

## Ex e Instruction Manual N° 31

DBC.2 “increased safety” terminal blocks, are manufactured according to the prescriptions given by IEC / EN 60079-0, IEC / EN 60079-7 Standards and are in compliance with the ATEX 94/9/CE Directive and the IEC Ex Certification Scheme

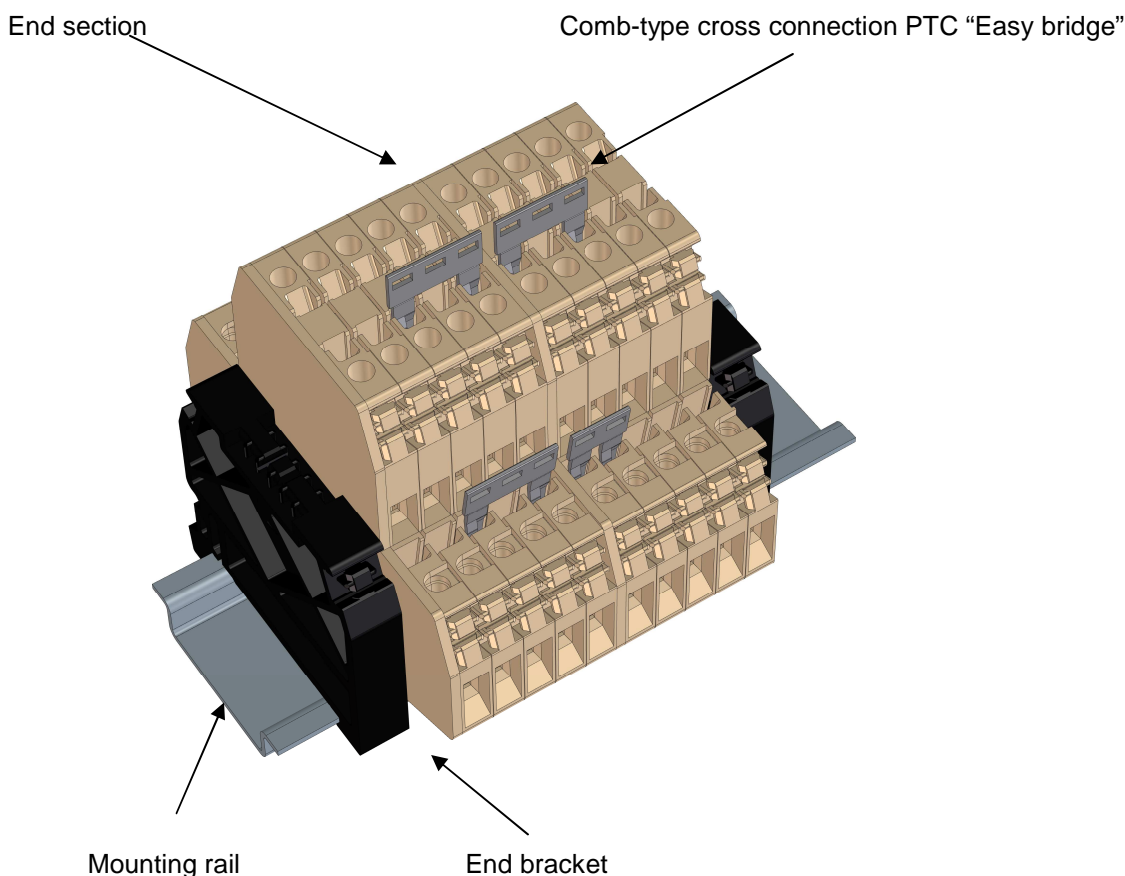
DBC.2 terminal blocks are also designed and manufactured in compliance with IEC / EN 60947-1 and IEC / EN 60947-7-1 reference product standards.

Terminal blocks (components) must be inserted in Ex e enclosures. The terminal blocks + enclosure assembly must be subjected to separate certification.

DBC.2 terminal blocks are suited for a temperature range between - 40 and + 80 °C

Ambient temperature range shall be between - 40 and + 40 °C

### Rail assembly composition in potentially explosive (Ex e) environments



Each rail assembly is formed by two or more adjoining terminal blocks and by END BRACKETS, that are located at the ends of the assembly, in a way to obtain a compact and single arrangement.

As the back of each terminal block performs the function of insulating wall for the adjoining terminal block, an END SECTION is necessary to close and provide appropriate insulation to the first terminal block forming the assembly.




Rail assemblies can be subdivided into groups by interposing COLOURED PARTITIONS, in order to ease the location of different circuits

Each terminal block can be connected to adjoining elements by means of CROSS CONNECTION of the comb type.

Adjoining terminal blocks can be visually separated by interposing a COLOURED PARTITION, having a thickness of 1,5 mm.

Adjoining jumpers between different phases should be electrically separated by interposing an END SECTION type DBC/PT.

