

Scope :

**USER MANUAL**  
**TNBCD Ex d Component Certified Enclosure**

**BARTEC**

Date:  
**01.09.2022**

Ver.:  
**3**

QA Code:  
**5**

Checked by:  
**E.T.**

Approved by:  
**S.Gr.**

Page:  
**1 of 8**

Document no. :  
**13406**

## **Explosion proof enclosures**

### **TNBCD ...**



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The TNBCD range of Ex d enclosures are rugged and designed for harsh environment like:

- Oil and gas industry
- Chemical industry
- Pharmaceutical
- Industry
- Agribusiness

They are designed for use in potentially explosive atmospheres and certified according to the requirements of the ATEX Directive and IECEx.

## Marking

**Ex db IIB Gb**

**Ex tb IIIC IP66/67/68 Db**

**Tamb: -50°C ≤ Ta ≤ +60°C**

**IP rating: IP66/67/68 – 0,4 bar, 2 hours according to EN/IEC 60529**

The enclosures listed in this manual are certified:

**II 2 G/D**

The certificate numbers are :

**Nemko 03ATEX264U, Issue No. : 3**

**IECEX NEM 10.0003U, Issue No. : 3**

They are made in accordance with the following standards:

Zones due to gases, vapors and fumes

EN 60079-0 : 2018

IEC 60079-0 : 2017



EN 60079-1 : 2014/AC :2018-09



IEC 60079-1 : 2014

Zones for dusts

EN 60079-31 : 2014

IEC 60079-31: 2013

Type: TNBCD	<b>BARTEC</b> Bartec Technor as Vestre Svanholmen 24 NO-4313 SANDNES, NORWAY		
0470		II2G Ex db IIB Gb	NEMKO 03ATEX 264U
Ex db IIB Gb		IECEX NEM 10.0003U	
U =	V	T.amb	IP
I =	A	S.No./Year	
EMPTY ENCLOSURE WITH Ex COMPONENT CERTIFICATE			
SEE INSTALLATION INSTRUCTION DOCUMENT			

Type: TNBCD	<b>BARTEC</b> Bartec Technor as Vestre Svanholmen 24 NO-4313 SANDNES, NORWAY		
0470		II2D Ex tb IIIC IP66 Db	NEMKO 03ATEX 264U
Ex tb IIIC IP66 Db		IECEX NEM 10.0003U	
U =	V	T.amb	IP
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EMPTY ENCLOSURE WITH Ex COMPONENT CERTIFICATE			
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## Description

Our TNBCD range of explosion proof enclosures is available in many sizes. They are made of welded or casted and machined acid resistant stainless steel 316L. Each enclosure is expected to receive electrical components inside, making service and maintenance easy. They can also be customized to meet each individual specific need. If necessary, multiple enclosures can be assembled on a frame with or without combined Ex e junction boxes.

**The enclosures are delivered with Ex Component certificate (U-certificate) to be used as basis for further certification of an Ex Equipment or Protective System.**

Optional solutions for the enclosures:

- one or more certified Ex e connection boxes on any side of the enclosure
- internal hinges
- glass window(s) in lid, wall(s) and / or bottom of enclosure
- threaded hole(s) in lid, wall(s) and / or bottom side of enclosure
- maximum number of entries is 18, maximum thread size is M120, description given on drawing BCD-40-3. The table for cable entries in the section below also describes what is allowed

Type Code:

TNBCD XX YY ZZ

XX: Dimension of box, width in cm, 19 to 57

YY: Dimension of box, height in cm, 19 to 57

ZZ: Dimension of box, depth in cm, max 38

Enclosure type/Maximum window aperture diameter / rectangle:

- 2625xx 65/100 mm      □ 100x100x15 mm (in lid)
- 3233xx 65/100 mm      □ 170x170x15 mm (in lid)
- 4535xx 65/100/154 mm      □ 290x200x21 mm (in lid)
- 5738xx 65/100/154 mm      □ 364x230x21 mm (in lid)

Material: CD = Stainless Steel AISI 316L

## Meaning of symbols



This symbol means a hazard and precaution to be taken

## Safety instructions



The device must be completed, installed, used and maintained in accordance with the following standards:

