PRODUCT CATALOGUE
DIFFERENTIAL PRESSURE TRANSMITTER

BD|SENSORS
pressure measurement

PRESSURE AT THE HIGHEST LEVEL

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

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

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

BD|SENSORS
pressure measurement

With 260 employees at 4 locations in Germany, the Czech Republic, Russia and China BD|SENSORS has solutions from 0.1 mbar to 8000 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 100 standard products, from economical OEM devices to high-end products with HART® communication or field bus interface.

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

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

flexibly, quickly and cost-efficiently.

DPT 200

Differential Pressure Transmitter for Process Industry with HART®-Communication

accuracy according to IEC 60770:
0.075 % FSO

Differential pressure

from 1 mbar up to 20 bar

Static pressure

max. 400 bar

Output signal

2-wire: 4 ... 20 mA

Special characteristics

- static over pressure 400 bar
- rangeability max. 100:1
- aluminium die cast case
- HART®-communication
- output signal: linear or square root extraction

Optional versions

- Ex-version group I
  - Ex ia = intrinsically safe version for firedamp mines
- Ex-version group II
  - Ex ia = intrinsically safe version
  - Ex d = flameproof enclosure
- LC display
- stainless steel housing

The differential pressure transmitter DPT 200 has been especially designed for the process industry and can be used for level measurement of closed, pressurized tanks, pump or filter controlling, etc.

The possibility passes different pressure seals at the DPT 200 adding with different membrane materials to reach an optimal adaptation to the application.

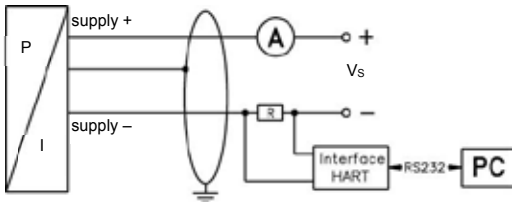
Preferred areas of use are

- Oil and gas industry
- Chemical and petrochemical industry
- Energy industry
- Food and beverage
- Paper industry

Differential pressure ranges					
Sensor type	A	B	C	D	E
Differential pressure range dp	10 mbar	60 mbar	400 mbar	2.5 bar	20 bar
Setting limits (offset and span in this range freely adjustable)	-10 ... 10 mbar	-60 ... 60 mbar	-400 ... 400 mbar	-2.5 ... 2.5 bar	-20 ... 20 bar
Lowest permissible span	1 mbar	2 mbar	4 mbar	25 mbar	200 mbar
Permissible static pressure optional	70 bar -	160 bar -	160 bar 400 bar	160 bar 400 bar	160 bar 400 bar
Rangeability TD (with respect to the differential pressure range dp)	10:1	30:1	100:1	100:1	100:1

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA with HART® communication / V_S = 12 ... 42 V_{DC} with optional display: V_S = 15 ... 42 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA with HART® communication / V_S = 15 ... 28 V_{DC} (with or without display)
Error signal Namur NE43	high / low (adjustable)
Performance	
Accuracy	turn-down ≤ 10:1: ≤ ± 0.075 % FSO turn-down > 10:1: ≤ ± [0.0075 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range *(FSO = Full Scale Output)*
Influence supply	≤ 0.001 % FSO / 10 V
Influence static pressure	type A: ± [0.015 mbar + 0.1 % of the adjusted range] / 40 bar type B: ± [0.06 mbar + 0.075 % of the adjusted range] / 160 bar type C: ± [0.2 mbar + 0.05 % of the adjusted range] / 160 bar type D: ± [1.25 mbar + 0.05 % of the adjusted range] / 160 bar type E: ± [10 mbar + 0.05 % of the adjusted range] / 160 bar
Influence installation position	max. 400 Pa (can be compensated by zero-point correction)
Long term stability	type A: ≤ ± (0.5 % x differential pressure range dp) / year at reference conditions type B: ≤ ± (0.2 % x differential pressure range dp) / year at reference conditions type C - E: ≤ ± (0.1 % x differential pressure range dp) / year at reference conditions
Permissible load	without LC-display: R_{max} = [(V_S – 12 V) / 0.023 A] Ω with LC-display: R_{max} = [(V_S – 15 V) / 0.023 A] Ω HART®-communication: R = 230 Ω ... 600 Ω
Response time	type A: approx. 1.6 sec type B: approx. 0.4 sec type C: approx. 0.2 sec type D: approx. 0.2 sec type E: approx. 0.1 sec
Damping	electronic: 0.1 ... 60 sec plus response time
Thermal effects (Offset and Span)	
Temperature range -20 ... +65°C	type A: ± [0.45 x turn-down + 0.25] % of the adjusted range] type B: ± [0.30 x turn-down + 0.20] % of the adjusted range] type C - E: ± [0.20 x turn-down + 0.10] % of the adjusted range]
Temperature range -40 … -20°C and +65 ... +100°C	type A: ± [0.45 x turn-down + 0.25] % of the adjusted range] type B: ± [0.30 x turn-down + 0.20] % of the adjusted range] type C - E: ± [0.20 x turn-down + 0.10] % of the adjusted range]
Permissible temperatures	
Environment / storage	without display: -40 ... 85 °C
	with display: -20 ... 65 °C (85°C without function)
Media wetted parts	silicone oil: -40 … 100 °C (information: +125 °C short time, max. 30 min.)
	fluorolube oil: -40 … 100 °C (information: +125 °C short time, max. 30 min.)
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Mechanical stability	
One-sided overload	according to the maximum static pressure of differential pressure sensor
Vibration	5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 1 msec according to DIN EN 60068-2-27

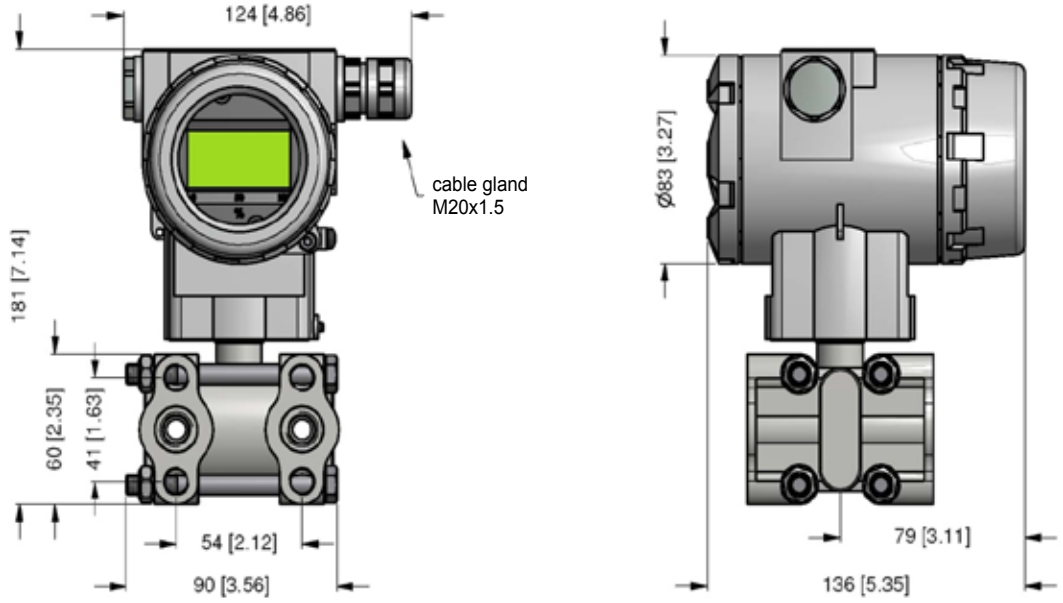
Materials		
Pressure port / flange	standard option	stainless steel 304 / 1.4301 stainless steel 316 / 1.4401 others on request
Diaphragm	standard option	stainless steel 316L / 1.4435 Hastelloy® C-276 others on request
Vent and dump valves, blanking plugs	standard option	stainless steel 304 / 1.4301 stainless steel 316 / 1.4401
Bolts and nuts	standard option	stainless steel 304 / 1.4301 stainless steel 316 / 1.4401 others on request
Type plate		stainless steel 316 / 1.4401
Housing	standard option	aluminium die cast with epoxy painting (blue) stainless steel 304 / 1.4301 others on request
Seals (media wetted)	standard options	FKM (-30 … 250 °C) EPDM (-40…125 °C) NBR (-40 … 125 °C) PTFE (-180…250 °C) others on request
Filling fluids	standard option (on request)	silicone oil (-40…125 °C) fluorolube oil (-40…125 °C) others on request
Explosion protection – aluminium die cast housing		
Approval AX18-DPT200 intrinsically safe version		IBExU 14 ATEX 1273 X / IECEx IBE 16.0005X group II: II 1/2G Ex ia IIC T4 Ga/Gb / II 2D Ex ia IIIC T 85 °C Db safety technical maximum values: P_i = 660 mW ,U_i = 28 V, I_i = 93 mA, C_i = 29.7 nF, L_i negligible permissible temperatures for environment: -40 ... 60 °C
Approval AX18B-DPT200 flameproof enclosure		IBExU 15 ATEX 1110 X / IECEx IBE 16.0006X group II: II 2G Ex db IIC T6 Gb permissible temperatures for environment: -40 ... 65 °C
Explosion protection – stainless steel housing		
Approval AX18-DPT200 intrinsically safe version		IBExU 14 ATEX 1273 X / IECEx IBE 16.0005X group I (mines): I M1 Ex ia I Ma group II: II 1G Ex ia IIC T4 Ga / II 2D Ex ia IIIC T85°C Db safety technical maximum values: P_i = 660 mW ,U_i = 28 V, I_i = 93 mA, C_i = 29.7 nF, L_i negligible permissible temperatures for environment: -40 ... 60 °C
Miscellaneous		
Display (optionally)		type: LCD, lines: 2, digits: 8, bargraph: 0…100%, rotatability: 90°-steps and / or by turn of the electronic case
Configuration		- offset / span local via 2 buttons - local configuration with an optional display - complete configuration via HART®
Mounting bracket (optionally)		material CF8M or stainless steel 304 / 1.4401 weight 0.45 kg (inclusive bolts and nuts)
Ingress protection		IP 67
Installation position		any
Weight		approx. 3 kg (depending on version)
Current consumption		approx. 23 mA
Operational life		100 million load cycles
CE-conformity		EMC Directive: 2014/30/EU
ATEX Directive		2014/34/EU
Connections		
Electrical connection		terminal clamps in clamping chamber (for cable-Ø max.2.5 mm²)
Process connections	standard option	internal thread 1/4" - 18 NPT / fixing 7/16 UNF internal thread 1/4" - 18 NPT / fixing M10 oval flange 1/2" NPT internal thread adapter M20x1.5 others on request
Wiring diagram		



