BD|SENSORS
pressure measurement

DM 01

Battery Powered Precision Digital Gauge

Stainless Steel Sensor

class 0.05

Nominal pressure

from 0 … 100 mbar up to 0 ... 400 bar

Special characteristics

- modular sensor concept
- data logger
- graphic display
- stainless steel housing Ø100 mm
- communication interface USB 2.0

Optional

- accredited calibration certificate according to DKD / DAkkS
- IS-version zone 0/1
- software incl. USB converter
- service case with accessories

Functions

- zero point calibration
- data logger
- turn off automatic
- free button assignment
- background illumination etc.

The digital pressure gauge DM 01 is a precision device fulfilling highest demands. It was conceived especially for the process monitoring and calibration.
The advantage: The DM 01 consists of two devices - the digital display and a pressure transmitter. The pressure transmitter can be selected on site for different measuring ranges and connected to the display - without tools or parameter setting.
Outstanding measuring qualities, an intuitive operation, as well as an innovative, modular sensor concept characterise the DM 01. The battery-powered digital pressure gauge can be used e.g. for controlling pressure courses or calibrating pressure transmitters.
The integrated data logger is able to record pressure and temperature values linearly and cyclically which can be analysed with the software DAQ.

Preferred areas of use are

- Calibrating techniques
- Laboratory applications
- Plant and machine engineering

BD SENSORS GmbH
BD-Sensors-Straße 1
D - 95199 Thierstein

Tel.: +49 (0) 92 35 / 98 11- 0
Fax: +49 (0) 92 35 / 98 11- 11

www.bdsensors.de
info@bdsensors.de

Input pressure												
Nominal pressure gauge	[bar]	-1…0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure abs.	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	1	1	1	2	5	5	10	10	17.5	35
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

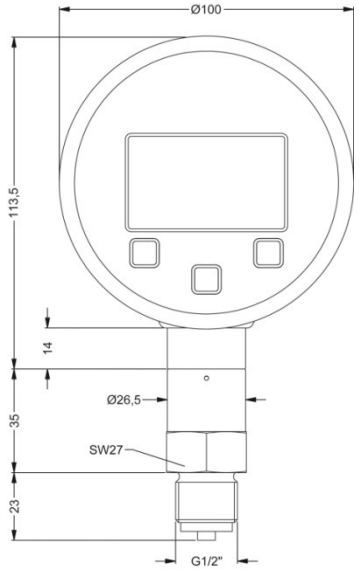
Nominal pressure gauge / abs.	[bar]	10	16	25	40	60	100	160	250	400
Overpressure	[bar]	35	80	80	105	210	600	600	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250
Vacuum resistance		P_N ≥ 1 bar: unlimited vacuum resistant; P_N < 1 bar: on request								

