



Terminal box



Terminal Box

TNCN

BARTEC **TECHNOR**

The TNCN/TNCC range comprises many standard sizes of enclosures manufactured in stainless steel 316L for maximum environmental protection. The main body is manufactured from minimum 1,5 mm sheet (depending on the box size). Cable entries can be made in all sides or optionally in gland plates. Entries may also be made in the rear face of the enclosures.

Several boxes of different sizes can be flanged together as a compact unit.

If you should have a particular requirement, BARTEC TECHNOR also offer tailor made boxes. Sales staff will be pleased to advise on this.

- Flexibel product range with many standard sizes. Tailor made sizes upon request.
- Ingress Protection IP66 as standard to meet harsh environment. IP67 and IP68 upon request.

- Wide temperature range (-50°C to +60°C).
- Drainage flange to prevent penetration of water.
- Left hinged lid locked with screws is standard from size 2020xx. Quick locks or only screws upon request.
- Many cable entry possibilities. Gland plates and MCT frames upon request.
- Several earthing options.
- May be used for intrinsically safe circuits.
- High voltage terminal- and bus bar systems are optional.
- May be used as connection box for flameproof enclosures.
- Self-limiting anti-condensating heating cable may be fitted.
- Glass or Lexan windows in lid/door may be fitted.
- High operational reliability and cost efficiency, reduced lifetime maintenance costs.
- Approvals: ATEX, IECEx, CSA, GOST and INMETRO.

Applications

The TNCN range of stainless steel 316L enclosures are designed for use in any environment where an explosive atmosphere may be present, and are especially recommended for chemical agent environments, seawater corrosion and extremes of low and high temperature.

Specifications

| | |
|--------------------|---|
| Material | Stainless steel 316L |
| IP Rating | IP66 (IP67 and IP68 upon request) |
| Temperature | -50°C to +40°C (T5) -50°C to +60°C (T6/T4) |
| Approvals | |
| - ATEX | DNV-2001-OSL-ATEX-0176 DNV-2008-OSL-ATEX-42438U |
| - IECEx | IECEx DNV 09.005U IECEx DNV 09.004 |
| - CSA | CSA 2036776 |
| - Brazilian | 09/UL-BRCN-0001 |
| - GOST | GOST Certificate |
| Standards | EN/IEC: 60079-0, 60079-7 61241-0, 61241-1 |
| Ex-Code | Ex e II T6/T5/T4 / Ex [ia] IIC T6 Ex tD A21 T85°C - T110°C ⊕ II 2 G/D and EPL Gb/Db |
| Cover gasket | Silicone (operating temp. -50°C to +200°C) |
| Surface treatment | Shotblasting and Acidized Pickling as standard Electropolished as an option |
| Material thickness | Min. 1,5 mm (depending on the box size) |
| Earthing | Internal earth bar/bracket External earth bolt |
| Drain plug | Optional |
| Gland Plate | Optional |





Terminal box maximum heat dissipation – number of terminals

An ignition temperature is the temperature at which a hot surface will cause an ignition to occur in a given atmosphere. Dependent on the type of gas or dust, the maximum temperature that the surface of the terminal box can reach without a spontaneous ignition is known as the 'T Class'. The maximum surface temperature must always be lower than the ignition temperature of the atmosphere in which it is used.

The terminal boxes within the TNCN range has been assigned a maximum heat dissipation relating to the ambient temperature and T-Class. The TNCN range offers T6 and T4 protection:

T4 = Maximum 135°C (Internal wiring must have a temperature rating of at least 110°C)
T6 = Maximum 85°C



Internal arrangements are delivered according to customers specifications.

