•		EX, DNV, GL, CCS	123-126
HU 300				0.5%	0 5,000 psi up to 0 15,000 psi	Hammer Union, pressure port WECO® 2"								Ex	127-131

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		0.4	4	-			^		10	400	000	400	000
gauge / abs. 2	[bar]	0.4	1	2	4	1	0	20	40	100	200	400	600
Overpressure	[bar]	2	5	10	20) 4	0	80	105	210	600	1000	1000
Burst pressure ≥	[bar]	3	7,5	15	25		0	120	210	420	1000	1250	1250
¹ On customer request we adj		_					-				1000	1200	1200
² absolute pressure possible fi				Will poods	<i>5</i> (y 5)	y convare		o roquiro	a procedio	rangee.			
Vacuum ranges													
Nominal pressure gauge	[bar]	-0.4 .	0.4	-	1 1	1		-1 2		-1	4	-1	. 10
Overpressure	[bar]	2	2		5			10		20		4)
Burst pressure ≥	[bar]	(3		7,5			15		25		5)
Output signal / Supply													
Standard		2-wire: 4	20 mA										
Option		IS-intrinsi IS versior							$1/V_S = 1$	2 28 V _D	С		
Current consumption		max. 25 r											
Performance													
Accuracy ³		Z L O 1 0/	TCO		T	The see	uroo	ı in nola	ulatad aa	followe			
		≤ ± 0.1 % - turn-dov		o chang	_				ulated as) % FSO			
Perfomance after turn-dov	vn	- turn-dov		o chang	е		n-dov	/n 9̂: ≤ 0	.1 + 0.01	, 5 x (9 - 5)			
Permissible load		$R_{max} = [(V_{max} = V_{max} = V_$] Ω					T [®] commι		$R_{min} = 25$	Ω
Influence effects		supply: 0.	05 % FSC) / 10 V				permiss	ible load:	0.05 % F	SO / kΩ		
Long term stability		≤ ± 0.1 %			erence	condition	ns						
Response time			– without					dampin	g	measuri	ng rate 10)/sec	
Adjustability		electronic	damping:	0 10	0 sec	off	set 0	90 %	FSO;	tur	n-down of	span up	to 1:10
³ accuracy according to IEC 6	0770 – Iir						eatab	ility)	,				
Thermal errors / Permiss													
Tolerance band 4, 5		<u>·</u> ≤ 0.2 % F		-down (ir	n com	nensate	d ran	ne -20	85 °C)				
Permissible temperatures	6	= 0.2 /0 I	OO X tairi	down (ii	1 00111	perioate	a ran	90 20.		lienlav:	environm	ent: _40	80 °
Termissible temperatures	medium: -40 125 °C for filling fluid silicon oil -10 125 °C for filling fluid food compatible oil without display: environmen storage: with display: environmen storage:					-40 nent: -20	80 °						
Permissible temperature medium for cooling eleme	nt	filling fluid silicon oil overpressure: -40 300 °C low pressure: -40 150 °C											
300°C		filling fluid food compatible oil overpressure: -10 250 °C low pressure: -10 150 °C											
⁴ an optional cooling element ⁵ for flange- and DRD-version ⁶ max. temperature of the me temperature of 50 °C (withou	: tolerand dium for i	e band offse nominal pres	$t \le \pm 1.6 \%$	FSO / tol	lerance	band spa	an ≤±	: 0.6 % F	SO		onditions		
Electrical protection													
		permaner	nt										
Short-circuit protection			• •										
Short-circuit protection Reverse polarity protectio	n	no damag	e, but also	o no fund	ction								
		no damag emission	e, but also	o no fund	ction ording	to EN 6	1326						
Reverse polarity protectio Electromagnetic compatib		no damag emission	e, but also	o no fund nity acco	ction ording	to EN 6	1326						
Reverse polarity protectio Electromagnetic compatib		emission	je, but also and immu	nity acco	ording				168-2-6				
Reverse polarity protectio Electromagnetic compatib Mechanical stability		emission 5 g RMS	je, but also and immu (25 200	nity acco	ording acc	to EN 6	DIN	EN 600					
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock		emission	je, but also and immu (25 200	nity acco	ording acc	ording to	DIN	EN 600					
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids		emission 5 g RMS 100 g / 11	je, but also and immu (25 200	nity acco	ording acc	ording to	DIN	EN 600					
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard		5 g RMS 100 g / 11 silicon oil	ge, but also and immu (25 200 msec	nity acco	acc acc	ording to	DIN	EN 600					
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard		emission 5 g RMS 100 g / 11	ie, but also and immu (25 200 msec patible oil E FM 32;	0 Hz) (with FD Category	acc acc A app	cording to cording to cording to coroval)	DIN DIN	EN 600	068-2-27	30662)			
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections		5 g RMS 100 g / 11 silicon oil food com (Mobil DT	ie, but also and immu (25 200 msec patible oil E FM 32;	0 Hz) (with FD Category	acc acc A app	cording to cording to cording to coroval)	DIN DIN	EN 600	068-2-27	30662)			
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials		emission 5 g RMS 100 g / 11 silicon oil food com (Mobil DT Halocarbo	(25 200 msec coatible oil E FM 32; on and oth	0 Hz) (with FD Category ers on re	acc acc A app y Cod eques	cording to cording to cording to coroval)	DIN DIN	EN 600	068-2-27	30662)			
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials Pressure port		emission 5 g RMS 100 g / 11 silicon oil food com (Mobil DT Halocarbo	(25 200 msec coatible oil E FM 32; on and oth	0 Hz) (with FD Category ers on re	acc acc A app y Cod eques	cording to cording to proval) le: H1; N	DIN DIN	EN 600 EN 600	on No.: 1				
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials Pressure port Housing		stainless aluminium	(25 200 msec coatible oil E FM 32; on and oth	0 Hz) (with FD Category ers on re	acc acc A app y Cod eques	cording to cording to proval) le: H1; N	DIN DIN	EN 600 EN 600	on No.: 1				
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials Pressure port Housing Cable gland		emission 5 g RMS 100 g / 11 silicon oil food com (Mobil DT Halocarbo stainless aluminium brass, nice	(25 200 msec coatible oil E FM 32; on and oth die cast, kel plated	nity accc 0 Hz) (with FD Categoriers on re 04 (316L powder-	acc acc A app y Cod eques	cording to cording to proval) le: H1; N	DIN DIN	EN 600 EN 600	on No.: 1				
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials Pressure port Housing Cable gland Viewing glass		emission 5 g RMS 100 g / 11 silicon oil food com (Mobil DT Halocarbo stainless aluminium brass, nic laminated	(25 200 msec patible oil E FM 32; on and oth die cast, kel plated safety gla	nity acco 0 Hz) (with FD Category ers on re 04 (316L powder-	acc acc A app y Cod eques	cording to cording to proval) le: H1; N	DIN DIN	EN 600 EN 600	on No.: 1				
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections		emission 5 g RMS 100 g / 11 silicon oil food com (Mobil DT Halocarbo stainless aluminium brass, nice	(25 200 msec coatible oil E FM 32; on and other in die cast, kel plated safety glastandar option: pressurelded vers	o Hz) (with FD Categor ers on re 04 (316L powder- ass d: FKM FFKM (re ranges ion for p	acc acc A appy y Cod eques -) -coate	ording to ording to ording to ording to ording to ording to ording to ording to ording to	SF R	egistration steel 1.	on No.: 1 4404 (31 ere from -1 equest EN 837 w	6L) 5 °C, pos			
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials Pressure port Housing Cable gland Viewing glass		emission 5 g RMS 100 g / 11 silicon oil food com, (Mobil DT Halocarbo stainless aluminium brass, nic laminated thread:	(25 200 msec coatible oil E FM 32; on and other in die cast, kel plated safety glastandar option: pressurelded vers	o Hz) (with FD Categor ers on re 04 (316L powder- ass d: FKM FFKM (re ranges ion for p	acc acc A appy y Cod eques -) -coate	ording to ording to ording to ording to ording to ording to ording to ording to ording to	SF R	egistration steel 1.	on No.: 1 4404 (31 ere from -1 equest EN 837 w	6L) 5 °C, pos			
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials Pressure port Housing Cable gland Viewing glass Seals (media wetted)		emission 5 g RMS 100 g / 11 silicon oil food com (Mobil DT Halocarbo stainless aluminium brass, nic laminated thread: option: we DRD and	pe, but also and immu (25 200 msec patible oil E FM 32; on and oth steel 1.440 safety glastandar option: pressur pressur flange: no steel 1.441	(with FD Categoryers on recovery of the categoryers on recovery of the categoryers of the	acc acc A appy y Cod eques -) -coate s P _N ≤ ressuludio	proval) e: H1; N t ermissib : 100 bar re ports a ed in the	SF R	esteel 1.	on No.: 1 4404 (31 re from -1 equest EN 837 w ivery	6L) 5 °C, pos			
Reverse polarity protectio Electromagnetic compatib Mechanical stability Vibration Shock Filling fluids Standard Options for process connections Materials Pressure port Housing Cable gland Viewing glass Seals (media wetted) Diaphragm	ility	emission 5 g RMS 100 g / 11 silicon oil food com (Mobil DT Halocarbo stainless aluminium brass, nic laminated thread: option: we DRD and	pe, but also and immu (25 200 msec patible oil E FM 32; on and oth steel 1.440 safety glastandar option: pressur pressur flange: no steel 1.441	(with FD Categoryers on recovery of the categoryers on recovery of the categoryers of the	acc acc A appy y Cod eques -) -coate s P _N ≤ ressuludio	proval) e: H1; N t ermissib : 100 bar re ports a ed in the	SF R	esteel 1.	on No.: 1 4404 (31 re from -1 equest EN 837 w ivery	6L) 5 °C, pos			

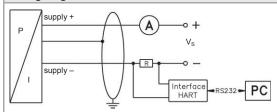
XMP i

Technical Data

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	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i = 0 \text{ nF}, L_i = 0 \mu\text{H}, C_{GND} = 27 \text{ nF}$
Approval AX17-XMP i	IBExU 12 ATEX 1045 X
(flameproof enclosure)	aluminium die cast case: zone 1: II 2G Ex d IIC T5 Gb
Permissible temperatures for	in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar
environment	zone 1 or higher: -25 70 °C (intrinsically safe version); -20 70 °C (flameproof enclosure)
Connecting cables	capacitance: signal line/shield also signal line/signal line: 160 pF/m
(by factory)	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 +	IN+	IN+
Supply –	IN-	IN-
Test	Test	-
Shield	<u></u>	

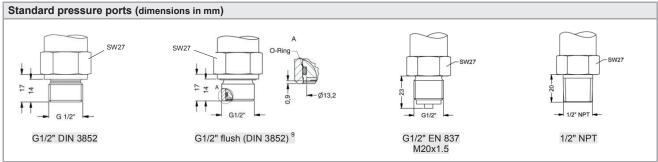
Housing designs 8 (dimensions in mm)

aluminium die cast case stainless steel field housing M20x1,5 (for cable-0) Sup to 14 mm) SW27 SW2

 \Rightarrow for nominal pressure $P_N > 400$ bar increases the length of devices by 39 mm

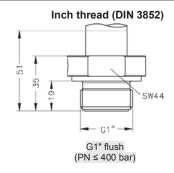
 $^{^{\}star}$ without display and operating module marked dimensions decrease by 19 mm (with aluminium case)

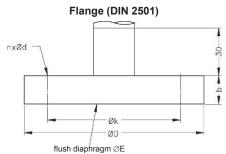
⁸ aluminium case is horizontally rotatable as standard



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

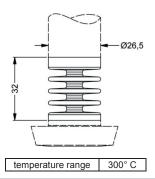
Process connections up to 40 bar (dimensions in mm)

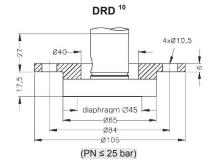


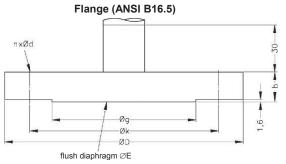


	dimensions in mm								
size	DN25/PN40	DN50/PN40	DN80/PN16						
D	115	165	200						
E	30	89	89						
k	85	125	160						
b	18	20	20						
n	4	4	8						
d	14	18	18						
DNI	< 10 har	< 10 har	< 16 har						

Cooling element





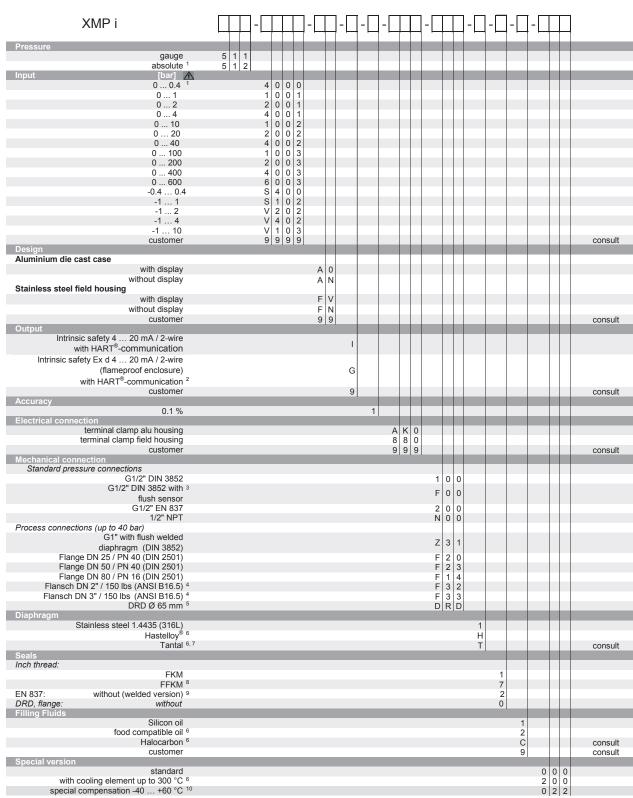


dimensions in mm						
size	2"/150 lbs	3"/150 lbs				
D	152.4	190.5				
E	86	89				
g	91.9	127				
k	120.7	152.4				
b	19.1	23.9				
n	4	4				
d	19.1	19.1				
PN	< 10 har	< 10 har				

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

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

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



 ${\underline{\mathbb{A}}}$ if setting range shall be different from nominal range please specify in your order

- absolute pressure possible from 1 bar
- ² only possible in combination with aluminium die cast case
- not possible for vacuum ranges and pressure ranges > 40 bar
- 4 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges $P_{\text{N}} \leq$ 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≤ 100 bar
- ⁹ possible with pressure ranges between 1 bar and 40 bar
- option for version without display

HART® is a registered trade mark of HART Communication Foundation: Hastellov® is a brand name of Havnes 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



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 Al₂O₃ 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



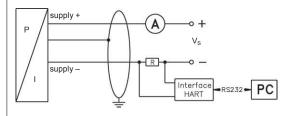




Pressure ranges 1									
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10	20
Overpressure	[bar]	2	4	6	8	15	25	35	45
Permissible vacuum	[bar]	-0.2	-0.3).5			-1	
On customer request we adjust	the de	vices by softwar	e to the requi	red pressure ra	inges. Within th	ne turn-down-p	ossibility (start	ing at 0.02 bar	·).
Output signal / Supply			00 4						
Standard		2-wire: 4 intrinsically		n with HART®	-communicat	tion / V _S = 12	28 V _{DC}		
Option				nclosure / V			0		
Current consumption		max. 25 m/	١						
Performance									
Accuracy ²			essure < 1 ba		2 % FSO I % FSO				
		for nominal	pressure ra	nges:		TD-1) x 0.02	% FSO		
		from 0.06 b			_ () _ (
		for nominal		nges:	$\leq \pm (0.1 + 0.1)$	TD-1) x 0.01)	% FSO		
		from 1 bar u	•	al pressure ra	ango / adjust	od rango			
Permissible load						ed range ad during HA	DT® commun	nicotion: D	- 250 O
		$R_{\text{max}} \leq [(V_S - V_S)]$							- 250 12
Influence effects Long term stability		supply: 0.05 ≤ ± 0.1 % F		U V	pe	ermissible loa	u. u.uo % FS	20 / K73	
Response time				sideration of	electronic da	ımnina	me	asuring rate	5/sec
Adjustability		electronic d			Sicoli Offic da	pig	1116	asaring rate	0,000
juotuomity		offset 0 8		. 100 000					
				. 1:5 (span m					
² accuracy according to IEC 6077	70 – lim	it point adjustm	ent (non-linea	rity, hysteresis,	repeatability)				
Thermal errors / Permissib	le tem	peratures							
Thermal error				% FSO / 10 K		ated range -2	20 80 °C		
Permissible temperatures ³		without disp with display		ım: -25 12: ım: -25 12:		nvironment: -4 nvironment: -2		storage: -4 storage: -3	10 80° C
³ for pressure port of PVDF the n	ninimun	n permissible te	mperature is -	30°C					
Electrical protection									
Short-circuit protection		permanent							
Reverse polarity protection		no damage	, but also no	function					
Electromagnetic compatibility	У	emission ar	nd immunity	according to	EN 61326				
Mechanical stability									
Vibration		5 g RMS (2	0 2000 Hz	z)					
Shock		100 g / 11 n		,					
Materials		100 97 111							
Pressure port									
Standard		stainless ste	eel 1.4404 (3	316L)					
Optionally for G1 1/2" flush Housing			lie cast now	vder-coated c	r etainless st	eel 1 4404 (1	R16L)		
				vaci odatea e	or ottaininess st	(001 1.4404 (0) (OL)		
Cable gland Viewing glass		brass, nicke							
Seals (media wetted)				erature: -25 .	125 °C)				
Codio (media wetted)			missible tem	perature: -40					
Diaphragm		ceramics Al							
Media wetted parts		pressure po		hragm					
Explosion protection		proodure pe	nt, ocui, uia	Jiliugili					
Approval AX12-XMP ci		IREVITOE A	TEX 1106 X	,					
(intrinsically safe version)		stainless ste	eel field hou	sing: zone 0/ e: zone 1: II 2					5 °C Da
Safety techn. maximum value	es	1		= 660 mW, 0					
Approval AX17-XMP ci		IBExU 12 A			, -	I- , - GND			
(flameproof enclosure)		_	die cast case		ne 1: II 2G E	x d IIC T5 GI	0		
Permissible temperatures for environment		in zone 0: -2	20 60 °C v	with p _{atm} 0.8 to	par up to 1.1	bar		enclosure)	
⁴ The designation depends on the	e nomir	⊥ nal pressure ran	ge. Nominal p	ressure range:	s ≤ 60 mbar are	e marked with .	.2G".	Cholosule)	
For nominal pressure ranges >	60 mb	ar and < 10 bar	see note unde	er item 17 in th	e EC type-exai	mination certific	cate!		

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-segment 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	

Wiring diagram

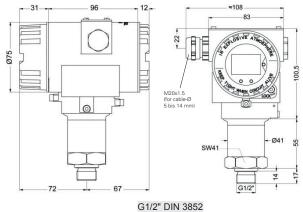


ь.				
Pin	conf	ıau	ratı	on

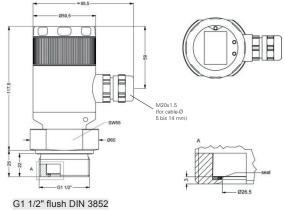
	aluminium die cast case:	stainless steel field housing:
Electrical connections	terminal clamps	terminal clamps
	(clamp section: 2.5 mm ²)	(clamp section: 1.5 mm ²)
Supply +	IN+	IN+
Supply –	IN-	IN-
Test	Test	-
Shield	<u>_</u>	

Housing designs 5 (dimensions in mm)

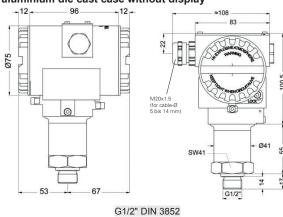
aluminium die cast case with display



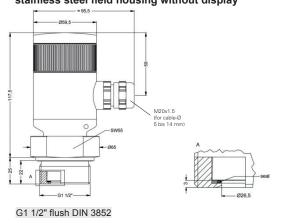
stainless steel field housing with display



aluminium die cast case without display



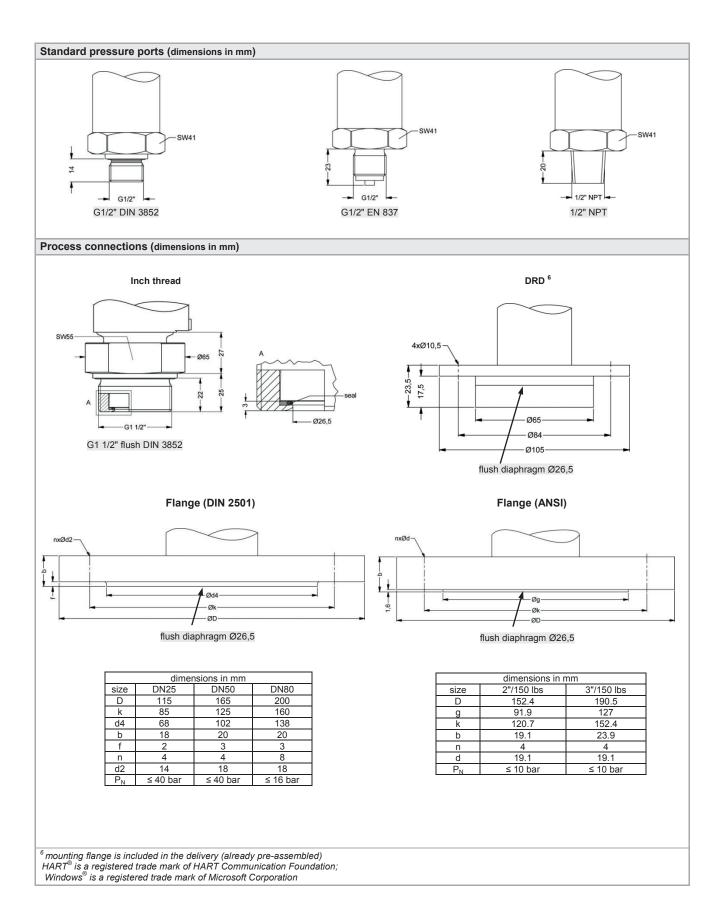
stainless steel field housing without display



⁵ aluminium die cast case is horizontally rotatable as standard

XMP ci

Technical Data



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

14 XMP ci Ordering Code

XMP ci	ш-ш-п-п-п-ш-п-п- п-]-[П	
Pressure				
gauge [bar]	5 1 E	-	н	
0.06	0 6 0 0		П	
0.16	1 6 0 0		Ш	
0.4	4 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
2	2 0 0 1			
5	5 0 0 1			
10 20	1 0 0 2			
customer	2 0 0 2 9 9 9			consult
Design				55115511
Aluminium die cast case				
with display without display	A 0 A N			
Stainless steel field housing				
with display	F V			
without display	F N			
Output	9 9			consult
Intrinsic safety 4 20 mA / 2-wire			П	
with HART®-communication				
Intrinsic safety d 4 20 mA / 2-wire (flameproof enclosure)	G			
with HART®-communication ¹				
customer	9			consult
Accuracy 0.1 %				
customer	1			consult
Electrical connection				551155111
terminal clamp alu housing	AKO			
terminal clamp field housing customer	8 8 0 9 9 9			consult
Mechanical connection	3 3 3			Coristit
standard pressure connections:				
G1/2" DIN 3852 G1/2" EN 837	1 0 0 2 0 0		ш	
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) Flange DN 50 / PN 40 (DIN 2501)	F 2 0 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 customer	D R D 9 9 9			consult
Diaphragm	3 3 3			Consuit
Ceramics Al ₂ O ₃ 99,9%	C		П	
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		В		
customer		9		consult
Special version standard		0 0	0	
customer		0 0 9 9	9	consult
		- 10	1 - 1	

$\underline{\Lambda}$ 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 \leq 10 bar
- $^{\rm 3}$ mounting flange is included in the delivery (already pre-assembled)
- 4 permissible temperature FKM -25 \dots 125 °C, EPDM -40 \dots 125 °C, PVDM -30 \dots 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





16 xlacti

Pressure ranges ¹										
Nominal pressure gauge / abs.	[bar]	0.4	1	2	4	10	20	40		
Overpressure										
Burst pressure [bar] 3 7,5 15 25 50 120 210										
¹ higher pressure ranges on r	equest; on den	nand we adjus	st the devices wit	thin the turn-dow	n-possibility by so	oftware on the re	equired pressure	ranges		

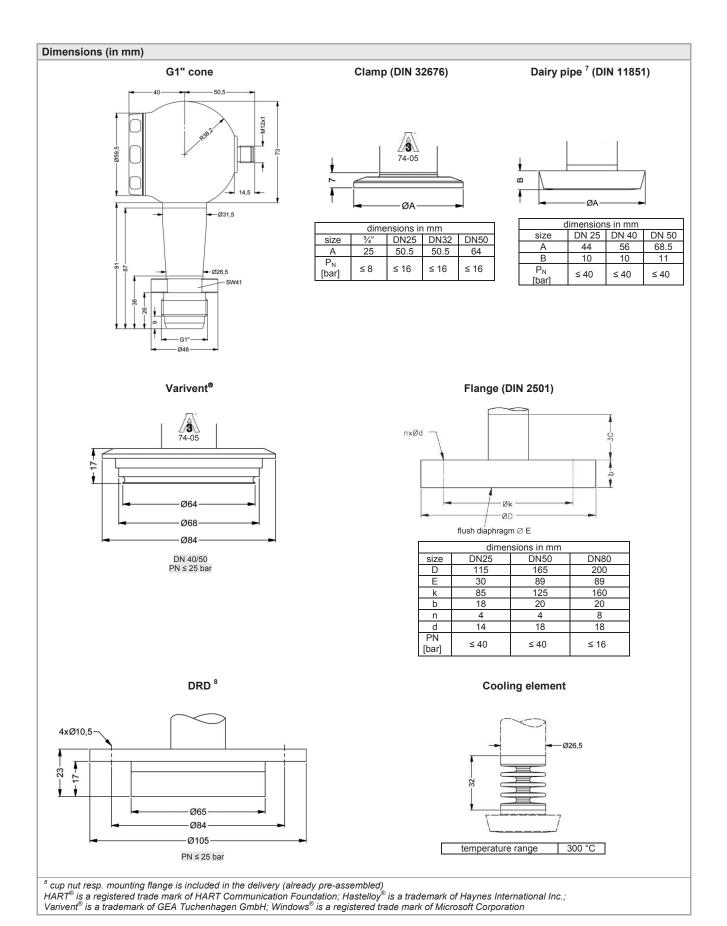
² absolute pressure possible from 1 bar

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

Standard	2 wire: 4 20 m/s /// = 4	2 20 1/							
Standard	2-wire: 4 20 mA / V _s = 1								
Option	$ \begin{array}{llllllllllllllllllllllllllllllllllll$								
Current consumption	max. 25 mA								
Performance									
Accuracy ³	≤ ± 0.1 % FSO	The accuracy is calculated as follows							
Perfomance after turn-down	- turn-down ≤ 1:5: no change	≤ 0.1 + 0.015 x (turn-down - 5) % FSO							
	- turn-down > 1:5:	e.g. turn-down 9: ≤ 0.1 + 0.015 x (9 - 5) % FSO = 0.16 % FSO							
Permissible load	$R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}]$	$Ω$ 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		/ year at reference conditions							
Response time	100 msec – without considera								
Adjustability	electronic damping: 0 100 offset: 0 90 % FSO	sec turn-down of span: max. 1:10							
³ accuracy according to IEC 60770 – lii	mit point adjustment (non-linearity, hysi	teresis, repeatability)							
Thermal effects (Offset and Spa									
Tolerance band 4,5	≤ ± 0.2 % FSO x Turn-Down								
in compensated range	-20 85 °C								
Permissible temperatures ⁶		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	filling fluid silicon oil	overpressure: -40 300 °C vacuum pressure: -40 150 °C							
⁴ an optional cooling element can influe ⁵ for flange-, Varivent-, DRD-version: to ⁶ for vacuum ranges and absolute pres max. temperature of the medium for r	olerance band offset ≤± 1.6 % FSO / to sure the max. medium temperature is nominal pressure gauge > 0 bar: 150 °C	n depending on installation position and filling conditions plerance band span ≤ ± 0.6 % FSO							
 ⁴ an optional cooling element can influe ⁵ for flange-, Varivent-, DRD-version: te ⁶ for vacuum ranges and absolute presmax. temperature of the medium for retemperature of 50 °C (without cooling 	ence thermal effects for offset and spar olerance band offset ≤ ± 1.6 % FSO / to sure the max. medium temperature is nominal pressure gauge > 0 bar: 150 °C	n depending on installation position and filling conditions olerance band span ≤ ± 0.6 % FSO 70 °C;							
 ⁴ an optional cooling element can influe ⁵ for flange-, Varivent-, DRD-version: te ⁶ for vacuum ranges and absolute presmax. temperature of the medium for retemperature of 50 °C (without cooling Electrical protection 	ence thermal effects for offset and spar olerance band offset \leq \pm 1.6 % FSO / to sure the max. medium temperature is nominal pressure gauge > 0 bar: 150 °C element).	n depending on installation position and filling conditions olerance band span ≤ ± 0.6 % FSO 70 °C;							
⁴ an optional cooling element can influe ⁵ for flange-, Varivent-, DRD-version: to ⁶ for vacuum ranges and absolute pres max. temperature of the medium for r temperature of 50 °C (without cooling Electrical protection Short-circuit protection	ence thermal effects for offset and spar olerance band offset ≤ ± 1.6 % FSO / to sure the max. medium temperature is nominal pressure gauge > 0 bar: 150 °C element).	n depending on installation position and filling conditions olerance band span ≤± 0.6 % FSO 70 °C; C for 60 minutes with a max. environmental							
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x|act i