Performance	
Accuracy [1]	nominal pressure P_N ≥ 0.4 bar: ≤ ± 0.05 % FSO BFSL nominal pressure P_N < 0.4 bar: ≤ ± 0.125 % FSO BFSL
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Measuring rate / Display	1, 2 or 50 measurements per second
[1] accuracy according to IEC 60770 – minimum value setting (non-linearity, hysteresis, repeatability) - at room temperature 20°C	
Thermal effects (offset and span)	
Temperature error	for nominal pressure ranges P_N ≤ 160 bar: tolerance band ≤ ± 0.2 % FSO for nominal pressure ranges P_N > 160 bar: tolerance band ≤ ± 0.75 % FSO
compensated range	0 ... 50 °C
Permissible temperatures	
Permissible temperatures	medium: -10 ... 55 °C environment: display module: -10 ... 55 °C storage: -20 ... 70 °C transmitter: -20 … 70 °C (at 1G to +60 °C)
Materials	
Pressure port / housing	stainless steel 1.4404 (316L)
Display housing	stainless steel 1.4301 (304)
Seals (media wetted)	FKM, without (welded version) and others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seal, diaphragm
Explosion protection	
AX16-DM01	IBExU12ATEX1108 X variant with standard front foil for zone 1: II 2G Ex ia IIB T4 Gb variant with conductive front foil for zone 0: II 1G Ex ia IIC T4 Ga (on request)
Miscellaneous	
Display	graphic LC display: visible area 55 x 46 mm; (resolution 128x64) figure height 5.5 mm (displaying of pressure value) measured value display: max. 7 digits, depending on pressure range temperature display, time, 100-segment-bargraph, potential input value background illumination: illumination period and intensity adjustable
Temperature display range	accuracy: ± 2 K resolution: 0.1 K display: -10 … 55 °C
Adjustable units pressure and temperature	[mbar], [bar], [psi], [mmHg], [cmHg], [inHg], [kPa], [MPa], [hPa], [mmH_2O], [mH_2O], [inH_2O], [kg/cm^2], [°C], [°F], [K]
Data logger	modes: single, cyclic, linear, off recording pressure values and sensor temperature measuring value interval adjustable (hrs, min, sec, 20 ms, daily at a defined time) measurement rate adjustable (1/s, 2/s or 50/s only with 20 ms measured value interval) max. 600798 values
Current consumption	without background illumination: approx. 1.3 mA with background illumination: approx. 16 mA (depending on adjusted intensity) standby mode: approx. 1.2 µA
Supply	3x 1.5 V: Duracell Plus battery, DUR087033, AA (LR6)
Ingress protection	IP 67
Mounting position [2]	any
Weight	approx. 680 g
A / D-converter resolution	16 bit (module)
Battery life	standard use: > 2.000 h standby mode: at least 5 years (with measurement rate 1/s and 2/s)
Operational life	100 million load cycles
CE-conformity	EMC directive: 2014/30/EU pressure equipment directive: 2014/68/EU (Module A) [3] electromagnetic compatibility: according to EN 6132

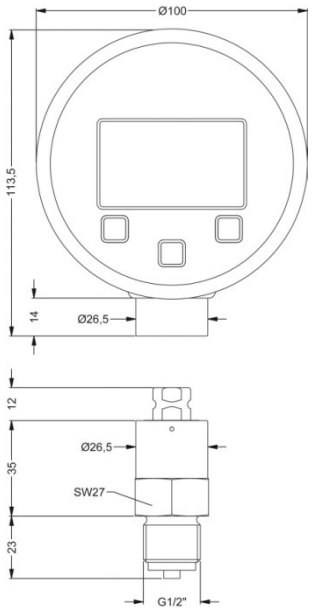
[2] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges P_N ≤ 1 bar.
[3] This directive is only valid for devices with maximum permissible overpressure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

Dimensions (in mm)

standard

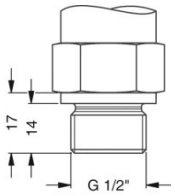


G1/2" EN 837

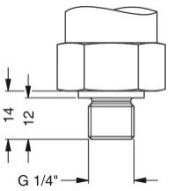


G1/2" EN 837
(pressure transmitter and display separated)

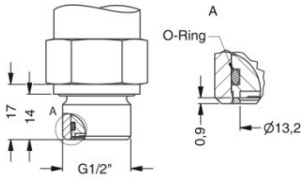
option



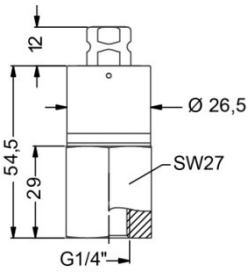
G1/2" DIN 3852



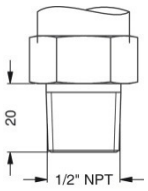
G1/4" DIN 3852



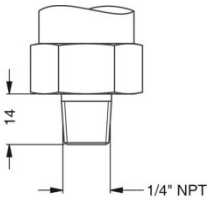
G1/2" DIN 3852
with flush sensor [4]