- IEC/EN 60079-0 (Explosive atmospheres - Part 0: Equipment - General requirements)
- IEC/EN 60079-1 (Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d")
- IEC/EN 60079-14 (Explosive atmospheres - Part 14: Electrical installations design, selection and erection)

- IEC/EN 60079-17 (Explosive atmospheres - Part 17: Electrical installations inspection and maintenance)
- IEC/EN 60079-31 (Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t")
- Decrees, orders, laws, directives, circulars, applications, standards, state of art and other documentation relating to its installation site

**⚠ It is forbidden to change anything without the prior written consent of Bartec Technor unless the enclosure undergoes a full Equipment certification at a Notified Body/Certifying Body.**

**⚠ We cannot accept any responsibility for failure to observe these regulations:**

- Make sure of the compatibility between the information on the nameplate, the explosive atmosphere present, the area of use and ambient temperatures on surfaces
- Any damage on the device can cause the explosion-proof protection to become ineffective
- The installation of the enclosure must be done in the state of the art in the technical domains and only by qualified, competent and empowered personnel
- A defective or abnormal use as well as the noncompliance with the instructions of the present document exclude any clause of guarantee and do not engage our responsibility
- The use of the device in case of excessive deposits of dusts superior at 50mm according to EN / IEC 60079-31 is not authorized
- Liability for manufacturer traceability is ensured only at the first known delivery destination (serial number specified on the certification label)
- It is also required to observe the regulations of the country of use
- The doors of the TNBCD enclosures are relatively heavy, to avoid sagging of the doors, potentially making the door not align with the flange of the enclosure, the doors shall be closed and secured during any moving and shifting of the enclosures. It is also strongly advisable to close and secure the doors when the daily working shift is over
- The flame paths of the doors and of the flanges of the enclosures must be well protected whilst work is performed and ongoing inside the enclosures

**⚠ Transport, storage**

- Check if the product has been damaged during transport. If any damage is observed, do the statutory reserves to the carrier
- Do not put damaged products into service

Packaging	Location storage	Duration storage
Open	In a covered location, clean (without contact with external substances) and closed with temperature a constant humidity (-40°C < T < +70°C). Shielded from important temperature variations	2 years and more with regular inspection (cleanliness and mechanical damage)

### **Putting into service**

- Verify that the information on the label of the product is in accordance with the permissible conditions for the Ex area of the site of use (Group II: Surface Industries - Category 2: high level of protection for ATEX G = for Gas / D = for Dust, IECEx EPL - G = for Gas / D = for Dusts - IPxx: IP rating (waterproofness for solids and liquids))
- Check if there is a specific position of mounting
- Do not open the lid before the enclosure is securely fastened. Also check if the enclosure has been equipped with hinges
- The wiring of the cable conductors must be made with a particular care
- Not to exceed the authorized maximal temperature appropriate cables must be selected and take particular care installing them
- Follow the instructions contained in the specifications

### **Before starting**

- Make sure the unit has been correctly settled and not damaged
- The device may include any foreign body and no part is damaged
- The cable gland must be tightened (see description of the gland torque)

### **Maintenance**

The maintenance and repairs work on devices must be made only by authorized and trained persons for that purpose.

### **Before any work the devices must be switched off. In addition:**

- Prevent and avoid any formation of layers of dusts: make a periodic cleaning with a wet cloth
- Do not take apart the command and control units (push buttons, pilot light, etc.)

### **It is advisable that the following checks must be made at least once a year:**

- The external equipment and surfaces must not be damaged
- The cable entries and blanking plugs must be securely fastened
- Prior to closing, check the cleanliness of the flame path (machined part of the cover in contact the machined part of the box). Grease these 2 parts with a grease resistant to oxidation (acid free white vaseline)
- Screw the cover on the box using the original stainless steel bolts DIN 912 / ISO 4762 M12x25 A4-80. Ensure that the bolts are clean and are greased (grease like Gleitmo 165). Ensure that all the bolts are fitted. Torque the bolts to 65 Nm, max 75 Nm. After torquing the bolts, check with a shim of 15/100 mm all around the flame path that the shim cannot penetrate the flame path. Its non-penetration on full perimeter is the insurance of the conformity of the product with the standards

