

# BDT33 – Safety process pressure gauge 100mm with LoRa signal

## Product description

Badotherm pressure gauge model BDT33 is the solid front, safety pattern gauge according the highest class of the EN 837-1 / 9.7.2 and ANSI B 40.1. The BDT33 stainless steel safety gauge has a solid front baffle wall and a full blow-out back. The pressure gauge is equipped with connection to be fitted with a TWTG NEON transmitter for communication through a LoRaWAN network. The NEON transmitter has a battery life up to 10 years.

## Design standard

EN837-1

## Dial sizes, ranges & accuracy

Possibilities in ranges and accuracies are led by the dial size. Accuracy class is based on dry gauges.

Dial size	Ranges	Accuracy
100mm	0...1 to 0...250 bar	1.0% (sensor accuracy 0.3%)

## Mounting variation

Not all gauges are suitable for some mounting variations. For the BDT33 series the mounting variations are below.

- **type A** (10) bottom connection, direct mounting

## Bracket for Neon Transmitter

The Neon transmitter is standard supplied with a bracket to mount the Neon Transmitter by means of straps or mounting plate. Optionally a bracket can be supplied to fix the Neon Transmitter on the back of the pressure gauge without losing the blow out back function.



## Process connection

Dial size	Standard thread	SW size
100mm	G ½ A or ½" NPT	17mm

-> See datasheet "thread information" for specific thread details

## Materials of construction

	BDT33
Case	AISI 316
Bezel	AISI 316
Connection <sup>1</sup>	AISI 316(L)
Sensing element <sup>1</sup>	TP316Ti
Measuring cel <sup>1</sup>	Ceramic
Measuring cel gasket <sup>1</sup>	FPM (spec)
Movement	Stainless steel
Pointer	Aluminium
Dial	Aluminium
Window gasket	NBR
Blow out	AISI 316 with NBR compensation
Fill plug	NBR (HNBR for filled gauges)
Sensor seal <sup>1</sup>	FKM
Connector	Stainless Steel
Mounting flanges	AISI 316
Window	Laminated safety glass

\*1 wetted materials

## Pressure limitations

The gauge are built to withstand harsh environments however the EN 837 limits the use of a pressure gauge according below table.

### Pressure gauge

Dial size	Steady	Fluctuating	Short time
100mm	0.75 x FSV	0.67 x FSV	FSV

FSV: full scale value

### Pressure sensor

Measuring range	Over pressure	Long term stability
<4 bar	3x FSV	± 0.25% FSV
>4...60 bar	2.5x FSV	
>60 bar	2 FSV	

## Temperature limitations

The gauges can withstand ambient and process temperature up to a certain limit. The limitations on temperature are:

	Ambient	Medium	Storage
Dry case	-40°C ...+70°C	-30°C...+150°C	-40°C...+70°C

The variation of indication caused by the effect of temperature shall not exceed:

Pressure gauge:  $\pm 0.4\%$  / 10K FSV

Pressure sensor:  $\pm 0.2\%$  / 10 K FSV

## Window

Standard BDT33 gauges have a laminated safety glass window.

## Pointer

Standard pointer is an adjustable slotted black painted aluminum pointer.

## Dial facing

The dial plate is made from aluminum and coated with UV resistant white coating. The black dial markings, scale, numbering, and interval is according the EN 837. Options like colored dial, customer logo, or colored segments are possible as well. Scale interval and numbering is following the EN837.

## Case filling

The gauges cannot be filled.

## Restrictor Screw

All gauges can be executed with a restrictor of 0.8 or 0.3 orifice in AISI316(L).

## Certification & Declaration

### Calibration

Gauges are full range calibrated as a factory standard. Optionally you can select a 5 points calibration certificate. For the BDT33 a calibration certificate of the pressure gauge as well as the pressure sensor is supplied.

### EN 10204 material certificate

A material 3.1 certificate on the wetted parts can be supplied (connection and bourdon tube)

## Limit stop

To prevent permanent damage after overpressure, or sudden vacuum on size 100mm the gauge is protected by an internal limit stop on the movement that is set just below the minimum scale value and just outside the 130% maximum scale value.

## Degree of protection

The BDT33 has a standard degree of protection of IP65. The values are determined according the IEC/EN 60529. Class IP66 and IP67 are available as option.