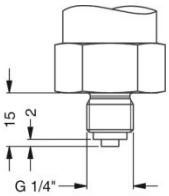
G1/4" EN 837
internal thread, welded [4, 5]



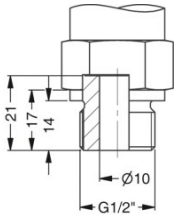
1/2" NPT



1/4" NPT



G 1/4" EN 837



G1/2" DIN 3852 open pressure port [4]

⇨ metrical threads and other variations on request

[4] only possible for nominal pressure ranges $P_N \leq 40$ bar
[5] different connection versions with optional adapters possible (see accessories)

Further pressure sensor modules can be combined to the advertisement unity DM01-A21 and DM01-A2E. an overview of available pressure sensor modules and characteristics you will find in the following matrix:

Pressure sensor module

Name	Pressure range	Filling fluid	diaphragm	accuracy	Special feature	further information
M0	0...0.1 bar up to 0...400 bar	silicone oil	stainless steel 1.4435	0.05% FSO	very high precision	see data sheet
M4	0...6 bar up to 0...600 bar	none; welded version	stainless steel 1.4542	0.25% FSO	i.a. for oxygen; oil and grease free	on request
M7	0...0.1 bar up to 0...10 bar	none	ceramic Al_2O_3 96%	0.15% FSO	high overpressure	on request

Accessories

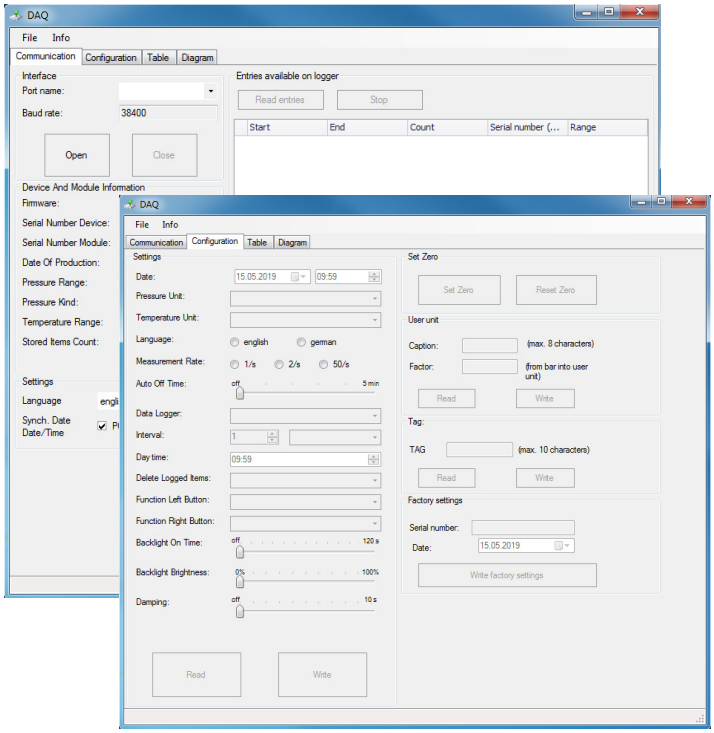
Accessories are not in scope of supply and have to be ordered separately!

Software DAQ (Communication, Configuration, Measurement display, Protocol creation)

Optionally software DAQ and an interface cable can be ordered. The software is also available for download on our homepage.

