



# DL 01

## Battery Powered Precision Digital Gauge for Leak Testing

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 acc. 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

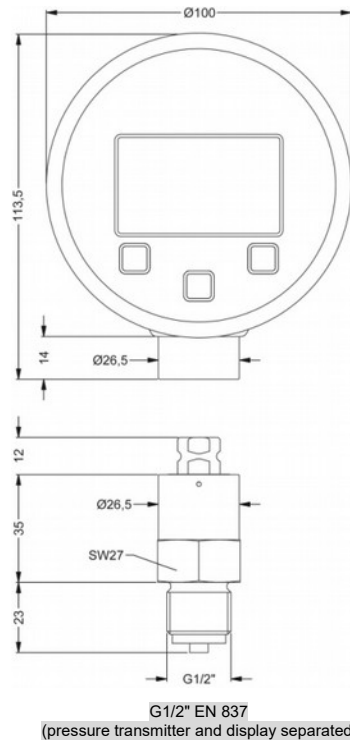
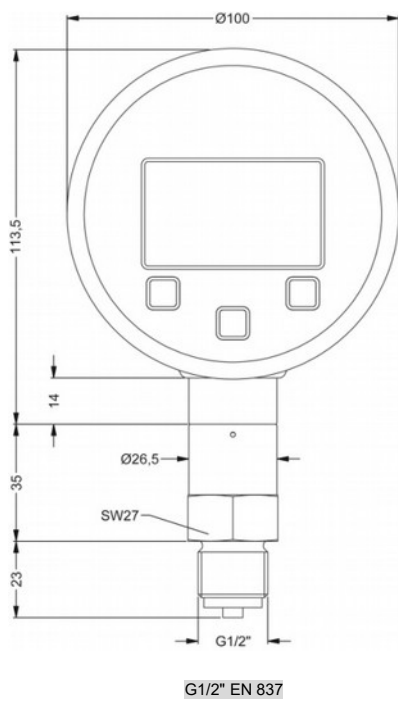
- 
 Plant and machine engineering
  - Pipeline monitoring
  - Leak testing



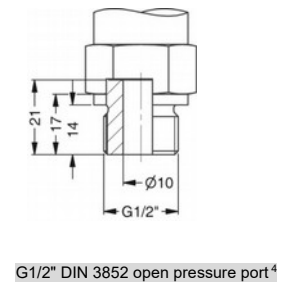
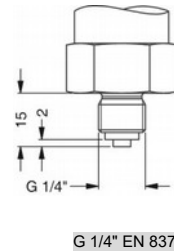
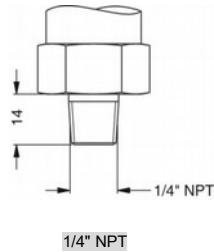
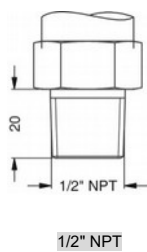
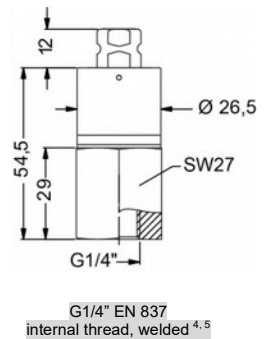
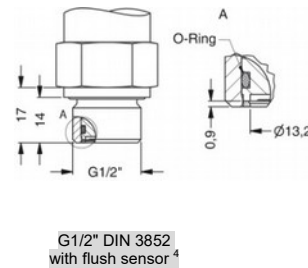
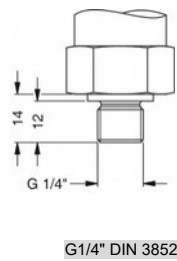
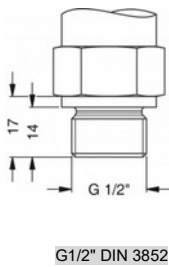
Input pressure												
Nominal pressure gauge [bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6	
Nominal pressure abs. [bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6	
Overpressure [bar]	5	1	1	1	2	5	5	10	10	17.5	35	
Burst pressure $\geq$ [bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	
Nominal pressure gauge / abs. [bar]	10	16	25	40	60	100	160	250	400			
Overpressure [bar]	35	80	80	105	210	600	600	1000	1000			
Burst pressure $\geq$ [bar]	50	120	120	210	420	1000	1000	1250	1250			
Vacuum resistance	P <sub>N</sub> $\geq$ 1 bar: unlimited vacuum resistance; P <sub>N</sub> < 1 bar: on request											
Performance												
Accuracy <sup>1</sup>	standard for P <sub>N</sub> $\geq$ 0.4 bar: $\leq \pm 0.05\%$ and for P <sub>N</sub> < 0.4 bar: $\leq \pm 0.125\%$											
Long term stability	$\leq \pm 0.1\%$ FSO / year at reference conditions											
Measuring rate / Display	1 or 2 measurements per second											
<sup>1</sup> 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 <sub>N</sub> $\leq$ 160 bar: tolerance band $\leq \pm 0.2\%$ FSO for nominal pressure ranges P <sub>N</sub> > 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 (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)											
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: $\pm 2$ K resolution: 0,1 K display: -10 ... 55 °C											
adjustable units pressure and temperature	[mbar], [bar], [psi], [mmHg], [cmHg], [inHg], [kPa], [MPa], [hPa], [mmH <sub>2</sub> O], [mH <sub>2</sub> O], [inH <sub>2</sub> O], [kg/cm <sup>2</sup> ], [°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 $\mu$ A											
Supply	3x 1.5 V: Duracell Plus battery, DUR087033, AA (LR6)											
Ingress protection	IP 67											
Mounting position <sup>2</sup>	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) <sup>3</sup> electromagnetic compatibility: according to EN 61326											
<sup>2</sup> 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 <sub>N</sub> $\leq$ 1 bar.												
<sup>3</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar.												