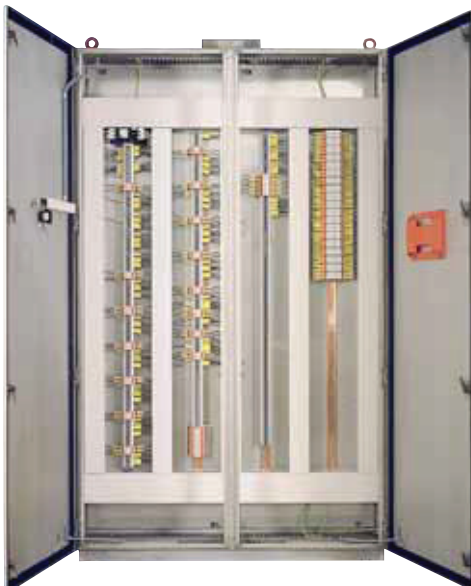
| Maximum heat dissipation | |
|--------------------------|----------------------------------|
| Box size | Max. dissipated power at Ta=40°C |
| 121009 | 6 W |
| 151510 | 15 W |
| 202010 | 20 W |
| 202015 | 20 W |
| 302015 | 30 W |
| 282815 | 30 W |
| 383815 | 40 W |
| 575715 | 90 W |

Table 1. Intermediate sizes between the box sizes listed in the table may use the dissipated power of the nearest smaller size.

Theoretical values are calculated based upon typical configurations. Maximum power must not be exceeded in any given terminal box. Maximum current per terminal must be calculated using the Maximum Heat Dissipation (table 1).

For some applications it may be necessary to have a variety of terminal sizes. The following tables and examples demonstrate how this is achieved. The power heat dissipation determines the maximum number of terminals permissible for any size of terminal box, based on a 100% load.

In example 2, the total load has exceeded the maximum 100% value. Therefore, the required size and number of terminals cannot be fitted within this terminal box. If load exceeds maximum value simply select a larger size terminal box within the range and repeat the process until the total load value is within 100% value.



Ex ed Interface-Panel.

Example 1 (TNCN 282815)

| Terminal/ conductor size (mm ²) | Current (Amps) | Number of terminals | Load = 100% maximum |
|---|----------------|---------------------|---------------------|
| 1,5 | 10 | 18 (of max 33) | 54,54% |
| 2.5 | 16 | 8 (of max 33) | 24,24% |
| 4 | 20 | 6 (of max 33) | 18,18% |
| | | Total load | 96,96% |

Example 2 (TNCN 282820)

| Terminal/ conductor size (mm ²) | Current (Amps) | Number of terminals | Load = 100% maximum |
|---|----------------|---------------------|---------------------|
| 1,5 | 10 | 18 (of max 33) | 54,54% |
| 2.5 | 16 | 10 (of max 33) | 30,30% |
| 4 | 20 | 6 (of max 33) | 18,18% |
| | | Total load | 103,02% |



TNCN Dimension Table
– Range of stocked boxes

| Type | Width (cm) | Height (cm) | Depth (cm) | Volume (dm ³) | Weight (kg) |
|----------|------------|-------------|------------|---------------------------|-------------|
| 121009** | 12 | 10 | 9 | 1,08 | 1,5 |
| 151510** | 15 | 15 | 10 | 2,25 | 2,5 |
| 202010 | 20 | 20 | 10 | 4,00 | 3,00 |
| 202015 | 20 | 20 | 15 | 6,00 | 3,5 |
| 302015 | 30 | 20 | 15 | 9,00 | 5,0 |
| 282815 | 28 | 28 | 15 | 11,76 | 5,2 |
| 383815 | 38 | 38 | 15 | 21,66 | 8,1 |
| 575715 | 57 | 57 | 15 | 48,74 | 16,4 |

TNCN Measurement Table – range of stocked boxes.

Other sizes are available upon request. The boxes are delivered as standard with left hinged cover secured to the enclosure by screws. Quicklocks, screws only, or other systems can be delivered upon request.