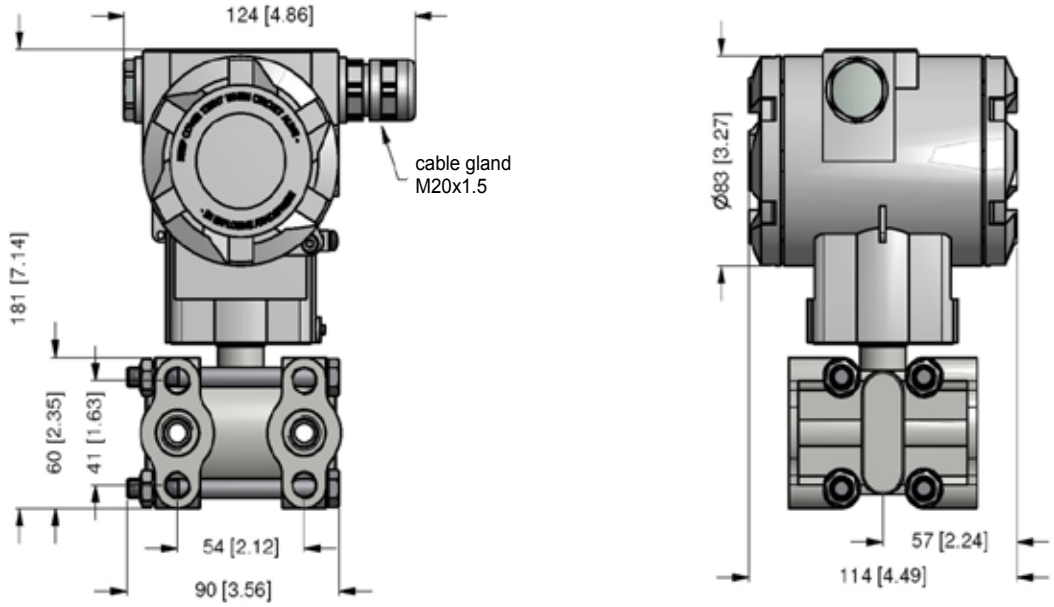
Pin configuration	
Electrical connection	terminal clamps
Supply + (V_s +) Supply / Test – (V_s –) Test +	+ - TEST +
Ground	⏚

Dimensions (mm / in)

DPT 200 with display



DPT 200 without display



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Ordering code DPT 200

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Pressure				
		differential pressure	3 4 3	
Input		[bar]		
Type A:	0 ... 1 mbar up to	0 … 10 mbar	A	
Type B:	0 … 2 mbar up to	0 … 60 mbar	B	
Type C:	0 … 4 mbar up to	0 … 400 mbar	C	
Type D:	0 … 25 mbar up to	0 … 2.5 bar	D	
Type E:	0 … 200 mbar up to	0 … 20 bar	E	
		customer	9	consult
Maximun static pressure				
		70 bar (only type A)	7	
		160 bar (type B - E)	1	
		400 bar (type C - E)	4	
Output				
		4 … 20 mA / 2-wire with HART®-communication	H	
		group II Ex ia 4 … 20 mA / 2-wire with HART®-communication	I	
		group II Ex d 4 … 20 mA / 2-wire with HART®-communication [1]	G	
		group I Ex ia 4 … 20 mA / 2-wire with HART®-communication (mines) [2]	FH	
		customer	9	consult
Accuracy				
		0.075 %	1 7	
Housing				
		aluminium	L	
		stainless steel 1.4301 (304)	2	consult
Display				
		without display	A N	
		with backlight display	A L	
Electrical connection				
		terminals / cable gland M20x1.5	A K 0	
		terminals / cable gland 1/2" NPT	A K 5	consult
		customer	9 9 9	consult
Process connection H-side				
		1/4" - 18 NPT F / fixing 7/16 UNF	N 2 0	
		1/4" - 18 NPT F / fixing M10	N 3 0	
		1/4" - 18 NPT (F / vertical) / fixing 7/16 UNF	N 2 1	
		1/4" - 18 NPT (F / vertical) / fixing M10	N 3 1	
		1/2" NPT F with adapter	N 5 7	
		M20x1.5 F with adapter	N 2 6	
		with volume reduced flange	N 2 5	consult
		customer	9 9 9	consult
Valve H-side				
		without	0	
		with vent	1	
		with vent (top)	2	
		with vent (bottom)	3	
Process connection L-side (identical with H side)				
		1/4" - 18 NPT F / fixing 7/16 UNF	N 2 0	
		1/4" - 18 NPT F / fixing M10	N 3 0	
		1/4" - 18 NPT (F / vertical) / fixing 7/16 UNF	N 2 1	
		1/4" - 18 NPT (F / vertical) / fixing M10	N 3 1	
		1/2" NPT F with adapter	N 5 7	
		M20x1.5 F with adapter	N 2 6	
		with volume reduced flange	N 2 5	
		customer	9 9 9	
Valve L-side (identical with H side)				
		without	0	
		with valve (straight)	1	
		with valve (top)	2	
		with valve (bottom)	3	
Material flange, valves, screws, …				
		stainless steel 1.4301 (304)	0 2	
		stainless steel 1.4401 (316)	1 2	
Diaphragm / filling fluid				
		stainless steel 1.4435 (316L) / silicone oil	1 1	
		Hastelloy® C-276 (2.4819) / silicone oil	H 1	
		customer	9 9	consult
Seals				
		FKM	1	
		EPDM	3	
		NBR	5	
		PTFE	4	
		customer	9	consult
Special version				
		standard	0 0 0	
		square root function (flow)	5 8 0	
		customer	9 9 9	consult

[1] only in combination with aluminium housing

[2] only in combination with stainless steel housing

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XMD

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

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 75 mbar up to 20 bar

Output signals

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

Special characteristics

- static over pressure 130 bar
- turn-down 1:10
- two chamber aluminium die cast case
- HART®-communication
- output signal: linear or square root extraction
- IS-version
  Ex ia = intrinsically safe version

Optional versions

- IS-version
  Ex d = flameproof enclosure
- SIL2 - version
  according to IEC 61508 / IEC 61511
- with integrated display
  and operating module

The differential pressure transmitter XMD has been especially designed for the process industry and can be used for level measurement of closed, pressurized tanks, pump or filter controlling, etc.

Another attribute is the possibility to switch the output signal from linear to square root extraction by what the flow rate of the medium can be issued.

Preferred areas of use are

- Oil and gas industry
- Chemical and petrochemical industry
- Energy industry
- Food and beverage
- Paper industry

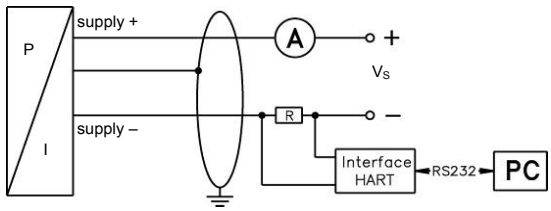
Pressure ranges						
Nominal pressure	[bar]	0.075	0.4	2	7	20
Permissible static pressure	[bar]	130	130	130	130	130

Output signal / Supply			
Standard	2-wire: 4 ... 20 mA	IS-intrinsically safe version with HART®-communication	V_S = 12 ... 28 V_{DC}
Option	2-wire: 4 ... 20 mA	IS version flameproof enclosure with HART®-communication	V_S = 13 ... 28 V_{DC}
		IS-intrinsically safe version with HART®-communication and SIL2	V_S = 12 ... 28 V_{DC}
		IS version flameproof enclosure with HART®-communication and SIL2	V_S = 13 ... 28 V_{DC}
Performance			
Clocking error	≤ ± 0.2 % FSO		
Accuracy [1]	turn-down ≤ 5:1: ≤ ± 0.1 % FSO turn-down > 5:1: ≤ ± [0.1 + 0.015 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range		
Permissible load	load during HART®-communication: R_{min} = 250 Ω		
Supply	≤ 0.05 % FSO / 10 V		
Permissible load	≤ 0.05 % FSO / kΩ		
Long term stability	≤ ± (0.1 x turn-down) % FSO / year at reference conditions		
Response time	300 msec – with electronic damping 0 sec		
Measuring rate	3.5/sec		
Adjustability	electronic damping: 0 … 100 sec offset: 0 ... 90 % FSO turn-down of span: max. 10:1		
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal effects (Offset and Span) / Permissible temperatures			
Thermal error	≤ ± (0.1 x turn-down) % FSO / 10 K in compensated range standard: -20 … 80 °C optional for device without display: -40 … 60 °C		
Permissible temperatures	without display: medium: -40 ... 85 °C	environment: -40 ... 50 °C	storage: -40 ... 80 °C
	with display: medium: -40 ... 85 °C	environment: -20 ... 50 °C	storage: -30 ... 80 °C
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to EN 61326		
Mechanical stability			
Vibration	5 g RMS (25 ... 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 1.4401 (316)		
Housing	aluminium die cast, powder-coated		
Viewing glass	laminated safety glass		
Seals (media wetted)	FKM / EPDM		
Diaphragm	standard: stainless steel 1.4435 (316 L) option: Hastelloy® C-276 (2.4819)		
Media wetted parts	pressure port, seals, diaphragm		
Filling fluids	silicone oil		
Explosion protection			
Approval AX12-XMD Approval AX2-XMD (with SIL2)	**intrinsically safe** IBExU 05 ATEX 1106 X (IBExU 05 ATEX1105 X with SIL2) zone 1: II 1/2G Ex ia IIB T4 Ga/Gb	zone 20: II 1D Ex ia IIIC T85 °C Da	
Safety technical maximum values	U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 27 nF		
Approval AX17-XMD Approval AX7-XMD (with SIL2)	**flameproof enclosure** IBExU 12 ATEX 1045 X (IBExU 12 ATEX1073 X with SIL2) zone 1: II 2G Ex d IIC T5 Gb		
Permissible temperatures for environment	intrinsically safe version : -40 ... 70 °C flameproof enclosure : -20 ... 70 °C		
Options			
SIL2-version	according to IEC 61508 / IEC 61511		
Display	LC display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segment bargraph; accuracy 0.1% ± 1 digit		
Miscellaneous			
Ingress protection	IP 67		
Installation position	any		
Weight	min. 3 500 g		
Current consumption	approx. 21 mA		
Operational life	100 million load cycles		
CE-conformity	EMC Directive: 2014/30/EU		
ATEX Directive	2014/34/EU		