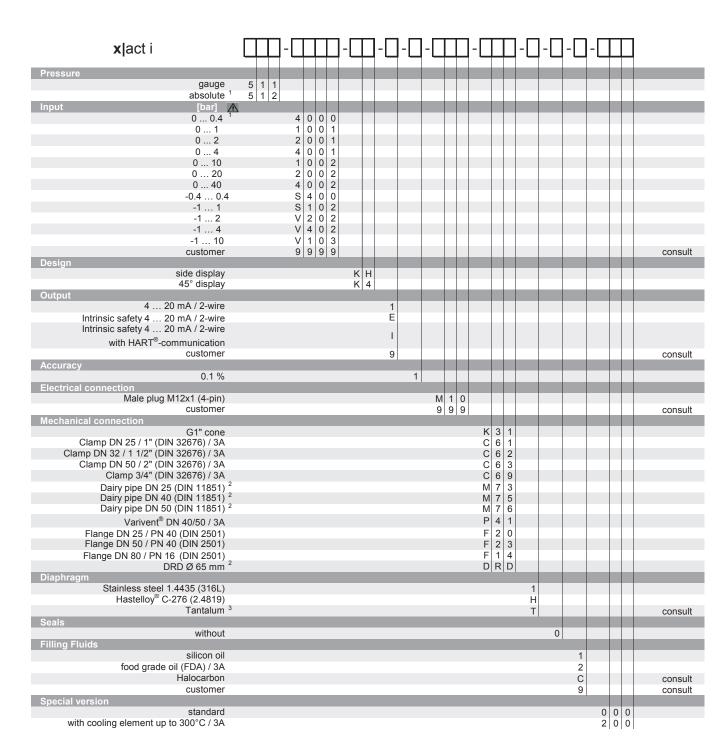
Explosion protection								
Approval AX12-x act i	IBEXU 05 ATEX 1106 X							
Safety technical maximum values	zone 0: II 1G Ex ia IIC T4 Ga / II 1D Ex ia IIIC T85 °C Da $U_i = 28 \text{ V}, \ I_i = 93 \text{ mA}, \ P_i = 660 \text{ mW}, \ C_i = 0 \text{ nF}, \ L_i = 0 \mu\text{H}, \ \text{the supply connections have an inner approximate of many 27 pF to the boundary.}$							
Permissible temperatures for	capacity of max. 27 nF to the housing in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar							
environment in zone 1: -25 70 °C Connecting cables capacitance: signal line/shield also signal line/signal line: 160 pF/m (by feeter) industrance: signal line/shield also signal line/signal line: 1 yH/m								
(by factory) Miscellaneous	inductance: signal line/shield also signal line/signal line: 1 µH/m							
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 Installation position	IP 67 any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $P_N \le 2$ 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®							
supply + supply -	supply + Vs Vs supply - Interface HART RS232 PC							
Pin configuration								
Electrical connections	M12x1 (4-pin)							
Supply + Supply –	1 3							
Shield	plug housing							
Electrical connections (dimension								
M12x1 (4-pin)								
Designs ⁷								
	side display 45° display							
⁷ all designs in combination with G1" con	e in horizontal rotatable housing as standard; other mech. connections in rotatable housing on request							



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

xlact i

Ordering Code



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

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

 ${\sf Varivent}^{\circledcirc} \ {\sf is\ a\ brand\ name\ of\ GEA\ Tuchenhagen\ GmbH}$

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

¹ absolute pressure possible from 1 bar

 $^{^{\}rm 2}$ cup nut resp. mounting flange is included in the delivery (already pre-assembled)

³ tantal diaphragm possible with nominal pressure ranges from 1 bar



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 Al₂O₃ 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





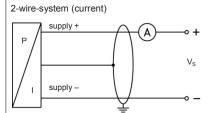


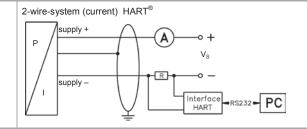
xlact ci

0.16 4 2 -0.3 oftware on the required in th	V_S = 12 30 V_S = 12 30 V_S = 12 26 h HART® con bar: $\leq \pm 0$ bar: $\leq \pm 0$ anges: 4 bar anges: 11 nal pressure 0.02 A] Ω 10 V onsideration 0 100 sec ix. 1:5 (span	0 V_{DC} 8 V_{DC} $0,2 \% \text{ FSO}$ $0,1 \% \text{ FSO}$ $0,2 \% \text{ FSO}$ $0,3 \% \text{ FSO}$ $0,4 \% \text{ FSO}$ $0,2 \% \text{ FSO}$ $0,3 \% \text{ FSO}$ $0,4 \% \text{ FSO}$	V _s = 12 2 D-1) x 0.02) % D-1) x 0.01) % ed range ad during HA ermissible loa	8 V _{DC} % FSO % FSO RT [®] commur	nication: R _{min}	= 250 Ω
2 -0.3 oftware on the required: 4 20 mA / \(\) 4 20 mA / \(\) 4 20 mA with 5 mA al pressure < 1 bal pressure ≥ 1 bal pressure ≥ 1 bal pressure rate and p	$V_S = 12 30$ $V_S = 12 30$ $V_S = 12 20$ $V_S = 12 $	-0.5 Pranges (within the pranges (within the pranges (within the pranges) 8 V _{DC} 8 V _{DC} 9,2 % FSO 9,1 % FSO ≤ ± (0.2 + (TE) range / adjusted pressure pranges (within the pranges)	the turn-down-p $V_S = 12 \dots 2$ $(D-1) \times 0.02)$ % $(D-1) \times 0.01)$ % ed range ad during HA ermissible loa	ossibility; start 8 V _{DC} 6 FSO 6 FSO RT® commun	nication: R _{min}	= 250 Ω
oftware on the requirements of the requiremen	V_S = 12 30 V_S = 12 30 V_S = 12 26 h HART® con bar: $\leq \pm 0$ bar: $\leq \pm 0$ anges: 4 bar anges: 11 nal pressure 0.02 A] Ω 10 V onsideration 0 100 sec ix. 1:5 (span	e ranges (within the ranges (within the ranges (within the property) $0.00000000000000000000000000000000000$	V _s = 12 2 D-1) x 0.02) % D-1) x 0.01) % ed range ad during HA ermissible loa	8 V _{DC} 6 FSO 6 FSO RT® commun	nication: R _{min}	= 250 Ω
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m: -25 125 °C		environment:			storage: -30	80 °C
1123 123 C	,	environment.	-20 70 C		storage50	80 C
nent	o function					
nage, but also no		o EN 61226				
on and immunity	y according to	0 EN 01320				
	Hz)					
11 msec						
read, DRD and f nt [®] , dairy pipe ar	flange version nd clamp:		steel 1.4404	(316L)		
ally for G1 1/2" fl	lush (DIN 38	52)· PVDF				
		,				
permissible temp		125 °C)				
)					
	•					
		'Gb / II 1D Ex ia	a IIIC T85 °C	Da		
3 V, I _i = 93 mA, F	P _i = 660 mW,	, C _i = 0 nF, L _i =	= 0 μH,		q	
					J	
				pF/m		
e 1: -25 tance: signal line	5 70 °C ne/shield also					
	/ 11 msec aread, DRD and ant®, dairy pipe a ally for G1 1/2" fess steel 1.4301 ated safety glass permissible tem lon request ics Al ₂ O ₃ 99.9 % are port, seals, of control of the cont	ally for G1 1/2" flush (DIN 38 as steel 1.4301 (304) ated safety glass permissible temperature: -25 l on request ics Al ₂ O ₃ 99.9 % are port, seals, diaphragm 05ATEX1106 X 0/1 3: II 1/2G Ex ia IIC T4 Ga/3 V, I _i = 93 mA, P _i = 660 mW pply connections have an inrecord."	In the control of the	In the control of the	In the sector of	In read, DRD and flange version, ant®, dairy pipe and clamp: stainless steel 1.4404 (316L) ally for G1 1/2" flush (DIN 3852): PVDF ass steel 1.4301 (304) ated safety glass permissible temperature: -25 125 °C) on request ics Al ₂ O ₃ 99.9 % are port, seals, diaphragm 05ATEX1106 X 0/1 3: II 1/2G Ex ia IIC T4 Ga/Gb / II 1D Ex ia IIIC T85 °C Da 3 V, I _i = 93 mA, P _i = 660 mW, C _i = 0 nF, L _i = 0 µH, pply connections have an inner capacity of max. 27 nF to the housing e O: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar ne 1: -25 70 °C itance: signal line/shield also signal line/signal line: 160 pF/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-segment 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

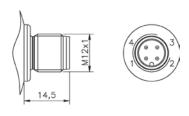




Pin configuration

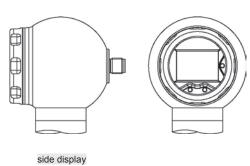
Electrical connections	M12x1 (4-pin)	cable colours (DIN 47100)			
Supply +	1	wh (white)			
Supply –	3	bn (brown)			
Shield	plug housing	ye/gn (yellow / green)			

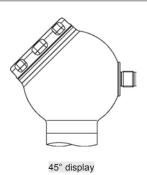
Electrical connections (in mm)



M12x1 (4-pin)

Designs 4

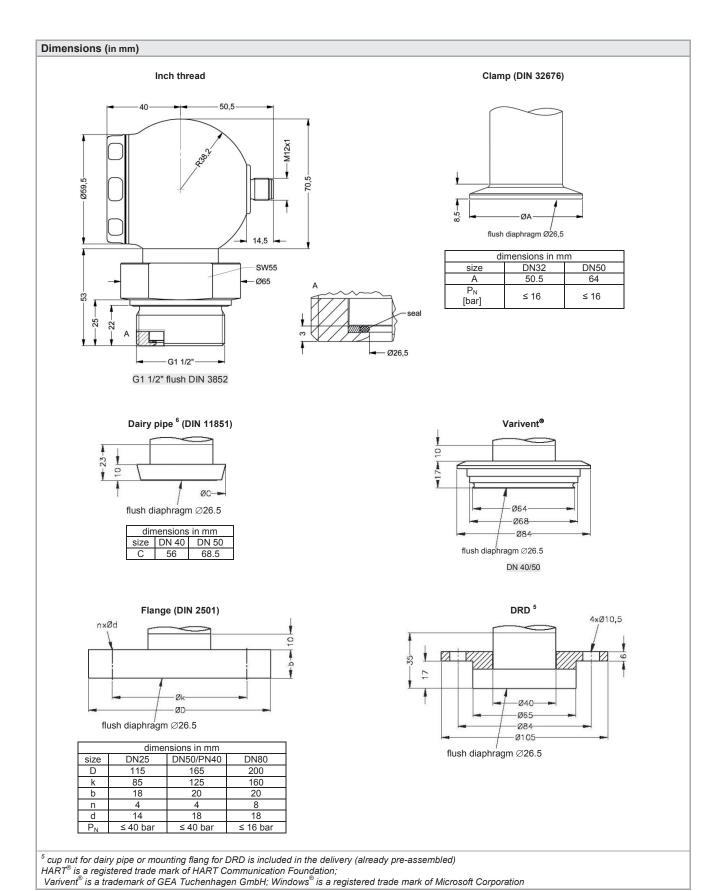




⁴ all designs in combination with G1 1/2" flush in horizontal rotatable housing as standard; other mech. connections in rotatable housing on request

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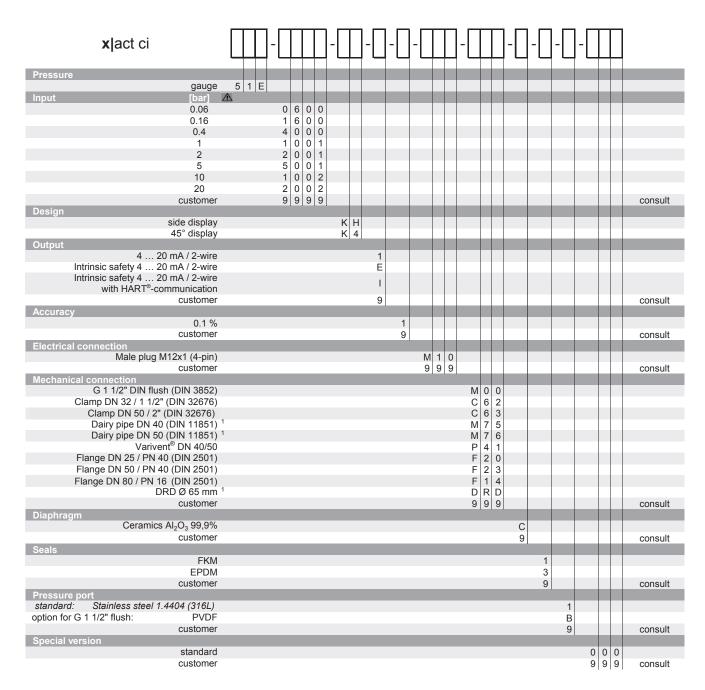
Technical Data



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Ordering Code



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

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

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



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
- communication interface for adjustment of offset, span and damping

The precision pressure transmitter DMP 331Pi demonstrates the further development of welltried industrial pressure transmitter DMP 331P.

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





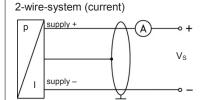
Pressure ranges ¹													
Nominal pressure		0.4	1	2	4	10	20	40					
gauge / absolute 2	[bar]												
Overpressure	[bar]	2	5	10	20	40	80	105					
Burst pressure ≥	[bar]	3	7,5	15	25	50	120	210					
Vacuum resistance $P_N \ge 1$ bar: unlimited vacuum resistance $P_N < 1$ bar: on request													
On customer request we adj		device within the t		sibility by softw	vare on the require	d pressure range.							
absolut pressure permissible	e from 1	bar											
/acuum ranges	1												
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 2	20 mA / V	/ _S = 12 36	V _{DC}								
Option IS-protection				/ _S = 14 28									
Options				ommunicatio									
J palorio		3-wire: 0 1		$t_{\rm S} = 14 30$									
				nmunication									
only possible with el. connec	ction Bir												
Performance		(,	. ,										
Accuracy ⁴		IEC 60770: ≤ ±	0.1 % FSO										
performance after turn-do	wn	0 00//0.31	0.1 /01 00										
eriormance alter turn-do - TD ≤ 1:5	VVII	no change of a	ccuracy 5										
- TD > 1.5 - TD > 1:5				vina formula	(for nominal pro-	seura rangos <	0.40 har see	note 5):					
15 - 1.0		for calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 5): ≤ ± [0.1 + 0.015 x turn-down] % FSO											
		≤ ± [0.1 + 0.015 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range											
				•	ccuracy is calcul								
					ccuracy is caicui acy is ≤ ± 0.25 %								
Permissible load							10 kO						
Influence effects	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1												
Long term stability		supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ ≤ ± (0.1 x turn-down) % FSO / year											
Response time		< 5 msec											
Adjustability			following na	rameters no	ssible (interface	/ software nece	ecan ₆).						
Adjustability		- electronic dar			ssible (IIIterrace	7 Software fiece	ssary).						
		- offset: 0 90											
		- turn down of	span: max. 1	:10									
⁴ accuracy according to IEC 6	0770 –	limit point adjustm	ent (non-linea	rity, hysteresis	, repeatability)								
⁵ except nominal pressure ran	nge <u>s</u> ≤ 0	.40 bar; for these	calculation of	accuracy is as	follows:	- < 1.0.40.0/ 500							
$\leq \pm (0.1 + 0.02 \text{ x turn-down})$ software, interface, and cabi	% FSO le have	e.g. turn-aown of to be ordered sep	1:3: ≤ ± (0.1 + aratelv (softwa	· 0.02 x 3) % r are appropriate	for Windows® 95.	S ≤ ± 0.16 % FSO 98. 2000. NT Ver	sion 4.0 or high	ner. and XP)					
Thermal effects 7 (Offset					10: 11::100110 00;	00, 2000, 10.	olon no ol mg.	.0., 0.10 7.1 /					
•		≤ ± (0.35 x turn			sated range -2	20 80 °C							
TC, average [% FSO /		≤ ± (0.035 x tur			sated range -2								
Permissible temperatures		medium:			5 °C for filling flu								
p = 1.5.1.00					5 °C for filling flu		ible oil						
		electronics / en	vironment:	-25 8									
		storage:		-40 10									
Permissible temperature		filling fluid silico	on oil over	pressure: -40) 300 °C	vacuum: -40	150 °C ⁹						
medium for cooling		filling fluid food	compatible	oilovernressi	ure: -10 250 °(C vacuum: -10	150 °C ⁹						
element 300°C													
7 an optional cooling element								of FO °C					
⁸ max. temperature of the med ⁹ also for P _{abs} ≤ 1 bar	aium ioi	nominal pressure	gauge > 0 ba	ir. 150 C 101 6	o minutes with a m	ax. erivirorimenta	i terriperature c	01 50 C					
Electrical protection													
		normanant											
Short-circuit protection	n	permanent no damage, bu	t also no fun	ction									
Reverse polarity protectio Electromagnetic compatib					61326								
	niity	emission and ir	mnumly acc	ording to EN	01320								
Filling fluids													
Standard		silicon oil											
Options		food compatible											
(Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662)													
Markania (1994		others on reque	est										
Mechanical stability													
m n (But = 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	a a:												
Vibration (DIN EN 60068- Shock (DIN EN 60068-		G 1/2": 20 g RN G 1/2": 500 g /			ers except G 1/2 ers except G 1/2			2)					

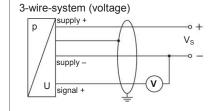
Technical Data

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	1 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, $C_i \approx 0$ nF, $L_i \approx 0$ μ H, the supply connections
	have an inner capacity of max. 27 nF to the housing
Max. permissible temperature	-20 65 °C
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
(by factory)	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 $P_N \le 1$ bar.

Wiring diagrams





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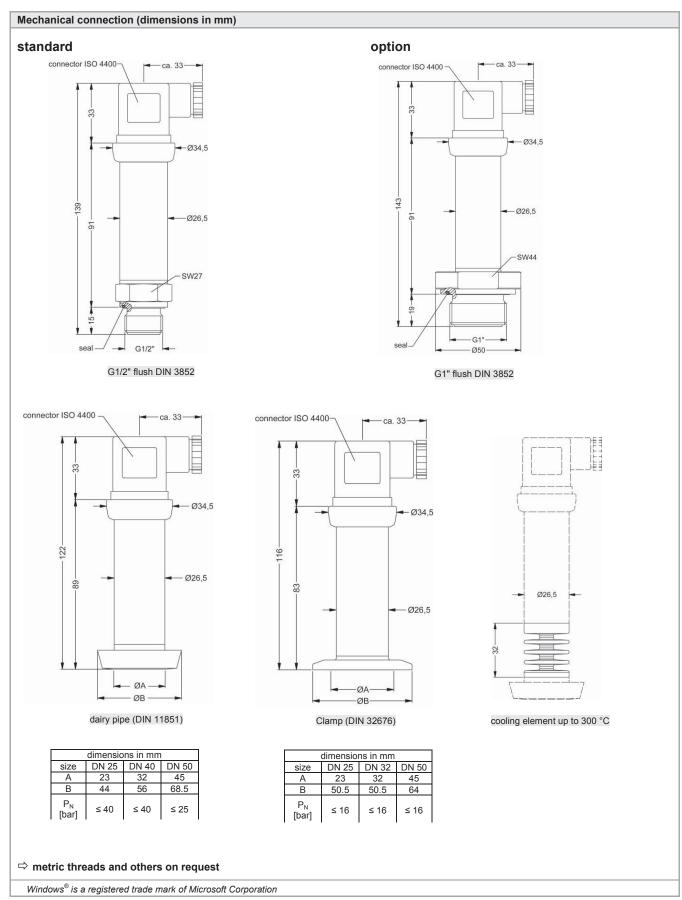
Electrical connection	s	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/ metal (4-pin)	field housing	cable colours (DIN 47100)
	Supply +	1	3	3	3	IN +	wh (white)
	Supply –	2	4	1	1	IN –	bn (brown)
Signal + (only	Signal + (only for 3-wire)		1	6	-	OUT +	gr (green)
	shield	ground pin	5	2	4	풀	ye/gn yellow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

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

Electrical connections (dimensions in mm)

option standard M12x1,5 (for cable-Ø 2 up to 8 mm) cable outlet 12 cable outlet 13, with ISO 4400 Binder 723 Binder 723 M12x1 field housing ventilation tube (IP 68) (IP 65) 5-pin (IP 67) 7-pin (IP 67) 4-pin (IP 67) (IP 67) PVC cable (IP 67)

 $^{^{12}}$ 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



Ordering Code

Design S S O O O O O O O O	DMP 331Pi		-	- <u> </u> -	- 🔲]-[-	- 🗌	- 🔲	-П		
Imput	gauge	5 0 0											
1.0		5 0 1											
2.0	0.40		0 0 0				П						
4.0			0 0 1										
20	4.0		0 0 1										
40 4 0 0 2		1 2	0 0 2										
-11 S 1 0 2 1 1 2 2 1 1 2 1 1	40	4	0 0 2										
Customer			4 0 0										
Customer	-1 2	V	2 0 2										
Customer			4 0 2										
A 20 mA / 2-wire		9	9 9 9										consult
Intrinsic safety 4 20 mA / 2-wire 8 0 10 V / 3-wire 3 0 10 V / 3-wire 4 0													
Consult													
Accuracy			3										
Customer			9										consult
Electrical connection	0.1%												
Male and female plug ISO 4400 Male plug Bindre series 723 (7-pin) 2 0 0 0 Male plug Bindre series 723 (7-pin) 3 A 0 0 0 Cable outlet with PVC-cable 3 T A 0 0 Cable outlet with PVC-cable 3 T R 0 0 Male plug M12x1 (4-pin) metal M 1 0 0 Compact field housing 8 5 0 0 stainless steel 1.4305 8 5 0 0 stainless steel 1.4305 8 5 0 0 Customer 9 9 9 9 9 9 0 0 Mechanical connection Mechanical connection Mechanical connection Mine welded disphragm (DIN 3852) 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				9									consult
Male plug Binder series 723 (7-pin) 2 Cable outlet with PVC-cable 3 Cable outlet with PVC-cable 3 Cable outlet with PVC-cable 3 T A 0 0 Cable outlet with PVC-cable 3 T R 0 0 Cable outlet with PVC-cable 3 T R 0 0 Male plug M12x1 (4-pin) / metal M 1 0 Compact field housing stainless steel 1.4305 5 customer 9 9 9 9 9 9 9 9 0 Consult Mechanical connection Mechanical connection Mechanical connection G1/2* with flush welded diaphragm (DIN 3652) 6 G1* with flush welded diaphragm (DIN 3652) 6 G1* with flush welded diaphragm (DIN 3652) 6 Calmp DN 32 (DIN 32676) C 6 6 1 1 Calmp DN 32 (DIN 32676) C 6 6 2 Calmp DN 32 (DIN 32676) C 6 6 3 Dairy pipe DN 40 (DIN 11851) 5 Dairy pipe DN 40 (DIN 11851) 5 Dairy pipe DN 50 (DIN 11851) 5 Dairy pipe DN	Male and female plug ISO 4400						$\overline{}$						
Cable outlet with PVC-cable 3	Male plug Binder series 723 (5-pin)												
Male plug M12x1 (4-pin / metal Compact field housing Stainless steel 1.4305 s	Cable outlet with PVC-cable ³				TA								
Compact field housing stainless steel 1.4305					TR								
Stainless steel 1.4305 S													
Mechanical connection	stainless steel 1.4305 ⁵												
G1/2" with flush Selection Selection					9 9 9)							consult
Weided diaphragin (DIN 3652)	G1/2" with flush					z	0 0						
welded diaphragm (DIN 3852)	welded diaphragm (DIN 3852) ° G1" with flush												
Clamp DN 32 (DIN 32676)	welded diaphragm (DIN 3852)												
Clamp DN 50 (DIN 32676)													
Dairy pipe DN 40 (DIN 11851) 5	Clamp DN 50 (DIN 32676)					С	6 3						
Dairy pipe DN 50 (DIN 11851) 5	Dairy pipe DN 25 (DIN 11851) ⁵						7 3						
Stainless steel 1.4435 (316L) Hastelloy® C-276 (2.4819) Tantalum T	Dairy pipe DN 50 (DIN 11851) ⁵					М	7 6						
Stainless steel 1.4435 (316L)						9	9 9						consult
Tantalum customer Customer Seals for clamp or dairy pipe: without for inch thread - standard: FKM for inch thread - option: FFKM 7 Consult Filling Fluids Silicon oil 1 Consult Filling Fluids Silicon oil 2 Consult Food compatible oil 2 Consult Special version Special version Standard RS-232 interface 7 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Stainless steel 1.4435 (316L)							1					
Customer 9 Consult Seals for clamp or dairy pipe: without 0 Tor inch thread - standard: FKM 1 Tor inch thread - option: FFKM 7 Tor inch thread - option: FFKM 9 Tor inch thread - option: FFKM 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Hastelloy® C-276 (2.4819)												
Seals for clamp or dairy pipe: without for inch thread - standard: FKM for inch thread - option: FFKM for inch thread - option: FFKM customer 9 consult Filling Fluids Silicon oil food compatible oil customer 9 consult Special version Standard RS-232 interface 7 with cooling element up to 300 °C RS-232 interface and cooling element up to 300 °C 7								-					
for inch thread - standard: FKM for inch thread - option: FFKM	Seals												
for inch thread - option: FFKM customer 9 consult Filling Fluids Silicon oil 1 2 customer 9 consult Filling Fluids Silicon oil 2 customer 9 consult Special version Standard 1 1 1 1 RS-232 interface 7 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1													
Filling Fluids Silicon oil 1 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	for inch thread - option: FFKM								7				14
silicon oil food compatible oil customer 1									9				consult
customer 9 consult Special version 1 1 1 1 1 1 1 1 1 1 2 1 2 1 2 1 2 1 1 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 1 2 2 2 1 3 3 3 3 3 3 3 3 3 3 3 3 3 4 3 4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	silicon oil												
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													consult
RS-232 interface ' 1 2 1 with cooling element up to 300 °C 2 1 1	Special version									5			COTICUIT
RS-232 interface and cooling element up to 300 °C 7											1	1 1	
RS-232 interface and cooling element up to 300 °C 7	with cooling element up to 300 °C										2	1 1	
cooling element up to 500 °C													
													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 $P_{N} \ge 1$ bar

 $^{^{\}rm 7}$ 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 $^{\odot}$ 95, 98, 2000, NT Version 4.0 or newer and XP)

Windows® is a registrated trademark of Microsoft Corporation



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)









DMP 331i / DMP 333i / LMP 331i

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	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										
60	100	200	400	600									
210	210	600	1000	1000									
420	420	1000	1250	1250									
	210 420	210 210 420 420	210 210 600 420 420 1000	210 210 600 1000									