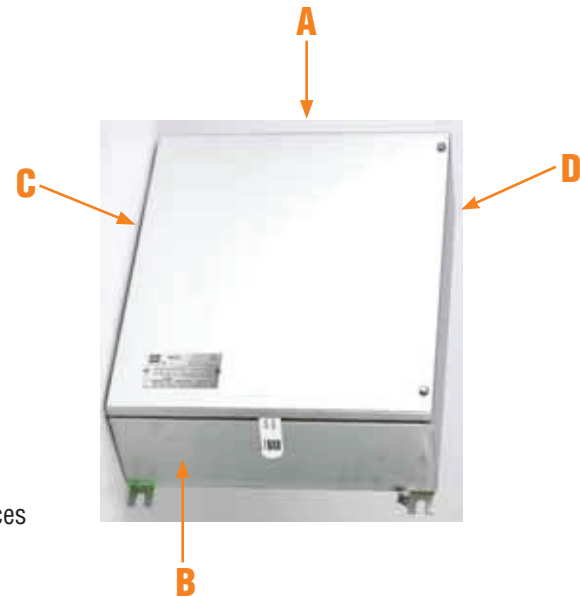
** No hinges – screws only

| Width | Depth | M20 | M25 |
|-------|-------|-----|-----|
| 15 | 10 | 8 | 6 |
| | 15 | 12 | 9 |
| | 20 | 16 | 12 |
| | 27 | 24 | 15 |
| 20 | 10 | 10 | 10 |
| | 15 | 15 | 15 |
| | 20 | 25 | 20 |
| | 27 | 35 | 30 |
| 30 | 10 | 15 | 14 |
| | 15 | 24 | 21 |
| | 20 | 40 | 28 |
| | 27 | 56 | 42 |
| 38 | 10 | 20 | 18 |
| | 15 | 30 | 27 |
| | 20 | 50 | 36 |
| | 27 | 70 | 54 |
| 40 | 10 | 22 | 18 |
| | 15 | 3 | 27 |
| | 20 | 55 | 36 |
| | 27 | 77 | 54 |
| 45 | 10 | 24 | 20 |
| | 15 | 36 | 30 |
| | 20 | 60 | 40 |
| | 27 | 84 | 60 |
| 57 | 10 | 32 | 26 |
| | 15 | 48 | 39 |
| | 20 | 80 | 52 |
| | 30 | 128 | 78 |
| 76 | 10 | 42 | 36 |
| | 15 | 63 | 54 |
| | 20 | 105 | 72 |
| | 27 | 147 | 108 |

Entry matrix

The table is a guidance for the maximum quantity of glands for installation in one face (the Width column in the table) on TNCN terminal boxes.

Note! Recommended quantity is 2/3 of guided quantity. MCT-frames can be fitted in boxes with a minimum depth of 20 cm.



Possible entry faces on TNCN

The quantity is based on glands with cross corner 41 mm (M25) and 34 mm (M20).