Connections	
Electrical connection	terminal clamps in clamping chamber with cable gland M20x1.5 (for cable-Ø 5 up to 14 mm)
Process connections	internal thread 1/4" - 18 NPT

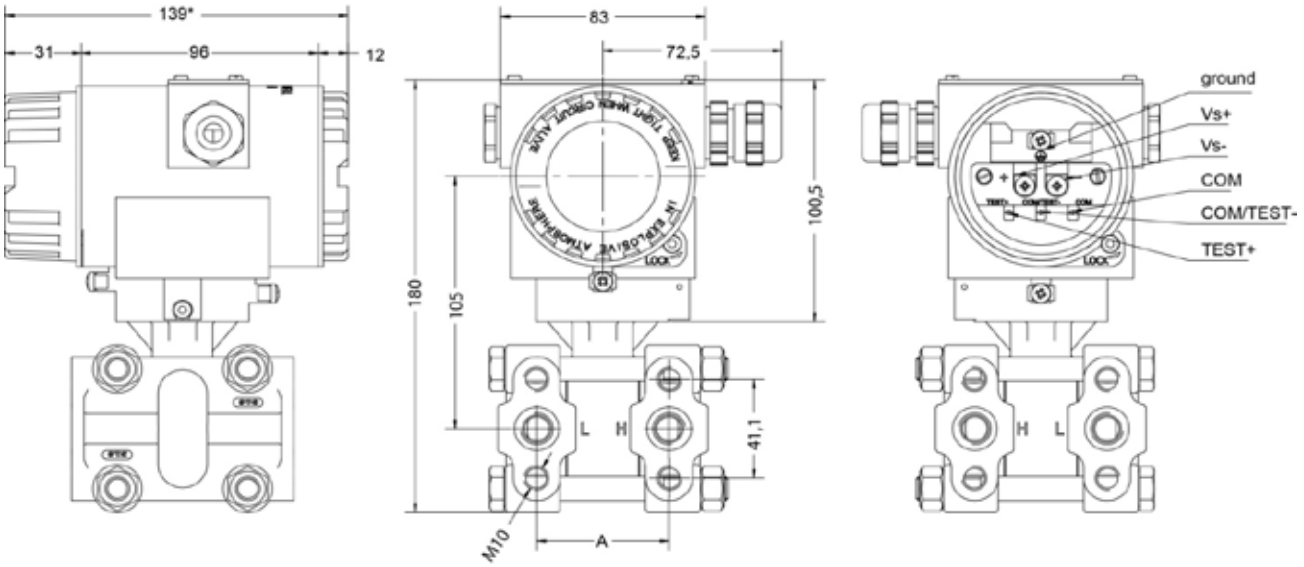
Wiring diagram

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



Pin configuration	
Electrical connection	terminal clamps (clamp section 2.5 mm²)
Supply + (Vs+)	+
Supply – (Vs-)	-
Test +	TEST+
COM / Test –	COM/TEST-
COM	COM
Ground	⏚

Dimensions (in mm) [2]



P_N = 0.075 bar, 0.4 bar, 2 bar : A = 54.5 ± 0.5 mm
P_N = 7 bar : A = 56.0 ± 0.5 mm
P_N = 20 bar : A = 56.5 ± 0.5 mm

* without display and operating module marked dimensions decrease by 19 mm

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

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Pressure Transmitter for Process Industry

XMP ci

Characteristics

- pressure ranges from 0.06 up to 20 bar
- turn-down 1:10
- two chamber aluminium die cast case or stainless steel field housing
- internal or flush mounted capacitive ceramic sensor
- HART®-communication (standard)
- IS-version (standard): Ex ia = intrinsically safe version
- accuracy according to IEC 60770: 0.1 % FSO

CE Ex HART

XMP i

Characteristics

- pressure ranges for vacuum, gauge and absolute pressure from 0.4 up to 600 bar
- turn-down 1:10
- two chamber aluminium die cast case or stainless steel field housing
- internal or flush welded diaphragm
- HART®-communication (standard)
- IS-version (standard): Ex ia = intrinsically safe version
- accuracy according to IEC 60770: 0.1 % FSO

CE Ex SIL HAR

Precision Pressure Transmitter for Food Industry, Pharmacy and Biotechnology

x|act ci

Characteristics

- pressure ranges from 0.06 up to 20 bar
- turn-down 1:10
- hygienic version
- flush mounted, capacitive ceramic sensor
- several process connections (inch thread, Clamp, etc.)
- with integrated display and operating module
- accuracy according to IEC 60770: 0.1 % FSO

CE Ex HART

x|act i

Characteristics

- pressure ranges from 0.4 up to 40 bar
- turn-down 1:10
- hygienic version
- flush welded diaphragm
- several process connections (G1“ cone, Clamp, dairy pipe, etc.)
- with integrated display and operating module
- accuracy according to IEC 60770: 0.1 % FSO

CE Ex SIL HART

Ordering code XMD

XMD ☐☐☐ - ☐☐☐☐ - ☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐ - 1 - ☐☐☐

	Code	
Pressure		
differential pressure	3 4 0	
Input [bar]		
0 ... 0.075	0 7 5 0	
0 ... 0.4	4 0 0 0	
0 ... 2	2 0 0 1	
0 … 7	7 0 0 1	
0 … 20	2 0 0 2	
customer	9 9 9 9	consult
Design		
with display	A 0	
without display	A N	
Output		
intrinsic safety ia 4 … 20 mA / 2-wire (intrinsically safe version) with HART®-communication [1]	I	
intrinsic safety d 4 … 20 mA / 2-wire (explosion proof housing) with HART®-communication [1]	G	
SIL2: intrinsic safety d 4 … 20 mA / 2-wire (intrinsically safe version) with HART®-communication [1]	IS	
SIL2: intrinsic safety d 4 … 20 mA / 2-wire (explosion proof housing) with HART®-communication [1]	GS	
customer	9	consult
Accuracy		
0.1 % FSO	1	
Electrical connection		
terminal clamp	A K 0	
customer	9 9 9	consult
Mechanical connection		
internal thread 1/4" - 18 NPT	N 5 6	
Diaphragm		
stainless steel 1.4435 (316L)	1	
Hastelloy® C-276 (2.4819) [2]	H	
customer	9	consult
Seals		
FKM	1	
EPDM	3	
Special version		
standard	0 0 0	
customer	9 9 9	consult

[1] HART® is a registered trade mark of HART Communication Foundation
[2] Hastelloy® is a brand name of Haynes International Inc.

DPT 100

Differential Pressure Transmitter for Process Industry

accuracy according to IEC 60770:
0.1 % FSO

Differential pressure

from 10 mbar up to 20 bar

Static pressure

max. 400 bar

Output signal

2-wire: 4 ... 20 mA

RS485 with Modbus RTU protocol

Special characteristics

- compact design
- fast response time
- aluminium die cast case
- zero adjustment via button

Optional versions

- several process connections

The differential pressure transmitter DPT 100 has been especially designed for fast test processes in leakage and flow measurement, where a fast response time and high sampling rate are necessary.

The compact design of the DPT 100 facilitates the usage in standardised applications. For instance, the installation in 19" racks.

The DPT 100 with optionally RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master Slave architecture with which up to 247 Slaves can be questioned by a master – the data will transfer in binary form.