Pressure ranges LMP 331 i ¹										
Nominal pressure gauge / absolute	[bar]	0.4	1	2	4	10	20	40		
Level gauge	[mH ₂ O]	4	10	20	40	100	200	400		
Overpressure	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	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	no change of accuracy ⁴								
- TD > 1:5	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:								
	$\leq \pm (0.1 + 0.015 \times 10)$ % FSO i.e. accuracy is $\leq \pm 0.25$ % FSO								
Permissible load	current 2-wire: $R_{max} = [(V_S - V_S min) / 0.02 A] \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$								
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	t point adjustment (non-linearity, hysteresis, repeatability)								
⁴ except nominal pressure ranges ≤ 0 .40 ≤ ± (0.1 + 0.02 x turn-down) % FSO e.g) bar; for these calculation of accuracy is as follows: - turn-down of 1:3: ≤ ± (0.1 + 0.02 x 3) % FSO i.e. accuracy is ≤ ± 0.16 % FSO								
	e ordered separately (software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP)								
Thermal effects (Offset and Span)	•								
Tolerance band [% FSO]	$\leq \pm (0.2 \text{ x turn-down})$								
TC average [0/ FCC / 40 l/]	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								
i emissible temperatures	electronics / environment: -25 125 °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								

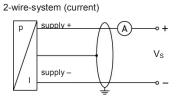
DMP 331i / DMP 333i / LMP 331i

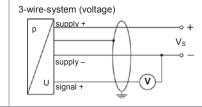
Technical Data

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	s 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
Safety technical max. values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ μ H, 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	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
(by factory)	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 5	**************************************

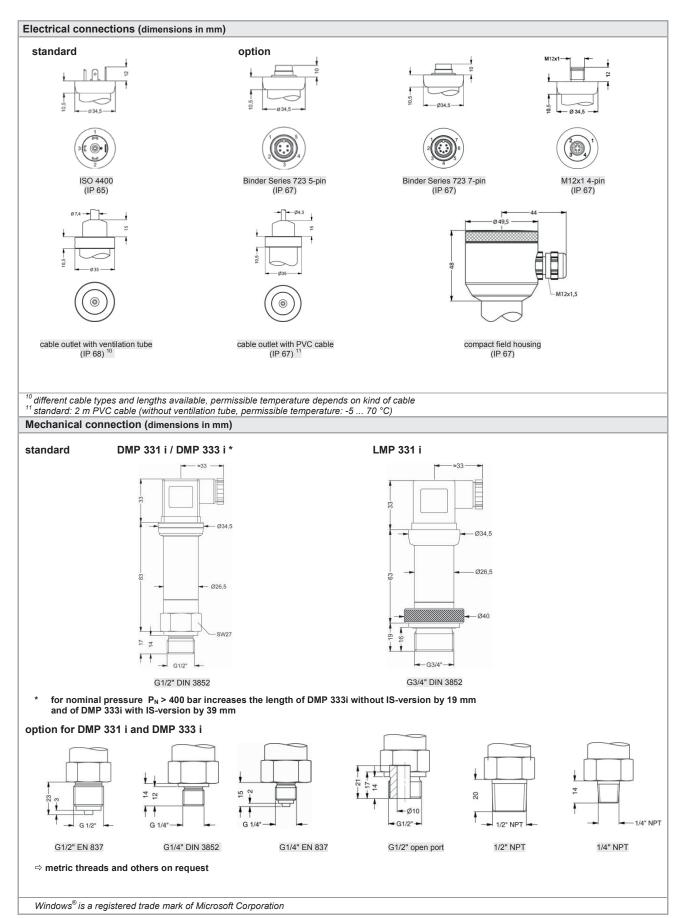
Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges P_N ≤ 1 bar.
 This directive is only valid for devices with maximum permissible overpressure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

Wiring diagrams





Pin configuration							
Electrical connection	s	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	<u></u>	ye/gn (yellow / green)
Communication	RxD	-	-	4	-	-	-
interface 9	TxD	-	-	5	_	-	_
	GND	-	-	7	-	-	-
9 may not be transmitted	d directly with the	PC (the suitable ac	dapter is available as	accessory)			



DMP 331i / DMP 333i / LMP 331i

Ordering Code

DMP 331i/ DMP 333i/ LW	IP 331i	ПП	-[]		Π.	-□	-□	-∏]_[_	П	_ 🗆		
													\exists			
Pressure																
For DMP 331i	gauge	1 1 0														
	absolute	1 1 1														
For DMP 333i	aboorato	.1.1.1														
	gauge 1	1 3 0														
	absolute	1 3 1														
For LMP 331i	in bar	120														
	in mH ₂ O	4 3 0 4 3 1														
nput [mH ₂ O		7 0 1														
For DMP 331i ² or LMP 331i											П				Т	
4	0.40		4 (0 0												
10	1.0		1 (0 0	1											
20 40	2.0 4.0		2 (0 0	1											
100	10		1 (0 0	1 2 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											
	200 400		4 (0 0	3											
	600		6 (0 0	3											
For DMP 331i																
	-0.40 0.40		S	1 0	0											
	-1 1		S Y	1 0 2 0 4 0	2											
	-1 2		V 2	2 0	2											
	-1 4 -1 10		V	1 0	3											
	customer			9 9	9											consult
Output																
	mA / 2-wire					1										
Intrinsic safety 4 20						Е										
0 1	0 V / 3-wire					3										a a na uli
Accuracy (at nominal pressure)	customer					9										consult
tabaraby (at Hommar pressure)	0.1 %						1									
	customer						9				Ш					consult
Electrical connection							·									
Male and female plu								1	0 0							
Male plug Binder series	eld housing								0 0							
stainless steel 1.4								8	5 0							
	female plug															
Binder series									0 0							
Male plug M12x1 (4-									1 0							
Cable outlet with	Cable outlet 4							T	A 0							
(customer							a l	R 0 9 9							consult
Mechanical connection	Gustorner							5	J J							Consum
or DMP 331i or DMP 333i											П					
	2" DIN 3852									1	0	0				
	1/2" EN 837									2	0					
	1" DIN 3852 1/4" EN 837									3 4	0					
	N 3852 with 5,6															
	lush sensor									F	0	0				
G1/2" DIN 3852 open pr	essure port 6									Н	0	0				
	1/2" NPT									N	0	0				
I MD 224:	1/4" NPT									N	4	0				
For LMP 331i G3/4" DIN 3852 with f	luch concor									V	0	0				
G3/4" DIN 3852 With t	customer									r\ Q	9	9				con
Seals											, ,					Con
For DMP 331i or LMP 331i																
	FKM												1			
without (weld	ed version) 7												2			
For DMP 333i	NDD												_			
	NBR												5 9			200
	customer			-								-	Э			con
Special version																
Special version	standard													1	1	
	standard 32 interface 8													1	1 2 9 9	

¹ measurement starts with ambient pressure

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

 $^{^2}$ pressure ranges \leq 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

S 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) Windows® is a registrated trademark of Microsoft Corporation



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









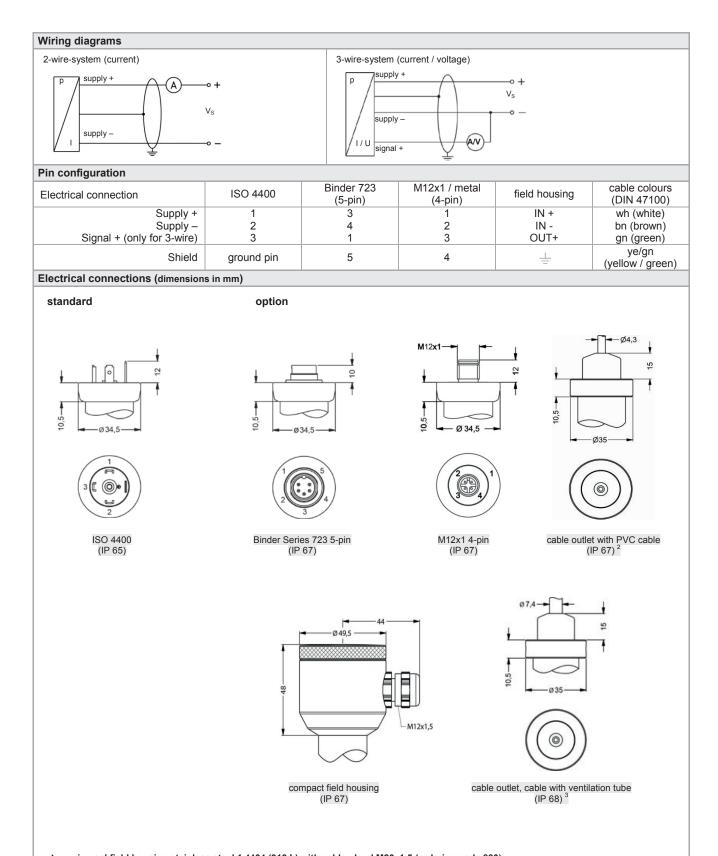




DMP 343

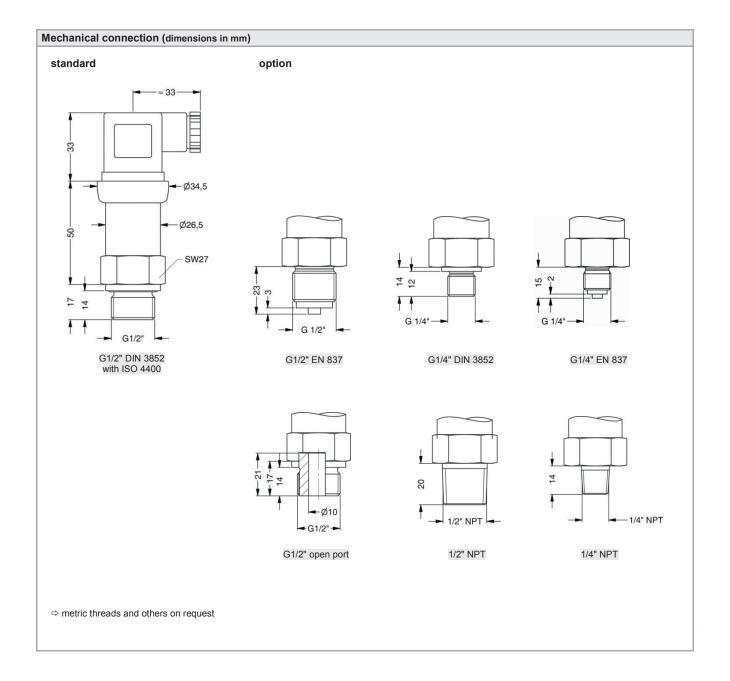
Input pressure range													
Nominal pressure gauge	[mbar]	-1000 0	10	16	25	40	60	100	160	250	400	600	1000
Overpressure	[bar]	3	0.2	0.2	0.2	0.5	0.5	1	2	3	3	3	3
Burst pressure	[bar]	5	0.3	0.3	0.3	0.75	0.75	1.5	3	5	5	5	5

Output signal / Supply									
Standard	2-wire: 4 20 mA /	V _c = 8 32 V _{pc}							
Option IS-protection									
Options 3-wire	2-wire: $4 20 \text{ mA}$ / $V_S = 10 28 V_{DC}$ 3-wire: $0 20 \text{ mA}$ / $V_S = 14 30 V_{DC}$								
Options 5-wire	0 10 V /	$V_S = 14 30 V_{DC}$ $V_S = 14 30 V_{DC}$							
Performance									
Accuracy ¹	standard: ≤ ± 0.35 % FSO nominal pressure ≤ 100 mbar: ≤ ± 0.50 % FSO								
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 \text{ A}] \Omega$ current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$								
Influence effects	supply: 0.05 % load: 0.05 %								
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec								
¹ accuracy according to IEC 60770 – limi		rity, hysteresis, repeatability)							
Thermal effects (Offset and Span)								
Nominal pressure P _N [mbar]		≤ 100	≤ 400	> 400					
Tolerance band [% FSO]		≤ ± 1.5	≤±1	≤ ± 0.75					
in compensated range [°C]	-20 85	0 50	0 70	-20 85					
Permissible temperatures									
Permissible temperatures	medium: electronics / environmen storage:	electronics / environment: -40 85 °C							
Electrical protection									
Short-circuit protection	permanent								
Reverse polarity protection	no damage, but also no	function							
Electromagnetic compatibility	emission and immunity a	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 (3	16L)							
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.									
Approvals DX19-DMP 343	IBExU 10 ATEX 1068 X								
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 cable capacitance: signal line/shield also signal line/signal line: 160 pF/m (by factory) cable inductance: signal line/shield also signal line/signal line: 1 μH/m									
Miscellaneous			<u> </u>						
Option SIL 2 application	according to IEC 61508	/ IEC 61511							
Current consumption	signal output current:	max. 25 mA max. 7 mA							
Weight	approx. 140 g								
-	appion. 140 u								
Installation position									
Installation position CE-conformity	any EMC Directive: 2004/108	3/EC							



[⇒] 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



Ordering Code

DMP 343	Ш-Ш	- - ·	-Ш-		□-□	П
Pressure	1 0 0					
gauge Input [mbar]	1 0 0					
10	0 1 0 0					
16	0 1 6 0 0 2 5 0 0 4 0 0 0 6 0 0					
25	0 2 5 0					
40 60	0 4 0 0 0 0 6 0 0					
100						
160	1 0 0 0 1 6 0 0 2 5 0 0 4 0 0 0					
250	2 5 0 0					
400	4 0 0 0 6 0 0 0					
600	6 0 0 0					
1000	1 0 0 1					
-1000 0	X 1 0 2 9 9 9 9					
Output	9 9 9 9					consult
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 $P_N > 100 \text{ mbar}$ 0.35 %		3				
standard for P _N ≤ 100 mbar 0.5 % Electrical connection		5				
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			8 5 0			
stainless steel 1.4305						
customer			9 9 9			consult
Mechanical connection						
G1/2" DIN 3852 G1/2" EN 837				1 0 0 2 0 0		
G1/4" DIN 3852				2 0 0 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 9 9 9		
customer ³				9 9 9		consult
Seals						
FKM					1	and a state of
Special version customer					9	consult
standard					0 0	0
customer					9 9	9 consult
Sastomor					0,0	1 - I

 $^{^1}$ 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

 $^{^{\}rm 3}$ metric threads and others on request



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













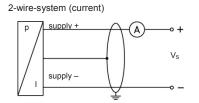
Input pressure range								
Nominal pressure gauge / abs. [bar]	-10	0.10	0.16	0.25	0.40	0.60	1	1.6
Overpressure [bar]	5	0.5	1	1	2	5	5	10
						-		
Burst pressure ≥ [bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15
Nominal pressure	2.5	4	6	10	16	25	40	
gauge / abs. [bar]	2.5	4	0	10	16	25	40	
Overpressure [bar]	10	20	40	40	80	80	105	
Burst pressure ≥ [bar]	15	25	50	50	120	120	210	
Vacuum resistance	$P_N \ge 1$ bar: $Q_N \le 1$ bar: $Q_N \le 1$		uum resista	nce				
Output signal / Supply								
Standard	2-wire: 4	20 mA /	V _S = 8	32 Vpc				
Option IS-protection	2-wire: 4							
Options 3-wire	3-wire: 0							
Options 3-wire		10 V /	V _S = 14 V _S = 14					
Performance								
Accuracy 1	standard:	nominal pre	ssure < 0.4 l	oar: ≤ ± 0.	5 % FSO			
·			ssure ≥ 0.4 lssure ≥ 0.4 l		35 % FSO 25 % FSO			
			nal pressure:		1 % FSO			
Permissible load	current 2-wii							
	current 3-wii							
	voltage 3-wi							
Influence effects	supply: 0.05					load: 0.05 %	FSO / kO	
Long term stability	≤ ± 0.1 % FS			nditions		1000. 0.00 /	71 00 7 1622	
Response time	2-wire: ≤ 10		reference co	TIGITIONS		3-wire: ≤ 3 n	2000	
						3-WIIE. ≥ 3 II	1860	
accuracy according to IEC 60770 – lim		ent (non-linea	arity, nysteresi	s, repeatability)				
Thermal effects (Offset and Spa								
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: electronics / storage:	environmen	-40 12 it: -40 8 -40 10	35 °C				
Electrical protection	otorage.		40 10	,,,				
Short-circuit protection	permanent							
Reverse polarity protection	no damage,							
Electromagnetic compatibility	emission an	d immunity a	according to	EN 61326				
Mechanical stability								
Vibration	10 g RMS (2	25 2000 H	z) accordin	g to DIN EN 6	0068-2-6			
Shock	500 g / 1 ms		accordin	g to DIN EN 6	0068-2-27			
Materials	-							
Pressure port	stainless ste	el 1 4404 (2	16)					
Housing								
	stainless ste			and brass, nic	akal platad	0.415	ers on reques	.+
Option compact field housing Seals (media wetted)	standard: F		os), cable gi	and brass, nic	skei piateu	Othe	ers on reques	il.
		NBR velded version	on ²	others	on request			
Diaphragm	stainless ste	el 1.4435 (3	16 L)					
Media wetted parts	pressure po	t, seals, dia	phragm					
² welded version only with pressure por	ts according to	EN 837						
Explosion protection (only for 4								
Approvals DX19-DMP 331	IBExU 10 A	TEX 1068 X I 1G Ex ia II		BE 12.0027X				
Safety technical maximum values	U _i = 28 V, I _i	= 93 mA, P _i	= 660 mW, 0 nave an inne	$C_i \approx 0 \text{ nF, } L_i \approx 0$ r capacity of n	nax. 27 nF to			
Permissible temperatures for environment	in zone 0: in zone 1 or	higher: -20) 70 °C	th p _{atm} 0.8 bar				
Connecting cables (by factory)	cable capac cable induct	itance: sig	nal line/shie	d also signal l d also signal l				

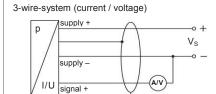
Technical Data

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%

Wiring diagrams

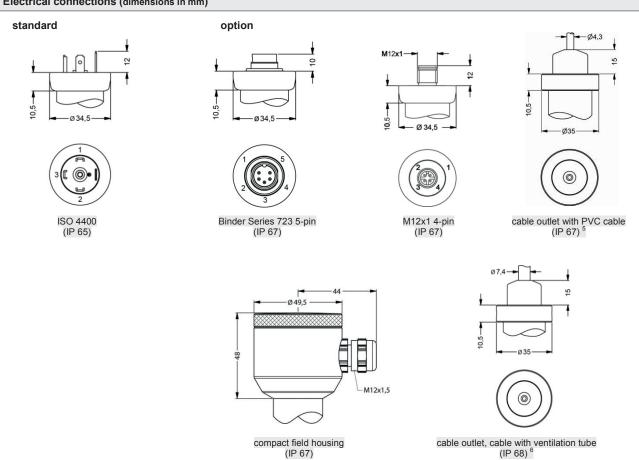




Pin	con	fiau	rati	οn
ГШ	CUII	nuu	ıau	UII

Electrical connection	ISO 4400	Binder 723	M12x1 / metal	field	cable colours
Liectrical confidention	150 4400	(5-pin)	(4-pin)	housing	(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
Silielu	ground pin		–	=	(yellow / green)

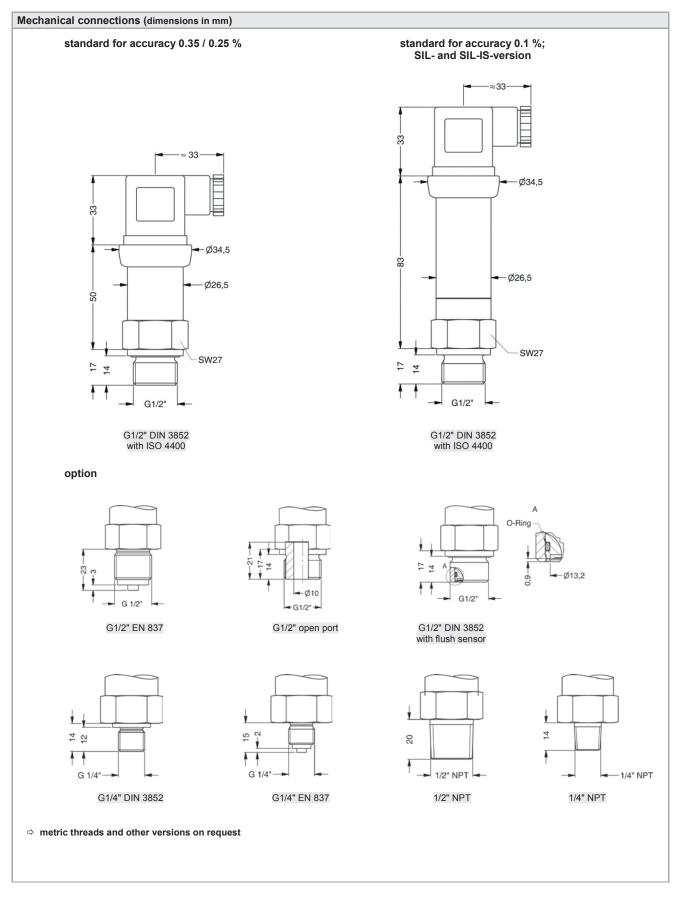
Electrical connections (dimensions in mm)



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

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

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



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

44 DMP 331 Ordering Code

DMP 331		- 🔲	Ш	-[]-[]-[<u></u>	- 🗌	Ţ]-		- 🗌			
Pressure																
gauge absolute	1 1 0															
Input [bar]		1 0	0 0													
0.10 0.16			0 0													
0.25			0 0													
0.40 0.60		4 0 6 0	0 0													
1.0		1 0	0 1													
1.6		1 6 2 5	0 1													
2.5 4.0		2 5 4 0	0 1 0 1													
6.0		6 0	0 1													
10		1 0 1 6	0 2 0 2 0 2 0 2 0 2													
16 25		1 6 2 5	0 2													
40		4 0	0 2													
-1 0 customer		X 1 9 9	0 2													aanault
Output		9 9	9 9													consult
4 20 mA / 2-wire				1				Т		Т	Т					
0 20 mA / 3-wire 0 10 V / 3-wire				2 3 E												
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												1
customer				9												consult
Accuracy standard for $P_N \ge 0.4$ bar 0.35%								-		-						
standard for $P_N \ge 0.4$ bar 0.35% standard for $P_N < 0.4$ bar 0.5%					3 5											
option 1 for $P_N \ge 0.4$ bar 0.25%					2											
option 2 0.1 % ¹ customer					1 9											consult
Electrical connection	_	_			9											Consuit
Male and female plug ISO 4400						1										
Male plug Binder series 723 (5-pin) Cable outlet with PVC cable ²						2 T	0 A									
Cable outlet with P vo cable - Cable outlet 3						Ť										
Male plug M12x1 (4-pin) / metal						M	1	0								
Compact field housing stainless steel 1.4305						8	5	0								1
customer						9	9	9								consult
Mechanical connection G1/2" DIN 3852																
G1/2" EN 837									1	0 0	0					
G1/4" DIN 3852									3	0 (0					
G1/4" EN 837 G1/2" DIN 3852									4		0					
with flush sensor									F	0 (0					
G1/2" DIN 3852 open pressure port									Н	0 (0					
1/2" NPT 1/4" NPT									N	0 (0					
customer									9	0 (0 4 (0 9 9	9					consult
Seals																
FKM EPDM												1				
NBR												5				
without (welded version) 4												3 5 2 9				
Special version customer												9				consult
standard													0 9	0	0	
customer													9	9	9	consult

¹ not in combination with SIL

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

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 ...

 $^{^{\}rm 4}$ welded version only with pressure ports according to EN 837



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









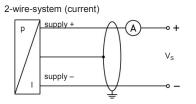


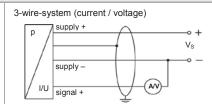
Input pressure range							
Nominal pressure gauge ¹ / abs.	[bar]	60	100	160	250	400	600
Overpressure	[bar]	210	600	600	1000	1000	1000
Burst pressure ≥	[bar]	420	1000	1000	1250	1250	1250
¹ measurement starts with a	mbient pres	sure					

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: $R_{max} = 500 \Omega$
	voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % FSO / 10 V
	load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Response time	2-wire: ≤ 10 msec
2	3-wire: ≤ 3 msec
	nit point adjustment (non-linearity, hysteresis, repeatability)
Thermal effects (Offset and Spa	·
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 $P_N \le 160$ bar)
	NBR
	others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
Explosion protection (only for 4	,
Approvals	IBEXU 10 ATEX 1068 X / IECEX IBE 12.0027X
DX19-DMP 333	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	

Wiring diagrams





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)



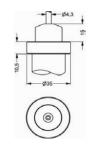


Binder Series 723 5-pin

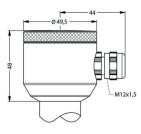




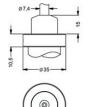




cable outlet with PVC cable (IP 67) ⁶



compact field housing (IP 67)



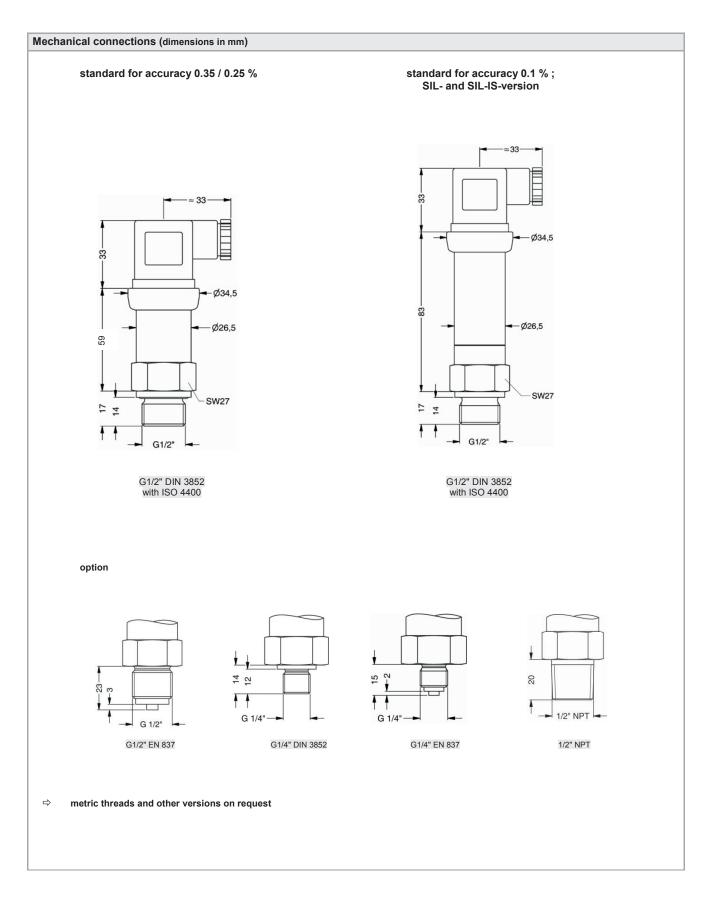
cable outlet, cable with ventilation tube (IP 68) ⁷