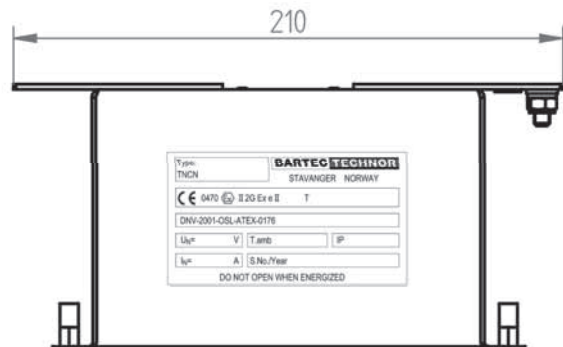
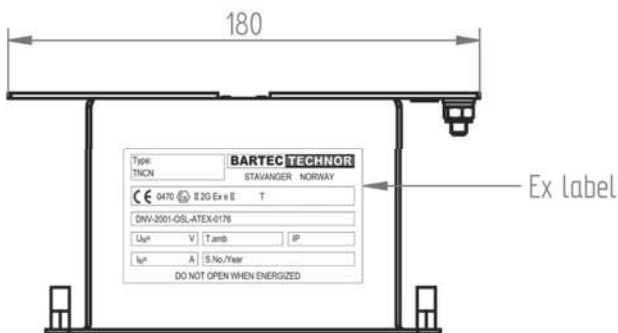
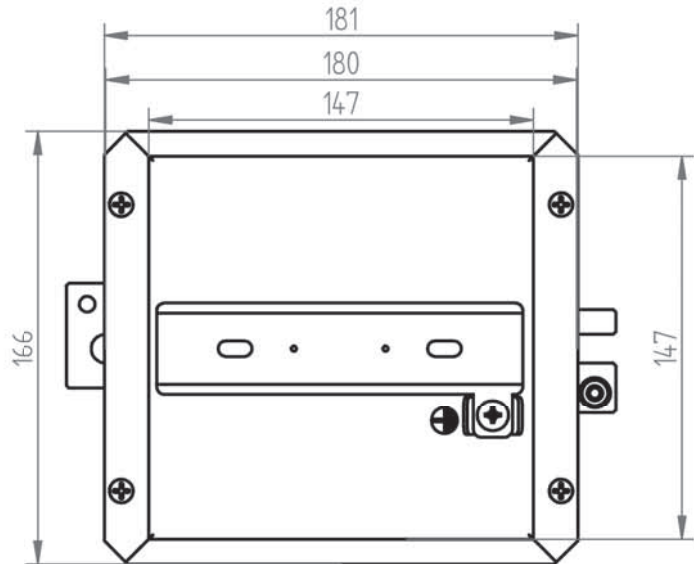
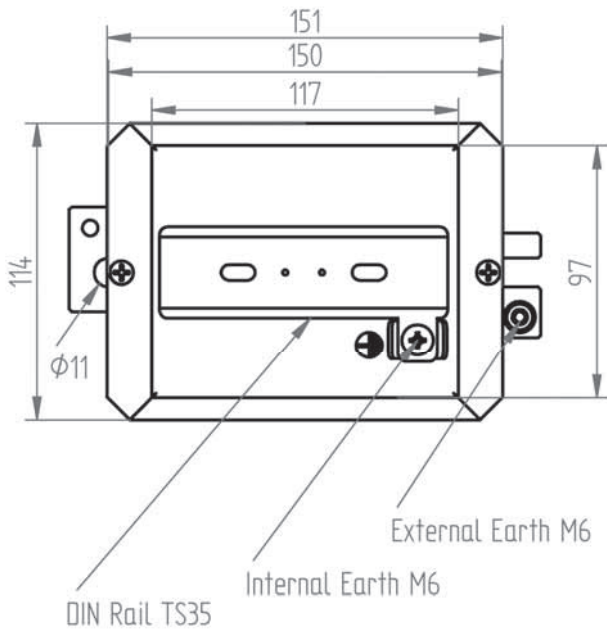
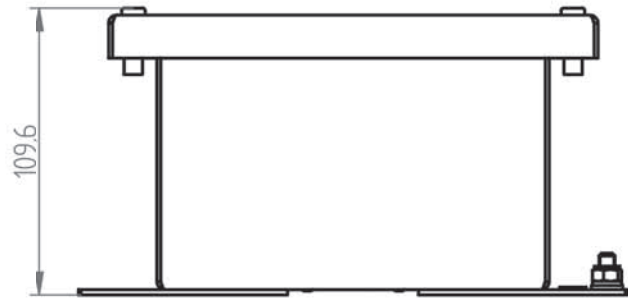
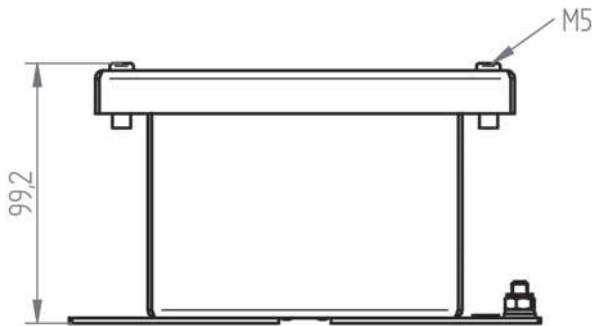
Terminal Box