## Certifications

ATEX zone 0 / IECx Zone 0 / North America

Class 1 Div 1 / Class 1 Zone 0

(Ex II 1G Ex ia IIC T4 Ga IS Class I, Division 1, Group ABCD T4

Class I, Zone 0 AEX/Ex ia IIC T4 Ga)

IP65

## Wireless Protocols

LoRaWAN 868, 915, 923 MHz

Region specific frequencies and certification upon request.

## Lifetime

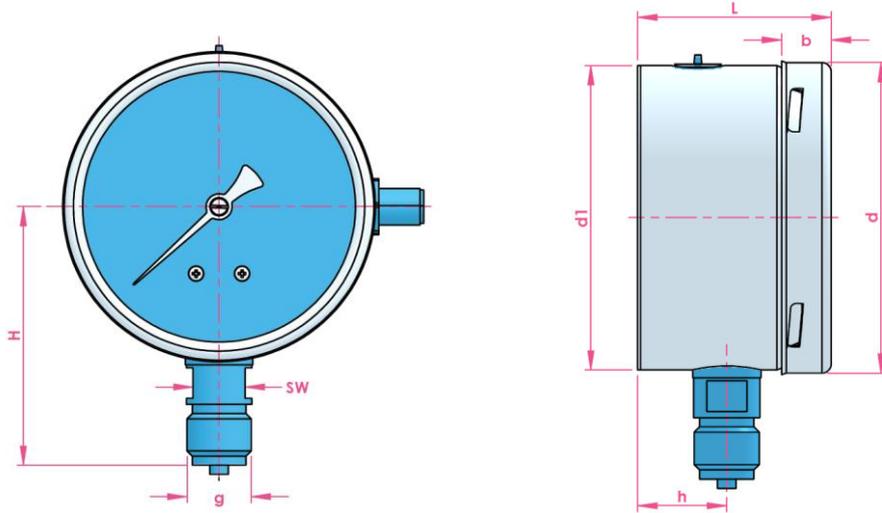
Battery life up to 10 years.

## Cable

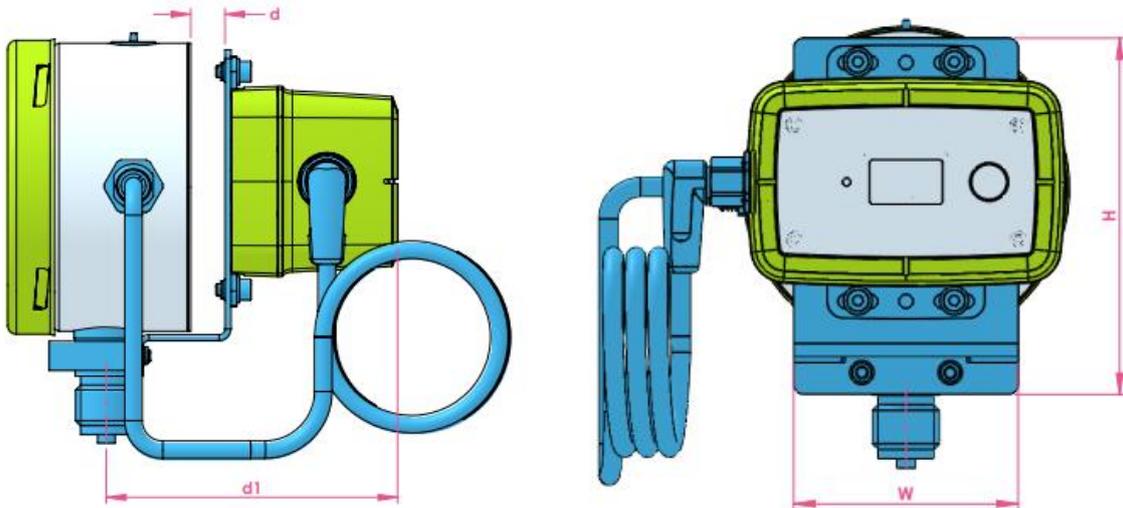
Default cable of 3 meters.