Multiple cross connections can be performed between terminal blocks, by means of a comb-type CROSS CONNECTION the use of which enables also to obtain parallel extending, pole skipping, staggered, and parallel skipping cross-connection schemes

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**ATEX Marking:**



0722

**I M 2 Ex e I Mb II 2G Ex e IIC Gb**

- 0722** = number of the ATEX surveillance Notifying Body (CESI)
- I M 2** = group I (mines), category M 2
- II 2** = group II (surface), category 2
- G** = explosive atmosphere with presence of GAS
- Ex e** = “increased safety” protection mode
- IIC** = gas group
- Gb** = EPL
- I** = group I (mines)
- Mb** = EPL
- DBC** = terminal block series or type
- 2** = rated cross-section of terminal block

**IEC Ex Marking**

**Ex e IIC Gb Ex e I Mb**

- Ex e** = “increased safety” protection mode
- IIC** = gas group
- Gb** = EPL
- I** = group I (mines)
- Mb** = EPL

**DBC.2 two-level feed-through terminal block - Rated Ex values**

Terminal block	Rated cross section [ mm <sup>2</sup> ]	Gauge according to IEC 60947-1	Minimum / maximum flexible conductor [ mm <sup>2</sup> ]	Rated current [ A ]	Resistance of the terminal block [ Ω ] (*)	Ex e rated voltage [ Vac ] (**)	Test voltage [ Vac ]
DBC.2	2,5	A3	0,2 / 4	24	5,54 x 10 <sup>-4</sup>	400	2500

Notes: (\*) : values calculated from the results of the voltage drop test according to paragraph 8.4.4 of IEC 60947-7-1 Std.  
 (\*\*): rated voltage values can be subjected to a ± 10 % tolerance as listed in Table 1 of IEC 60079-7 Std.

**“Easy bridge” PTC comb-type jumper - Jumper connection configurations**

	<b>Single or parallel extending</b>	<b>Pole skipping</b>	<b>Adjacent with partition (**)</b>	<b>Staggered mode</b>	<b>Parallel skipping</b>
	Ex e rated voltage (Vac) (*)	Ex e rated voltage (Vac) (*)	Ex e rated voltage (Vac) (*)	Ex e rated voltage (Vac) (*)	Ex e rated voltage (Vac) (*)
DBC.2 (upper level)	250	250	250	250	250
DBC.2 (lower level)	250	250	250	250	250

Notes: (\*) : rated voltage values can be subjected to a ± 10 % tolerance as listed in Table 1 of IEC 60079-7 Std.

TERMINAL BLOCK	JUMPER	MULTIPLE COMMONING BAR	SCREW AND SLEEVE	CURRENT OF THE JUMPER [A]
DBC.2	PTC/2/...	-	-	21 / 24 (***)

Note (\*\*): the higher current value corresponds to the capacity embedding two jumpers for each one of the poles connected together

Instructions for the connection of PTC “Easy bridge” jumper.

After having cut the bar according to the number of poles, insert the cross-connection in the appropriate groove of the terminal block. At this point, by using the blade of a screwdriver, push down the cross-connection until it reaches its blocking point. The cross-connection will be fully insulated and intrinsically IPXXB protected. After having mounted the cross-connection the connected poles can be outlined and visually detected by placing the PTC/SP green strip. This strip is supplied in a standard length of 100 mm and it can be easy cut to the appropriate length with the aid of a cutter. To remove the cross-connection it is sufficient to remove the PTC/SP strip: insert the blade of the screwdriver in the jumper slot, then lift it up and finally extract it.

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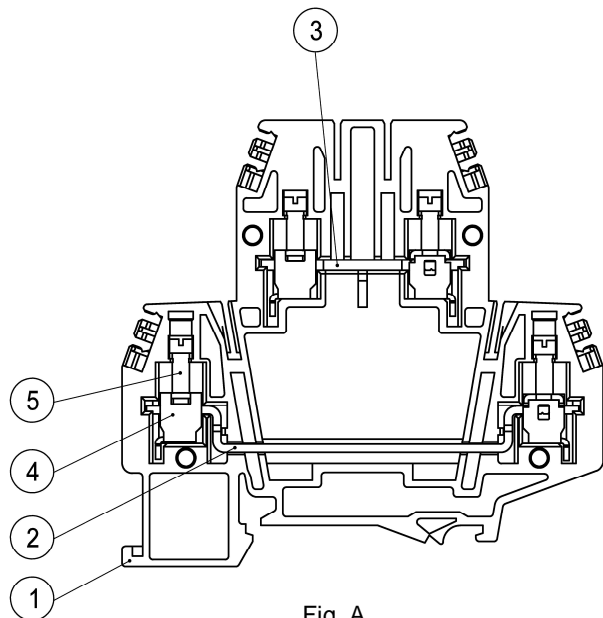