TNCN



General Arrangement Drawings (General tolerance +/- 3mm)

Standard layout for TNCN121009 and 151510



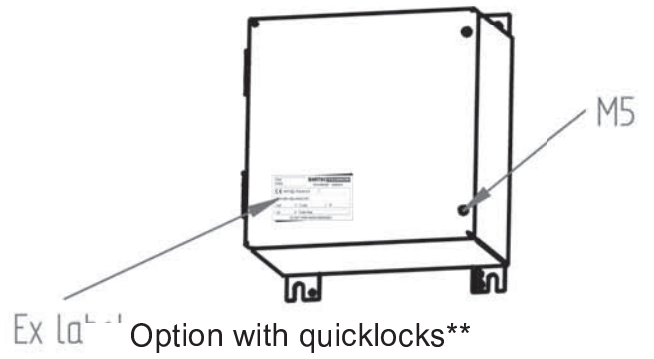
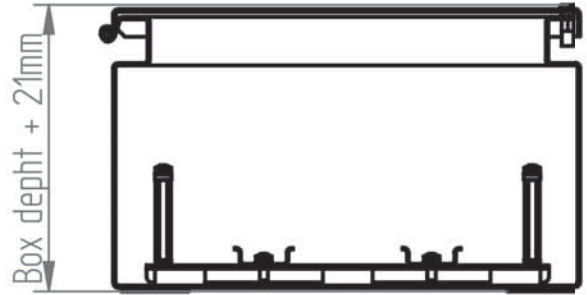
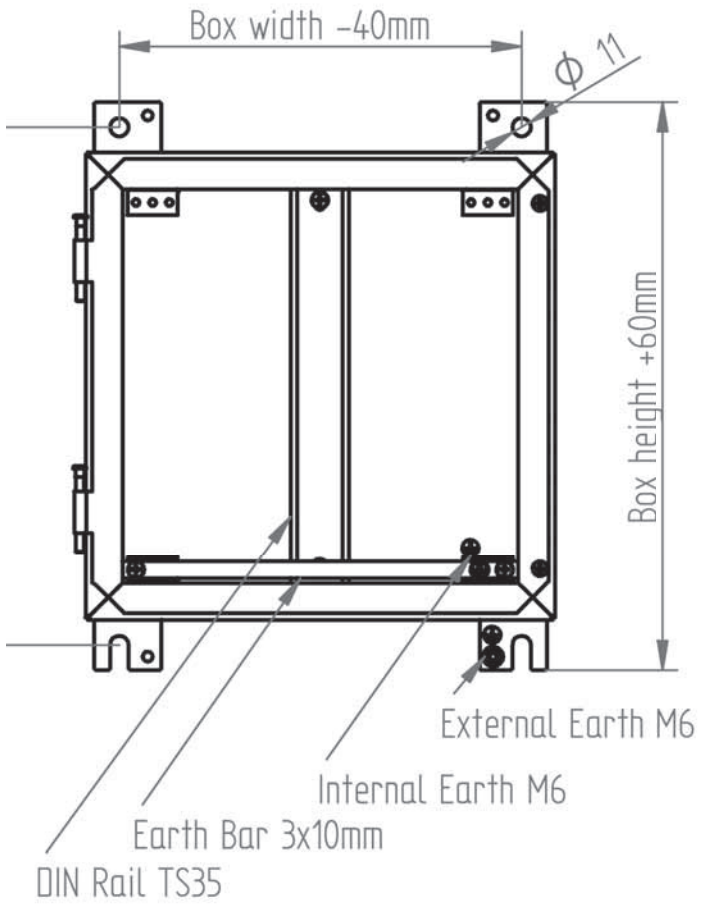
NOTES:

- X = Box width -80 mm.
- Y = x/2, only for boxes wider than 270mm (TNCN 28XXXX).
- = The real box depth is, depending on box size, 5-10 mm larger than the depth seen from the type description.
- = Not for TNCN 151510 og TNCN 121009

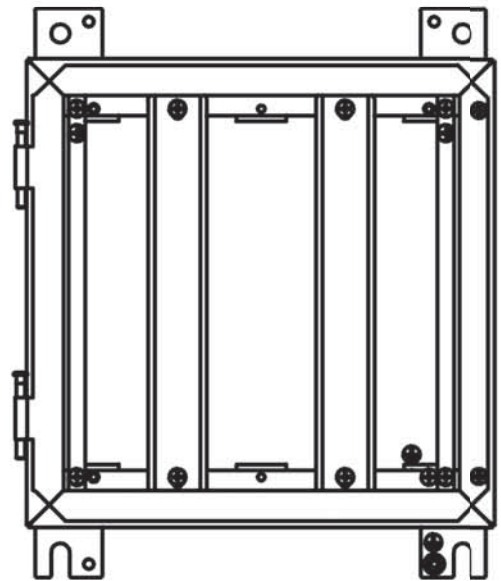
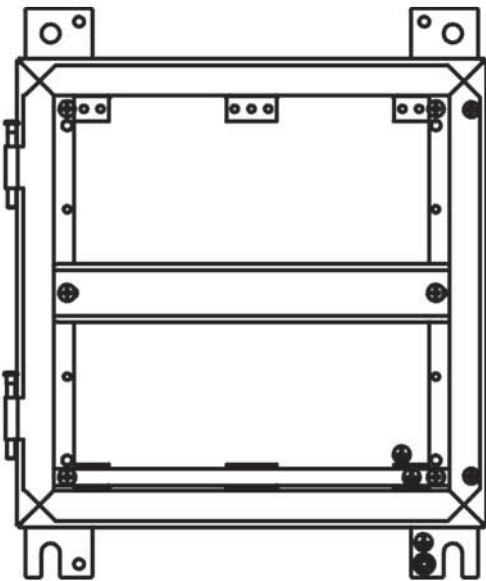
All dimensions in mm.



Terminal Box TNCN



Option :
Internal arrangement with adapters





Hazardous area information & terminology

ATEX Directive

The ATEX Directive, derived from the French “AT mosphères EXplosibles” and formally known as 94/9/EC, contains the ESR (Essential Safety Requirements) to which electrical equipment and protective systems used within potentially explosive atmospheres must conform.

The new ATEX Directive currently in place within the European Union was made mandatory on 1st July 2003. Primarily intended for manufacturers of hazardous area equipment for use in the presence of flammable gases, vapours, fumes or dusts, the new directive requires a quality management system to be implemented.

Procedures for the design, manufacture and verification of products are to be approved by a notified body (i.e. DNV, NEMKO, etc.) and all equipment conforming to the new directive will feature CE and Ex Marking.

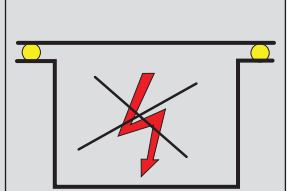
Zone Classification with the presence of GAS

| | |
|------------------------|---|
| Zone 1 (Category 2) | An area in which explosive gas is likely to be present during normal operation of the plant. |
| Zone 2 (Category 3) | An area in which explosive gas is not continuously present, but may exist for a short period of time. |

Applicable EX protection

Ex e Protection

for electrical components that do not spark under normal working conditions but where measures are applied to prevent high temperatures and the occurrence of arcs and sparks internally.



Ex ia Protection

for equipment containing intrinsically safe circuits, which are incapable of causing an explosion in the surrounding atmosphere, that is where current and voltage in normal operation would not produce enough spark energy or heat to ignite any potentially explosive gases.