Software:

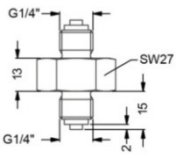
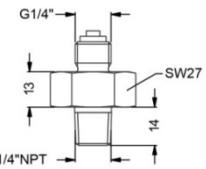
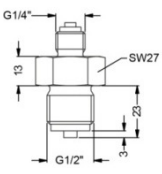
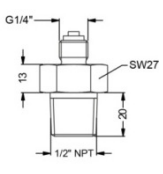
- display of device information
  (serial number, pressure and temperature range, …)
- configuration area for all parameters
- download area for recorded data:
  - date
  - pressure measurement
  - temperature measurement
- protected data acquisition
- measured value representation in tabular or graphic form
- free scaling of the diagram
- creation of measurement / test report as a PDF file
- data export



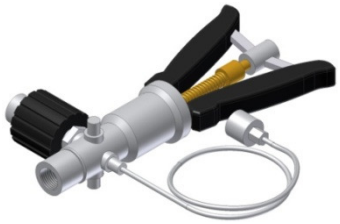
Interface cable USB (type A) to mini connector (3.5 mm)
with integrated converter
l: 1.7 m

Ordering number: ZUSBCD01

Pressure sensor module DM01, pressure port G 1/4" EN 837 internal thread, welded

G 1/4" EN 837  Ordering number: Z5010203	Adapter for pressure sensor module with pressure port G 1/4" EN 837 internal thread, welded external thread: G 1/4" EN 837 external thread: G 1/4" EN 837	1/4" NPT  Ordering number: Z5010204	Adapter for pressure sensor module with pressure port G 1/4" EN 837 internal thread, welded external thread: G 1/4" EN 837 external thread: 1/4" NPT
G 1/2" EN 837  Ordering number: Z5010202	Adapter for pressure sensor module with pressure port G 1/4" EN 837 internal thread, welded external thread: G 1/4" EN 837 external thread: G 1/2" EN 837	1/2" NPT  Ordering number: Z5010205	Adapter for pressure sensor module with pressure port G 1/4" EN 837 internal thread, welded external thread: G 1/4" EN 837 external thread: 1/2" NPT

** others on request*

Hard-shell service case without accessories Service_Case_DM01		Hard shell case. Dimension in mm (L x W x H): 432 X 363 X 138
Protective cap Ordering number: Z1002648		Rubber protection
Additional batteries (only in combination with service case)		for IS-version use only • 3 x 1.5 V / AA Duracell Power Plus
Seal set (only in combination with service case)		Flat seal copper for mechanical connections according to EN 837
PTFE seal tape Nr. 498.505 (only in combination with service case)		Seal tape for mechanical connections material: PTFE (Teflon) Temperature range: -200 ... 280 °C
Wrench (only in combination with service case)		Wrench SW 27
Calibration test pump KHP 35 Ordering number: 1002637		The KHP 35 calibration test pump is used to generate pressure and vacuum for checking, adjusting and calibrating mechanical and electronic pressure measuring instruments by comparative measurements. These pressure tests may be carried out in laboratories, workshop or on site at the measuring point. pressure: 0 ... 35 bar vacuum: 0 ... -0.95 bar weight: ca. 510 g dimension: ca. 220 x 105 x 63 mm
Adapter for calibration test pump		
Test unit connection: Adapter to connect the test unit to the calibration test pump.		Adapter to connect the test unit to the calibration test pump. external thread: G 1/4" EN 837 to: internal thread: G 1/4" DIN 3852 (No. 5008909) or G 1/2" EN o. DIN (No. 5007896) or 1/4" NPT (No. 5007897) or 1/2" NPT (No. 5007898) others on request
Reference unit connection: Adapter to connect the digital gauge to the calibration test pump		Adapter to connect the pressure sensor module DM01 to the calibration test pump. external thread: G 1/2" EN 837 to: internal thread: G 1/4" DIN 3852 (No. 5012498) or G 1/2" DIN 3852 (No. 5012519) or 1/4" NPT (No. 5012499) or 1/2" NPT (No. 5012500) others on request

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Tel.: +49 (0) 92 35 / 98 11- 0
Fax: +49 (0) 92 35 / 98 11- 11
www.bdsensors.de
info@bdsensors.de
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Ordering code DM 01

1. Position: Digital Display for Precision Digital Pressure Gauge DM 01

DM 01- □□□

Digital Pressure Gauge DM 01					
with communication interface	A	2	1		
IS (zone 1) with communication interface	A	2	E		
IS (zone 0) with communication interface	A	2	G		consult