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

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

 $[\]frac{6}{2}$ 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

Technical Data



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

Ordering Code

Pressure	DMP	333]-[Ц		-	- [-[П		-]	-	-[L		
Input	Pressure	goven 1	4 0 0																
Input			1 3 0	1															
100	Input																		
160																			
A00					0	0 3				ш									
A00				1	6	0 3				Ш									
Customer				1	0	0 3													
Cutput 4 20 mA / 2-wire 1 0 <td></td> <td></td> <td></td> <td>6</td> <td>0</td> <td>0 3</td> <td></td> <td></td> <td></td> <td>Н</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				6	0	0 3				Н									
Output				9	9	9 9													consult
0 20 mA / 3-wire 2 0 10 V / 3-wire 3	Output																		
Intrinsic safety 4 20 mA / 2-wire										П									
Intrinsic safety 4 20 mA / 2-wire SIL 2 with Intrinsic safety 4 20 mA / 2-wire IS SIL 2 with Intrinsic safety 4 20 mA / 2-wire ES SIL 2 with Intrinsic safety 4 20 mA / 2-wire ES SIL 2 with Intrinsic safety 4 20 mA / 2-wire ES SIL 2 with Intrinsic safety 4 20 mA / 2-wire ES SIL 2 with Intrinsic safety 4 20 mA / 2-wire ES SIL 2 with Intrinsic safety 5 SIL 2 with Intri																			
SIL2 4 20 mA / 2-wire							3			Ш									
SIL2 with Intrinsic safety 4 20 mA / 2-wire ES							10												
A 20 mA / 2-wire																			
Customer 9	OILL						ES												
Standard							9												consult
option 1	Accuracy																		
Electrical connection								3											
Electrical connection	•	0.25 %						2		ш									
Electrical connection	option 2							1		Ш									
Male and female plug ISO 4400 Male plug Binder series 723 (5-pin) Cable outlet with PVC cable 3 Cable outlet 4 Male plug M12x1 (4-pin) / metal Compact field housing stainless steel 1,4305 customer G1/2" DIN 3852 G1/2" EN 837 G1/4" DIN 3852 G1/4" EN 837 Customer FMM Customer Seals FKM FKM FRM FKM FRM FKM FRM FKM FKM FRM FRM FRM FRM FRM FRM FRM FRM FRM FR	Electrical connection					-		9				-				_			consuit
Male plug Binder series 723 (5-pin) Cable outlet with PVC cable 3 Cable outlet 4 Male plug M12x1 (4-pin) / metal Compact field housing stainless steel 1.4305 Customer Mechanical connection G1/2" DIN 3852 G1/2" EN 837 G1/4" DIN 3852 G1/4" EN 837 G1/4" NPT Customer Seals FKM EPDM 5 NBR Customer Special version Standard V				_	-	_	_	_	1		0	_				_	-		
Cable outlet with PVC cable 3										0	0								
Cable outlet 4	Cable or	utlet with PVC cable 3							T	A	0								
Male plug M12x1 (4-pin) / metal		Cable outlet 4							Ť	R	0								
Stainless steel 1.4305		112x1 (4-pin) / metal							N	1 1	0								
Stainless steel 1.4305									8	5	0								
Mechanical connection	st																		
G1/2" DIN 3852 G1/2" EN 837 G1/4" DIN 3852 G1/4" EN 837 4 0 0 1/2" NPT Customer 9 9 9 0 consult Seals FKM EPDM 5 NBR Customer 9 0 0 consult Special version	Manhanian			_	_	-	_	-	9	9	9	-					_		consult
G1/2" EN 837 G1/4" DIN 3852 G1/4" EN 837 4 0 0 1/2" NPT N 0 0 Customer 9 9 9 Consult FKM FPDM 5 NBR Customer 9 9 Consult Special version	Mechanical connecti				-					-	•	1	0	0					
G1/4" DIN 3852 G1/4" EN 837 4 0 0 1/2" NPT Customer 9 9 9 9 Consult Seals FKM EPDM 5 NBR Customer 9 9 Consult Special version													0						
G1/4" EN 837 1/2" NPT Customer 9 9 9 9 Consult Seals FKM EPDM 5 NBR Customer Special version Standard 0 0 0												3	0	0					
1/2" NPT customer N 0 0 9 9 9 Seals FKM 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5												4	0						
Seals FKM 1 EPDM 5 3 NBR 5 customer 9 consult Special version standard 0 0 0 0		1/2" NPT										N	0	0					
Seals FKM 1 EPDM 5 3 NBR 5 customer 9 consult Special version standard 0 0 0 0		customer										9	9	9					consult
EPDM 5 3 NBR 5 customer 9 Special version consult standard 0 0	Seals	EIG.																	
NBR customer 5 6 7 8 9 Consult Special version 5 0 <															1				
customer 9 consult Special version standard 0 0 0															3				
Special version standard 0 0 0															0				consult
standard 0 0 0	Special version	Guatomer													9				Consult
customer 9 9 9 9 consult		standard														0	0	0	
		customer															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 ≤ 160 bar



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 1/4" 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 1/4" 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



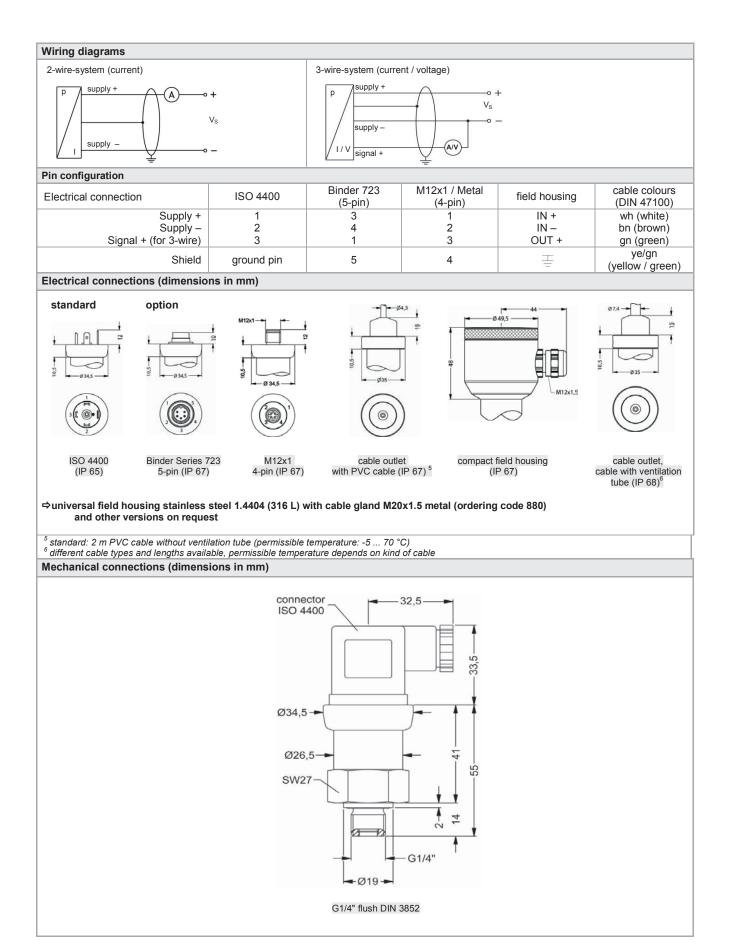






Input pressure range ¹							
Nominal pressure gauge / abs.	[bar]	60	100	160	250	400	600
Overpressure	[bar]	210	210	600	600	1050	1050
Burst pressure ≥	[bar]	300	300	1100	1100	1500	1500
¹ Nominal pressure $P_N < 60$	bar on reque	est					

Output signal / Supply	
Standard	2-wire: 4 20 mA / V _S = 8 32 V _{DC}
Option IS-protection	2-wire: $4 20 \text{ mA} / V_S = 10 28 V_{DC}$
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: $R_{max} = [(V_S - V_S min) / 0.02 A] \Omega$
	current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec
² accuracy according to IEC 60770 – lin	nit point adjustment (non-linearity, hysteresis, repeatability)
Thermal effects (Offset and Spa	n)
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
option compact note necessing	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	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X
DX19-DMP 339	zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da
Safety technical maximum values	$U_i = 28 \text{ V}_{DC}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i \approx 0 \text{ nF}, L_i \approx 0 \mu\text{H}, C_{iGND} \approx 27 \text{ nF}$
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	n a vertical position with the pressure connection down.
⁴ This directive is only valid for devices	with maximum permissible overpressure > 200 bar



Ordering Code

DMP 339]-[-	-[П	-[-[]-[
Pressure																	
gauge	1 3 5		т					г	П		П	П			_		
absolute	1 3 5 1 3 6							П									
Input [bar] ¹																	
60		6 0	0	2													
100		1 0	0	3													
160		1 6	0	3													
250		2 5 4 0	0	3													
400		4 0	0	3													
600		6 0 9 9	0	3													
customer		9 9	0 0 0 0 0 0 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					Е												
customer					9			ш									consult
Accuracy																	
0.35 %						3											
customer						9		ш									consult
Electrical connection								ı.									
Male and female plug ISO 4400							1		0								
Male plug Binder series 723 (5-pin)							2 T	0									
Cable outlet with PVC cable ²							T	Α	0								
Cable outlet ³							Т										
Male plug M12x1 (4-pin) / metal							M	1	0								
Compact field housing							8	5	0								
stainless steel 1.4305 (303)																	
customer			_		_	_	9	9	9	_			_		_		consult
Mechanical connection																	
G1/4" DIN 3852										F	0	2					
with flush sensor																	
customer										9	9	9					consult
Seals FKM																	
													1				
customer													9				consult
Special version standard																	
														(0	9	
customer														٤	1 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



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









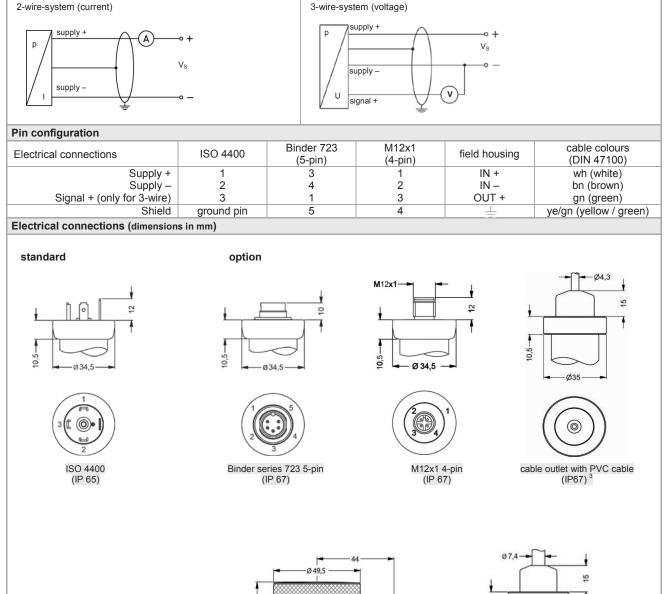


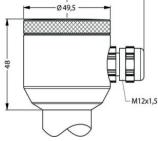
Input pressure range												
Nominal pressure gauge	[bar]	6	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	14	35	35	70	140	140	350	350	700	1200	1200
Burst pressure ≥	[bar]	35	85	85	175	350	350	850	850	1750	2100	2100
Vacuum resistance		unlimite	d									

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	3-Wile. 0 10 V / VS = 14 30 VDC
Accuracy 1	≤±0.5 % FSO
Permissible load	current 2-wire: $R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$
1.0	voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % FSO / 10 V
Lance Assess at all 1994 .	load: 0.05 % FSO / kΩ
Long term stability	≤±0.2 % FSO / year at reference conditions
Response time	2-wire: ≤ 10 msec
1	3-wire: ≤ 3 msec
	nit point adjustment (non-linearity, hysteresis, repeatability)
Thermal effects (Offset and Spar	·
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
	300 g / Thisec according to Diff EN 60006-2-27
Materials	1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
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	·
Approvals	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X
DX19-DMP 335	zone 0: II 1G Ex ia IIC T4 Ga
	zone 20: II 1D Ex ia IIIC T 85°C Da
Safety technical maximum values	$U_i = 28 \text{ V}_{DC}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \mu\text{H}$,
Description to an automorphism	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)	
Connecting capies (by factory)	
Miccellenceus	cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Miscellaneous	
Current consumption	signal output current: max. 25 mA
Woight	signal output voltage: max. 7 mA
Weight Installation position	approx. 140 g
Installation position	any
Operational life	> 100 x 10 ⁶ pressure cycles EMC Directive: 2004/108/EC
CE-conformity	
ATEV Discretive	Pressure Equipment Directive: 97/23/EC (module A) ²
ATEX Directive	94/4/EG
•	with maximum permissible overpressure > 200 bar

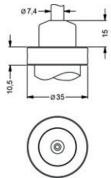
Technical Data

Wiring diagrams







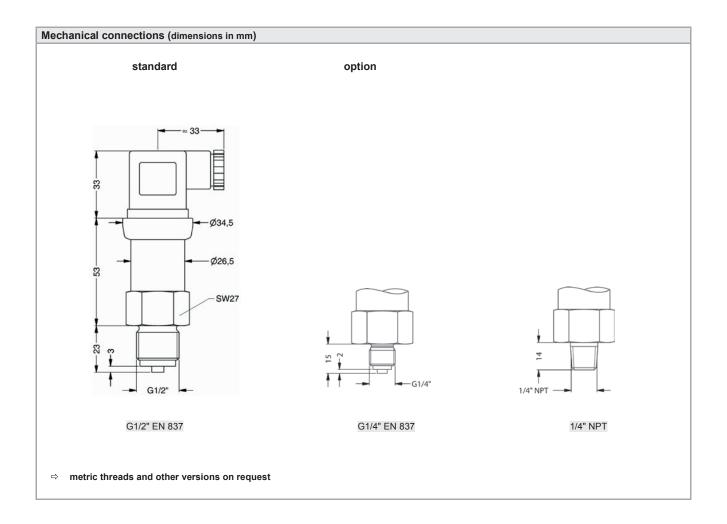


cable outlet, cable with ventilation tube (IP 68) ⁴

⇒ 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



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Ordering Code

DMP 335	<u> </u>	- 🔲	-[-	П]	-			-[- <u> </u>			
Pressure														
gauge	2 1 0													
Input [bar]														
6	6 0 0 1													
10	1 0 0 2 1 6 0 2 2 5 0 2 4 0 0 2 6 0 0 2 1 0 0 3 1 6 0 3 2 5 0 3													
16 25	1 6 0 2 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	1 0 0 2 1 6 0 2 2 5 0 2 4 0 0 2 6 0 0 2 1 0 0 3 1 6 0 3 2 5 0 3 4 0 0 3 6 0 0 3 9 9 9 9													
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		3 E 9												
customer		9		_			_			_				consult
Accuracy 0.5 %			5											
customer			9											consult
Electrical connection			9											Consuit
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				2 T	Α (0								
Cable outlet with cable ²				Т		0								
Male plug M12x1 (4-pin) / metal				M	1 (0								
Compact field housing				8	5 (0								
stainless steel 1.4305														
customer				9	9 9	9								consult
Mechanical connection							_							
G1/2" EN 837 G1/4" EN 837								0	0					
1/4" EN 837							4 N	0	0					
1/4 NP1 customer							IN	4 9	0					consult
Seals							9	9	9					Consuit
without (welded version)										2				
customer										9				consult
Special version														School
standard											0	0	0	
customer											9	9	0 9	consult

 $^{^{\}rm 1}$ standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 ... 70 $^{\rm o}\text{C})$

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



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 longterm 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.

characteristics and the excellent ΑII 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



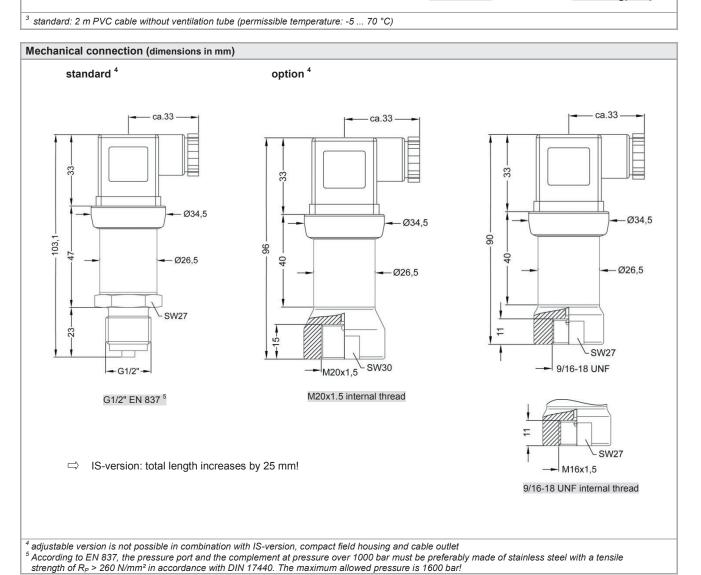
Commercial Vehicles and Mobile Hydraulics





[bar] 600 ¹ [bar] 800 <i>G1/2" EN 837</i>		1000 1400	1600 2200	2000 2800	2200 2800
		1400	2200	2800	2000
G1/2" EN 837					2000
2-wire: 4	. 20 mA	\ / V _S = 12 3	36 V _{DC}		
2-wire: 4	. 20 m/	\ / V _S = 14 2	28 V _{DC}		
J-Wile. 0	. 10 V	/ VS - 14 V	O A DC		
0.0E 0/ E/	0.150.4	207702			
			-) / 0 00 01 0		
			1) / 0.02 A] 12		
				load: 0.05 % ESO / I	(O
		7 10 0		1044. 0.00 /01 00 / 1	422
< 5 msec	, , , ca				
	offset is	s possible within	the range of ± 5 % of	the nominal pressure	e range, without an
				•	
– limit point adjustmer	(non-lin	earity, hysteresis, r	epeatability)		
Span) / Permissible	tempe	ratures			
≤ ± 0.25 % FS	O / 10 F	in compe	nsated range -20 8	35 °C	
medium: -40	. 140 °(age: -40 100 °C
permanent					
	ut also i	no function			
			N 61226		
emission and	mmumi	ty according to E	N 01320		
10 g RMS (20	2000) Hz)			
100 g / 11 ms	ec.				
stainless stee	1.4542	(17-4 PH)			
standard:	stainle	ess steel 1.4404	(316L)		
field housing:	stainle	ess steel 1.4404	(316L), cable gland:	brass, nickel plated	
none (welded	version)			
pressure port	diaphr	agm			
or 4 20 mA / 2-w	re)				
	93 mA, I			4 1	
	abor:		tn p _{atm} 0.8 bar up to 1	.1 bar	
			so signal line/signal l	ine: 160 nF/m	
Gabio inadotai	oo.orgin	ar iir io oriii ora aloo	olgilar iirlo/olgilar iirl	. τ μ ι <i>π</i> ιτι	
gianal output	urrent	may 25 m/			
	onago.				
	: 2004/	108/EC	Pressure Equip	ment Directive: 97/23	/EC (module A)
			<u> </u>		
		3-wire	e-system (current / yolta	ae)	
)		P	Supply +	V _S	
	≤±0.35 % FS current 2-wire: voltage 3-wire supply: 0.05 ≤±0.2 % FSC <5 msec Adjustment of influence of ch - limit point adjustment Span) / Permissible ≤±0.25 % FS medium: -40 permanent no damage, bi emission and i 10 g RMS (20 100 g / 11 mse stainless steel standard: field housing: none (welded stainless steel pressure port. TÜV 03 ATEX zone 0: II zone 20: II sone 1 or hig cable capacital cable inductan signal output of	≤ ± 0.35 % FSO IEC 0 current 2-wire: R ₁ voltage 3-wire: R ₂ supply: 0.05 % FSO ≤ ± 0.2 % FSO / year < 5 msec Adjustment of offset is influence of character Imit point adjustment (non-lin Span Permissible tempe ≤ ± 0.25 % FSO / 10 medium: -40 140 ° 0 permanent no damage, but also is emission and immunities 10 g RMS (20 2000 100 g / 11 msec. stainless steel 1.4542 standard: stainles field housing: stainles none (welded version stainless steel 1.4542 pressure port / diaphror TÜV 03 ATEX 2006 X zone 0: II 1G EE zone 20: II 1D EE ues U _i = 28 V, I _i = 93 mA, Iin zone 0: in zone 0: in zone 1 or higher: cable capacitance: signal output current: signal output current: signal output voltage: approx. 200 g any EMC Directive: 2004/	S ± 0.35 % FSO IEC 60770 2 current 2-wire: R _{max} = [(V _S - V _S min voltage 3-wire: R _{min} = 10 kΩ supply: 0.05 % FSO / 10 V ≤ ± 0.2 % FSO / year < 5 msec Adjustment of offset is possible within a influence of characteristic curve and active point adjustment (non-linearity, hysteresis, respan) / Permissible temperatures ≤ ± 0.25 % FSO / 10 K in compe medium: -40 140 °C electronic permanent no damage, but also no function emission and immunity according to Electronic 10 g RMS (20 2000 Hz) 100 g / 11 msec. stainless steel 1.4542 (17-4 PH) standard: stainless steel 1.4404 in none (welded version) stainless steel 1.4542 (17-4 PH) pressure port / diaphragm or 4 20 mA / 2-wire) TÜV 03 ATEX 2006 X zone 0: II 1G EEx ia IIC T4 zone 20: II 1D EEx tD A20 IP65 T 8 in zone 0: -20 60 °C with in zone 1 or higher: -25 70 °C cable capacitance: signal line/shield also signal output current: max. 25 mA signal output voltage: max. 7 mA approx. 200 g any EMC Directive: 2004/108/EC	S ± 0.35 % FSO IEC 60770 current 2-wire: R _{max} = [(V _S − V _S min) / 0.02 A] Ω voltage 3-wire: R _{min} = 10 kΩ supply: 0.05 % FSO / 10 V s ± 0.2 % FSO / year s 5 msec Adjustment of offset is possible within the range of ± 5 % of influence of characteristic curve and accuracy. - limit point adjustment (non-linearity, hysteresis, repeatability) Span) / Permissible temperatures s ± 0.25 % FSO / 10 K in compensated range -20 8 medium: -40 140 °C electronics / environment: -25 permanent no damage, but also no function emission and immunity according to EN 61326 10 g RMS (20 2000 Hz) 100 g / 11 msec. stainless steel 1.4542 (17-4 PH) standard: stainless steel 1.4404 (316L), cable gland: 1 none (welded version) stainless steel 1.4542 (17-4 PH) pressure port / diaphragm or 4 20 mA / 2-wire) TÜV 03 ATEX 2006 X zone 0: II 1G EEx ia IIC T4 zone 20: II 1G EEx ia IIC T4 zone 20: II 1D EEx tD A20 IP65 T 85°C Jues U ₁ = 28 V, I ₁ = 93 mA, P ₁ = 660 mW, C ₁ ≤ 1nF, L ₁ ≤ 10 μH in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1 in zone 1 or higher: -25 70 °C cable capacitance: signal line/shield also signal line/signal line/signal line/signal output voltage: max. 7 mA approx. 200 g any EMC Directive: 2004/108/EC Pressure Equip	S ± 0.35 % FSO IEC 60770 ° current 2-wire: R _{max} = [(V _S – V _S min) / 0.02 A] Ω voltage 3-wire: R _{min} = 10 kΩ supply: 0.05 % FSO / 10 V load: 0.05 % FSO / 11 V load: 0.05 % FSO / 12 V load: 0.05 % C load:

Pin configuration						
Electrical connection		ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	Field housing	Cable colours (DIN 47100)
	Supply + Supply –	1 2	3 4	1 2	IN + IN -	wh (white bn (brown)
Signal + (on	ly for 3-wire)	3	1	3	OUT+	gn (green)
•	Shield	ground pin	5	4	=	ye/gn (yellow / greer
Electrical connection	ns (dimensions	in mm)				
standard	option		M12x1——		54,3	
22	9900	2	20 J.	\$ g g g g g g g g g g g g g g g g g g g	92	0.49,5
3 ()	2 2 3	5)	M12)
ISO 4400 (IP 65)	Binder serie	es 723 (IP 67)	M12x1 4-pin (IP 67)	cable outlet with PVC		compact field housing(IP 67)



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

Ordering Code

DMP 334		-Щ	Ш	-	- <u> </u>	-		-[Ш		-	-			
Pressure															
gauge	1 4 0									Т					
Input [bar]															
600 1		6 0	0 3												
1000		1 0	0 4												
1600		1 6 2 0	0 4 0 4 0 4												
2000		2 0	0 4												
2200		2 0 2 2 9 9	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				Е											
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 T	0 0								
Cable outlet with PVC cable ^{2,3}							A 0								
Male plug M12x1 (4-pin) / metal						M	1 0								
Comapct field housing						8	5 0								
stainless steel 1.4404 (316L)															
customer						9	9 9								consult
Mechanical connection															
G1/2" EN 837 ⁴								2	2 0	0					
M20x1.5 internal thread								D	2	8					
9/16 UNF internal thread								V	0 2 0 9	0					
customer								9	9	9					consult
Seals															
without (welded version)											9				
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 $R_P > 260 \text{ N/mm}^2$ 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



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

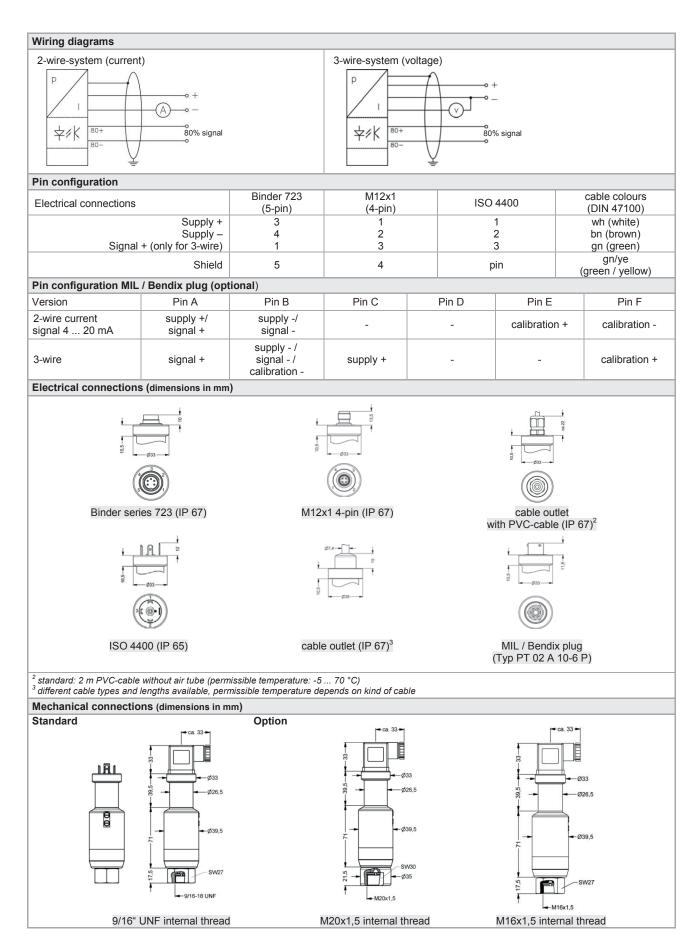




Input pressure range					
Nominal pressure gauge	[bar]	2 000	4 000	5 000	6 000
Overpressure	[bar]	3 000	5 000	6 000	7 000
Burst pressure	[bar]	4 000	8 000	10 000	10 000

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: $R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$
	voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
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	t point adjustment (non-linearity, hysteresis, repeatability)
Calibration (only with MIL / Bendi	
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
mornial circi	in compensated range -20 85 °C
Permissible temperatures	
Permissible temperatures	medium: -40 85 °C
T officers to inportation	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	·· · · · · · · · · · · · · · · · · · ·
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	in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar
environment	zone 1 and higher: -25 70 °C
Connecting cables	cable capacity: signal line/shield as well as signal line/signal line: 160 pF/m
(by factory)	cable inductance: signal line/shield as well as signal line/signal line: 1 µH/m
Miscellaneous	
Insulation strength / resistance	standard: insulation strength IS-version: insulation resistance 100 M Ω @ 35 V 100 M Ω @ 35 V 100 M Ω @ 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

Technical Data



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Ordering Code

DMP 304]-[- <u> </u>]-[Ш		-[]-	- 🗌			
Pressure																
	gauge	2 2 0						П			П	Т				
Input	[bar]															
	2 000		2 0		ļ.											
	4 000		4 0	0 4	1											
	5 000		5 0	0 4	1											
	6 000		6 0	0 4	1											
	customer		9 9	9 9)											consult
Output																
	4 20 mA / 2-wire				1											
Intrinsic sa	fety 4 20 mA / 2-wire				E 3											
	0 10 V / 3-wire				3											consult
	customer				9											consult
Accuracy																
standard	0.5 %					5										
option	0.25 %					2 9										consult
	customer					9										consult
Electrical connection	16 1 100 1100															
	nd female plug ISO 4400						1		0							
	Binder series 723 (5-pin)						2 T	0	0							
Cab	ole outlet with PVC-cable 1							Α	0							
Mala	Cable outlet 2						Т		0							
	lug M12x1 (4-pin), metal						М		0							
MIL-/Bend	dix (Typ PT 02 A 10-6 P)						В	G 9	0							consult
	customer		_	_		_	9	9	9	_		-				consult
Mechanical connection	/16" LINIT internal three-d											^				
9	/16" UNF internal thread									V	0	U				
	M16x1.5 internal thread M20x1.5 internal thread									P D	0	0				
	customer									9	9	0 0 8 9				consult
Special version	customer									9	9	9				CONSUIT
Opecial version	adjustable												0	1	1	
	customer												9	4 9	9	consult
	Customer												9	9	9	CONSUIT

 $^{^1}$ 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)



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 % Al₂O₃
- 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