## Dimensions table

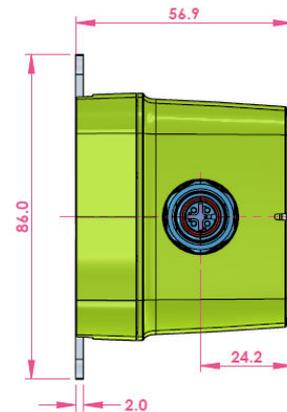
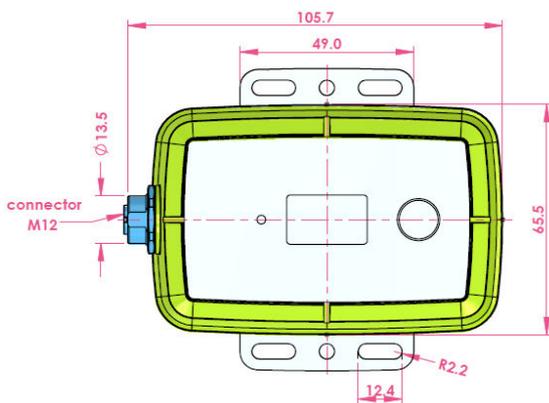
Type A (10)



Dial size	d	d1	b	L	h	g	SW	H	weight
100	101.0	99.0	16.0	62.5	28.8	G 1/2	17	85.0	0.5 kg



d	d1	H	W
11.7	99.4	112.0	70.0



## Product code 100mm

Code	
Example code:	<b>BDT33</b> 100 A G12M S363 S300 A 0 L B50 10
<b>TYPE</b>	
100 mm ◀	100
<b>MOUNTING</b>	
Bottom connection - direct mounting (10) ◀	A
<b>CONNECTION</b>	
G1/2 ◀	G12M
1/2" NPT	N12M
R 1/2	R12M
M20 x 1.5	M20M
<b>CONNECTION MATERIAL</b>	
AISI 316(L) ◀	S363
<b>CASE/BEZEL MATERIAL</b>	
AISI 316 ◀	S300
<b>POINTER</b>	
Adjustable slotted pointer ◀	A
Micro adjustable pointer	M
<b>LIQUID FILLING</b>	
Dry ◀	0
<b>WINDOW</b>	
Laminated glass (S1) ◀	L
<b>RANGE</b>	
See page table 1 and table 2	....
<b>ACCURACY</b>	
1.0 ◀	10

◀: is the sign for the standard pressure gauge

**Tabel 1: Pressure Range code**

bar		psi		MPa		kPa		kgf/cm2	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
B01	-1...0	P32	0...10	N50	0...1,6	D36	-100...60	K01	-1...0
B04	-0,6...0	P35	0...15	N54	0...2,5	D38	-100...150	K04	-0,6...0
B31	0...0,6	P37	0...30	N57	0...4	D40	-100...300	K31	0...0,6
B35	0...1	P40	0...60	N58	0...6	D42	-100...500	K35	0...1
B36	0...1,6	P43	0...100	N60	0...10	D45	-100...900	K36	0...1,6
B38	0...2,5	P46	0...160	N62	0...16	D50	-100...1500	K38	0...2,5
B40	0...4	P48	0...200	N65	0...25	D54	-100...2400	K40	0...4
B42	0...6	P51	0...300			L01	-100...0	K42	0...6
B45	0...10	P55	0...400			L04	-60...0	K45	0...10
B50	0...16	P56	0...500			L31	0...60	K50	0...16
B54	0...25	P57	0...600			L35	0...100	K54	0...25
B57	0...40	P58	0...800			L36	0...160	K57	0...40
B58	0...60	P59	0...1000			L38	0...250	K58	0...60
B60	0...100	P60	0...1500			L40	0...400	K60	0...100
B62	0...160	P61	0...2000			L42	0...600	K62	0...160
B65	0...250	P64	0...3000			L45	0...1000	K65	0...250

**Table 2: Secondary scale**

Dual scale option	code
PSI red	#PR
PSI black	#PB
PSI blue	#PBL
bar red	#BR
bar black	#BB
bar blue	#BBL

Add the code behind the pressure code  
(eg B45#PR for 0...10 bar//psi with red scale)

**Table 3: General option code**

Option (start options with X )	code
IP 66 class	_IP66
IP 67 Class	_IP67
Restrictor screw 0.8mm	_RS8
Restrictor screw 0.3mm	_RS3
3.1 material certificate	_IC31
Calibration certificate 5 points	_CC5

8<sup>th</sup> of September 2023

## Change log

Date	Change
8-9-2023	Range table changed in compound ranges
7-3-2024	Added Battery and cable information. Added extra dimensions of bracket option

Holland – Romania – India – Thailand – Dubai – USA

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