## Dimensions (in mm)

### standard



### option



⇒ metrical threads and other variations on request

<sup>4</sup> only possible for nominal pressure ranges  $P_N \leq 40$  bar

<sup>5</sup> different connection versions with optional adapters possible (see accessories)

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

**Software BD|LOG lite version (Communication, Configuration)**

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

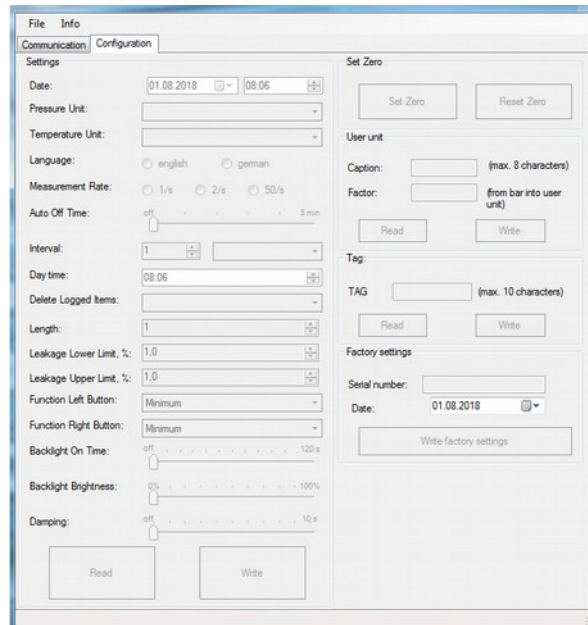
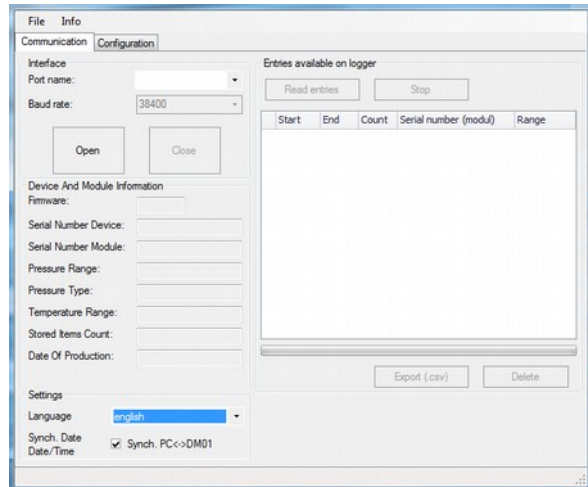
**Software (Communication, Configuration):**

- 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
- actual value



Interface cable with integrated USB converter  
l: 1.7 m

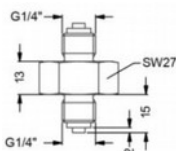
Ordering number: ZUSBCD02



⇒ **Software BD|LOG full version (Communication, Configuration, Table, Diagram) on request**