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Page:  
**6 of 8**

Document no. :  
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**Technical features**

**Measurement table for Ex d IIB Explosion proof enclosures**

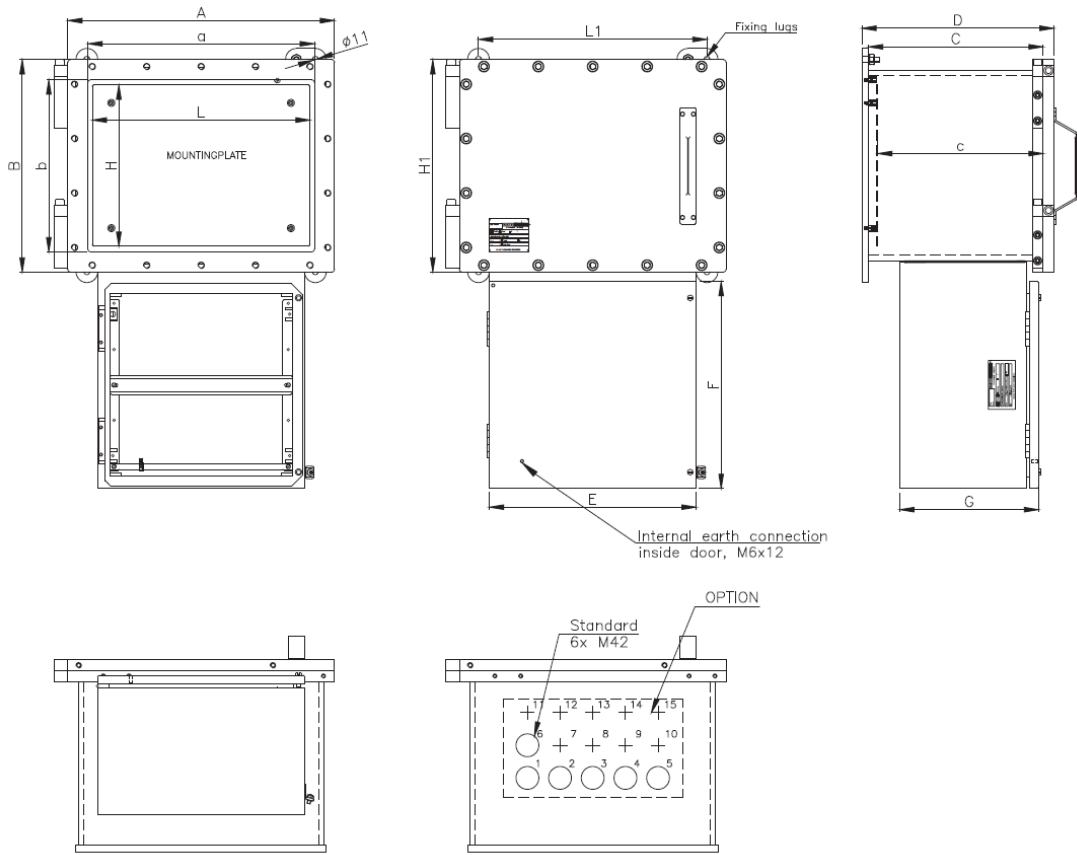
External dimensions						Internal dimensions				Fixing dimensions		Mounting plate	
TNBCD	Wide A	Height B	Depth C	Total Depth D	Window	Wide a	Height b	Depth c	Kg	L1	H1	L	H
262531	300	290	280	315	65/100	226	216	265	16	230	290	210	196
323321	360	370	180	215	65/100	286	296	165	37	360	300	266	280
453535	490	390	320	355	65/100/154	416	316	305	60	420	390	400	296
573835	615	420	320	355	65/100/154	541	346	305	125	545	420	525	326

Measures in mm. Other sizes upon request.

**Measurement table for Ex e connection boxes**

TNCC			
	E	F	G
202025	200	200	255
252015	250	200	155
383825	380	380	255
453825	450	380	255

Measures in mm.