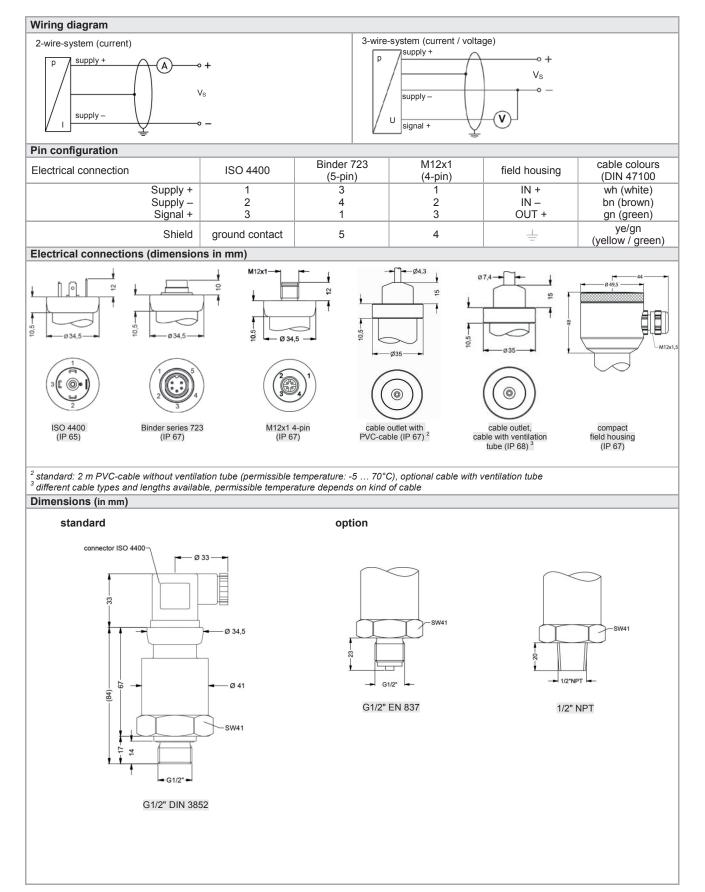




Pressure ranges																
Nominal pressure	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Low pressure	[bar]	-0	.2	-C).3		-0	.5					-1			

Output signal / Supply	
Standard	2-wire: 4 20 mA / V _S = 9 32 V _{DC}
Option IS-protection	
Option to proteotion	2-wire : $4 20 \text{ mA} / V_S = 14 28 V_{DC}$ Option 3-wire: $0 10 \text{ V} / V_S = 12.5 32 V_{DC}$
Performance	
Accuracy 1	standard: $\leq \pm 0.35$ % FSO option for $P_N \geq 0.6$ bar: $\leq \pm 0.25$ % FSO
Permissible load	current 2-wire $R_{max} = [(V_S - V_{Smin}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k} \Omega$
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
	nit 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	g
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 ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 %
Media wetted parts	pressure port, seals, diaphragm
IS-protection (only for 4 20 m	
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

Technical Data



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70 DMK 351 Ordering Code

DMK 351		-]
Pressure			
in bar, gauge in bar, absolute	2 9 0 2 9 1		
in bar, sealed gauge			consult
in mH ₂ O, gauge	2 9 2 2 9 3		
in mH ₂ O, absolute	2 9 3		consult
$\operatorname{in} \operatorname{mH}_2\operatorname{O}$, sealed gauge $\operatorname{Imput} = \operatorname{Im}_2\operatorname{O} = \operatorname{Im}_2\operatorname{O}$			consult
0.4 0.04	0 4 0 0		
0.6 0.06	0 6 0 0		
1.0 0.10 1.6 0.16	1 0 0 0 0 1 6 0 0		
2.5 0.25	1 6 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 25 2.5	1 6 0 1 2 5 0 1		
40 4.0	2 5 0 1 4 0 0 1		
60 6.0	6 0 0 1		
100 10	1 0 0 2		
160 16 200 20	1 6 0 2 2 0 0 2		
customer	1 0 0 2 1 6 0 2 2 0 0 2 9 9 9 9		consult
Output			
4 20 mA / 2-wire	1		
0 10 V / 3-wire Intrinsic safety 4 20 mA / 2-wire	3 E 9		
customer	9		consult
Accuracy			
standard 0.35 %	3		
option für P _N ≥ 0.6 bar: 0.25 % customer	2 9		consult
Electrical connection	9		Corisuit
Male and female plug ISO 4400	1 0 0		
Male plug Binder series 723 (5-pin)	2 0 0 T A 0		
Cable outlet with PVC cable 1	T A 0 T R 0		
Cable outlet with cable 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			
customer	3 9		consult
Pressure port			
Stainless steel 1.4404 (316L) customer	1 9		oonou!
Diaphragm	9		consult
Ceramics Al ₂ O ₃ 96%	2		
Ceramics Al ₂ O ₃ 99.9 %	С		
customer	9		consult
Special version standard		0 0 0	
customer		0 0 0 9 9	consult
		1 - 1 -	

 $^{^{1}}$ 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.



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





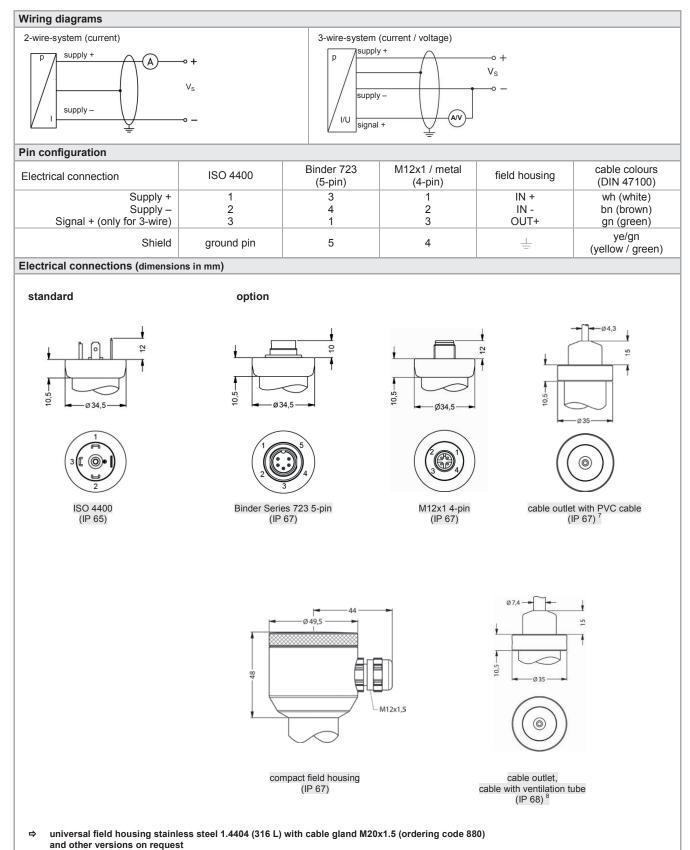






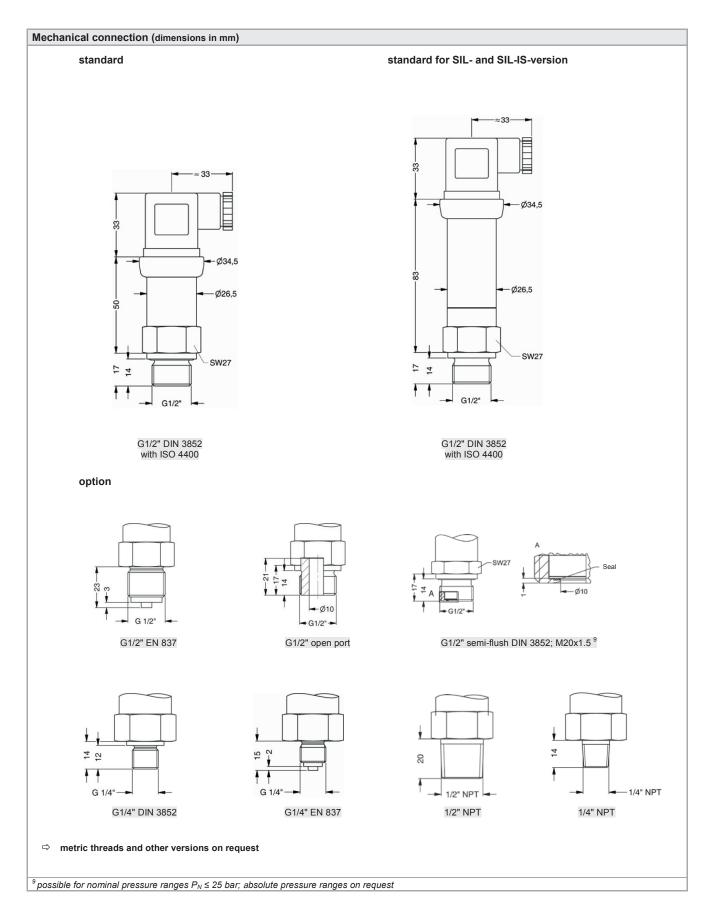


Input pressure range 1	
	[bar] -10 0.4 0.6 1 1,6 2,5 4 6 10 16 25 40 60 100 160 250 400 600
· · · · · · · · · · · · · · · · · · ·	[bar] 0.6 1 1,6 2,5 4 6 10 16 25 40 60 100 160 250 400 600
· · · · · · · · · · · · · · · · · · ·	[bar] 4 1 2 2 4 4 10 10 20 40 40 100 100 200 400 400 600 80
· · · · · · · · · · · · · · · · · · ·	[bar] 7 2 4 4 5 5 12 12 25 50 50 120 120 250 500 500 650 88
Vacuum resistance	$P_N \ge 1$ bar: unlimited vacuum resistance $P_N < 1$ bar: on request
nominal pressure 600 bar without no not possible to	or nominal pressure ranges up to 60 bar
Output signal / Supply	at of contained
Standard	2-wire: 4 20 mA / V _S = 8 32 V _{DC}
Option IS-protection	2-wire: 4 20 mA / V _S = 6 32 V _{DC} 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}
Options 5-wire	$0 \dots 10 \text{ V} / \text{V}_{\text{S}} = 14 \dots 30 \text{ V}_{\text{DC}}$
Performance	5 · · · · · · · · · · · · · · · · ·
Accuracy ³	≤ ± 0.5 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$ current 3-wire: $R_{max} = 500 \Omega$
T CITIIOOIDIC TOUG	voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.3 % FSO / year at reference conditions
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec
	70 – limit point adjustment (non-linearity, hysteresis, repeatability)
	d 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 r	
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibilit	
Mechanical stability	, Tomoson and minimum, according to Entropy
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	decorating to Diff En occord 2.27
Pressure port	standard: stainless steel 1.4404 (316 L)
riessure port	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	
Seals (media wetted)	
, ,	standard: FKM options: EPDM (for P _N ≤ 160 bar), NBR others on request
Diaphragm	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 %
Diaphragm Media wetted parts	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm
Seals (media wetted) Diaphragm Media wetted parts Explosion protection (only	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire)
Diaphragm Media wetted parts Explosion protection (only Approval	standard: FKM options: EPDM (for P _N ≤ 160 bar), NBR others on request ceramic Al ₂ O ₃ 96 % pressure port, seals, diaphragm / for 4 20 mA / 2-wire) 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
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331	standard: FKM options: EPDM (for P _N ≤ 160 bar), NBR others on request ceramic Al ₂ O ₃ 96 % pressure port, seals, diaphragm / for 4 20 mA / 2-wire) 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
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 U _i = 28 V _{DC} , I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μ H,
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 U _i = 28 V _{DC} , I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μ H, the supply connections have an inner capacity of max. 27 nF to the housing
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm */ for 4 20 mA / 2-wire) **BEXU 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 U _i = 28 V _{DC} , I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μ H, the supply connections have an inner capacity of max. 27 nF to the housing
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 U _I = 28 V _{DC} , I _I = 93 mA, P _I = 660 mW, C _I ≈ 0 nF, L _I ≈ 0 μ H, the supply connections have an inner capacity of max. 27 nF to the housing in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 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 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
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory)	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 U _i = 28 V _{DC} , I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μ H, the supply connections have an inner capacity of max. 27 nF to the housing 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 cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 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 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 cable capacitance: signal line/shield also signal line/signal line: 1µH/m
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous Option SIL ⁵ 2	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 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 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 cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance:signal line/shield also signal line/signal line: 1 μ H/m according to IEC 61508 / IEC 61511 for $P_N \le 15$ bar: O-ring in 70 EPDM 281 (with BAM-approval); permissible maximum values are 15 bar / 60° C and 10 bar / 90° C for $P_N \le 25$ bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous Option SIL ⁵ 2 Option oxygen application	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 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 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 cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance:signal line/shield also signal line/signal line: 1 μ H/m according to IEC 61508 / IEC 61511 for $P_N \le 15$ bar: O-ring in 70 EPDM 281 (with BAM-approval); permissible maximum values are 15 bar / 60° C and 10 bar / 90° C for $P_N \le 25$ bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous Option SIL ⁵ 2 Option oxygen application Current consumption	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm (for 4 20 mA / 2-wire) 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 U ₁ = 28 V _{DC} , I ₁ = 93 mA, P ₁ = 660 mW, C ₁ ≈ 0 nF, L ₁ ≈ 0 μ H, the supply connections have an inner capacity of max. 27 nF to the housing 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 cable capacitance: signal line/shield also signal line/signal line: 1 μ H/m cable inductance:signal line/shield also signal line/signal line: 1 μ H/m according to IEC 61508 / IEC 61511 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 signal output current: max. 25 mA signal output voltage: max. 7 mA
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous Option SIL ⁵ 2 Option oxygen application Current consumption Weight	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm / for 4 20 mA / 2-wire) 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 U ₁ = 28 V _{DC} , I ₁ = 93 mA, P ₁ = 660 mW, C ₁ ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing 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 cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance:signal line/shield also signal line/signal line: 1 μ H/m according to IEC 61508 / IEC 61511 for $P_N \le 15$ bar: O-ring in 70 EPDM 281 (with BAM-approval); permissible maximum values are 15 bar / 60° C and 10 bar / 90° C for $P_N \le 25$ bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C signal output current: max. 25 mA signal output voltage: max. 7 mA approx. 140 g
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous Option SIL ⁵ 2 Option oxygen application Current consumption Weight Installation position	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm / for 4 20 mA / 2-wire) IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous Option SIL ⁵ 2 Option oxygen application Current consumption Weight Installation position Operational life	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm / for 4 20 mA / 2-wire) 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 U ₁ = 28 V _{DC} , I ₁ = 93 mA, P ₁ = 660 mW, C ₁ ≈ 0 nF, L ₁ ≈ 0 μ H, the supply connections have an inner capacity of max. 27 nF to the housing 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 cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance:signal line/shield also signal line/signal line: 1 μ H/m according to IEC 61508 / IEC 61511 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 signal output current: max. 25 mA signal output voltage: max. 7 mA approx. 140 g any > 100 x 10 ⁶ pressure cycles
Diaphragm Media wetted parts Explosion protection (only Approval DX19-DMK 331 Safety technical maximum values Permissible temperatures for environment Connecting cables (by factory) Miscellaneous Option SIL ⁵ 2 Option oxygen application Current consumption Weight	standard: FKM options: EPDM (for $P_N \le 160$ bar), NBR others on request ceramic Al_2O_3 96 % pressure port, seals, diaphragm / for 4 20 mA / 2-wire) IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X

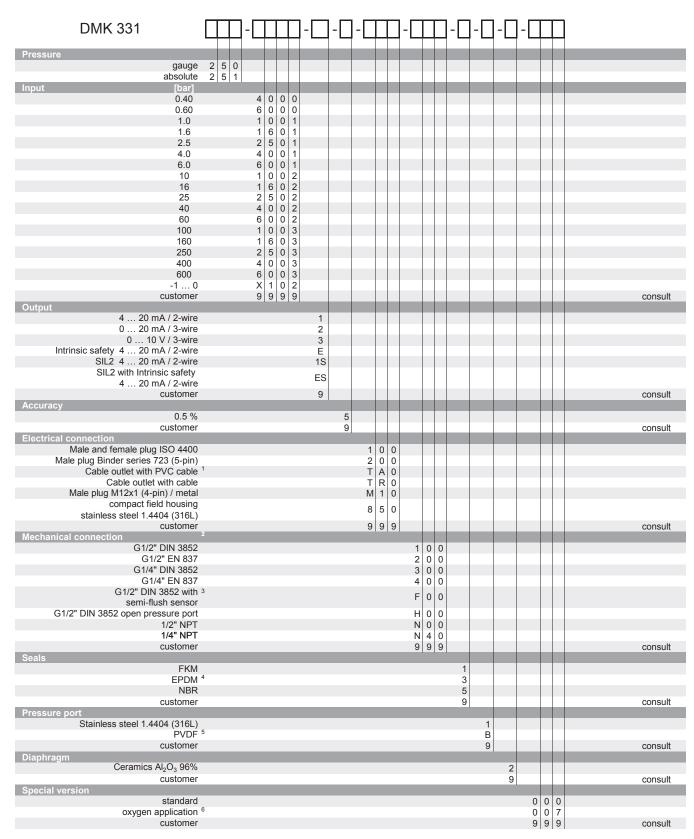


and other versions on request

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



Ordering Code



 $^{^{1}}$ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 $^{\circ}\text{C})$

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

² metric threads and others on request

 $^{^{3}}$ possible for nominal pressure ranges $P_{N} \le 25$ bar; absolute pressure ranges on request

 $^{^4\,}$ possible for nominal pressure range $P_N\!\le\!$ 160 bar

 $^{^5}$ PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar), minimum permissible temperature is -30 $^\circ\text{C}$

⁶ oxygen application with FKM-seal up to 25 bar and with EPDM-seal up to 15 bar possible



DMP 457

Pressure Transmitter for Shipbuilding and Offshore

Stainless Steel Sensor

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

Nominal pressure

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

Output signals

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

Special characteristics

- 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 Hydraulic and Pneumatic Control Systems



Fuel and Oil













DMP 457

Technical Data

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 ₂ O]	-	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	60	00
Nominal pressure abs.	[bar]	10	16	25	40	60	100	160	250	400	60	00
Level gauge / abs.	[mH ₂ O]	100	160	250	400	-	-	-	-	-		-
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000	10	00
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	-		-
Vacuum resistance		P _N ≥ 1 ba	ar: unlimi	ted vacuu	m resista	nce						
		P _N < 1 b	ar: on red	quest								
1 from 60 bar: measurement s	starts with	ambient pre	essure									

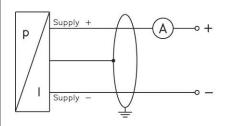
Output signal / Supply			
Standard	2-wire: 4 20 mA / V _S = 8	3 32 V _{DC}	
Option IS-protection	2-wire: 4 20 mA / V _S = 10) 28 V _{DC}	
Performance			
Accuracy ²	Standard: Nominal pressure	e < 0.4 bar: ≤ ± 0.5 % FSO	
		e ≥ 0.4 bar: ≤ ± 0.35 % FSO	
	Option: Nominal pressure	e ≥ 0.4 bar: ≤ ± 0.25 % FSO	
Permissible load	$R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$		
Influence effects	supply: 0.05 % FSO / 10 V	load: 0.05 % FSC) / kΩ
Long term stability	≤ ± 0.1 % FSO / year by reference	conditions	
Response time	< 10 msec		
	it point adjustment (non-linearity, hyster	esis, repeatability)	
Thermal effects (Offset and Spar	n) / 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 ele	ectronics / environment: -40 85°	C storage: -40 100°C
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic	emission and immunity according	to	
compatibility	- EN 61326		
	- Germanischer Lloyd (GL)		
	- Det Norske Veritas (DNV)		
Mechanical stability			
Vibration	4 g (according to GL: curve 2 / acc	cording to DNV: Class B / basis: It	-C 60068-2-6)
Materials			
Pressure port	stainless steel 1.4404 (316L)		
Housing	standard: stainless	steel 1.4404 (316L)	
3		steel 1.4404 (316L), with cable gla	ind
Cable sheath		steel 1.4404 (316L), with cable gla	permissible temperatures
	option field housing: stainless	· , ,	
	option field housing: stainless stai	for submersible version - PUR - probe cable	permissible temperatures -5 70 °C -25 70 °C
	option field housing: stainless of stainless	for submersible version - PUR - probe cable FEP - probe cable	permissible temperatures -5 70 °C -25 70 °C -25 70 °C
Cable sheath	option field housing: stainless : for cable outlet PVC - cable PUR - cable	for submersible version - PUR - probe cable	permissible temperatures -5 70 °C -25 70 °C
	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM	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
Cable sheath Seals (media wetted)	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, wele	for submersible version - PUR - probe cable FEP - probe cable	permissible temperatures -5 70 °C -25 70 °C -25 70 °C
Cable sheath Seals (media wetted) Diaphragm	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L)	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
Cable sheath Seals (media wetted) Diaphragm Media wetted parts	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L) pressure port, seals, diaphragm	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version³	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C
Cable sheath Seals (media wetted) Diaphragm Media wetted parts ³ welded version only with pressure port	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L)	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version³	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C
Cable sheath Seals (media wetted) Diaphragm Media wetted parts ³ welded version only with pressure port IS-protection	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nome	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version³ inal pressure ranges P _N ≤ 40 bar	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C
Cable sheath Seals (media wetted) Diaphragm Media wetted parts ³ welded version only with pressure port IS-protection Approvals	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nom	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version ³ inal pressure ranges $P_N \le 40$ bar x IBE 12.0027X	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C
Cable sheath Seals (media wetted) Diaphragm Media wetted parts 3 welded version only with pressure port IS-protection	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nome	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version ³ inal pressure ranges $P_N \le 40$ bar x IBE 12.0027X	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C
Cable sheath Seals (media wetted) Diaphragm Media wetted parts ³ welded version only with pressure port IS-protection Approvals DX 19-DMP 457	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nom IBEXU 10 ATEX 1068 X / IECE zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T 85°	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version ³ inal pressure ranges $P_N \le 40$ bar x IBE 12.0027X C Da	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C
Cable sheath Seals (media wetted) Diaphragm Media wetted parts **welded version only with pressure port IS-protection Approvals	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, wele stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nom IBEXU 10 ATEX 1068 X / IECE zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T 85° U _i = 28 V, I _i = 93 mA, P _i = 660 mW	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version ³ inal pressure ranges $P_N \le 40$ bar x IBE 12.0027X C Da V, C _i = 105 nF, L _i = 5 μ H,	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C others on request
Cable sheath Seals (media wetted) Diaphragm Media wetted parts **welded version only with pressure port IS-protection Approvals DX 19-DMP 457 Safety technical maximum values	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, weld stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nom IBEXU 10 ATEX 1068 X / IECE zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T 85° U _i = 28 V, I _i = 93 mA, P _i = 660 mW the supply connections have an in	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version³ Final pressure ranges $P_N \le 40$ bar In the probe table bar in the probability of the probe cable bar in the probability of the	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C others on request
Cable sheath Seals (media wetted) Diaphragm Media wetted parts **welded version only with pressure port IS-protection Approvals DX 19-DMP 457 Safety technical maximum values Permissible temperatures for	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, wele stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nom IBEXU 10 ATEX 1068 X / IECE zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T 85° U _i = 28 V, I _i = 93 mA, P _i = 660 mW the supply connections have an in in zone 0: -20	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version ³ Vinal pressure ranges $P_N \le 40$ bar In the probe table bar in the probability of the path of the pa	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C others on request
Cable sheath Seals (media wetted) Diaphragm Media wetted parts **welded version only with pressure port* IS-protection Approvals DX 19-DMP 457 Safety technical maximum values Permissible temperatures for environment	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, wele stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nom IBEXU 10 ATEX 1068 X / IECE zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T 85° U _i = 28 V, I _i = 93 mA, P _i = 660 mW the supply connections have an in in zone 0: -20 in zone 1 or higher: -20	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version³ vinal pressure ranges $P_N \le 40$ bar x IBE 12.0027X C Da V, C _i = 105 nF, L _i = 5 μ H, there capacity of max. 140 nF to the compact of the compa	permissible temperatures -5 70 °C -25 70 °C -25 70 °C -25 125 °C others on request
Cable sheath Seals (media wetted) Diaphragm Media wetted parts **welded version only with pressure port IS-protection Approvals DX 19-DMP 457 Safety technical maximum values Permissible temperatures for	option field housing: stainless: for cable outlet PVC - cable PUR - cable standard: FKM option: NBR, wele stainless steel 1.4435 (316L) pressure port, seals, diaphragm s according to EN 837; possible for nom IBEXU 10 ATEX 1068 X / IECE zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T 85° U _i = 28 V, I _i = 93 mA, P _i = 660 mW the supply connections have an in in zone 0: -20	for submersible version PUR - probe cable FEP - probe cable TPE - probe cable ded version³ Final pressure ranges P _N ≤ 40 bar In the substituting the substitution that substituting the substitution that substituting the substitution that substituting the substitution that substituting the substitution that substituting the substitution that substituting the substitution that substitution the s	permissible temperatures -5 70 °C -25 70 °C -25 125 °C others on request e housing

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
CC conformity	EMC Directive: 2004/108/EC
CE-confomity	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 $P_N \le 1$ bar. 5 This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram

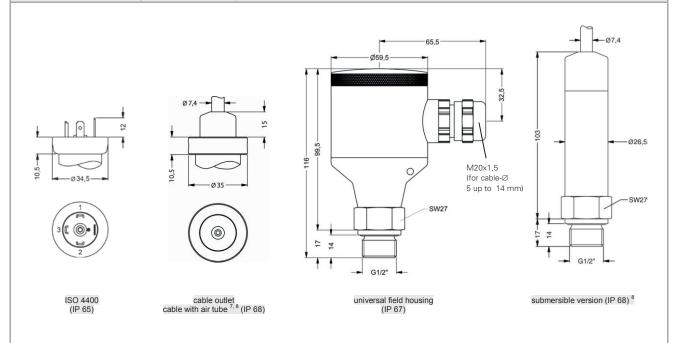
2-wire-system (current)



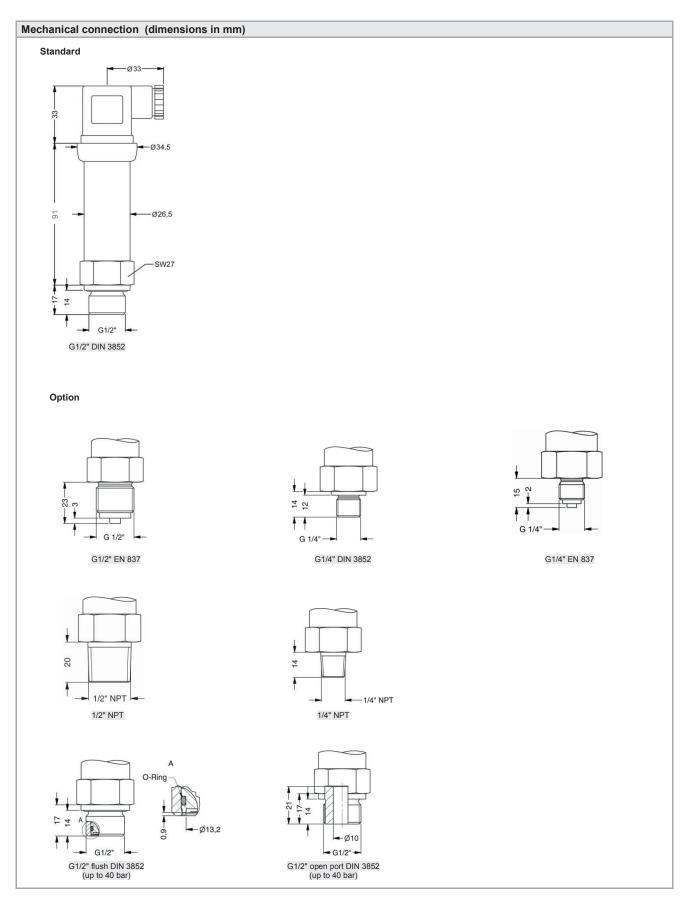
Pin	con	tiau	ıratı	On.