Preferred areas of use are

Test engineering / leak testing

Machine and plant engineering

Environmental technology

Energy production

CE ROHS REACH Modbus®

Differential pressure ranges						
Pressure range P_N diff.	10 mbar	60 mbar	100 mbar	400 mbar	2.5 bar	20 bar
Pressure range P_N symmetric (diff.)	± 10 mbar	± 60 mbar	± 100 mbar	± 400 mbar	on request	on request
Permissible static pressure	70 bar	400 bar	400 bar	400 bar	400 bar	400 bar

Output signal / Supply					
Standard	2 wire : 4 ... 20 mA / V_S = 12 ... 32 V_{DC}				
Option	digital: RS 485 with Modbus RTU protocol / V_S = 9 … 32 V_{DC} (delay time: 500 msec)				
Performance					
Accuracy [1]	P_N ≥ 60 mbar: ≤ ± 0.1 % FSO P_N < 60 mbar: ≤ ± 0.2 % FSO				
Permissible load	R_{max} = [(V_S – $V_{S\,min}$) / 0.02 A] Ω				
Influence supply	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ				
Influence static pressure P_N [Pa/100 bar]	10 mbar 18	60 mbar 30	400 mbar 40	2.5 bar 250	20 bar 2000
Influence installation position	max. 400 Pa (can be compensated by zero-point correction) **for ranges < 60 mbar please state installation position on the order**				
Long term stability	P_N ≥ 60 mbar: ≤ ± 0.05 %FSO/ year at reference conditions P_N < 60 mbar: ≤ ± 0.15 %FSO/ year at reference conditions				
Sampling rate	250 Hz				
Turn-on time	approx. 260 msec				
Response time (10 … 90 %)	10 msec				
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)					
Thermal effects (Offset and Span)					
Thermal error (offset and span)	≤ ± 0.1 % FSO / 10 K				
Compensated range	-20 ... 80 °C				
Permissible temperatures	medium: -25 … 85°C electronics / environment: -25 … 85°C storage: -25 … 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					
One-sided overload	according to the maximum static pressure of differential pressure sensor				
Vibration	5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6				
Shock	100 g / 1 msec according to DIN EN 60068-2-27				
Materials					
Pressure port / flange standard option	 stainless steel 304 / 1.4301 stainless steel 316 / 1.4401 others: on request				
Diaphragm	stainless steel 316L / 1.4404 others: on request				
Vent and dump valves Blanking plugs standard option	 stainless steel 304 / 1.4301 stainless steel 316 / 1.4401				
Bolts and nuts standard option	 stainless steel 304 / 1.4301 stainless steel 316 / 1.4401 others: on request				
Housing	aluminium die cast with epoxy painting (grey) others: on request				
Cable gland	polyamide				
Seals (media wetted) standard option	 FKM EPDM, NBR others: on request				
Filling fluids	silicone oil others: on request				
Media wetted parts	pressure port, seal of pressure port, diaphragm				

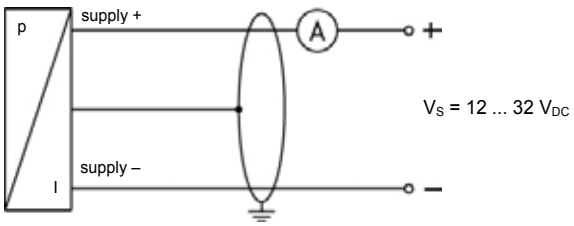
Miscellaneous	
Mounting bracket (optionally)	material C-steel or stainless steel 304 / 1.4401 weight 0.45 kg (incl. bolts and nuts)
Ingress protection	IP 66 / IP 67
Installation position	any [2]
Weight	approx. 1800 g
Current consumption	approx. 23 mA
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [3]

[2] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point. Press the button for zero adjustment (see operating manual).
[3] This directive is only valid for devices with maximum permissible overpressure > 200 bar.

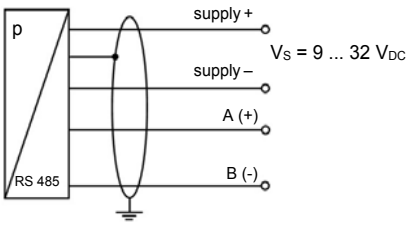
Connections	
Electrical connection	terminal clamps in clamping chamber (for cable-Ø max.2.5 mm²)
Process connections Standard option	 internal thread 1/4" - 18 NPT / fixing 7/16 UNF internal thread 1/4" - 18 NPT / fixing M10 others: on request

Wiring diagram

2-wire-system (current)



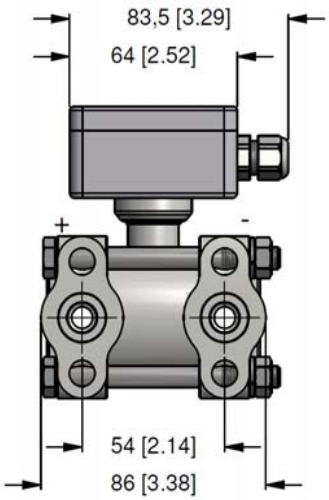
RS485 / Modbus RTU

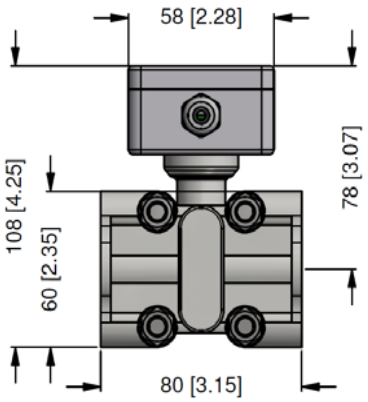


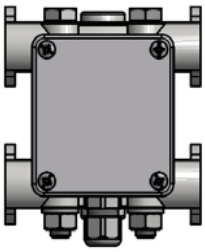
Pin configuration

Electrical connection	terminal clamps	M12x1 / metal (4-pin)
Supply +	+ Ub	1
Supply –	- Ub	3
for RS485 / Modbus RTU:		
A (+)	A	2
B (–)	B	4
Ground	⏚	plug housing

Dimensions (mm / in)







BD|SENSORS
pressure measurement

Ordering code DPT 100

DPT 100 □□□-□□□□-□-□-□-□□□-□□□-□-□□-□□-□-□□□

Pressure			
	differential pressure	345	
Input			
	10 mbar	0100	
	60 mbar	0600	
	100 mbar	1000	
	400 mbar	4000	
	2.5 bar	2501	
	20 bar	2002	
	customer	9999	consult
Output			
	4 … 20 mA / 2-wire	1	
	RS485 Modbus RTU	L5	
	customer	9	consult
Accuracy			
$P_N \geq 60$ mbar:	0,1 % FSO	1	
$P_N < 60$ mbar:	0,2 % FSO	B	
	customer	9	consult
Housing			
	Aluminium	L	
	customer	9	consult
Electrical connection			
	terminals / cable gland M12x1.5	AK2	
	Male plug M12x1 (4-pin) / metal	M17	
	customer	999	consult
Process connection			
	1/4" - 18 NPT F / fixing 7/16 UNF	N20	
	1/4" - 18 NPT (F / vertical) / fixing 7/16 UNF	N21	
	1/4" - 18 NPT F / fixing M10	N30	
	1/4" - 18 NPT (F / vertical) / fixing M10	N31	
	customer	999	consult
Valve			
	without	0	
	with vent	1	
	with vent (top)	2	
	with vent (bottom)	3	
Material flange, valves, screws, …			
	stainless steel 1.4301 (304 SS)	02	
	stainless steel 1.4401 (316 SS)	12	
	customer	99	consult
Diaphragm / filling fluid			
	stainless steel 1.4435 (316L) / silicone oil	11	
	customer	99	consult
Seals			
	FKM	1	
	EPDM	3	
	NBR	5	
	PTFE	4	
	customer	9	consult
Special version			
	standard	000	
	customer	999	consult

DMD 331

Differential Pressure Transmitter for Liquids and Gases

Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Differential pressure

from 0 ... 20 mbar up to 0 ... 16 bar

Output signals

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

Special characteristics

- differential pressure wet / wet
- permissible static pressure -onesided- up to 30 times of differential pressure range
- compact design
- mechanical robust and reliable at dynamic pressures as well as shock and vibration

Optional versions

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

The DMD 331 is a differential pressure transmitter for industrial applications and is based on a piezoresistive stainless steel sensor, which can be pressurized on both sides with fluids or gases compatible with SST 1.4404 (316L) and 1.4435 (316L).

The compact design allows an integration of the DMD 331 in machines and applications with limited space. The DMD 331 calculates the difference between the pressure on the positive and the negative side and converts it into a proportional electrical signal.

Preferred areas of use are

- Plant and machine engineering
- Energy industry

Preferred used for

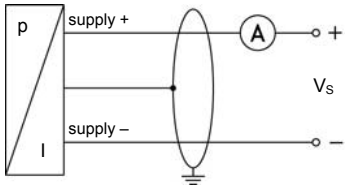
- Water

Input pressure range							
Nominal pressure	[bar]	0.2	0.4	1	2.5	6	16
Differential pressure range	[bar]						
TD 1 : 1		0 ... 0.2	0 ... 0.4	0 ... 1	0 ... 2.5	0 ... 6	0 ... 16
up to		up to	up to	up to	up to	up to	up to
TD 1 : 10		0 ... 0.02	0 ... 0.04	0 ... 0.1	0 ... 0.25	0 ... 0.6	0 ... 1.6
Permissible static pressure, one-sided	[bar]	0.5	1	3	6	20	60

