



DL 01

Battery Powered Precision Digital Gauge for Leak Testing

Stainless Steel Sensor

class 0.1

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 various accessories

Functions

- ▶ data logger interval
1 s ... 99 days or fixed time
- ▶ default values for time / test duration
- ▶ zero point calibration
- ▶ backlight and much more

The digital pressure gauge DL 01 is a precision device fulfilling highest demands. It was conceived especially for leak testing or pipeline monitoring.

In the leakage mode the device shows the pressure decrease during an adjustable time. After finishing of measurement, the result is shown in the display.

Outstanding measuring qualities, an intuitive operation, as well as an integrated data logger characterize the DL 01. In addition, the graphic display provides the handling and the clear presentation of the measuring procedure.

The gathered data and the relevant information (TAG or serial number, etc.) are recorded and can be read out and processed over the integrated interface via USB and PC software.

Preferred areas of use are

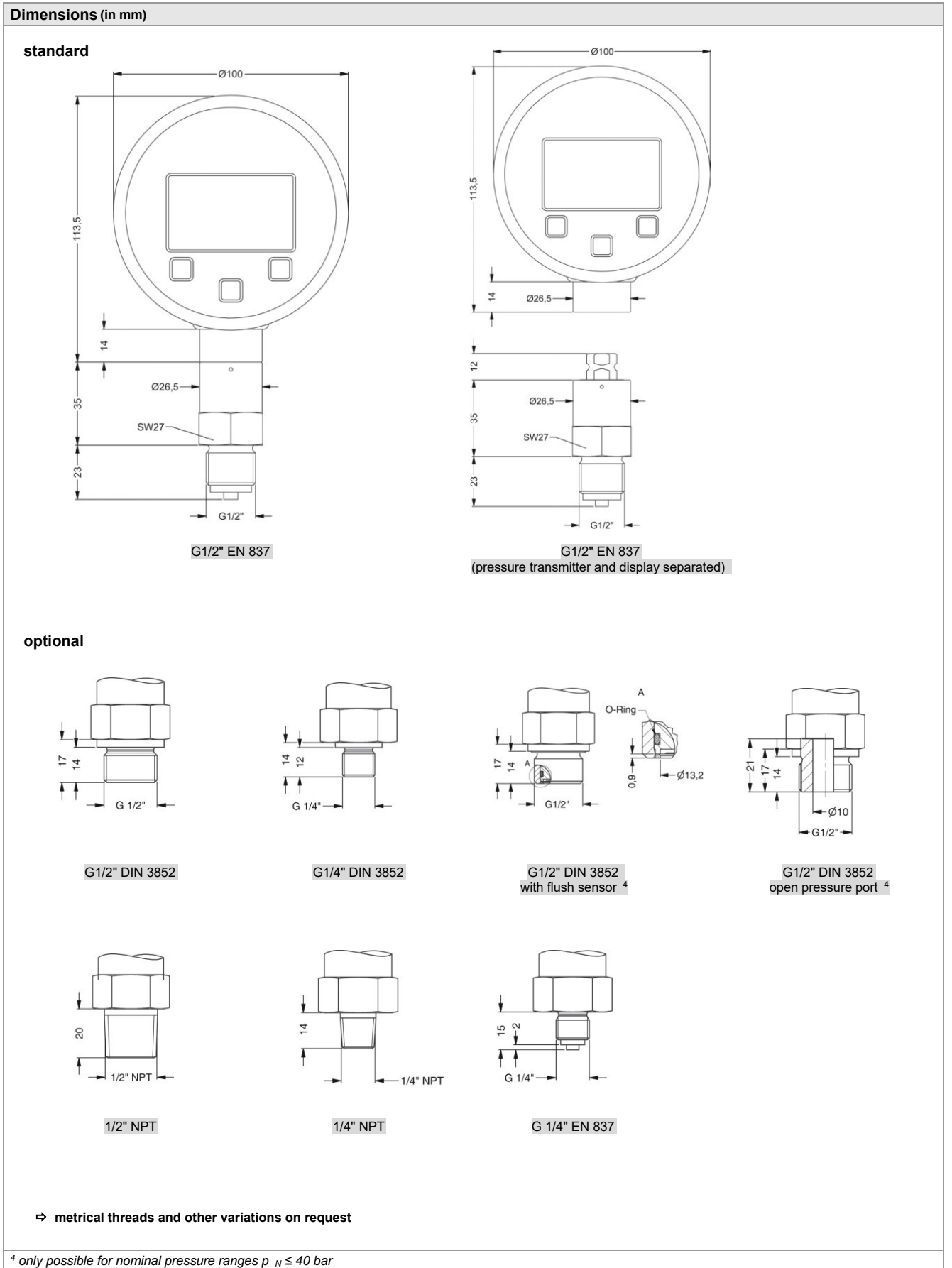


Plant and machine engineering

- Pipeline monitoring
- Leak testing



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 absolute [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 \geq [bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50
Nominal pressure gauge / absolute [bar]	[bar]	10	16	25	40	60	100	160	250	400	
Overpressure [bar]		35	80	80	105	210	600	600	1000	1000	
Burst pressure \geq [bar]		50	120	120	210	420	1000	1000	1250	1250	
Vacuum resistance		$p_N \geq 1$ bar: unlimited vacuum resistance; $p_N < 1$ bar: on request									
Performance											