3			
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)



⁶ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory. ⁷ tested at 4 bar or 40 mH₂O for 24 hours ⁸ different cable types and lengths available,permissible temperature depends on kind of cable, see cable connection



DMP 457

Ordering Code

DMP 457					
Pressure in bar, gauge 1	6 0 0				
in bar, absolute in $\mathrm{mH_2O}$, gauge 1 in $\mathrm{mH_2O}$, absolute	6 0 1 6 0 2 6 0 3				
Input [mH ₂ O] [bar] 1 0.1	1 0 0 0				
1.6 0.16 2.5 0.25	1 6 0 0				
4 0.4 6 0.6	2 5 0 0 4 0 0 0 6 0 0 0				
10 1	1 0 0 1				
25 2.5	1 6 0 1 2 5 0 1 4 0 0 1				
40 4 60 6	4 0 0 1 6 0 0 1				
100 10 160 16	1 0 0 2 1 6 0 2				
250 25	2 5 0 2				
400 40 60	2 5 0 2 4 0 0 2 6 0 0 2				
100 160	1 0 0 3 1 6 0 3				
250 400	2 5 0 3 4 0 0 3 6 0 0 3				
600	6 0 0 3				
-1 0 customer	X 1 0 2 9 9 9 9				consult
Output 4 20 mA / 2-wire		1			
Intrinsic safety 4 20 mA / 2-wire customer		E 9			consult
Accuracy					Consuit
standard for $P_N \ge 0.4$ bar 0.35 % standard for $P_N < 0.4$ bar 0.50 %		3 5			
option for P _N ≥ 0,4 bar 0.25 % customer		2 9			consult
Electrical connection Male and female plug ISO 4400 ²					
(for cable Ø 46 mm) Male and female plug ISO 4400 GL ²	3	G 1 0			
(for cable Ø 1014 mm)		G 0 0			
Male and female plug ISO 4400 GL ^{2,} (for cable Ø 4,511 mm)		G 0 1			
Cable outlet ^{2,} Field housing stainless steel	4	T R 0 8 8 0			
Submersible version (1.4404 / 316L) with PUR cable ²	4	T T 1			
with PUR cable so customer		9 9 9			consult
Mechanical connection G1/2" DIN 3852			1 0 0		
G1/2" EN 837 G1/4" DIN 3852			1 0 0 2 0 0 3 0 0 4 0 0		
G1/4" EN 837 G 1/2" DIN 3852 with ⁵					
flush sensor			F 0 0		
G1/2" DIN 3852 open pressure port ⁵ 1/2" NPT			H 0 0 N 0 0		
1/4" NPT customer			N 4 0 9 9 9		consult
Seals					Consult
FKM NBR			1 5		
without (welded version) ⁶ customer			2 9		consult
Special version standard				0 0 0	
customer				0 0 0 9 9	consult

¹ from 60 bar: measurement starts with ambient pressure

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

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 $P_N \le 40$ bar



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 Al₂O₃ 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





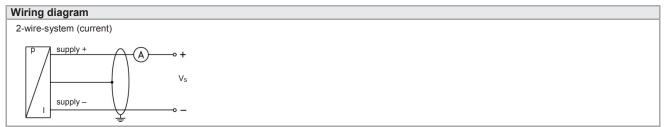






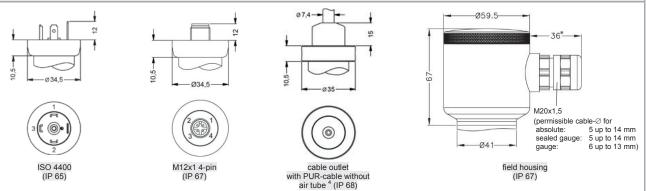
Pressure ranges																
Nominal pressure 1	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0	.2	-(0.3		-C	.5					-1			
¹ available in gauge, sealed	gauge and a	absolute	e; nomir	nal pre	ssure ra	anges se	aled ga	uge and	absolut	e from 1	bar					

Output signal / Comple			
Output signal / Supply	0i 4	24.1/	
Standard	2-wire: 4 20 mA / $V_S = 9$ 32 V_{DC}	$V_{S \text{ rated}} = 24 V_{DC}$	
Option IS-version	2-wire: 4 20 mA / V _S = 14 28 V _{DC}	$V_{S rated} = 24 V_{DC}$	
Performance			
Accuracy ²	standard: $\leq \pm 0.25 \% FSO$ option: for $P_N \geq 0.6$ bar ³ : $\leq \pm 0.1 \% FSO$		
Permissible load	$R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$		
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 rat	e 5/sec
Max. response time	380 msec	,	
² accuracy according to IEC 60770 – li ³ Under the influence of disturbance but	imit point adjustment (non-linearity, hysteresis, repeatabilı urst according to EN 61000-4-4 (2004 <u>)</u> 2 kV accuracy dec		
Thermal effects			
Thermal error	≤ ± 0.1 % FSO / 10 K in compensated rai	nge -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	I (GL)
Mechanical stability		-	· · ·
Vibration	4 g (according to GL: curve 2 / basis: DIN EN	60068-2-6)	
Materials	, <u>J(</u>	,	
Pressure port	standard: stainless steel 1.4404 (316 L) option for threaded connections: CuNi10Fe1M	n - 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 ret	ference)	others on request
Seals (media wetted)	FKM	,	others on request
Diaphragm	standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O 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 ISO 4400, M12x1, cable outlet: zone 0: II 1G		
Safety technical maximum values	U_i = 28 V; I_i = 93 mA; P_i = 660 mW field housing: C_i = 52.3 nF; ISO 4400, M12x1, cable outlet: C_i = 105 nF;	L _i = 5 μH; 90.2 nF opposi L _i = 5 μH; 140 nF opposit	
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			
medium Miscellaneous	zone 1 and higher: -25 70 °C -40 85 °C		
medium Miscellaneous Ingress protection	zone 1 and higher: -25 70 °C		
medium Miscellaneous	zone 1 and higher: -25 70 °C -40 85 °C		
medium Miscellaneous Ingress protection	zone 1 and higher: -25 70 °C -40 85 °C		
medium Miscellaneous Ingress protection Installation position Current consumption	zone 1 and higher: -25 70 °C -40 85 °C IP65, IP 67, IP68 any max. 21 mA	nical connection)	
medium Miscellaneous Ingress protection Installation position Current consumption Weight	zone 1 and higher: -25 70 °C -40 85 °C IP65, IP 67, IP68 any max. 21 mA min. 400 g (depending on housing and mechal	nical connection)	
medium Miscellaneous Ingress protection Installation position Current consumption	zone 1 and higher: -25 70 °C -40 85 °C IP65, IP 67, IP68 any max. 21 mA	nical connection)	



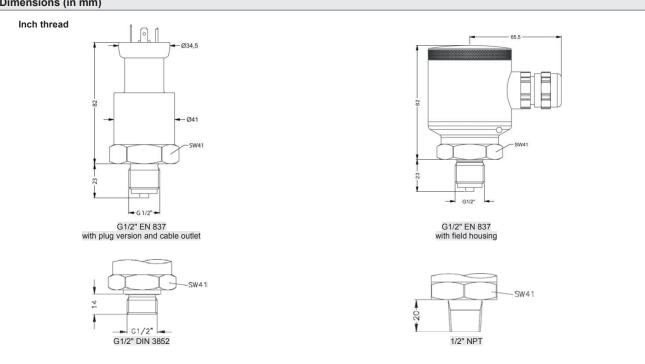
Pin configuration field housing M12x1 (4-pin) cable colours (clamp section: Electrical connections ISO 4400 metal (DIN 47100) 2.5 mm²) Supply + VS+ wh (white) VS-Supply -2 2 bn (brown) Shield ground contact 4 ye/gn (yellow / green)

Electrical connections (dimensions in mm)



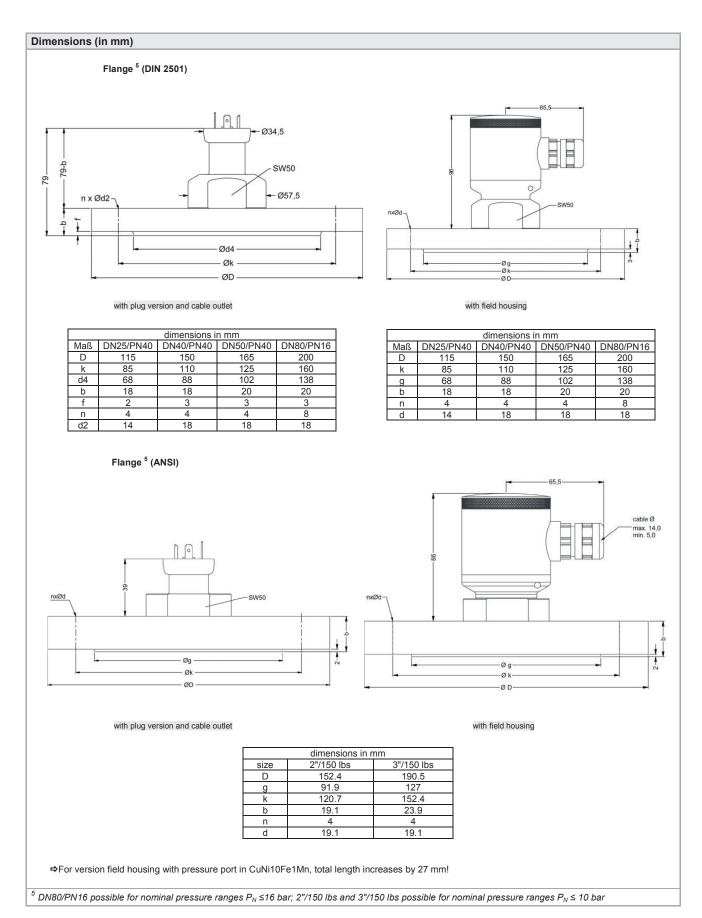
^{*} for gauge pressure ranges with field housing the marked dimension increases by 8 mm

Dimensions (in mm)



For version field housing with pressure port in CuNi10Fe1Mn, total length increases by 27 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 $_2$ O for 24 hours



Ordering Code

DMK 458	Ш	- 🔲	П]-[]-[- [- 🔲	Ţ]-[]-[]-[- 🗌	Ţ]	
Pressure																	
in bar, gauge	5 9 A																
in bar, absolute ¹ in bar, sealed gauge ¹	5 9 B 5 9 E																consult
in mH₂O, gauge	5 9 C																CONSUIT
in mH ₂ O, absolute ¹	5 9 D																consult
in mH₂O, sealed gauge ¹	5 9 F									\perp							consult
Input [mH₂O] [bar] 0.4 0.04		0	4 0 (
0.4 0.04 0.6 0.06			6 0 0														
1.0 0.1			0 0 0														
1.6 0.16			6 0 0														
2.5 0.25		2	5 0 0														
4.0 0.40 6.0 0.60			0 0 0														
10 1.0			0 0														
16 1.6			6 0														
25 2.5			5 0	I													
40 4.0			0 0														
60 6.0 100 10			0 0 2														
160 16		1	6 0 2														
200 20		2	0 0 2	2													
customer		9	9 9 9	9													consult
Output 4 20 mA / 2-wire				1													
Intrinsic safety 4 20 mA / 2-wire				1 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						G	0	1									
(for cable Ø 4.5 11 mm) Male plug M12x1 (4-pin) /																	
metal version						N	1 1	0									
Cable outlet with PUR-cable						Т	R	1									
(with ventilation tube)																	
Field housing, absolute, sealed gauge customer						8 a	9	0									consult
Mechanical connection						J	, 13	5									Consuit
G 1/2" DIN 3852										0 0							
G 1/2" EN 837									2	0 0							
1/2" NPT Flange DN 25 / PN 40 (DIN 2501)									N	0 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) customer									F Q	0 0 0 2 0 2 2 2 3 1 4 3 2 3 3 9 9							consult
Seals									ا	5 5							Consuit
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 ₂ O ₃ 96% Ceramics Al ₂ O ₃ 99.9%													2				
customer													C 9				consult
Special version																	33341
standard														0	0 0		
customer														9	9 9	'	consult
1 nominal pressure ranges absolute and sealed gauge from	m 1 har																

 $^{^{\}rm 1}$ nominal pressure ranges absolute and sealed gauge from 1 bar $^{\rm 2}$ female plug is GL-approbated

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

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



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 ₂ O]	-	-	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 l	oar: ι	ınlimit	ed v	acuur	n res	istand	ce										
		$P_N < 11$	bar: c	n req	uest														

Output signal / Supply				
Standard	2-wire: 4 20 mA	\ / Ve =	8 32 V _{DC}	
Option IS-protection			10 28 V _{DC}	
<u>'</u>	Z WIIC. 4 20 III/	17 45	10 20 VDC	
Performance	JEO 00770 1 0 5 0/	/ F00		
Accuracy ¹	IEC 60770: ≤ ± 0.5 %			
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / (V_{\text{S}} - V_{\text{S min}})]$		Ω	
Influence effects	supply: 0.05 % FSO			
	load: 0.05 % FSO) / kΩ		
Response time	< 10 msec			
¹ accuracy according to IEC 60770 – II				
Thermal effects (Offset and Spa	<u>'</u>			
Thermal error	≤ ± 0.2 % FSO / 10 K in compensated range		. 85 °C	
Permissible temperatures	medium: electronics / environm storage:	nent:	-40 125 °C -40 85 °C -40 100 °C	
Electrical protection				
Short-circuit protection	permanent			
Reverse polarity protection	no damage, but also i	no funct	ion	
Electromagnetic compatibility	emission and immunit - EN 61326 - Germanischer L - Det Norske Verit	ty accor loyd (Gl	ding to –)	
Mechanical stability			,	
Vibration	4 g (according to GL:	curve 2	/ according to DNV: Class B / ba	sis: IEC 60068-2-6)
Materials	7 3 (* * * * * * * * * * * * * * * * * *			,
Pressure port	Standard:	stainle	ess steel 1.4404 (316L)	
·	option ² :	conne G1/4"	10Fe1Mn (sea water resistant) - fo ection G1/2" DIN 3852, G1/2" EN DIN 3852, G1/4" EN 837 in comb Ni10Fe1Mn	837, G1/2" open port,
Housing	standard:	stainle	ess steel 1.4404 (316L)	
	option ² :	port ir	0Fe1Mn (sea water resistant) - in CuNi10Fe1Mn	·
211 1 11	option field housing:	staini	ess steel 1.4404 (316L); with cab	
Cable sheath	for cable outlet		for submersible version	permissible temperatures
	PVC - cable PUR - cable		- DLID probe cable	-5 70 °C -25 70 °C
	PUR - Cable		PUR - probe cable FEP - probe cable	-25 70 °C
			TPE - probe cable	-25 70 °C
Seals (media wetted)	standard: option: others on request	FKM NBR,	FFKM (only for P _N ≤ 100 bar)	25 126 0
Diaphragm	ceramic Al ₂ O ₃ 96 %			
Media wetted parts	pressure port, seals, o	diaphrad	gm	
² IS-version on request				
IS-protection (only for 4 20 n	nA / 2-wire)			
Approvals DX19-DMK 457	zone 0: II 1G Ex ia zone 20: II 1D Ex ia	a IIB T4	Ga	
Safety technical maximum values			0 mW, C_i = 105 nF, L_i = 5 μ H, an inner capacity of max. 140 nF	to the housing
Permissible media temperature		-20 6	0 °C with p _{atm} 0.8 bar up to 1.1 ba	
Connecting cables (by factory)	cable capacitance:	signal li	ne/shield also signal line/signal lir ne/shield also signal line/signal lir	

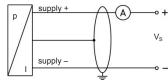
Technical Data

Miscellaneous	
Option oxygen application	for P _N ≤ 25 bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C
Current consumption	max. 25 mA
Weight	approx. 140 g (with ISO 4400)
Installation position	any
Operational life	> 100 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

This directive is only valid for devices with maximum permissible overpressure > 200 ba

Wiring diagram

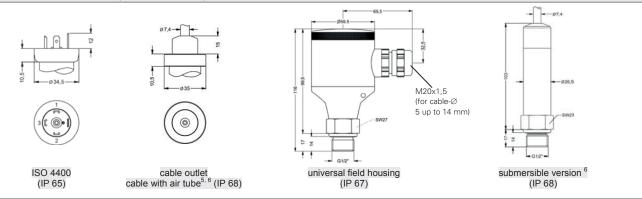
2-wire-system (current)



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	<u></u>	ye/gn (yellow / green)

Electrical connections 4 (dimensions in mm)



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.

Mechanical connection (dimensions in mm) standard option 2 2 2 2 3 4.5 2 2 2 4 5 5 5 6 1/4" 3 1/4" DIN 3852 G1/4" EN 837 G1/2" DIN 3852 G1/2" NPT 1/4" NPT G ½" open port DIN 3852 (≤ 40 bar)

⁵ tested at 4 bar or 40 mH₂O for 24 hours

⁶ different cable types and lengths available, permissible temperature depends on kind of cable, see cable connection

Ordering Code

DMK 457	Ш]-[- 🗆 - 🗆	- -	- 🗆]-□-[]-[]-[]
Pressure									
in bar, gauge	5 9 0 5 9 1 5 9 2 5 9 3								
in bar, absolute in mH ₂ O, gauge	5 9 1								
in mH ₂ O, absolute	5 9 3								
Input [mH ₂ O] [bar]									
4 0.4 6 0.6		4 0 0 0 6 0 0 0							
10 1.0		1 0 0 1							
16 1.6		1 6 0 1							
25 2.5 40 4.0		2 5 0 1 4 0 0 1							
60 6.0		6 0 0 1							
100 10		1 0 0 2							
160 16 250 25		1 6 0 2 2 5 0 2 4 0 0 2							
400 40		4 0 0 2							
600 60		6 0 0 2							
100		1 0 0 3							
160 250		1 6 0 3 2 5 0 3							
400		4 0 0 3							
600		6 0 0 3							
-1 0 customer		X 1 0 2 9 9 9 9							consult
Output		9 9 9 9							Consuit
4 20 mA / 2-wire			1						
Intrinsic safety 4 20 mA / 2-wire customer			E 9						conquit
Accuracy			9						consult
0.5 %			5					П	
customer			9						consult
Electrical connection Male and female plug ISO 4400									
(for cable Ø 46 mm)				G 1 0					
Male and female plug ISO 4400 GL ¹ (for cable Ø 1014 mm)	, 2			G 0 0					
Male and female plug ISO 4400 GL	, 2								
(for cable Ø 4.511 mm)				G 0 1					
Cable outlet ¹	, 3			T R 0					
Field housing stainless steel Submersible version (1.4404 / 316L)				8 8 0					
with PUR cable ¹	, 3			T T 1					
Submersible version (CuNiFe)				T S 1					
with PUR cable 1 customer	, 3			9 9 9					concult
Mechanical connection				9 9 9					consult
G1/2" DIN 3852					1 0 0				
G1/2" EN 837 G1/4" DIN 3852					2 0 0				
G1/4 DIN 3852 G1/4" EN 837					3 0 0 4 0 0				
G1/2" DIN 3852 open pressure port 4					H 0 0				
1/2" NPT 1/4" NPT					N 0 0				
customer					H 0 0 N 0 0 N 4 0 9 9 9				consult
Seals									33.1341
FKM FFKM 5						1			
option NBR ⁵						7 5			
customer						9			consult
Pressure port									
Stainless steel 1.4404 (316L) Copper-Nickel-alloy (CuNi10Fe1Mn) ⁶						1 K			
customer						9			consult
Diaphragm									
Ceramics Al ₂ O ₃ 96% customer							9		consult
Special version									
standard							0	0 0 0 7 9 9	
oxygen application ⁷ customer							0	0 7	4unana
customer							9	9 9	consult

¹ Shielded cable has to be used! Cable versions are delivered with shielded cable.

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

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 ≤ 40 bar possible

 $^{^{5}}$ only for $P_{N} \le 100$ bar possible

⁶ optionally for nominal pressure ranges up to 400 bar and mechanical connections G1/2" DIN 3852, G1/2" EN 837, G1/2" open port, G1/4" DIN 3852, G1/4" EN837 in combination with housing in CuNi10Fe1Mn

 $^{^{\}rm 7}$ oxygen application with FKM seal possible up to 25 bar



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













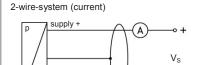
1 1															
Input pressure range ¹															
Nominal pressure gauge / abs.	[bar]	-10	0.10	0.16	0.25	0.40	0.60	1	1.6						
Overpressure	[bar]	5	0.5	1	1	2	5	5	10						
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15						
Nominal pressure gauge / abs.	[bar]	2.5	4	6	10	16	25	40							
Overpressure	[bar]	10	20	40	40	80	80	105							
Burst pressure ≥	[bar]	15	25	50	50	120	120	210							
Vacuum resistance		$P_N \ge 1$ bar: $Q_N \le 1$ bar: $Q_N \le 1$		uum resist	ance										
¹ consider the pressure resis	tance of fitti	ng 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 /	$V_{\rm S} = 10$.	28 V _{DC}										
Options 3-wire			20 mA /	$V_{S} = 14$. $V_{S} = 14$.											
Performance															
Accuracy 2		standard:	nominal pre	essure < 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: P = F(V = V = V = V = V = V = V = V = V = V =															
Permissible load current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 \text{ A}] \Omega$															
	current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$														
Influence effects	voltage 3-wire: R_{min} = 10 kΩ supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ														
Long term stability			supply: 0.05% FSO / 10 V load: 0.05% FSO / $k\Omega$ $\leq \pm 0.1 \%$ FSO / year at reference conditions												
Response time			± 0.1 % FSO / year at reference conditions wire: < 10 msec 3-wire: ≤ 3 msec												
² accuracy according to IEC	60770 – lim	it point adiustr	nent (non-linea	aritv. hvstere											
Thermal effects (Offset					, - ₁ ,,, -, -, -, -, -, -, -, -, -, -,										
Nominal pressure P _N	[bar]		-1 0		< 0	0.40		≥ 0.40							
Tolerance band	[% FSO]		≤ ± 0.75			1,5		≤ ± 0.75							
in compensated range	[°C]		-20 85			. 50		-20 85							
Permissible temperatures	3	medium:	/ environme	-10 .	125 °C for filli 125 °C for filli 85 °C		compatible of	oil age: -40 10	0°C						
Permissible temperature for cooling element 300°C		filling fluid s	silicon oil ood compati	ble oil	overpressure:			um: -40 15 um: -10 15							
³ an optional cooling element ⁴ max. temperature of the me ⁵ also for $P_{abs} \le 1$ bar	t can influer edium for no	nce thermal efforminal pressure	ects for offset a e gauge > 0 ba	and span de ar: 150 °C fo	pending on instal r 60 minutes with	lation position a a max. enviror	and filling cond nmental temper	litions. rature of 50 °C							
Electrical protection															
Short-circuit protection		permanent													
Reverse polarity protection	on		, but also no	function											
Electromagnetic compatibility	-				to EN 61326										
Mechanical stability															
Vibration according to DIN EN 600	68-2-6	G 1/2": 20	g RMS (25 .	2000 Hz) others: 1	0 g RMS (25	2000 Hz)								
Shock according to DIN EN 600	68-2-27	G 1/2": 50	0 g / 1 msec		others: 1	00 g / 1 mse	С								
Filling fluids															
Standard		silicon oil													
Options			atible oil with FM 32; Cate		oval e: H1; NSF Reg	istration No.:	130662)	others on	request						
Materials															
Pressure port			eel 1.4404 (others on	request									
Housing Ontion compact field hou	oina		eel 1.4404 (aland brees :	الماحة الماحة		others s	roau 10 - t						
Option compact field hou	sing	stainless st	eei 1.4305 (ასა), cable	gland brass, n	ickei plated		others on	request						
Seals (media wetted) Standard Optional		FFKM (rec	FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) Clamp, dairy pipe, Varivent®: without												
Diaphragm															
Standard			eel 1.4435 (т							
Optional			C-276 (2.48)					I antalum	on request						
Media wetted parts		pressure p	ort, seal, diap	ohragm											

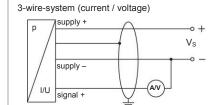
Technical Data

Explosion protection (only for 4	20 mA / 2-wire)								
Approvals DX 19-DMP 331P	IBExU 10 ATEX 1068 X								
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ μ H, 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 $P_N \le 2$ 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

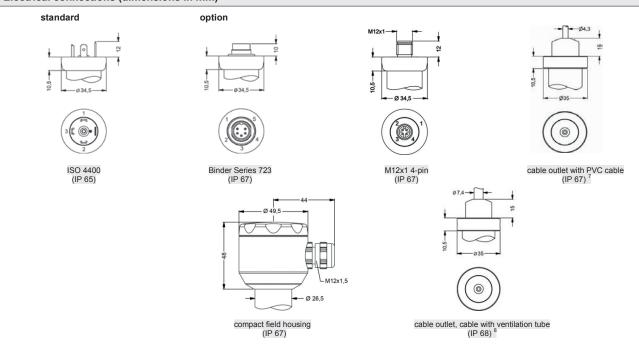
supply -





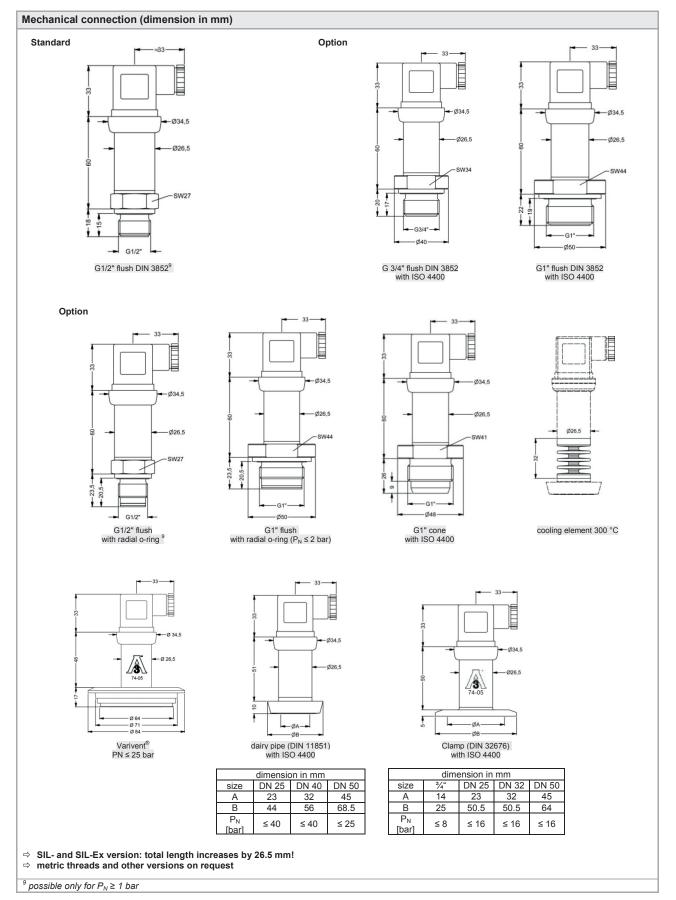
Pin configuration					
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply + Supply – Signal (only 3-wire)	1 2 3	3 4 1	1 2 3	IN + IN - OUT+	wh (white) bn (brown) gn (green)
Shield	ground pin	5	4	±	ye/gn (yellow / green)

Electrical connections (dimensions in mm)



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



Ordering Code

DMP 331P	ш-ш]-[- 🗆	- 🗆	ш]-[П]-[]-[]-[-	Т]
Pressure gauge	5 0 0 5 0 1												
Input [bar]													
0.10 0.16	1 0 0 0												
0.25 0.40	2 5 0 0 4 0 0 0												
0.60 1.0	6 0 0 0 1)											
1.6 2.5	1 6 0 1 2 5 0 1												
4.0 6.0	2 5 0 1 4 0 0 1 6 0 0 1												
10 16	1 0 0 2 1 6 0 2	2											
25 40	2 5 0 2	:											
-1 0	X 1 0 2	:											
Output	9 9 9 9												consult
4 20 mA / 2-wire 0 20 mA / 3-wire		1 2											
0 10 V / 3-wire Intrinsic safety 4 20 mA / 2-wire		3 E											
SIL2 4 20 mA / 2-wire SIL2 with Intrinsic safety 4 20 mA / 2-wire		1S ES											
Accuracy		9	_										consult
standard for $P_N \ge 0.4$ bar 0.35 % standard for $P_N < 0.4$ bar 0.5 %			3 5										
option for $P_N \ge 0.4$ bar 0.25 %			2										
Electrical connection			9										consult
Male and female plug ISO 4400 Male plug Binder series 723 (5-pin)				1	0 0	1							
Cable outlet with PVC-cable ¹ Cable outlet ²				T T	A 0 R 0								
Male plug M12x1 (4-pin) / metal Compact field housing stainless steel				M	1 0								
stainless steel 1.4305 ³ customer	3			8	5 0								consult
Mechanical connection G1/2" with flush					0 0								Concur
welded diaphragm (DIN 3852) ⁴ G3/4" with flush	1						0 0						
welded diaphragm (DIN 3852) G1" with flush							3 0						
welded diaphragm (DIN 3852) G1" DIN 3852 with rad. o-ring							3 1						
and flush diaphragm ⁵ G1/2" DIN 3852 with rad. o-ring	5						5 7						
and flush diaphragm 4							6 1						
G 1" cone Clamp DN 25 / 1" (DIN 32676) / 3A						K C	6 1						
Clamp DN 32 / 1 1/2" (DIN 32676) / 3A Clamp DN 50 / 2" (DIN 32676) / 3A						C	6 2						
Clamp 3/4" (DIN 32676) / 3A Dairy pipe DN 25 (DIN 11851) 3						N N	6 9						
Dairy pipe DN 40 (DIN 11851) ³ Dairy pipe DN 50 (DIN 11851) ³	3					N N	6 9 7 3 7 5 7 6						
Varivent [®] DN 40/50 / 3A customer						Р	4 1 9 9						consult
Diaphragm Stainless steel 1.4435 (316L)								1					
Tantalum Hastellov [®] C-276 (2.4819)								T H	1				consult
Hastellov C-276 (2.4819) customer								9					consult
for clamp, dairy pipe, Varivent [®] : without									0				
for inch thread - option: FFKM									7				
Filling Fluids									g				consult
silicon oil food grade oil (FDA) / 3A										1 2			
Special version customer										9			consult
standard with cooling element up to 300°C / 3A											0	0 (0
customer											9	9 9	9 consult