**Adapter for pressure port G 1/4" EN 837 internal thread, welded**

G 1/4" EN 837

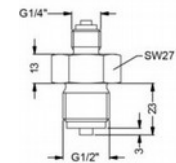


Adapter for pressure sensor module with pressure port G 1/4" EN 837 internal thread, welded

external thread: G 1/4" EN 837  
external thread: G 1/4" EN 837

Ordering number: Z5010203

G 1/2" EN 837



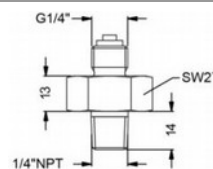
Adapter for pressure sensor module with pressure port G 1/4" EN 837 internal thread, welded

external thread: G 1/4" EN 837  
external thread: G 1/2" EN 837

Ordering number: Z5010202

\* others on request

1/4" NPT

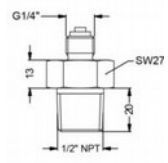


Adapter for pressure sensor module with pressure port G 1/4" EN 837 internal thread, welded

external thread: G 1/4" EN 837  
external thread: 1/4" NPT

Ordering number: Z5010204







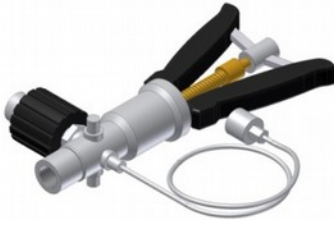


1/2" NPT



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

Ordering number: Z5010205

<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 (only in combination with service case)</p>		<p>for IS-version use only</p> <ul style="list-style-type: none"> <li>• 3 x 1.5 V / AA Duracell Power Plus</li> </ul>
<p>Seal set (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 (only in combination with service case)</p>		<p>Seal tape for mechanical connections material: PTFE (Teflon) Temperature range: -200 ... 280 °C</p>
<p>Wrench (only in combination with service case)</p>		<p>Wrench SW 27</p>
<p>Calibration test pump KHP 35</p> <p>Ordering number: 1002637</p>		<p>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.</p> <p>pressure: 0 ... 35 bar vacuum: 0 ... -0,95 bar weight: ca. 510 g dimension: ca. 220 x 105 x 63 mm</p>
<p><b>Adapter for calibration test pump</b></p>		
<p>Test unit connection:  Adapter to connect the test unit to the calibration test pump.</p>		<p>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</p>
<p>Reference unit connection:  Adapter to connect the digital gauge to the calibration test pump</p>		<p>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</p>

## Ordering code DL01

1. position: digital display for Precision Digital Pressure Gauge DL01

DL01-

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Digital pressure gauge DL01			
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 DL01

DL01

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<b>Pressure</b>													
	gauge absolute <sup>1</sup>	M 0 P											
		M 0 Q											
<b>Input</b>		[bar]											
			1	0	0								
	0.10			1	6	0							
	0.16				2	5	0						
	0.25				4	0	0						
	0.40				6	0	0						
	0.60				1	0	1						
	1.0				1	6	0	1					
	1.6				2	5	0	1					
	2.5				4	0	0	1					
	4.0				6	0	0	1					
	6.0				1	0	0	2					
	10				1	6	0	2					
	16				2	5	0	2					
	25				4	0	0	2					
	40				6	0	0	2					
	60				1	0	0	3					
	100				1	6	0	3					
	160				2	5	0	3					
	250				4	0	0	3					
	400				X	1	0	2					
	-1 ... 0	customer			9	9	9	9					consult
<b>Version</b>													
	non IS							0					
	IS							E					
<b>Accuracy</b>		[BFSL]											
	standard for P <sub>N</sub> ≥ 0.4 bar	0.05%						B 1					
	standard for P <sub>N</sub> < 0.4 bar	0.125%						B 2					
	customer							9 9					consult
<b>Mechanical connection</b>													
	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 <sup>2</sup>							F 0 0					consult
	G1/2" DIN 3852 open pressure port <sup>2</sup>							H 0 0					
	1/2" NPT							N 0 0					
	1/4" NPT							N 4 0					
	G 1/4" EN837 internal thread, welded <sup>2,3</sup>							J 0 3					
	customer							9 9 9					consult
<b>Seals</b>													
	FKM							1					
	customer							9					consult
<b>Special version</b>													
	standard										0 0 0		
	customer										9 9 9		consult

<sup>1</sup> absolute pressure possible from 0.4 bar

<sup>2</sup> only possible for P<sub>N</sub> ≤ 40 bar

<sup>3</sup> different connection versions with optional adapters possible (see accessories)

**ordering example:**

device DL01:  
 position 1: DL 01-A21  
 position 2: MOP-1001-B1-200-1-000  
 only display: position 1: DL01-A21  
 only transmitter: position 2: MOP-1001-B1-200-1-000

## Accessories DL01

Accessories	
USB converter (incl. software BD LOG)	ZUSBCD02
service case (without accessories)	Service_Case_DM01
Protective cap	Z1002648
Additional batteries (3 x 1,5 V / AA Duracell Power Plus) <sup>4</sup>	1002798
Seal set <sup>4</sup>	5008886
PTFE seal tape <sup>4</sup>	1002724
wrench <sup>4</sup>	1002722
Calibration test pump (KHP)	1002637
Adapter for DM01	
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

<sup>4</sup> only in combination with service case