Accuracy ¹		nominal pressure $p_N \geq 0.4$ bar: $\leq \pm 0.1$ % FSO nominal pressure $p_N < 0.4$ bar: $\leq \pm 0.25$ % FSO									
Long term stability		$\leq \pm 0.1$ % FSO / year at reference conditions									
Measuring rate / Display		1 or 2 measurements per second									
¹ accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability) – at room temperature 20°C											
Thermal effects (offset and span)											
Temperature error		for nominal pressure ranges $p_N \leq 160$ bar: tolerance band $\leq \pm 0.2$ % FSO for nominal pressure ranges $p_N > 160$ bar: tolerance band $\leq \pm 0.75$ % FSO									
compensated range		0 ... 50 °C									
Permissible temperatures											
Permissible temperatures		medium: -10 ... 55 °C storage: -20 ... 70 °C environment: display module: -10 ... 55 °C / transmitter: -20 ... 70 °C (for 1G up 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)									
Diaphragm		stainless steel 1.4435 (316L)									
Media wetted parts		pressure port, seal, diaphragm									
Explosion protection											
AX16-DL01		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									
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], [mmHg], [mH ₂ O], [inH ₂ O], [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 μ A									
Supply		3x 1.5 V: Duracell Plus battery, DUR087033, AA (LR6)									
Ingress protection		IP 66									
Installation 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 61326									
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 $p_N \leq 1$ bar.											
³ This directive is only valid for devices with maximum permissible overpressure > 200 bar.											



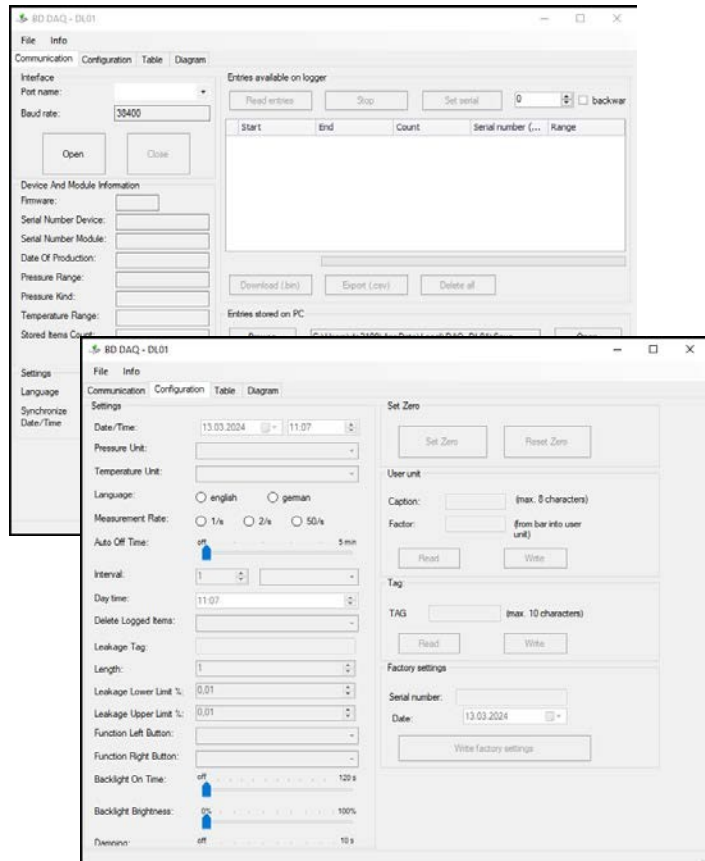
Accessories are not in scope of supply and have to be ordered separately.