Fig. A

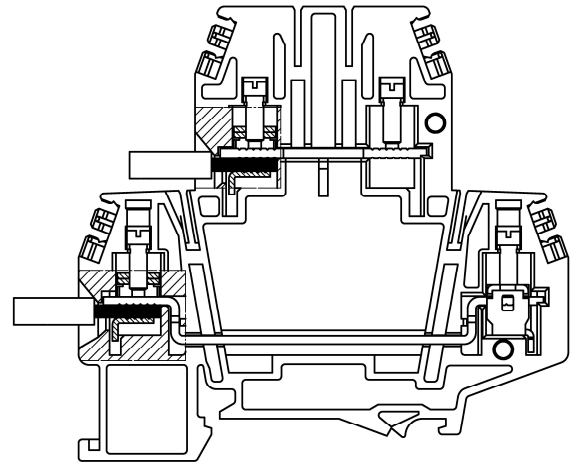


Fig. B

POSITION	COMPONENT
1	Insulating body
2	Upper conducting body
3	Lower conducting body
4	Tightening screw
5	Wire clamping collar

TERMINAL BLOCK	INSULATION STRIPPING LENGTH [ mm ]	TIGHTENING TORQUE [ Nm ] (*)
DBC.2	9	0,4

Note(\*): values taken from Table 4 of IEC 60947-1 Std.

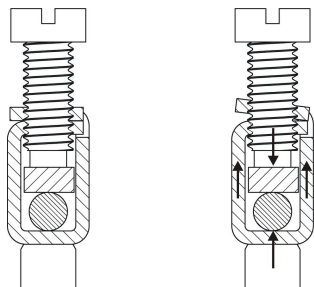
Cabur terminal block type DBC.2 allows the direct and anti-loosening connection of solid, stranded and flexible conductors, by means of wire clamping collars, captive screws and conducting body. Each clamping unit shall house only one conductor

The insertion of the cable is eased by:

- Sloping entrance planes provided on the insulating body
- A tab provided in the collar that avoids faulty introduction of the conductors
- Adequate dimensioning of the conductors insertion hole, with respect to the diameter of the maximum connectable conductor (according to the different Gauges prescribed by IEC 60947-1Std.)

Appropriate grooving, provided in the wire clamping collar and on the conducting body guarantee a perfect electrical contact and an efficient blocking of the conductor. Both the wire clamping collar and the tightening screw are manufactured in tempered steel with galvanic RoHS conforming zinc plating; thanks to their coupling it is possible to apply the correct contact pressure

By acting on the tightening screw, the collar tightens the conductor against the conducting body, which is manufactured in tin-plated copper. With the clamping yoke tightening system a gas proof, particularly safe connection is guaranteed





Thanks to the force applied during the tightening process, the overlapped threaded parts system act, by means of elastic deformation on the head of the screw, blocking it and avoiding subsequent loosening

For the connection of the conductor it is necessary to:

- 1) Loosen the tightening screw (Pos.4 - Fig. A) until it frictions, making the collar (Pos.5 - Fig. A) reach its lower position; once this operation is performed, the conductor's insertion hole results to be completely open and is ready to house the conductor.
- 2) Prepare the conductor by stripping one end from its insulation (Fig. B) and according to the correct insulation stripping length given in the table. introduce it in the terminal block until the limiting wall is reached.

By holding firmly the conductor in one hand, tightening operation must be performed (applying the prescribed torque values given in the table). Once this operation is performed the conductor is firmly secured.

Thanks to the force applied during the tightening process, the overlapped threaded parts system acts, by means of elastic deformation on the head of the screw, blocking it and avoiding subsequent loosening

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## Attestation of Conformity to ATEX 94/9/EC Directive

Inserted in the following document: **M19/e general instructions (leaflet inserted in every package)**



Terminal blocks approved in conformity to ATEX 94/9/CE Directive  
Terminal blocks "at increased safety" (Ex e) are manufactured according to IEC/EN 60079-0, IEC/EN 60079-7 Std. and bear, on the insulating body, the name of the product and the electrical characteristics.


ATEX Marking:

0722  **I M 2 Ex e I Mb II 2G Ex e IIC Gb**

**0722** = number of Notifying Body (CESI) for the ATEX surveillance  
**I M 2** = group **I** (mines), category **M2**  
**II 2 G** = group **II** (surface) category **2 G** (gas)  
**Ex e** = "increased safety" protection mode  
**IIC** = gas group  
**Gb** = EPL  
**I** = group **I** (mines)  
**Mb** = EPL  
**V** = rated voltage

The CE Marking indicates the Conformity to EU Low-voltage Directive 2006/95/EC  
Terminal blocks must be installed in enclosures "at increased safety"; the enclosure / terminal blocks assembly must be subjected to separate certification

  
The Legal Representative  


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