 $^{^{\}rm 1}$ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C), others on request $^{\rm 2}$ 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 $P_N \ge 1$ bar ^5 possible only for $P_N \le 2$ bar

 $^{{\}sf Varivent}^{@} \ is \ a \ brand \ name \ of \ {\sf GEA} \ {\sf Tuchenhagen} \ {\sf GmbH}, \ {\sf Hastelloy}^{@} \ is \ a \ brand \ name \ of \ {\sf Haynes} \ {\sf International} \ {\sf Inc.}$



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













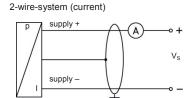
DMK 331P

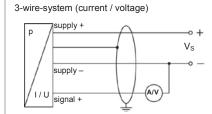
Input pressure range						
Nominal pressure gauge / abs.	[bar]	60	100	160	250	400
Overpressure	[bar]	100	200	400	400	600
Burst pressure ≥	[bar]	120	250	500	500	650

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}
Options 5-wife	$0 \dots 10 \text{ V} / \text{V}_{\text{S}} = 14 \dots 30 \text{ V}_{\text{DC}}$
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: $R_{max} = 500 \Omega$
	voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % FSO / 10 V
	load: 0.05% FSO / $k\Omega$
Long term stability	≤ ± 0.3 % FSO / year at reference conditions
Response time	2-wire: ≤ 10 msec
1	3-wire: ≤ 3 msec
	it point adjustment (non-linearity, hysteresis, repeatability)
Thermal effects (Offset and Span	
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	filling fluid silicon oil overpressure: -40 300 °C vacuum: -40 150 °C
for cooling element 300°C	filling fluid food compatible oil overpressure: -10 250 °C vacuum: -10 150 °C
	ace thermal effects for offset and span depending on installation position and filling conditions.
³ max. temperature of the medium for ov	rerpressure > 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	Latting att
	I SIIICON OII
	silicon oil food compatible oil (with EDA approval)
Options	food compatible oil (with FDA approval)
	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662)
Options	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662)
Options Materials	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request
Options Materials Pressure port	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L)
Options Materials Pressure port Housing	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L)
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C)
Options Materials Pressure port Housing Option compact field housing Seals (media wetted)	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C)
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L)
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts Explosion protection (only for 4 a.)	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm 20 mA / 2-wire)
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts Explosion protection (only for 4 .	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm 20 mA / 2-wire) IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts Explosion protection (only for 4 a.)	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm 20 mA / 2-wire) IBEXU 10 ATEX 1068 X / IECEX IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts Explosion protection (only for 4 - Approvals DX 19 - DMK 331P	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm 20 mA / 2-wire) 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
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts Explosion protection (only for 4 . Approvals DX 19 - DMK 331P Safety technical maximum values	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm 20 mA / 2-wire) 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 U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 µH
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts Explosion protection (only for 4 - Approvals DX 19 - DMK 331P	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm 20 mA / 2-wire) 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
Options Materials Pressure port Housing Option compact field housing Seals (media wetted) Standard Option Diaphragm Media wetted parts Explosion protection (only for 4 . Approvals DX 19 - DMK 331P Safety technical maximum values Permissible temperatures for	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request stainless steel 1.4404 (316 L) stainless steel 1.4404 (316 L) stainless steel 1.4305 (303) with cable gland brass, nickel plated others on request FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) others on request stainless steel 1.4435 (316 L) pressure port, seals, diaphragm 20 mA / 2-wire) 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 U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μH in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar

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

Wiring diagrams





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	<u></u>	ye/gn (yellow / green)

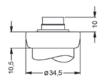
Electrical connection (dimensions in mm)







option



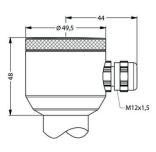


Binder Series 723 5-pin (IP 67)

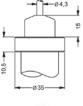




M12x1 4-pin (IP 67)



compact field housing (IP 67)



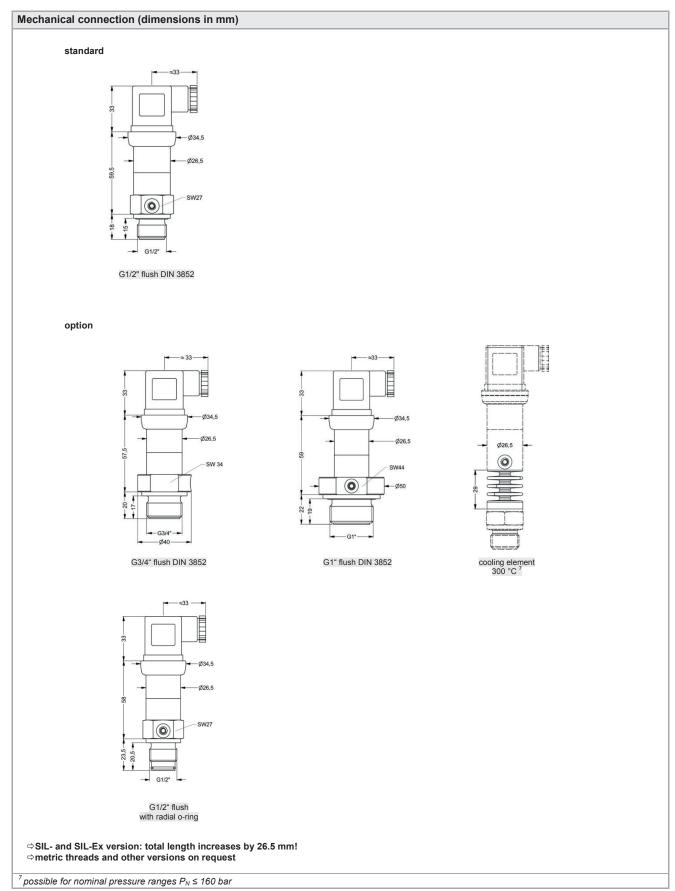


cable outlet with PVC cable (IP 67) ⁶

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

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)



DMK 331P

Ordering Code

DMK 331P			- 🔲 -	-Ц	-	Ц]-	-Ц		-	-	-	-[
Pressure																
gauge	5 0 5 5 0 6															
absolute Input [bar]	5 0 6												-			
Input [bar] 60		6 0 0 2					-	_	_							
100		6 0 0 2 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 0 10 V / 3-wire			3													
Intrinsic safety 4 20 mA / 2-wire			E													
SIL2 4 20 mA / 2-wire			18													
SIL2 with Intrinsic safety			ES													
4 20 mA / 2-wire			ES													
customer			9													consult
Accuracy																
0.5 %				5												
customer Electrical connection				9					_							consult
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					М	1	0									
compact field housing					8	5										
stainless steel 1.4305																
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								Z	3 1							
flush diaphragm								_	5 1							
G 1/2" DIN 3852 with rad. o-ring								Z	6 1							
and flush diaphragm customer								0	9 9							consult
Diaphragm			-	-	-			او	9 9				-			Consult
Stainless steel 1.4435 (316L)						_	_			1						
customer										9						consult
Seals																
FKM _											1					
FFKM ²											7					
customer											9					consult
Filling Fluids Silicon oil												4				
food compatible oil												1				
customer												9				consult
Special version																Corrount
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 \dots 70 $^{\circ}\text{C})$

only for $P_N \le 100$ bar possible only for $P_N \le 160$ bar possible



DMK 351P

Pressure Transmitter for the Process Industry

Ceramic Sensor

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

Nominal pressure

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

Output signal

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

Special characteristics

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

Optional versions

- IS-version
 Ex ia = intrinsically safe for gases and dusts
- diaphragm 99.9 % Al₂O₃
- customer specific versionse.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

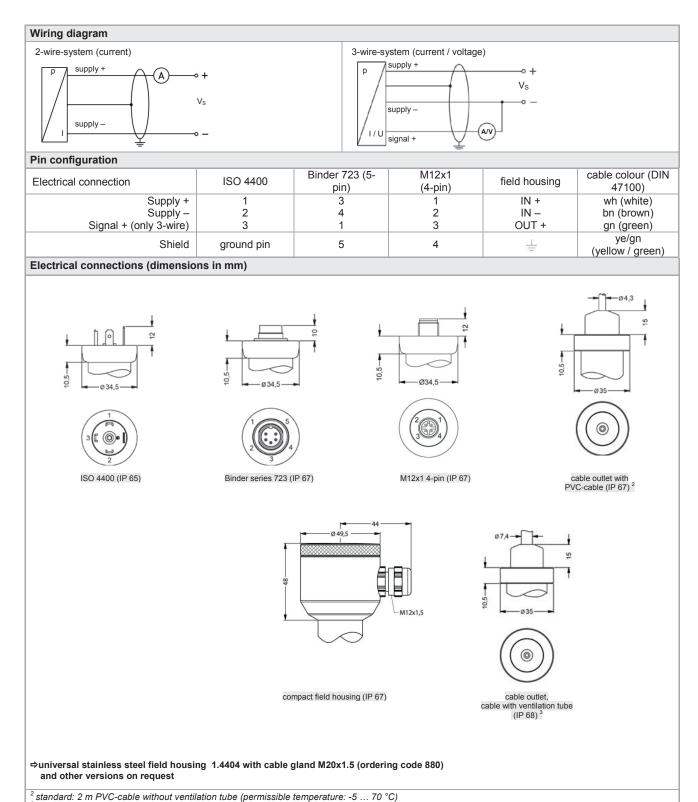




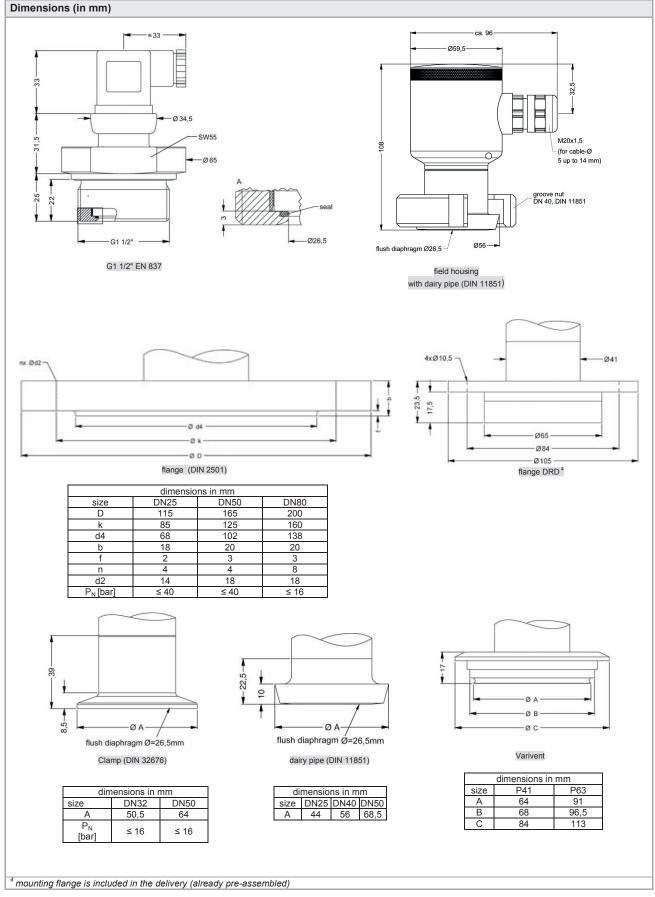
DMK 351P

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					0.6	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	-0.2 -0.3				-0	.5					-1			

$ \begin{array}{llllllllllllllllllllllllllllllllllll$	
$\begin{tabular}{lll} \hline \textbf{Performance} \\ \hline Accuracy 1 & & \\ Standard & & \leq \pm 0.35 \% FSO \\ Option & & \leq \pm 0.25 \% FSO \\ \hline Long term stability & & \leq \pm 0.1 \% FSO / year \\ \hline Influence effects & supply: & 0.05 \% FSO / 10 V \\ Ioad: & 0.05 \% FSO / k\Omega \\ \hline \end{tabular}$	
$\begin{array}{lll} \text{Standard} & \leq \pm \ 0.35 \ \% \ \text{FSO} \\ \text{Option} & \leq \pm \ 0.25 \ \% \ \text{FSO} \\ \text{Long term stability} & \leq \pm \ 0.1 \ \% \ \text{FSO} \ / \ \text{year} \\ \hline \text{Influence effects} & \text{supply:} & 0.05 \ \% \ \text{FSO} \ / \ \text{10 V} \\ \text{load:} & 0.05 \ \% \ \text{FSO} \ / \ \text{k}\Omega \\ \end{array}$	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
load: 0.05 % FSO / kΩ	
Permissible load current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$	
voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$	
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 \leq \pmole 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 stainless steel 1.4404	
compact field housing stainless steel 1.4435	
Seal (media wetted) FKM	
EPDM	
others on request	
Diaphragm	
Standard ceramic Al ₂ O ₃ 96 %	
Option ceramic Al ₂ O ₃ 99.9 %	
Media wetted parts pressure port, seals, diaphragm	
IS-protection (only for 4 20 mA / 2-wire)	
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	
IS-protection (only for 4 20 mA / 2-wire) Approval DX 14-DMK 351 P male (connector)-version:	
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	
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	
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	
Seprotection (only for 4 20 mA / 2-wire)	
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 capacity: signal line / shield also signal line / signal line: 160 pF/m	
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) signal line / shield also signal line / signal line: 160 pF/m inductance: signal line / shield also signal line / signal line: 1 μH/m	
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 capacity: signal line / shield also signal line / signal line: 160 pF/m	
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) 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	
S-protection (only for 4 20 mA / 2-wire) 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 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 Max. 21 mA Weight min. 200 g	
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) 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	
S-protection (only for 4 20 mA / 2-wire) 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 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 Max. 21 mA Weight min. 200 g	



³ different cable types and lengths available, permissible temperature depends on kind of cable



104 DMK 351P

Ordering Code

DMK 351P		- 🔲	<u> </u>	- 🗌	- 🗌	- []-[]-[]-	- 🗆	- 🗌	-[
Pressure gauge	2 9 5								-		т	_					
absolute 1	2 9 5 2 9 6						_			_	_	_					
Input [mH ₂ O] [bar] 0.4 0.04		0 4	0 0														
0.6 0.06		0 6	0 0														
1.0 0.10			0 0														
1.6 0.16 2.5 0.25		1 6 2 5	0 0														
4.0 0.40		4 0	0 0														
6.0 0.60		6 0	0 0														
10 1.0 16 1.6			0 1 0 1														
25 2.5		2 5	0 1														
40 4.0		4 0	0 1														
60 6.0 100 10		6 0	0 1														
160 16		1 6	0 2														
200 20		2 0	0 1 0 2 0 2 0 2 0 2 9 9														
Output	_	9 9	9 9											-			consult
4 20 mA / 2-wire				1													
0 10 V / 3-wire				3													consult
Intrinsic safety 4 20 mA / 2-wire				E													
Accuracy				9													consult
standard 0.35 %					3		П				т						
option 0.25 %					2 9												
Electrical connection		_			9												consult
Male and female plug ISO 4400						1	0 0				т						
Cable outlet with PVC cable ²						Т	A C										
Binder series 723 Compact field housing						2 8	0 0										
Compact field flousing Cable outlet						T	5 0 R 0										
Male plug M12x1 (4-pin) / metal						M	1 0										
customer				_	_	9	9 9				_						consult
Mechanical connection G 1 1/2" DIN flush (DIN 3852)									M 0	0	-						
Clamp DN 32 (DIN 32676)								(C 6	2							
Clamp DN 50 (DIN 32676)									C 6	3							
Dairy pipe DN 40 (DIN 11851) ³ Dairy pipe DN 50 (DIN 11851) ³										5 6							
Varivent® DN 40/50									P 4	1							consult
Flange DN 25 / PN 40 (DIN 2501)									P 4 F 2	0							consult
Flange DN 50 / PN 40 (DIN 2501) Flange DN 80 / PN 16 (DIN 2501)										3 4							consult consult
customer									9 9								consult
Seals																	
FKM											1						
EPDM customer											3						consult
Pressure port																	
Stainless steel 1.4404 (316L)												1					
Diaphragm customer												9					consult
Ceramics Al ₂ O ₃ 96 %													2				
Ceramics Al ₂ O ₃ 99.9 %													С				
Special version customer													9				consult
standard														0	0	0	
customer														9	9	0 9	consult

 $^{^{\}rm 1}\,$ absolute pressure from 0.04 bar up to 0.25 bar on request

 ${\sf Varivent}^{\it @} \ {\sf is \ a \ brand \ name \ of \ GEA \ Tuchenhagen \ GmbH}$

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

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.



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

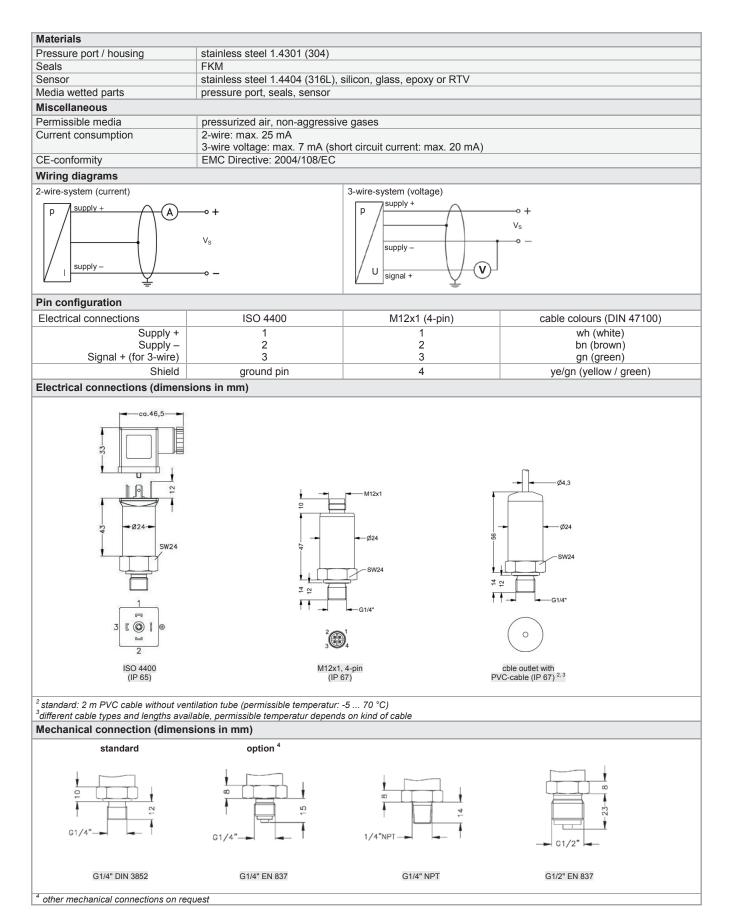


Input pressure range											
Nominal pressure gauge	[bar]	-1 0	0.1	0.25	0.4	0.6	1	1.6	2.5	4	6
Overpressure	[bar]	3	0.5	1	1	3	3	6	10	10	20

Output signal / Supply												
Standard		2-wire:		4 20 mA	1	V _S = 8	. 32 V _{DC}					
Option		3-wire:		0 10 V	1	V _S = 14	. 30 V _{DC}					
		3-wire ratiome	etric:	0.5 4.5 V	/	$V_S = 5 \pm$	$0.5 V_{DC}$					
Performance												
Accuracy 1		≤ ± 0.5 % FS0)									
Permissible load		2-wire:	$R_{max} = [(V_S -$	- V _{Smin}) / 0.02 /	λ] Ω							
		3-wire:	$R_{min} = 10 \text{ k}\Omega$	2								
Influence effects		supply:	0.05 % FSO) / 10 V		load:	0.05 % F	-SO / kΩ				
Response time		2-wire:	≤ 10 msec			3-wire:	≤ 3 msed	С				
Measuring rate		1 kHz										
¹ accuracy according to IEC	60770 – lim	it point adjustme	nt (non-linearit	y, hysteresis, rep	eatabilit	y)						
Thermal effects (Offset	t and Spar	1)										
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 temperatu	res											
Permissible temperature	es	medium: -25	125 °C	electronics	/ enviro	nment: -25	85 °C	storage: -40 85 °C				
Electrical protection												
Short-circuit protection		permanent										
Reverse polarity protecti	ion	no damage, b	mage, but also no function									
Electromagnetic compat	immunity acc	cording to EN	31326									
Mechanical stability												
Vibration		10 g, 25 Hz				N EN 60068						
Shock		100 g / 11 ms	ec	accordin	g to DII	N EN 60068	-2-27					

18.600 G

Technical Data



18.600 G		- 🗌 -		- 🔲	Ш	-[Ш	□ -	П	-		Ц	
Input [bar]													
0.10	1 0 0 0 0 2 5 0 0												
0.25	2 5 0 0 4 0 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 0 1												
4.0	4 0 0 1												
6.0	6 0 0 1 X 1 0 2												
-1 0	X 1 0 2 9 9 9 9												
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				M 0 T A 9 9	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	9	0					
customer						9	9	9					consult
Seals													
FKM									1				
customer									9				consult
Special version													
standard											0	0	
customer										9	9	9	consult

 $^{^{\}rm 1}$ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 \dots 70 $^{\circ}\text{C})$



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



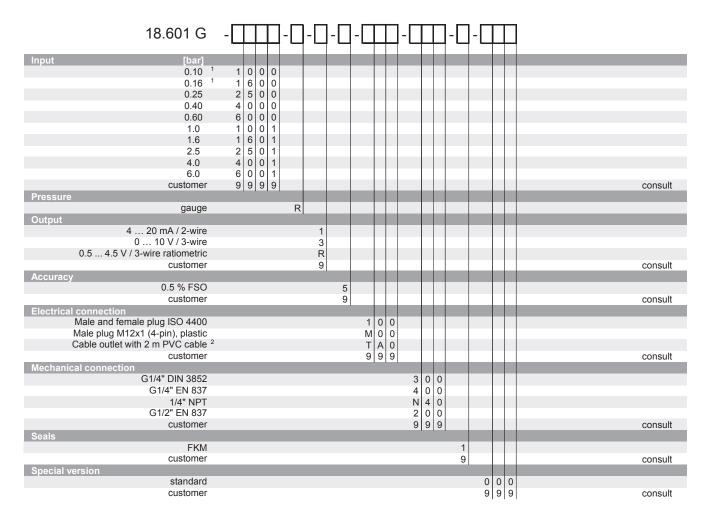
Input pressure range											
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6
Overpressure	[bar]	1	1	1	1	3	3	6	10	10	21
Burst pressure ≥	[bar]	1.5	1.5	1.5	1.5	5	5	10	17.5	17.5	35
Vacuum resistance		unlimited									

Output signal / Supply	
Standard	2-wire: $4 20 \text{ mA}$ / $V_S = 8 32 V_{DC}$
Options 3-wire	3-wire: 0 10 V / $V_S = 14$ 30 V_{DC} 3-wire ratiometric: $V_{Sig} = 0.5$ 4.5 V / $V_S = 5 \pm 0.5$ V_{DC}
Performance	
Accuracy 1,2	≤±0.5 % FSO
Permissible load	2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 \text{ A}] \Omega$ 3-wire: $R_{min} = 10 \text{ k}\Omega$
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 – ² for pressure ranges ≤ 160 mbar acc	limit point adjustment (non-linearity, hysteresis, repeatability) curacy is ≤ ± 1% FSO
Thermal effects (Offset and Sp	pan) / 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, diaphragr	n	
Miscellaneous			
Weight	approx. 120 g		
Current consumption	2-wire: max. 25 mA 3-wire voltage: max. 7 mA (sho		etric: typ. 1.5 mA
CE-conformity	EMC Directive: 2004/108/EC	·	
Wiring diagrams			
2-wire-system (current)		3-wire-system (voltage)	
p supply + A supply -	• + ∨ _s • -	supply + supply - signal +	
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 (dimens	sions in mm)		
5	M12x1 0 M12x1 0 0 0 0 0 0 0 0 0 0 0 0 0	Ø4,3 Ø24 SW24 G1/4"	
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 vel	ntilation tube (permissible temperature ailable, permissible temperature depen	: -5 70 °C) ds on kind of cable	
Mechanical connection (dimen		ad on wind or dable	
G1/4"	G1/4"	1/4"NPT	23 - 8
G1/4" DIN 3852	G1/4" EN 837	1/4" NPT	G1/2"

18.601 G

Ordering Code



 $^{^{1}}$ for pressure ranges \leq 160 mbar accuracy is \leq \pm 1 % FSO

 $^{^2}$ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 \dots 70 $^{\circ}\text{C})$



26.600 G

OEM Pressure Transmitter Standard

Applications

- mechanical and plant engineering
- general industrial applications

Characteristics

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



Input pressure range																
Nominal pressure gauge	[bar]	-10 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 accur	acy is ≤ 1	% FSO	IEC 607	70												

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 =	$5 \pm 0.5 V_{DC}$
Performance			
Accuracy ²	≤ ± 0.5 % FSO		
Permissible load	2-wire: $R_{max} = [(V_S - V_{S min})]$	n) / 0.02 A] Ω	3-wire: $R_{min} = 10 \text{ k}\Omega$
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		
² accuracy according to IEC 60770 – lin	nit point adjustment (non-linearity	v, hysteresis, repeatability)	
Thermal effects (Offset and Span	n) / Permissible temperatur	res	
Thermal error	≤ ± 0.3 % FSO / 10 K	in compensated rang	ge: -25 85 °C
Permissible temperatures	medium: -25 125 °C	electronics / environr	ment: -25 85 °C storage: -40 85 °C
Electrical protection			
Short-circuit protection	permanent	3-wire ratiometric: no	one
Reverse polarity protection	no damage, but also no fun	nction	
Electromagnetic protection	emission and immunity acc	ording to EN 61326	
Mechanical stability			
Vibration	10 g, 25 Hz 2 kHz	according to DIN EN	I 60068-2-6
Shock	500 g / 1 msec	according to DIN EN	l 60068-2-27

Technical Data

Materials												
Pressure port / housing	stainless steel 1.4301 (3	.04)										
Seals (media wetted)	FKM	<u> </u>	on request									
Diaphragm	ceramics Al ₂ O ₃ 96 %	Others t	ni request									
Media wetted parts	pressure port, seals, dia	nhraam										
·	pressure port, seals, dia	priiagiri										
Miscellaneous Ontion englished and included	for D < 15 hor: O ring in	70 EDDM 204 (with DAI	A approval), parmissible	mavimum valuas ara								
Option oxygen application	15 bar /	60° C and 10 bar / 90° C		maximum values are aximum values are 25 bar / 150° C								
Weight	approx. 120 g	(
Current consumption	2-wire: max. 25 mA		3-wire ratiometric: typ. 1.	5 mA								
Long term stability	3-wire voltage: max. 7 m ≤ ± 0.3 % FSO / year at	A (short circuit current: n		-								
Operational life	> 100 x 10 ⁶ cycles											
CE-conformity	EMC Directive: 2004/108	B/EC Pressur	e Equipment Directive: 9	7/23/EC (module A) 3								
³ This directive is only valid for devices v	vith maximum permissible ov			,								
Wiring diagrams	, , , , , , , , , , , , , , , , , , , ,	- ,										
			,									
2-wire-system (current) p supply + A supply -	-• + V _s -• -	3-wire-system (voltace supply +	0 + Vs - Vs - Vs									
Pin configuration		<u> </u>										
Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), plastic	cable colours (DIN 47100)								
Supply +	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 (dimension	ons in mm)											
2 - 224 - SW24	00.35,4 - Pg7	21 21 21	M12x1 Ø24 SW24	\$4,3 \$24 \$5 \$1/4*								
ISO 4400 (IP 65)	Micro, contact distance 9.4 mm (IP 65)		:1, 4-pin 9 67)	cable outlet with PVC-cable (IP 67) 4.5								
* pressure range P _N = 400 bar: tota												
⁴ standard: 2 m PVC cable without venti ⁵ different cable types and lengths availa	able, permissible temperature	erature: -5 70 °C) depends on kind of cable										
Mechanical connection (dimensi	ons in mm)											
0 2 7 61/4"	G1/4"	00 To 1/4"NPT -	ω κ κ κ κ κ κ κ κ κ κ κ κ κ									
G1/4" DIN 3852	G1/4" EN 837	1/4	" NPT	G1/2" EN 837								