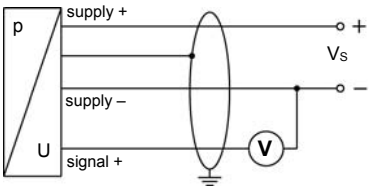
Output signal / Supply			
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}		
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}		
Option 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}		
Performance			
Accuracy [1]	**for ranges of max. input pressure P_N > 1 bar (codes C, D, E)** ≤ ± 0.5 % FSO (differential pressure range with TD from 1:1 up to 1:5) ≤ ± 1 % FSO (differential pressure range with TD > 1:5 up to 1:10) **for ranges of max. input pressure P_N ≤ 1 bar (codes A, B, F)** ≤ ± 0.5 % FSO (differential pressure range with TD from 100 to 50 % from nominal pressure) ≤ ± 1 % FSO (differential pressure range with TD > 50 to 10 % from nominal pressure)		
Permissible load	current 2-wire: R_{max} = [(V_S – V_S min) / 0.02 A] Ω voltage 3-wire: R_{min} = 10 kΩ		
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Long term stability	≤ ± 0.2 % FSO / year at reference conditions		
Response time	< 5 msec		
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal effects [2] (Offset and Span) / Permissible temperatures			
Nominal pressure P_N [bar]	0.2	0.4	≥ 1.0
Tolerance band [% FSO]	≤ ± 2.5	≤ ± 2	≤ ± 1.5
TC, average [% FSO / 10 K]	± 0.4	± 0.3	± 0.2
in compensated range [°C]	0 ... 50		0 … 70
Permissible temperatures	medium: -25 ... 125 °C	electronics / environment: -25 ... 85 °C	storage: -40 ... 100 °C
[2] relating to nominal pressure range			
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to EN 61326		
Mechanical stability			
Vibration	10 g RMS (20 ... 2000 Hz)		
Shock	100 g / 11 msec		
Materials			
Pressure port	stainless steel 1.4404 (316L)		
Housing	aluminium, black anodized		
Seals (media wetted)	FKM / others on request		
Diaphragm	stainless steel 1.4435 (316L)		
Media wetted parts	pressure port, seals, diaphragm		
Miscellaneous			
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA		
Weight	approx. 250 g		
Operational life	100 million load cycles		
Ingress protection	IP 65		
CE-conformity	EMC Directive: 2014/30/EU		
ATEX Directive	2014/34/EU		
Explosion protection (only for 4 … 20 mA / 2 wire)			
Approvals DX13A-DMD 331	**IBExU 08 ATEX 1125 X** zone 1: II 2G Ex ia IIC T4 Gb zone 21: II 2D Ex ia IIIC T85°C Db		
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i ≤ 1 nF, L_i ≤ 10 µH, the supply connections have an inner capacity of max. 27 nF to the housing		
Permissible temperatures for environment	-25 ... 65°C		
Pin configuration			
Electrical connection	ISO 4400		
Supply +	1		
Supply –	2		
Signal + (only 3-wire)	3		
Shield	ground pin		

Wiring diagrams

2-wire-system (current)

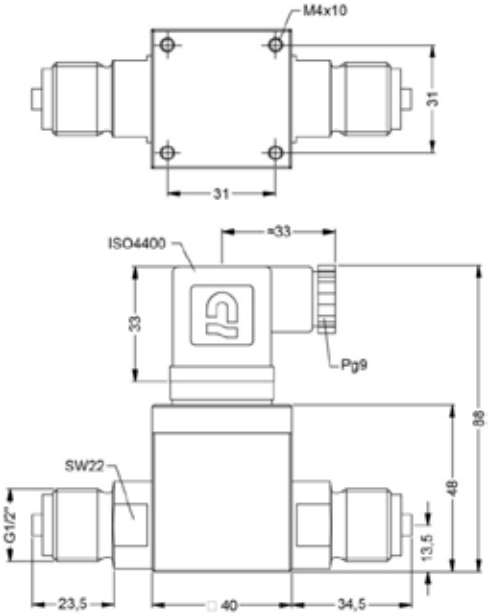


3-wire-system (voltage)



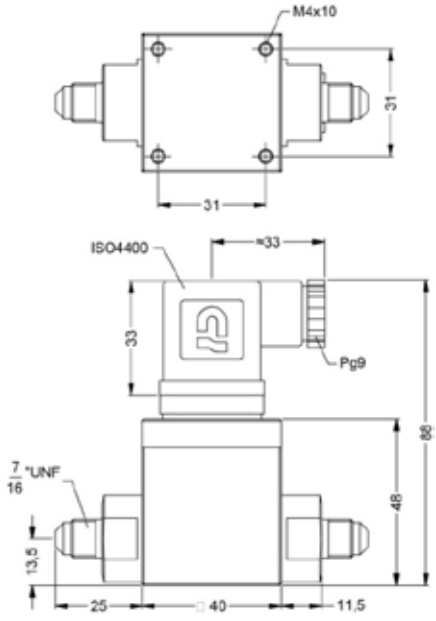
Mechanical connection (dimensions in mm)

standard

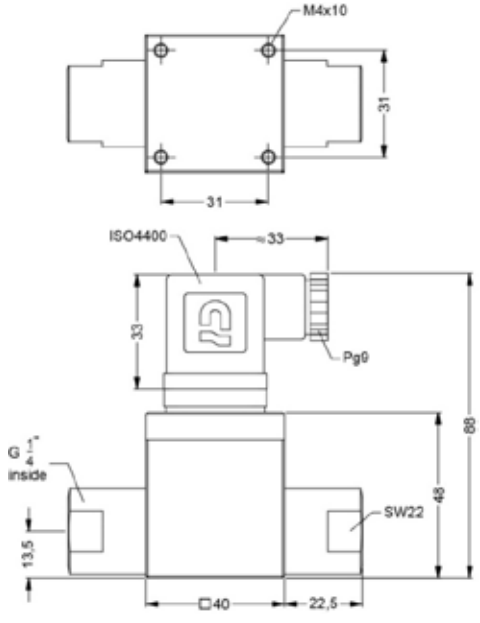


G1/2" EN 837

option



7/16" UNF DIN 3866



G1/4" internal

Ordering code DMD 331

DMD 331 □□□-□-□□□□-□-□-□□□-□□□-□-□□□

Pressure		Code	
differential pressure		7 3 0	

Nominal pressure range	[bar]	Code	
	0.2	F	
	0.4	A	
	1.0	B	
	2.5	C	
	6.0	D	
	16	E	
	customer	9	consult

Differential pressure range	[bar]	F	A	B	C	D	E	Code	
	0.02	■						0 2 0 0	
	0.04	■	■					0 4 0 0	
	0.10	■	■	■				1 0 0 0	
	0.25		■	■	■			2 5 0 0	
	0.40		■	■	■			4 0 0 0	
	0.60			■	■	■		6 0 0 0	
	1.0			■	■	■		1 0 0 1	
	2.5				■	■	■	2 5 0 1	
	4.0					■	■	4 0 0 1	
	6.0					■	■	6 0 0 1	
	10						■	1 0 0 2	
	16						■	1 6 0 2	
	customer							9 9 9 9	consult

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

Accuracy		Code	
TD ≤ 1:5	0.5 %	5	
TD > 1:5 up to 1:10	1.0 %	8	
	customer	9	consult

Electrical connection	Code	
Male and female plug ISO 4400	1 0 0	
customer	9 9 9	consult

Mechanical connection	Code	
G1/2" EN 837	2 0 0	
7/16" UNF DIN 3866	U 0 0	
G1/4" internal thread	J 0 0	
customer	9 9 9	consult

Seals	Code	
FKM	1	
customer	9	consult

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

DMD 831

Differential Pressure Transmitter with Display and Contact for Fluids and Gases

- 2 piezoresistive stainless steel sensors
- differential pressure from 0 ... 1 bar up to 0 ... 70 bar
- display and pressure port rotatable

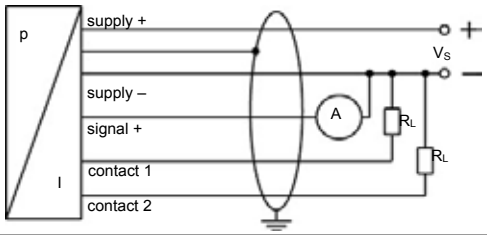
Technical Data

Input pressure range							
Type	D5	D6	D7	D8	DA	DB	H1
Differential pressure range gauge [1] / abs.[2] (calibration) [bar]	0 … 1	0 … 2	0 … 3,5	0 … 7	0 … 20	0 … 35	0 … 70
Permissible static pressure, one-sided [bar]	1	2	3,5	7	20	35	70
[1] gauge: If the reference point is the ambient atmosphere, the value "0" is displayed with unloaded system.							
[2] abs.: If the reference point is the absolute vacuum, the atmospheric pressure is indicated with unloaded system.							

Analogue signal / Supply		
Standard	3-wire: 4 ... 20 mA	24 V_{DC} ± 10 %
Permissible load	500 Ω	
Accuracy [3]	≤ ± 1 % BFSL	
[3] accuracy according to IEC 60770 – (non-linearity, hysteresis, repeatability)		
Contact		
Number, type	standard: 1 PNP	option: 2 independent PNP
Max. switching current	125 mA, short-circuit proof	
Switching accuracy [3]	≤ ± 0.5 % FSO	
Repeatability	≤ ± 0.1 % FSO	
Switching cycles	> 100 x 10^6	
Delay time	0 ... 100 sec	
Programming		
Adjustability	analogue output / contact refers to: - pressure (+ port) / - pressure (- port) / - differential pressure	
	turn-down: max. 1:10	
Thermal error [4] (offset and span) / Permissible temperatures		
Tolerance band	≤ ± 1.5 % FSO	
TC, average	± 0.2 % FSO / 10 K	
In compensated range	0 ... 70 °C	
Permissible temperatures	medium: -40 ... 125 °C	electronics / environment: -25 … 85 °C storage: -40 ... 85 °C
[4] relating to nominal pressure range		
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	

Mechanical stability		
Vibration	10 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	stainless steel 1.4404 (316L)	
Housing	PA 6.6, Polycarbonate	
Seals (media wetted)	FKM	others on request
Diaphragm	stainless steel 1.4435 (316L)	
Media wetted parts	pressure port, seals, diaphragm	
Miscellaneous		
Display	4-digit, red LED-display, digit size 7 mm range of indication -1999 ... +9999; accuracy 0.1 % +/- 1 digit; digital damping 0.3 … 30 sec (programmable);	
Current consumption	signal output current: max. 60 mA (without switching current)	
Weight	approx. 350 g	
Operational life	100 million load cycles	
Ingress protection	IP 65	
Electrical connections		
Standard	connector M12x1 / 5- pin (IP 67)	others on request