BD|DAQ Software

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






Software (Communication, Configuration):

- display of device information (serial number, pressure and temperature range, ...)
- configuration area for all parameters
- download area for recorded data:
 - date
 - pressure value
 - temperature value
- 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 with integrated converter USB (type A) to mini connector (3.5 mm)
length: 1.7 m

Ordering number: ZUSBCD02

<p>Hard-shell service case without accessories</p> <p>Service_Case_DM01</p>		<p>Hard shell case.</p> <p>dimension in mm (L x W x H): 432 X 363 X 138</p>
<p>Protective cap</p> <p>Ordering number: Z1002648</p>		<p>Rubber protection</p>
<p>Additional batteries</p> <p>(only in combination with service case)</p>		<p>for IS-version use only 3 x 1.5 V / AA Duracell Power Plus</p>
<p>Seal set</p> <p>(only in combination with service case)</p>		<p>Flat seal copper for mechanical connections according to EN 837</p>
<p>PTFE seal tape Nr. 498.505</p> <p>(only in combination with service case)</p>		<p>Seal tape for mechanical connections</p> <p>material: PTFE (Teflon) temperature range: -200 ... 280 °C</p>
<p>Wrench</p> <p>(only in combination with service case)</p>		<p>Wrench SW 27</p>
<p>Calibration test pump KHP 4002 including pressure test tube</p> <p>Reference connection: G1/2" EN 837</p> <p>Test unit connection: G1/4" EN 837</p> <p>Ordering number: 1002637</p>		<p>The calibration test pump is used to generate pressure and vacuum for checking, adjusting and calibrating mechanical and electronic pressure measuring instruments by comparative measurements.</p> <p>These pressure tests may be carried out in laboratories, workshop or on site at the measuring point.</p> <p>pressure: 0 ... 40 bar vacuum: 0 ... -0.95 bar weight: approx. 510 g dimension: approx. 220 x 105 x 63 mm</p>

Ordering code DL 01

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

DL 01-

Digital pressure gauge DL 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 DL 01

DL 01 - - - -

Pressure			
gauge	M 0 P		
absolute ¹	M 0 Q		
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			
standard for p _N ≥ 0.4 bar	0.1 % FSO	1	
standard for p _N < 0.4 bar	0.25 % FSO	2	
customer		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		
customer	9 9 9		consult
Seal			
FKM	1		
customer	9		consult
Special version			
standard	0 0 0		
customer	9 9 9		consult
Accessories			
USB converter (incl. software BD DAQ)	ZUSBCD02		
service case (without accessories)	Service_Case_DM01		
Protective cap	Z1002648		
Additional batteries (3 x 1,5 V / AA Duracell Power Plus) ³	1002798		
Seal set ³	5008886		
PTFE seal tape ³	1002724		
wrench ³	1002722		
Calibration test pump (KHP 4002)	1002637		

¹ absolute pressure possible from 0.4 bar

² only possible for p_N ≤ 40 bar

³ only in combination with service case

ordering example:

device DL 01:

position 1: DL01-A21

position 2: MOP-1001-1-200-1-000

only display: position 1: DL01-A21

only transmitter: position 2: MOP-1001-1-200-1-000