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 0 0 2 1 6 0 2 2 5 0 2 4 0 0 2 6 0 0 2 1 0 0 3					
25	2 5 0 2 4 0 0 2					
40 60	4 0 0 2 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		Α				
Output						
4 20 mA / 2-wire		1				
0 10 V / 3-wire		3				
0.5 4.5 V / 3-wire ratiometric		R				
Accuracy		9				consult
0.5 % FSO		5				
customer		9				consult
Electrical connection		9				Consuit
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 9 9		
Seal				9 9 9		consult
FKM				1		
EPDM				3		
customer				9		consult
Special version						Conduit
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



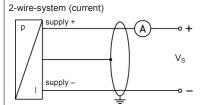
Input pressure range													
Nominal pressure gauge	[bar]	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Overpressure	[bar]	5	5	12	12	20	50	50	120	120	200	400	400
Burst pressure ≥	[bar]	7	7	15	15	25	70	70	150	150	250	500	500
Vacuum resistance		unlimited	b										

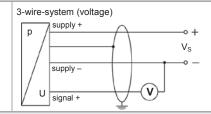
Output signal / Supply	
Standard	2-wire: 4 20 mA / V _S = 8 32 V _{DC}
Options	3-wire: 0 10 V / $V_S = 14$ 30 V_{DC} 3-wire ratiometric: $V_{Siq} = 0.5$ 4.5 V / $V_S = 5 \pm 0.5$ V_{DC}
Performance	
Accuracy 1	≤±1%FSO
Permissible load	2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 \text{ A}] \Omega$ 3-wire: $R_{min} = 10 \text{ k}\Omega$
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 Sp	pan) / 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 ₂ O 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 of	3-wire ratiometric: typ. 1.5 mA
Long term stability	≤ ± 0.3 % FSO / year at reference	
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

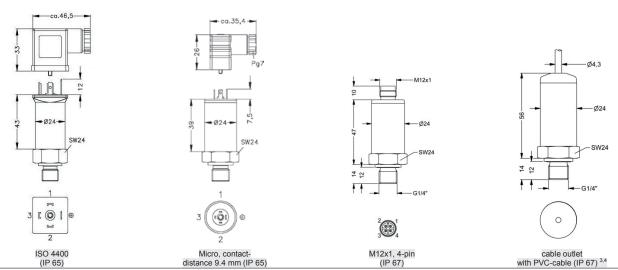




Pin configuration

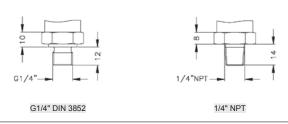
Electrical connection	ISO 4400	Micro (contact distance 9.4 mm)	M12x1 (4-pin), plastic	cable colours (DIN 47100)
Supply +	1	1	1	wh (white)
Supply –	2	2	2	bn (brown)
Signal + (for 3-wire)	3	3	3	gn (green)
Shield	ground pin	ground pin	4	ye/gn (yellow / green)

Electrical connections (dimensions in mm)



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)



30.600 G Ordering Code

30.600 G	-	- 🗆 - 🗆	-	- 🔲		-		-2-	□-[I	Ţ		
										4			
Input [bar]											-		
1.6	1 6 0 1 2 5 0 1 4 0 0 1												
2.5	2 5 0 1												
4.0	4 0 0 1												
6.0	6 0 0 1 1 1 0 0 2												
10	1 0 0 2												
16	1 6 0 2 2 5 0 2 4 0 0 2												
25	2 5 0 2 4 0 0 2												
40	4 0 0 2												
60	6 0 0 2												
100	1 0 0 2 1 6 0 2 2 5 0 2 4 0 0 2 6 0 0 2 1 0 0 3 1 6 0 3 2 5 0 3 9 9 9 9												
160	1 6 0 3												
250	2 5 0 3												
customer	9 9 9 9						_		_	4			consult
Pressure										4	-		
gauge		R					_	_		4			
Output		4								7	-		
4 20 mA / 2-wire 0 10 V / 3-wire		1											
		3											
0.5 4.5 V / 3-wire ratiometric		R											
customer		9								-			consult
Accuracy 1.0 % FSO										7	-		
customer			8										
			9							-			consult
Electrical connection					0 0					7	-		
Male and female plug ISO 4400				1	0 0								
Male and female plug Micro				С	1 0								
Male plug M12x1 (4-pin), plastic Cable outlet with PVC cable	1			M	0 0								
customer				1	A 0 9 9								
Mechanical connection				9	9 9		_			÷			consult
G1/4" DIN 3852						2	0 0	,					
1/4" NPT						3 N	4 0						
customer						9	4 C 9 9)					conquit
Seal						9	9 5	1					consult
FKM									1	۲	1		
customer									9				consult
Special version									9				Consult
standard										0	0	0	
customer										9	a	a	consult
customer										۱ ک	9	١	Consult

 $^{^{\}rm 1}$ 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



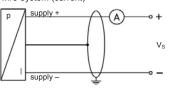
Pressure ranges							
Nominal pressure gauge	[bar]	6	10	16	25	40	60
Overpressure	[bar]	14	35	35	70	140	140
Burst pressure ≥	[bar]	28	70	70	140	280	280
Vacuum resistance		unlimited					

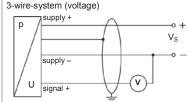
Vacuum ranges														
Nominal pressure gauge	[bar]	-1 6	-1 10	-1 16	-1 25	-1 40	-1 60							
Overpressure	[bar]	14	35	35	70	140								
Burst pressure	[bar]	28	70	70 140 280 280										
Output signal / Supply														
Standard		2-wire:	4 20 mA	/ V _S = 8	32 V _{DC}									
Options 3-wire		3-wire:	0 10 V	/ V _S = 14	30 V _{DC}									
		3-wire ratiometr	ric: $V_{Sig} = 0.5$	$.4.5 \text{V} / \text{V}_{\text{S}} = 5$	± 0.5 V _{DC}									
Performance														
Accuracy 1		≤ ± 0.5 % FSO												
Permissible load		2-wire: R _{max} = [2-wire: $R_{max} = [(V_S - V_S min) / 0.02 A] \Omega$ 3-wire: $R_{min} = 10 k\Omega$											
Influence effects		supply: 0.05 %	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ											
Response time		2-wire: ≤ 10 ms	ec		3-wire: ≤ 3 mse	ec .								
Measuring rate		1 kHz												
¹ accuracy according to IEC 60	770 – lin	nit point adjustment	(non-linearity, hyst	eresis, repeatability	<i>(</i>)									
Thermal effects (Offset a	nd Spar	n) / Permissible	temperatures											
Thermal error		≤ ± 0.3 % FSO	/ 10 K in	compensated rar	nge 0 70	°C								
Permissible temperatures		medium: -40	125 °C ele	ectronics / enviror	nment: -40 85	°C storage:	-40 85 °C							
Electrical protection														
Short-circuit protection		permanent	3-\	wire ratiometric: r	none									
Reverse polarity protection		no damage, but	no damage, but also no function											
Electromagnetic protection		emission and in	nmunity accordin	g to EN 61326										
Mechanical stability		<u> </u>												
Vibration		20 g, 25 Hz	2 kHz ac	cording to DIN El	N 60068-2-6									
Shock		500 g / 1 msec	ac	cording to DIN El	N 60068-2-27									

Technical Data

Materials							
Pressure port	tainless steel 1.4571 (316Ti)						
Housing	tainless 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)						
- Lydgus +	supply +						

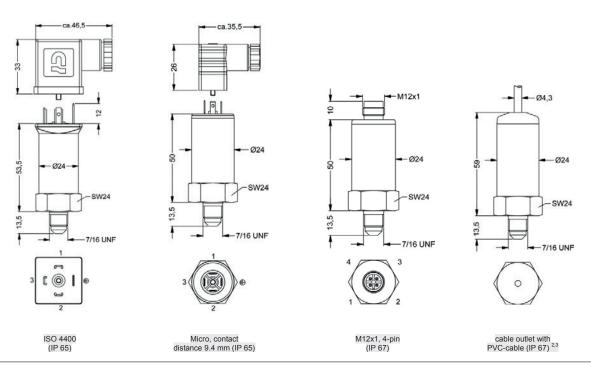
supply +





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)



 $^{^2}$ 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

17.609 G		□-□-[]-[- 🛛 - 🖸		
Input [bar]							
6	6 0 0 1						
10	1 0 0 2						
16	1 6 0 2 2 5 0 2 4 0 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 V 4 0 3						
-1 40	V 1 6 3 V 2 5 3 V 4 0 3 V 6 0 3						
-1 60	V 6 0 3						0
customer	9 9 9 9						consult
Pressure		R					
Output		K					
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 9 9 9				
customer			9 9 9				consult
Mechanical connection / Seal							
7/16"-20 UNF				U 0 0 9 9 9	2		
customer				9 9 9	9		consult
Special version							
standard						0 0 0	
customer					(9 9 9	consult

 $^{^{\}rm 1}$ 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 from0 ... 6 bar up to 0 ... 600 bar



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		unlimite	ed									

0	
Output signal / Supply	
Standard	2-wire: $4 \dots 20 \text{ mA}$ / $V_S = 8 \dots 32 V_{DC}$
Options	3-wire: $0 \dots 10 \text{ V}$ / $V_S = 14 \dots 30 \text{ V}_{DC}$
	3-wire ratiometric: $V_{Sig} = 0.5 \dots 4.5 \text{ V} / V_S = 5 \pm 0.5 \text{ V}_{DC}$
Performance	
Accuracy 1	≤±0.5 % FSO
Permissible load	2-wire: $R_{max} = [(V_S - V_S min) / 0.02 A] \Omega$
	3-wire: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % FSO / 10 V
	load: 0.05% FSO / $k\Omega$
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec
Measuring rate	1 kHz
¹ accuracy according to IEC 60770 – lin	nit point adjustment (non-linearity, hysteresis, repeatability)
Thermal effects (Offset and Spar	n) / 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

Matariala												
Materials	stainless stail 4 4574 (04)	CT:\										
Pressure port	stainless steel 1.4571 (31)	<u>'</u>										
Housing	stainless steel 1.4301 (30	,										
Seal of pressure port	FKM: G 1/4" DIN 3852	others on	request									
Seal of sensor	none (welded)											
Diaphragm	stainless steel 1.4542 (63)	0)										
Media wetted parts	pressure port, seal of pres	sure port, diaphragm										
Miscellaneous		1 / 1										
Weight	approx. 120 g											
Current consumption	-	2-wire: max. 25 mA 3-wire ratiometric: typ. 3 mA										
Current consumption	z-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											
Operational life	> 100 x 10 ⁶ pressure cycle											
•	EMC Directive: 2004/108/		Equipment Directive: 97/	(22/FC (modulo A) ²								
CE-conformity			Equipment Directive. 977	23/EC (Module A)								
² This directive is only valid for devices	s with maximum permissible ove	erpressure > 200 bar										
Wiring diagrams												
2-wire-system (current) p supply + A	• + V₅ • -	3-wire-system (voltage	*) + V _s - V									
Pin configuration			=									
		Micro (contact	M12x1 (4-pin),	cable colour								
Electrical connection	ISO 4400	distance 9.4 mm)	plastic	(DIN 47100)								
Supply +	1	1	piastic 1	wh (white)								
Supply –	2	2	2	bn (brown)								
Signal + (for 3-wire)	3	3	gn (green)									
Shield	ground pin	ground pin	3 4	ye/gn (yellow / green)								
Electrical connections (dimens		ground pin		y orgin (your or y groom)								
Liectrical connections (uniferis	10113 111 111111)											
2 SS 4400	2 Sw24 Micro, contact	M12x	M12x1 Ø24 SW24 G1/4* 1, 4-pin	Ø4.3 Ø24 SW24 Cable outlet with								
(IP 65) ³ standard: 2 m PVC cable without ven ⁴ different cable types and lengths ava	distance 9.4 mm (IP 65)	(IF	67)	2 m PVC-cable (IP 67) 3.4								
Mechanical connection (dimens												
61/4"	G1/4"	1/4"NPT	41	-23-11								
G1/4" DIN 3852 (not for oxygen)	G1/4" EN 837	1/4	" NPT	G1/2" —— G1/2" EN 837								

17.600 G]-[]-]-[]-[-		
Input [bar]										
6	6 0 0 1									
10	1 0 0 2									
16	1 6 0 2 2 5 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 2 5 0 3									
250	2 5 0 3									
400	4 0 0 3									
600	6 0 0 3									
customer	4 0 0 3 6 0 0 3 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			С	1 0						
Male plug M12x1 (4-pin), plastic			M	0 0						
Cable outlet with PVC-cable ¹	1		T							
customer			9	9 9						consult
Mechanical connection / Seal										
G1/4" DIN 3852 /					3	00	P			
on pressure port: FKM										
G1/4" EN 837 / without 1/4" NPT / without					4	0 0	2			
					N	4 0	2 2 2			
G1/2" EN 837 / without					2		2			
customer				_	9	9 9	9			consult
Special version standard									0	
oxygen application ²	2								0	0 7
oil and grease free	-							0	0	8
customer									0 9	0
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 Al₂O₃ 99.9 %
- different inch threads and flush versions

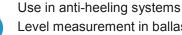
The pressure transmitter DMK 456 has been developed for measuring the pressure in systems and the level in tanks. It has been certified by Germanischer Lloyd (GL) and is therefore predestined for shipbuilding and offshore applications.

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



Level measurement in ballast and storage tanks



Monitoring of the internal pressure in liquid gas cargo tanks







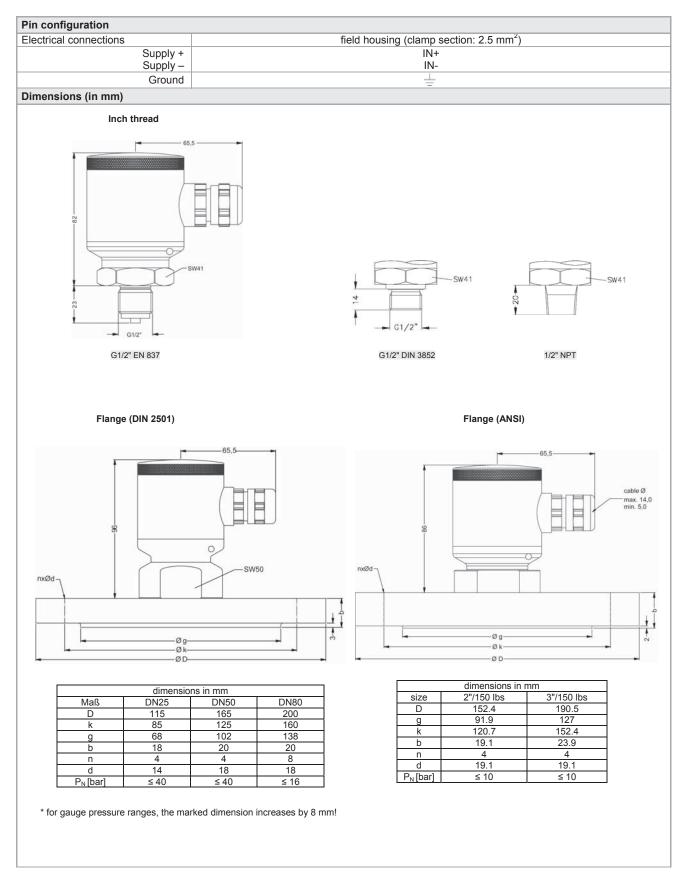




DMK 456

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 ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	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																	

Standard Performance Accuracy ²	2-wire: 4 20 mA IS-version / V _S = 14 28 V _{DC}	$V_{S rated} = 24 V_{DC}$
Accuracy ²		
	standard: ≤± 0.25 % FSO	
	options: $P_N \ge 0.6$ bar 3 : $\le \pm 0.1$ % FSO	
Permissible load	$R_{\text{max}} = [(V_{\text{S}} - V_{\text{S min}}) / 0.02 \text{ A}] \Omega$	
ong term stability	≤ ± 0.1 % FSO / year	
nfluence effects	supply: 0.05 % FSO / 10 V	
	load: $0.05 \% FSO / k\Omega$	
Turn-on time	700 msec	
Mean response time	< 200 msec mean measuring ra	ate 5/sec
Max. response time	380 msec	
	mit point adjustment (non-linearity, hysteresis, repeatability)	
	rst according to EN 61000-4-4 (2004) +2 kV accuracy decreased to ≤ ± 0.25 % FSC).
Thermal effects / Permissible te		
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
	mediam25 125 C Cicotionics / Givironinent25 05 C	3101agc40 100 C
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	1 (01)
Electromagnetic compatibility	emission and immunity according to EN 61326 and Germanischer Llo	ya (GL)
Mechanical stability		
Vibration	4 g (according to GL: curve 2 / basis: DIN EN 60068-2-6)	
Viaterials		
Pressure port	stainless steel 1.4404 (316 L)	
Housing	stainless steel 1.4404 (316 L)	
Cable gland	brass, nickel plated	
3	others on request	
Seals	FKM; others on request	
Diaphragm	standard: ceramics Al ₂ O ₃ 96 %	
	option: ceramics Al ₂ O ₃ 99.9 %	
Media wetted parts	pressure port, seals, diaphragm	
S protection		
•	IBExU07ATEX1180 X	
Approval DX14A-DMK 456	zone 0: II 1G Ex ia IIC T6	
Safety techn. maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i = 52.3 \text{ nF}, L_i = 5 \mu\text{H},$	
.,	the supply connections have an inner capacity of max. 90,2 nF oppos	ite the enclosure
Permissible temperatures for		
environment	-20 60 °C in zone 0: with p _{atm} 0.8 up to 1.1 bar	
Miscellaneous	+	
ngress protection	IP 67	
nstallation position		
Current consumption	max. 21 mA	
· · · · · · · · · · · · · · · · · · ·		
Weight	min. 400 g (depending on housing and mechanical connection) > 100 x 10 ⁶ cycles	
Operational life CE conformity	EMC Directive: 2004/108/EC	
ATEX Directive	94/9/EC	
	37/3/LO	
Wiring diagram		
2-wire-system (current)		
P Supply +	$V_{S \text{ reted}} = 24 V_{DC}$ $V_{S} = 14 28 V_{DC}$	



126 DMK 456

Ordering Code

DMK 456	Ш-		-]- <u>[</u>	-Ц]-[]-	- 🗌	- 🔲	-	-			
Pressure																
in bar, gauge in bar, absolute ¹ in mH ₂ O, gauge	5 9 5 5 9 6 5 9 7 5 9 8															consult
in mH ₂ O, absolute ¹	5 9 8															consult
Input [mH ₂ O] [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 2.5 0.25		1 6 0 0 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 2 5 0 1														
25 2.5 40 4.0		2 5 0 1 4 0 0 1														
60 6.0		6 0 0 1														
100 10		1 0 0 2														
160 16		1 6 0 2 2 0 0 2														
200 20 customer		2 0 0 2 9 9 9														consult
Output		3 3 3 3														Consuit
Intrinsic safety 4 20 mA / 2-wire customer			E 9													consult
Accuracy																
standard 0.25% option for PN ≥ 0.6 bar: 0.1%				2												
customer				9												consult
Electrical connection																
Field housing					8	8 0 9 9										
Mechanical connection					9	9 9										consult
G1/2" DIN 3852							1	0	0						7	
G1/2" EN 837							2	0	0							
1/2" NPT							N		0							
Flange DN 25 / PN 40 (DIN 2501) Flange DN 50 / PN 40 (DIN 2501)							F F	2	0							
Flange DN 80 / PN 16 (DIN 2501) 2							F	1	3 4							
Flansch DN 2" / 150 lbs (ANSI B16.5) 2							F	3	2							
Flansch DN 3" / 150 lbs (ANSI B16.5) ² customer							F 9	3	3							consult
Seals							Э	ן פ	9							CONSUIT
FKM										1						
customer										9						consult
Pressure port Stainless steel 1.4404 (316L)											1					
customer											9					consult
Diaphragm																
Ceramics Al ₂ O ₃ 96%												2				
Ceramics Al ₂ O ₃ 99,9% customer												C 9				consult
Special version												9				CONSUIT
standard													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 $P_N \! \leq \! 10$ bar



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





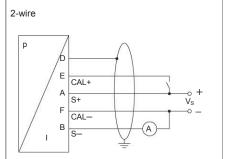
HU 300

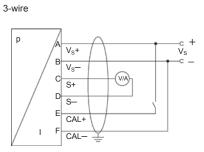
Pressure ranges					
Nominal pressure	[psi]	5 000	6 000	10 000	15 000
Permissible overpressure	[psi]	7 500	9 000	15 000	22 500
Burst pressure ≥	[psi]	10 000	12 000	20 000	30 000

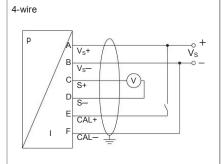
Supply									
Standard	2-wire: 4 20 mA / V _S = 10 30 V _{DC} ¹								
Ex-protection	2-wire: 4 20 mA / V _S = 14 28 V _{DC} ¹								
In preparation	3-wire: $0 \dots 5 \text{ V}$ / $V_S = 14 \dots 20 \text{ V}_{DC}$								
(only possible with MIL- / Ben-	4-wire: 3 mV/V / $V_S = 6 \dots 10 \text{ Vpc}$								
dix-connector)									
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: $R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$								
	r oltage 3-wire: R_{min} ≥ 10 kΩ								
	voltage 4-wire: R _{min} ≥ 100 kΩ								
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 Spa	an)								
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								
Violation	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	, <u>, , , , , , , , , , , , , , , , , , </u>								
Pressure port / diaphragm	standard: stainless steel 1.4548 (316L)								
Trocouro porty diapriragin	on request: Inconel X750®								
	Inconel X718®								
Housing	stainless steel 1.4404 (316L)								
Media wetted parts	pressure port								
Explosion protection (only for	· · · · ·								
Approval	IBEXU08ATEX1127 X								
DX 18-HU 300	zone 0/1: II 1/2 G Ex ia IIC T4								
Safety technical maximum val-	$U_i = 28 \text{ V}, I_i = 100 \text{ mA}, P_i = 700 \text{ mW}, C_i = 1 \text{ nF}, L_i = 5 \mu\text{H},$								
ues	The supply connections have an inner capacity of max. 27 nF opposite the housing.								
Permissible temperatures	-40 70 °C								
for medium	-40 /U · C								
Permissible temperatures	in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar								
for environment	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



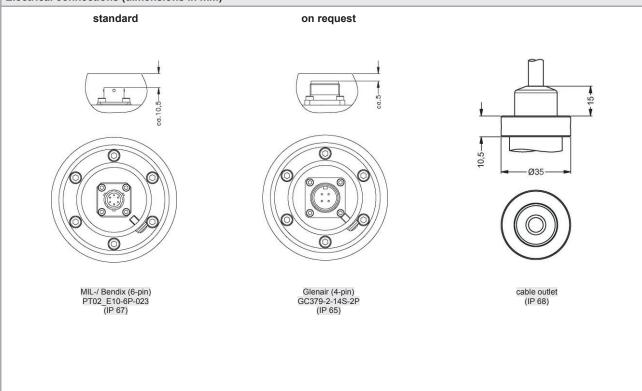


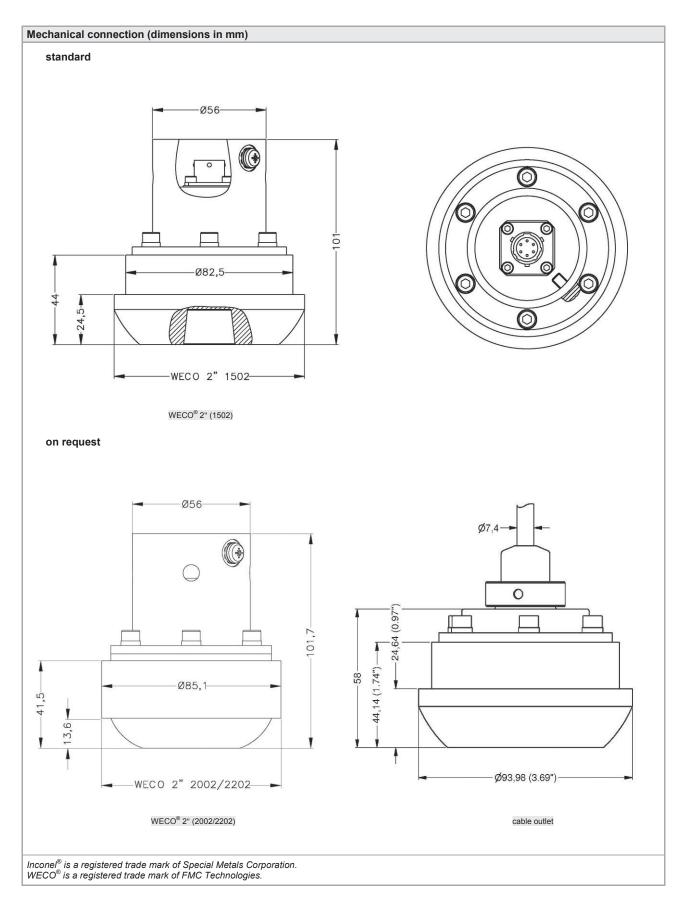


Pin configuration

i iii ooiiiigaraaoii					
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)





HU 300	<u> </u>	□-□-□	□-□□-	Ш-Ш-[Ш	
Standard version						
In most	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		4			_	
Intrinsic safety 4 20 mA / 2-wire		1				
0 5 V / 3-wire		4				in preparation
3 mV/V / 4-wire		V3				in preparation
customer		9				consult
Accuracy						
0.5 % customer		5				
Electrical connection ¹		9			_	consult
MIL-/ Bendix (6-pin)						
type PT02 E10-6P-023		B 2	2 0			
Glenair (4-pin)		В Z	2 0			
GC379-2-14S-2P		Б	- 0			
Cable outlet IP 68		TR	R 2			
with FEP cable customer						
Mechanical connection		9 9	9 9		_	consult
WECO 2" 1502			H U 0		$\overline{}$	
WECO 2" 2002/2202			H U 1			consult
customer			H U 1 9 9 9			consult
Material pressure port						
Stainless steel 1.4548 (17-4PH)				7 8 9 9		
customer Material diaphragm				9 9	_	consult
Stainless steel 1.4548 (17-4PH)				7 8		
customer				Z 8 9 9		consult
Special version						
standard				0	0 0	
customer				9	9 9	consult

¹ only male plugs

WECO® is a registered trade mark of FMC Technologies

NOTES

COMPETENCE

Industrial pressure measurement technology from 0.1 mbar up to 6000 bar

→ pressure transmitters, electronic pressure switches or hydrostatic level probes

- → OEM or high-end products
- → standard products or customized solutions

BDISENSORS has the right pressure measuring device at the right price.

PRICE / PERFORMANCE

pressure measurement at the highest level

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

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

RELIABILITY

projectable delivery times and strict observance of deadlines

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

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

FLEXIBILITY

We have special solutions for your individual requirement.

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

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

INDUSTRIES



plant and machine engineering



chemical and biochemical industry



energy industry



renewable energy



semiconducter industry / cleanroom technology



HVAC



hydraulics



refrigeration



calibration techniques



laboratory techniques



medical technology



food and beverage



vehicles and mobile hydraulics



oil and gas industry



pharmaceutical industry



marine / shipbuilding / offshore



heavy industry



environmental industry



packaging and paper industry

MEDIA



sewage



aggressive media



colours



gases



fuels and oils



pasty and viscous media



oxygen



water



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