2. Position: Transmitter for Precision Digital Pressure Gauge DM 01

DM 01 □□□-□□□□-□-□□-□□□-□-□□□

Pressure																			
gauge		M	0	K															
absolute	[1]	M	0	L															
Input	**[bar]**																		
0.10	[1]				1	0	0	0											
0.16	[1]				1	6	0	0											
0.25	[1]				2	5	0	0											
0.40					4	0	0	0											
0.60					6	0	0	0											
1.0					1	0	0	1											
1.6					1	6	0	1											
2.5					2	5	0	1											
4.0					4	0	0	1											
6.0					6	0	0	1											
10					1	0	0	2											
16					1	6	0	2											
25					2	5	0	2											
40					4	0	0	2											
60					6	0	0	2											
100					1	0	0	3											
160					1	6	0	3											
250					2	5	0	3											
400					4	0	0	3											
-1 … 0					X	1	0	2											
customer					9	9	9	9											consult
Version																			
standard version (without explosion protection)									0										
IS-version									E										
Accuracy	**[BFSL]**																		
standard for $P_N \geq 0.4$ bar	0.05 % FSO									B	1								
standard for $P_N < 0.4$ bar	0.125 % FSO									B	2								
customer										9	9								consult
Mechanical connection																			
G1/2" DIN 3852												1	0	0					
G1/2" EN 837												2	0	0					
G1/4" DIN 3852												3	0	0					
G1/4" EN 837												4	0	0					
G1/2" DIN 3852 with flush sensor	[2]											F	0	0					consult
G1/2" DIN 3852 open pressure port	[2]											H	0	0					
1/2" NPT												N	0	0					
1/4" NPT												N	4	0					
G1/4" EN837 internal thread, welded	[2, 3]											J	0	3					
customer												9	9	9					consult
Seals																			
FKM															1				
customer															9				consult
Special version																			
standard																0	0	0	
customer																9	9	9	consult

[1] absolute pressure possible from 0.4 bar
[2] only possible for $P_N \leq 40$ bar
[3] different connection versions with optional adapters possible (see accessories)

ordering example:
device DM 01:
position 1: DM01-A21
position 2: M0K-1001-B1-200-1-000
only display: position 1: DM01-A21
only transmitter: position 2: M0K-1001-B1-200-1-000

BD SENSORS GmbH
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info@bdsensors.de

Accessories DM 01

Accessories	
USB converter (incl. software DAQ on USB stick)	ZUSBCD01
service case (without accessories)	Service_Case_DM01
Protective cap	Z1002648
additional batteries (3 x 1.5 V / AA Duracell Power Plus) [4]	1002798
Seal set [4]	5008886
PTFE seal tape [4]	1002724
wrench [4]	1002722
calibration test pump (KHP)	1002637
Adapter for DM 01	
G1/4“ EN 837 male - G1/4" EN 837 male	Z5010203
G1/4“ EN 837 male - G1/2" EN 837 male	Z5010202
G1/4“ EN 837 male - 1/4" NPT male	Z5010204
G1/4“ EN 837 male - 1/2" NPT male	Z5010205
Adapter for KHP - test unit connection	
G1/4" EN 837 m - G1/4" DIN3852 fm	5008909
G1/4" EN 837 m - G1/2" EN 837/DIN3852 fm	5007896
G1/4" EN 837 m - 1/4" NPT fm	5007897
G1/4" EN 837 m - 1/2" NPT fm	5007898
Adapter for KHP - reference unit connection	
G1/2" EN 837 m - G1/4" DIN3852 fm	5012498
G1/2" EN 837 m - G1/2" DIN3852 fm	5012519
G1/2" EN 837 m - 1/4" NPT fm	5012499
G1/2" EN 837 m - 1/2" NPT fm	5012500

[4] only in combination with service case

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