**! Number of cable entries:**

- Any type of cable or conduit entry certified Ex d can be used and installed according to EN / IEC 60079-14
- Different types of threads can be used but minimum five threads by bolt must always be engaged

Enclosure type	Max thread area (removed surface)	Metric threaded holes	
		Dimension	Area
TNBCD25XX31	83,0 cm <sup>2</sup>	M20	3,1 cm <sup>2</sup>
TNBCD26XX31	83,0 cm <sup>2</sup>	M25	4,9 cm <sup>2</sup>
TNBCD32XX21	124,5 cm <sup>2</sup>	M32	8,0 cm <sup>2</sup>
TNBCD33XX21	124,5 cm <sup>2</sup>	M40	12,6 cm <sup>2</sup>
TNBCD35XX35	207,0 cm <sup>2</sup>	M50	19,6 cm <sup>2</sup>
TNBCD45XX35	207,0 cm <sup>2</sup>	M63	31,1 cm <sup>2</sup>
TNBCD38XX35	249,0 cm <sup>2</sup>	M75	44,1 cm <sup>2</sup>
TNBCD57XX35	249,0 cm <sup>2</sup>	M120	113 cm <sup>2</sup>

**! Condition of Certification and Schedule of Limitations:**

1. It's only allowed for the manufacturer to make the finished mounting of the enclosures in accordance with Technical Note 53-BCD-5 "Specification for the completion of TNBCD enclosures"
2. When viewing windows are mounted the temperature of the cementing resp. window shall not exceed:
  - Enclosure with window type 195 and cementing DP190, according to drawing CDX-75-5: -50°C to 90°C
  - Enclosure with window according to drawing BCD-55-4: -20°C to 70°C
  - For other windows the temperature on the cementing/window shall not exceed -20°C to 90°C
3. Certification with Tamb -50°C is limited to enclosure up to TNBCD 573835 with lid of stainless steel and with window type 195 according to drawing CDX-75-4
4. IP67 and IP68 - 0.4 bar 2 h only for TNBCD without lamp globe, push buttons and windows according to drawing BCD47-02-4, with gasket according to drawing BCD-14-4 (internal lid gasket).
5. The maximum number of entries are 18, maximum thread size is M120, description given on drawing BCD-40-3. The table for cable entries in the section above also shows what is allowed
6. Rotating machines or other devices which create turbulence shall not be incorporated
7. Oil-filled circuit breakers and contactors shall not be used
8. IECEx Certified and tested components that are built into the enclosure's walls need to fulfill the requirements of types of explosion protection used as well as the IP level shown on the type label
9. Bartec Technor's Type TNCN/TNCC Ex e junction box may be used for indirect cable entry

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**8 of 8**

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10. The Maximum dissipated power in the TNBCD enclosures must follow values in the manufacturer's power dissipation tables
11. Calculations of inner and surface temperatures must be performed by program: TempCalc-sm Rev. 1
12. The Manufacturer has to ensure all maximum temperatures of equipment used inside or in the enclosure walls are lower than it's maximal Tamb
13. Repairs on flame-proof joints can only be done by Bartec Technor
14. Routine tests:  
Due to a welded construction routine test has to be done with minimum of 12 bar on each type/variant. Minimum 14.9 bar on each -50°C product
15. No high-pressure water to be applied in the connection between lid and enclosure



The content of the TNBCD enclosures may be placed in any arrangement provided that an area of at least:

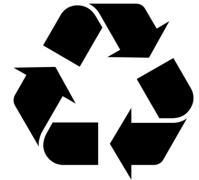
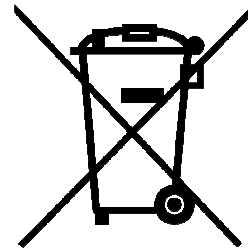
- - 20 % of each cross-sectional area remains free for gas group IIB



**Dismantling, taking out of service:**

When removing the enclosure and taking it out of service, the same precautions apply as those observed when mounting the enclosure.

The enclosure with its content must be handled according to the WEEE (Waste Electrical and Electronic Equipment) Directive, 2012/19/EU.



SS316L