Wiring diagram

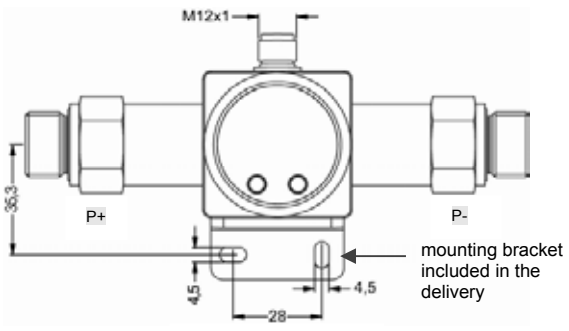


Pin configuration

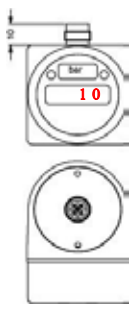
Electrical connections	M12x1 (5-pin), plastic	cable colour (IEC 60757) (IP 67)
Supply +	1	wh (white)
Supply –	3	bn (brown)
Signal +	2	gn (green)
Contact 1	4	gy (grey)
Contact 2	5	pk (pink)
Shield	via pressure port	gnye (green-yellow)

Mechanical connections (in mm) **Electrical connections (dimensions in mm)**

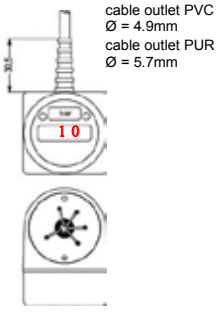
standard



G1/2" DIN 3852

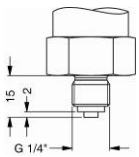


M12x1 (5-pin)

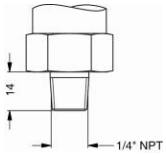


cable outlet

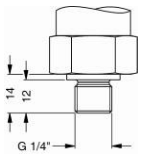
option



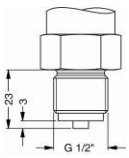
G1/4" EN 837



1/4" NPT



G1/4" DIN 3852



G1/2" EN 837

Ordering code DMD 831

DMD 831 ☐☐☐ - ☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐☐☐

Pressure	Code	
differential pressure gauge	7 3 2	
differential pressure abs.	7 3 3	

max. static pressure [bar]	Code	
1	D 5	
2	D 6	
3.5	D 7	
7	D 8	
20	D A	
35	D B	
70	H 1	
customer	9 9	consult

differential pressure range [bar] Minimum	Maximum	D5	D6	D7	D8	DA	DB	H1	Code	
0.1	1	■	■	■	■				1 0 0 1	
0.2	2		■	■	■	■			2 0 0 1	
0.35	3.5			■	■	■	■		3 5 0 1	
0.7	7				■	■	■	■	7 0 0 1	
2	20					■	■	■	2 0 0 2	
3.5	35						■	■	3 5 0 2	
7	70							■	7 0 0 2	
customer									9 9 9 9	consult

Analogue output	Code	
4 … 20 mA / 3-wire	7	
customer	9	consult

Contact	Code	
1 contact PNP	1	
2 contacts PNP	2	
customer	9	consult

Accuracy	Code	
1% FSO BFSL	G	
customer	9	consult

Electrical connection	Code	
M12x1 (5-pin)	N 0 1	
Cable outlet with PVC cable [1]	T A 0	consult
customer	9 9 9	consult

Mechanical connection	Code	
G 1/2" DIN 3852	1 0 0	
G 1/2" EN 837	2 0 0	
G 1/4" DIN 3852	3 0 0	
G 1/4" EN 837	4 0 0	
1/2" NPT	N 0 0	
1/4" NPT	N 4 0	
customer	9 9 9	consult

Seals	Code	
FKM	1	
customer	9	consult

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

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

DMD 341

Differential Pressure Transmitter for Gases and Compressed Air in Compact Version

Silicon Sensor

accuracy according to IEC 60770:
0.35 % / 1% / 2%

Differential pressure

from 0 ... 6 mbar up to 0 ... 1000 mbar

Output signals

2-wire: 4 … 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

Special characteristics

- aluminium housing
- suited for non-aggressive gases and compressed air

Optional versions

- customer specific versions

The DMD 341 is a differential pressure transmitter for non-aggressive gases and compressed air. Because of its compact and robust aluminium housing it is particularly suited for machine and plant engineering.

Basic element of the DMD 341 is a piezo-resistive silicon sensor, which features high accuracy and excellent long term stability.

Preferred areas of use are

- Plant and machine engineering
- Heating and air conditioning

Preferred used for

- Compressed air, non-aggressive gases

Input pressure range											
Nominal pressure P_N [mbar] (over, differential pressure)	0...6	0...10	0...20	0...40	0...60	0...100	0...160	0...250	0...400	0...600	0...1000
Nominal pressure P_N symmetric (differential pressure) [mbar]	± 6	± 10	± 20	± 40	± 60	± 100	±160	± 250	± 400	± 600	±1000
Overpressure [mbar]	100	100	200	350	350	1000	1000	1000	1000	3000	3000

Output signal / Supply		
Standard	standard pressure range: 2-wire: 4 ... 20 mA / V_S = 8 ... 32 V_{DC}	
Options 3-wire	standard pressure range: 3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}	
Performance		
Accuracy [1]	P_N > 160 mbar: ≤ ± 0.35 % FSO 40 mbar ≤ P_N ≤ 160 mbar: ≤ ± 1 % FSO P_N < 40 mbar: ≤ ± 2 % FSO	
Permissible load	current 2-wire: $R_{max} = [(V_S – V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 240 Ω voltage 3-wire: R_{min} = 10 kΩ	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± 0.2 % FSO / year at reference conditions	
Response time	< 5 msec	
[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		

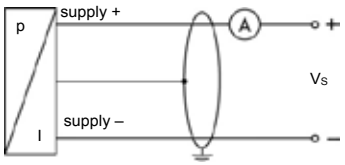
Thermal effects (Offset and Span) / Permissible temperatures				
Nominal pressure P_N [mbar]	≤ 10	≤ 20	≤ 250	> 250
Tolerance band [% FSO]	≤ ± 2	≤ ± 1.5	≤ ± 1	≤ ± 0.5
TC, average [% FSO / 10 K]	± 0.3	± 0.25	± 0.15	± 0.08
in compensated range	0 ... 60 °C			
Permissible temperatures	medium: -25 ... 125 °C	electronics / environment: -25 ... 85 °C		storage: -40 ... 100 °C

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec
Materials	
Pressure port	G1/8″ internal: aluminium, silver anodized flexible tube connection Ø6.6 x 11: brass, nickel plated
Housing	aluminium, silver anodised
Seal (media wetted)	PUR, bonded
Sensor	silicon, glass, RTV, ceramics Al_2O_3, nickel
Media wetted parts	pressure port, housing, seal, sensor
Miscellaneous	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 250 g
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU

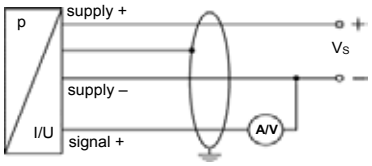
Pin configuration			
Electrical connection	ISO 4400	M12x1 (4-pin), metal	cable colour (IEC 60757)
Supply +	1	1	wh (white)
Supply –	2	2	bn (brown)
Signal + (only 3-wire)	3	3	gn (green)
Shield	ground pin	4	gnye (green-yellow)

Wiring diagrams

2-wire-system (current)

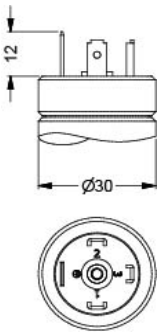


3-wire-system (current / voltage)



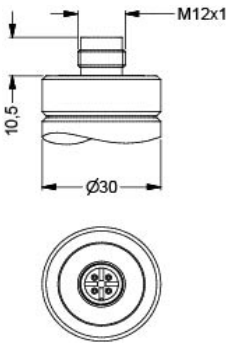
Electrical connections (dimensions in mm)

standard

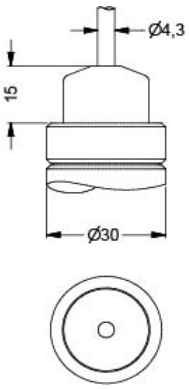


ISO 4400 (IP 65)

option



M12x1 4-pin (IP 67)

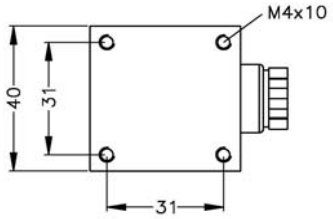


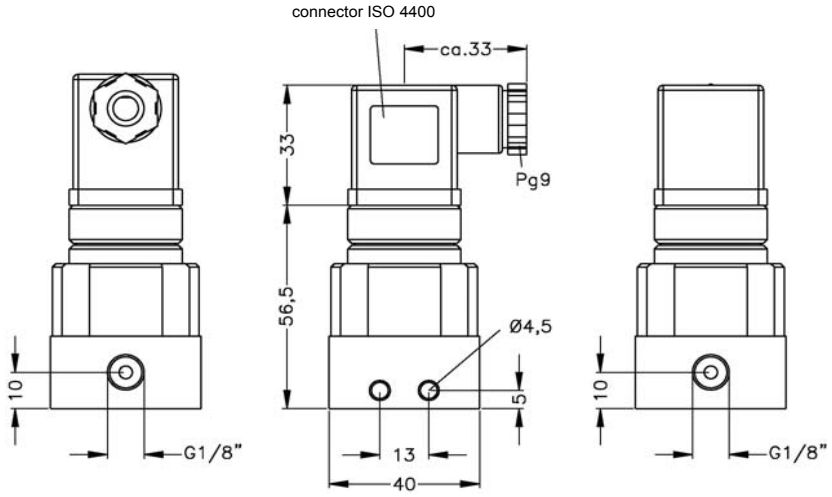
cable outlet with PVC-cable (IP 67)[2]

[2] *standard: 2 m PVC cable (without ventilation tube), optionally cable with ventilation tube*

Mechanical connection (dimensions in mm)

standard





G1/8″ internal

Ordering code DMD 341

DMD 341 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

	Code								
Pressure									
differential pressure	330								
gauge pressure	331								
Input [mbar]									
6		0060							
10		0100							
20		0200							
40		0400							
60		0600							
100		1000							
160		1600							
250		2500							
400		4000							
600		6000							
1000		1001							
-6 ... 6		S006							consult
-10 ... 10		S010							consult
-20 ... 20		S020							consult
-40 ... 40		S040							consult
-60 ... 60		S060							consult
-100 ... 100		S100							consult
-160 ... 160		S160							consult
-250 ... 250		S250							consult
-400 ... 400		S400							consult
-600 ... 600		S600							consult
-1000 ... 1000		S102							consult
customer		9999							consult
Output									
4 … 20 mA / 2-wire			1						
0 … 20 mA / 3-wire			2						
0 … 10 V / 3-wire			3						
customer			9						consult
Accuracy									
standard for P_N > 160 mbar — 0,35 % FSO				3					
standard for 40 mbar ≤ P_N ≤ 160 mbar — 1,0 % FSO				8					
standard for P_N < 40 mbar — 2,0 % FSO				G					
customer				9					consult
Electrical connection									
male and female plug ISO 4400					100				
male plug M12x1 (4-pin), metal					M10				
cable outlet with PVC cable [1]					TA0				
customer					999				consult
Mechanical connection									
G1/8" internal thread						Q00			
Ø 6.6 x 11 (for flex. tubes Ø 6)						Y00			
customer						999			consult
Seals									
PUR, bonded							6		
Special version									
standard								000	
customer								999	consult

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

DPS 300

Multi Range Differential Pressure Transmitter for Gas and Compressed Air

Silicon Sensor

accuracy according to IEC 60770:
0.5% FSO BFSL

Differential pressure

from 0 ... 1.6 mbar up to 0 ... 1000 mbar

Output signals

3-wire: 0 ... 10 V, 0 ... 20 mA
(0 ... 5 V, 4 ... 20 mA switchable)

2-wire: 4 ... 20 mA (optional)

Special characteristics

- adjustable ranges
- high overpressure capability
- adjustable damping
- compact form

Optional versions

- LC-display, two-line
- automatic zero adjustment
- contacts
  (only in combination with display)
- square root extraction
  (only in combination with display)

The pressure transmitter DPS 300 was developed for the differential pressure measuring for dry, non aggressive gases and compressed air and can be used for several HVAC applications

The DPS 300 is a multi range transmitter with up to three adjustable ranges.

The device is equipped with a two-line LC display optionally and can be parameterized simply. Values, status of the contact and the unit are shown on the display.

Preferred applications are

HAVC applications
e.g. air conditioning, clean room technology, filter monitoring

Medical

Preferred areas of use are

Gas, compressed air

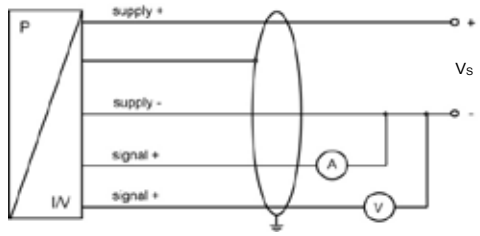
Input pressure range						
Nominal pressure P_N [mbar] (differential, gauge pressure)	1.6	4	10	40	250	1000
Adjustable to [mbar]	1.0	2.5	6	25	60 / 160	400 / 600
Nominal pressure P_N symmetric (differential pressure) [mbar]	±1.6	±4	±10	±40	±250	±1000
Max. static pressure [mbar]	200	200	200	345	1000	3000

Output signal / Supply				
Standard	3-wire:		0 ... 10 V / 0 ... 20 mA	V_S = 19 ... 32 V_{DC}
		switchable on:	0 … 5 V / 4 … 20 mA	
			with automatic zero adjustment:	V_S = 24 ... 32 V_{DC}
Option	2-wire:		4 ... 20 mA	V_S = 11 ... 32 V_{DC}
			with automatic zero adjustment:	V_S = 24 ... 32 V_{DC}
Performance				
Accuracy	for $P_N \geq 6$ mbar: ≤ ± 0.5% FSO BFSL		for $P_N < 6$ mbar: ≤ ± 1% FSO BFSL	
Permissible load	voltage 3-wire: R_{min} = 10 kΩ		current 3-wire: 330 Ω	
	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0{,}02\ A]\ \Omega$			
Influence effects	supply: 0.05 % FSO / 10 V		load: 0.05 % FSO / kΩ	
Response time T_{90}	< 100 msec; adjustable by potentiometer in the range of 0 msec up to 5000 msec			
Turn on time	500 msec			
Long term stability	≤ ± 0.5% FSO / year at reference conditions, for $P_N < 6$ mbar ≤ ± 0.2% FSO / year at reference conditions, for $P_N \geq 6$ mbar			
Measuring rate	12.5 Hz			
Contact (optional)				
	3-wire version		2-wire version	
Number, form	2 x relay-output (NO/NC)		2 x PNP-open-collector-contact	
switching current switching voltage switching capacity	max. 1 A max. 60 V_{DC}; max. 40 V_{AC} max. 60 W		max. 125 mA resistant; short-circuit-proof	
Accuracy of switching points	≤ ± 2 % FSO		≤ ± 2 % FSO	
Accuracy of repeatability	≤ ± 0.5 % FSO		≤ ± 0.5 % FSO	
Switching frequency	5 Hz		5 Hz	
Switching cycles	< 100 x 10^6		< 100 x 10^6	
Thermal effects / Permissible temperatures				
Thermal error (offset and span)	≤ ± 0.5 % FSO / 10 K (typ.) for $P_N < 6$ mbar		≤ ± 0.3 % FSO / 10 K (typ.) for $P_N \geq 6$ mbar	
in compensated range	0 ... 50 °C			
Permissible temperatures	medium: 0 … 50°C	electronics / environment: 0 … 50°C	storage: -10 … 70°C	
Electrical protection				
Short-circuit protection	permanent			
Reverse polarity protection	no damage, but also no function			
Electromagnetic protection	EMC directive: 2014/30/EU		emission and immunity according to EN 61326	
Materials				
Pressure port	brass nickel plated			
Housing	ABS			
Sensor	ceramic, silicon, epoxy, RTV			
Media wetted parts	pressure port, PVC / silicone tube, sensor			
Display (optional)				
Performance	two-line LC-Display, visible range 32.5 x 22.5 mm; 5-digit 7-segment-main display, digit size 8 mm, range of indication: ±9999; 8-digit 14-segment-additional display, digit size 5 mm; 52-segment-bargraph; accuracy: 0.1% ±1 digit			
Functions	- parameterisation of contacts - selection of units - selection of signal (linear, square root extraction) - cut-off-function (only with square root extraction) - min- / max-value - recalibration - autozeroing - factory setting			

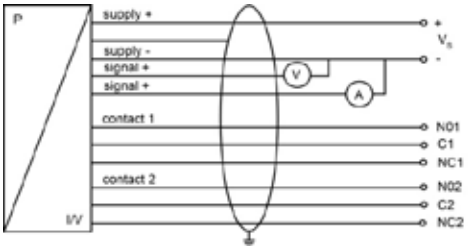
Miscellaneous		
Current consumption	2-wire: max. 22 mA (during automatic zero adjustment: +23 mA)	3-wire: max. 30 mA
Weight	approx. 200 g	
Ingress protection	IP 54	
Installation position	vertical [1]	
Operational life	100 million load cycles	
[1] The devices are calibrated in a vertical position with pressure port down. If this position is changed on installation there can be slight deviations in the zero point.		
Mechanical connections (dimensions in mm)		
Standard	Ø 6.6 x 11 (for flex. tubes Ø 6)	
Option	Ø 4.4 x 10 (for flex. tubes Ø 4)	
Electrical connections (conductor cross-section)		
Without ferrule	1.5 mm²	
With ferrule	1 mm²	
Pin configuration		
Standard	cable gland M16x1.5	
Electrical connections	3-wire	2-wire
supply + supply – signal + (only for 3-wire) contact 1 contact 2	VS + VS - Iout / Vout C1 / NO1 / NC1 C2 / NO2 / NC2	VS + VS - - S1 S2

Wiring diagram

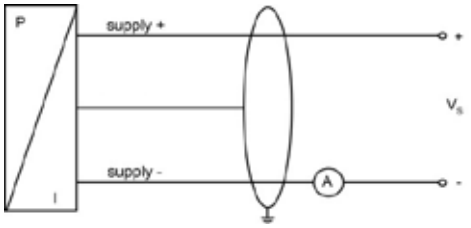
3-wire-system (current / voltage)



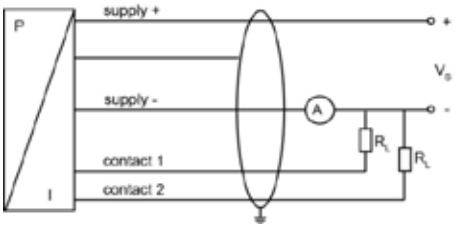
3-wire-system (current / voltage) with 2 contacts



2-wire-system (current

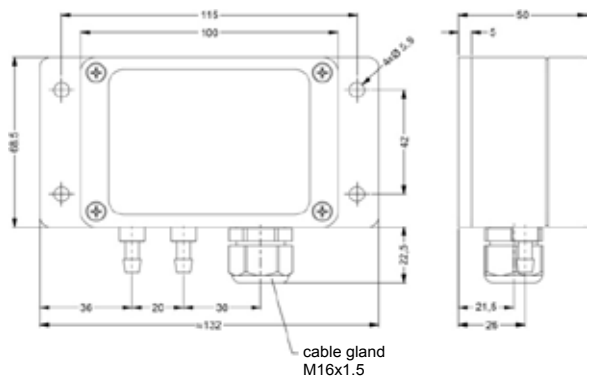


2-wire-system (current) with 2 contacts



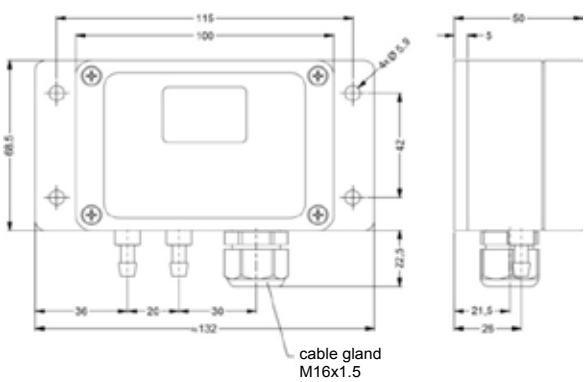
Dimension (in mm)

standard



DPS 300 without display

option



DPS 300 with display

Ordering code DPS 300

DPS 300 ☐☐☐-☐☐☐☐-☐-☐-☐-☐-☐-☐☐☐-☐-☐☐☐

	Pressure	Input	Output	contact	Accuracy	Display	Front foil	Mechanical connection	Pressure port	Special version	
Pressure											
differential pressure	8 1 5										
gauge pressure	8 1 6										consult
Input [mbar]											
1.6		0 0 1 6									
4.0		0 0 4 0									
10		0 1 0 0									
40		0 4 0 0									
250		2 5 0 0									
1000		1 0 0 1									
-1.6 … 1.6		S 1 K 6									
-4 … 4		S 0 0 4									
-10 … 10		S 0 1 0									
-40 … 40		S 0 4 0									
-250 … 250		S 2 5 0									
-1000 … 1000		S 1 0 2									
customer		9 9 9 9									consult
Output											
3-wire: 0 … 10 V, 0 … 20 mA [1]			3Z								
2-wire: 4 … 20 mA			1								
customer			9								consult
contact											
without				0							
2 contacts [2]				B							
Accuracy											
$P_N \geq$ 6 mbar 0,5 % FSO BFSL					8						
$P_N <$ 6 mbar 1,0 % FSO BFSL					G						
Display											
without display						0					
LC display						C					
customer						9					consult
Front foil											
BD SENSORS							1				
neutral							N				
customer							9				consult
Mechanical connection											
Ø6.6 x 11 (for flex. tubes Ø6)								Y 0 0			
Ø4.4 x 10 (for flex. tubes Ø4)								Y 0 2			
								9 9 9			consult
Pressure port											
brass nickel plated									M		
customer									9		consult
Special version											
standard										0 0 0	
automatic zeroing										6 0 0	
square-root extraction [2]										6 0 5	
customer										9 9 9	consult

output switchable on 0 … 5 V / 4 … 20 mA
only in combination with display

DPS 200

Differential Pressure Transmitter for Gas and Compressed Air

Applications:

- for HVAC-applications

Characteristics:

- piezoresistive silicon sensor
- differential pressure range 6 ... 1000 mbar

Technical Data

Input pressure range												
Nominal pressure P_N [mbar] (differential, gauge pressure)	6	10	16	25	40	60	100	160	250	400	600	1000
max. static pressure [mbar]	200	345	345	345	345	345	345	1000	1000	3000	3000	3000

Output signal / Supply		
Standard	3-wire: 0 ... 10 V	V_S = 19 … 32 V_{DC}
Option	2-wire: 4 ... 20 mA 3-wire: 4 ... 20 mA	V_S = 11 ... 32 V_{DC} V_S = 19 … 32 V_{DC}
Performance		
Accuracy	≤ ± 1% FSO BFSL	
Permissible load	current 2-wire: R_{max} = [(V_S - V_{Smin}) / 0,02 A] Ω current 3-wire: 330 Ω	voltage 3-wire: 10 kΩ
Influence effects	supply: ≤ ± 0.1 % FSO/10V	load: ≤ ± 0.1 % FSO/kΩ
Response time (0 ... 100%)	2-wire: adjustable by potentiometer in the range of 500 msec up to 2.5 sec 3-wire: adjustable by potentiometer in the range of 50 msec up to 2.5 sec	
Long term stability	≤ ± 0,5% FSO / year at reference conditions	
Measuring rate	2-wire: 8 Hz	3-wire: 1 kHz
Thermal effects (Offset and Span) / Permissible temperatures		
Thermal error (offset and span)	≤ ± 0.3 % FSO / 10 K (typ.)	
in compensated range	0 ... 50 °C	
Permissible temperatures	medium: 0 … 50°C	electronics / environment: 0 … 50°C storage: -10 … 70°C
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic protection	emission and immunity according to EN 61326	
Materials		
Pressure port	brass nickel plated	
Housing	ABS	
Sensor	ceramic, silicon, epoxy, RTV	
Media wetted parts	pressure port, PVC / silicone tube, sensor	

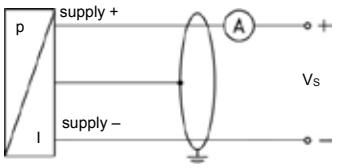
Miscellaneous	
Display (optional)	LC-Display, visible range 32.5 x 22.5 mm; 5-digit 7-segment-main display, digit size 8 mm, 8-digit 14-segment-additional display, digit size 5 mm; 52-segment-bargraph
Current consumption	2-wire: signal output current: max. 22 mA 3-wire: signal output current: max. 30 mA signal output voltage: 7.5 mA (20 mA short circuit) display: + 1 mA
Units	following units can be set at factory: [bar], [mbar], [PSI], [Inch Hg], [cm Hg], [mm Hg], [hPa], [kPa], [MPa], [mH_2O], [Pa], [mmH_2O]
Ingress protection	IP 54
Weight	approx. 165 g
Installation position	vertical [1]
Operational life	100 million load cycles

[1] The devices are calibrated in a vertical position with the pressure port down. If this position is changed on installation there can be slight deviations in the zero point.

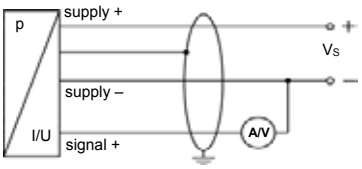
Mechanical connections (dimensions in mm)	
Standard	Ø 6.6 x 11 (for flex. tubes Ø 6)
Option	Ø 4.4 x 10 (for flex. tubes Ø 4)

Wiring diagram

2-wire-system (current)



3-wire-system (current / voltage)

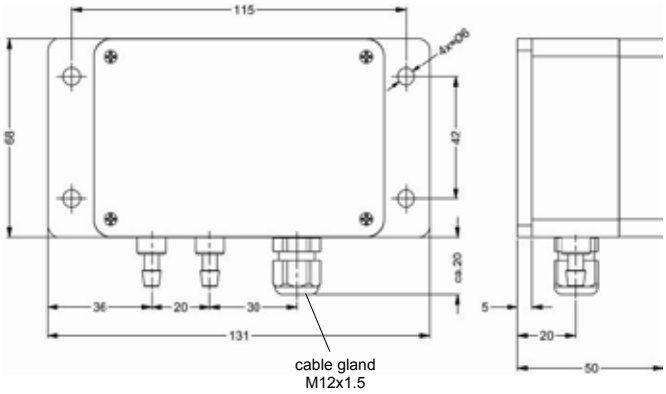


Pin configuration

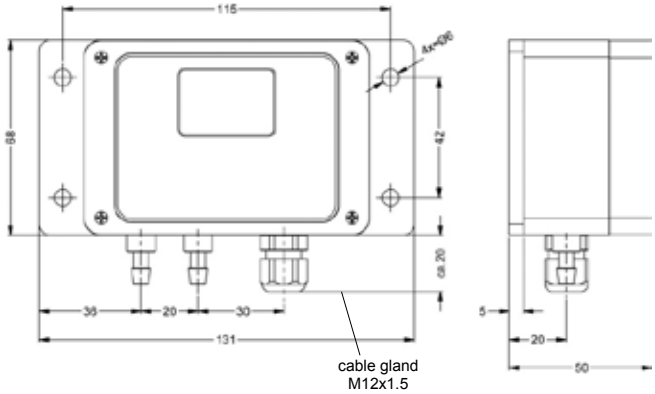
Electrical connections	Terminals 2-wire-system	Terminals 3-wire-system
supply +	2 / +	2 / V_S+
supply –	3 / -	3 / V_S-
signal + (only for 3-wire)	1 (not connected)	1 / SIG

Dimensions (in mm)

standard:
DPS 200 without display



optional:
DPS 200 with display



Ordering code DPS 200

DPS 200 □□□-□□□□-□-□-□-□-□□□-□-□□□

Pressure		
differential pressure	810	
gauge pressure	811	consult
Input [mbar]		
6	0060	
10	0100	
16	0160	
25	0250	
40	0400	
60	0600	
100	1000	
160	1600	
250	2500	
400	4000	
600	6000	
1000	1001	
customer	9999	consult
Output		
0 … 10 V / 3-wire	3	
4 … 20 mA / 2-wire	1	
4 … 20 mA / 3-wire	7	
customer	9	consult
Accuracy		
1 % FSO BFSL	G	
Display		
without display	0	
LC display	C	
customer	9	consult
Front foil		
BD SENSORS	1	
neutral	N	
customer	9	consult
Mechanical connection		
Ø6.6 x 11 (for flex. tubes Ø6)	Y00	
Ø4.4 x 10 (for flex. tubes Ø4)	Y02	
	999	consult
Pressure port		
brass nickel plated	M	
customer	9	consult
Special version		
standard	000	
customer	999	consult

NOTES

NOTES

COMPETENCE

Industrial pressure measurement technology from 0.1 mbar up to 8000 bar

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

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

PRICE / PERFORMANCE

Pressure measurement at the highest level

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

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

RELIABILITY

Projectable delivery times and strict observance of deadlines

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

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