

Ex e Instruction Manual N° 22

RN.2 “increased safety” terminal blocks, are manufactured according to the prescriptions given by IEC / EN 60079-0, IEC / EN 60079-7, IEC / EN 61241-0 Standards and are in compliance with the ATEX 94/9/CE Directive and the IEC Ex Certification Scheme

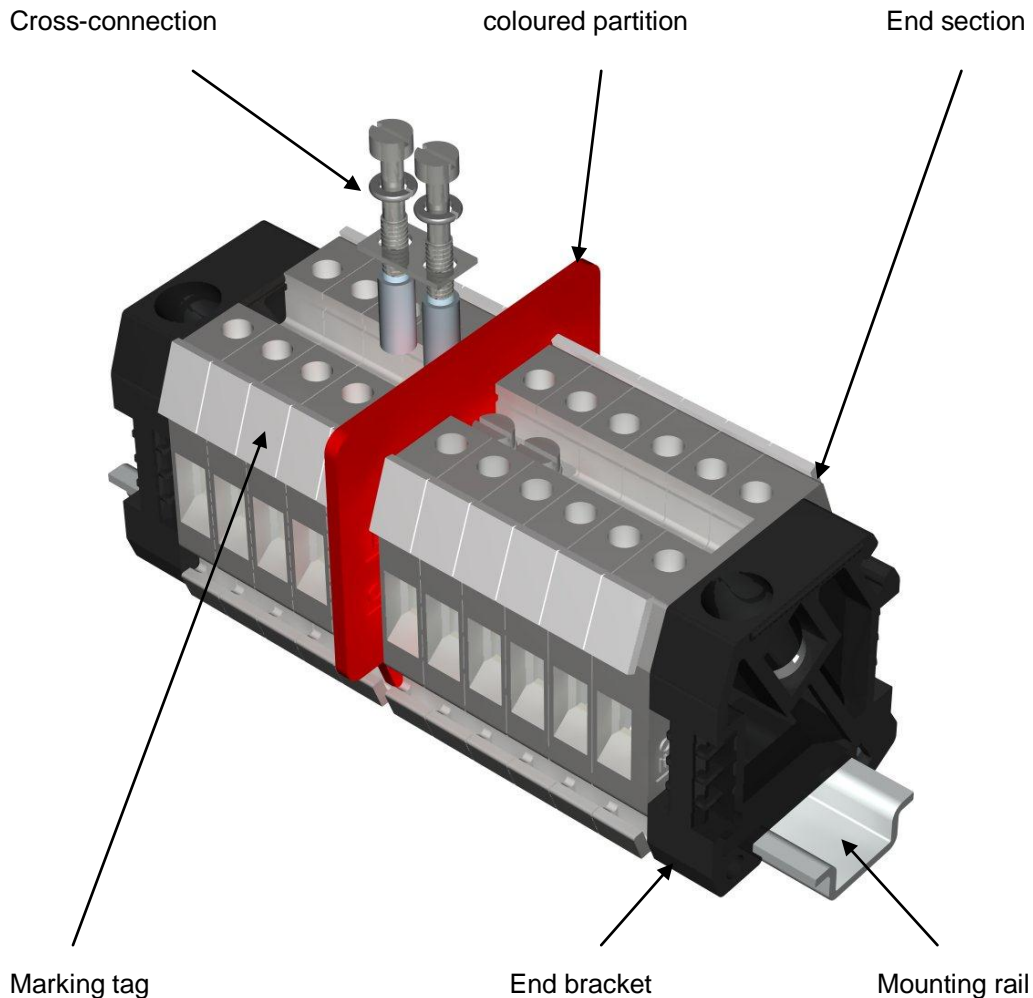
RN.2 terminal blocks are also designed and manufactured in compliance with IEC / EN 60947-1 and IEC / EN 60947-7-1 reference product standards.

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

RN.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 of the adjoining terminal block, an END SECTION is necessary in order 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

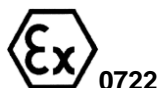
Each terminal block can be connected to adjoining elements by means of CROSS CONNECTION (Page 12) of the fixed type, which are anti-loosening thanks to an elastic washer located under the head of each screw forming the cross connection itself.

For permanent cross-connections, it is necessary to separate adjoining different phases by interposing a COLOURED PARTITION, having a thickness of 1,5 mm, between adjoining jumpers and between jumpers and adjoining terminal blocks

Multiple cross connections can be performed between adjoining terminal blocks, by means of a multiple commoning bar

	Ex e Instruction manual	N°	Page	Rev.	Date	Issued	Approved
		22	1	3	26/07/10		

ATEX Marking:



I M 2 / II 2 GD

Ex e

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**

D = explosive atmosphere with presence of **DUST**

Ex e = “increased safety” protection mode

RN = terminal block type

2 = rated cross-section of terminal block (2,5 mm²)

V = rated **Ex e** voltage

IEC Ex Marking

Ex e = “increased safety” protection mode

II = group **II** (surface)

Terminal block type RN.2 - Ex e rated values

Terminal block	Rated cross section [mm ²]	Minimum / maximum flexible and rigid conductor [mm ²]	Rated current [A] (****)	Resistance of the terminal block [Ω] (*)	Rated Ex e voltage on rail type IEC 60715 / TH/15 [Vac] (**)	Jumper	Multiple commoning bar	Screw and sleeve	Tightening torque of the jumper screw [Nm] (***)	Current of the jumper [A] (****)
RN.2	2,5	0,2 / 4	24	1,96 x 10 ⁻⁴	320	PM/12/...	PMP/25	CPX/16	0,4	24



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.

(***):Values taken from Table 4 of IEC 60947-1 Std.

(****) : Ambient temperature according to paragraph 8.3.3.3.1 of IEC 60947-1 Std.

	Ex e Instruction manual	N°	Page	Rev.	Date	Issued	Approved
		22	2	3	26/07/10	Rapetti	

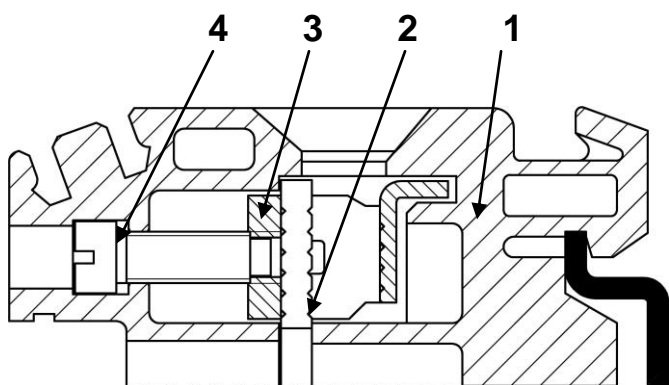


Fig. A

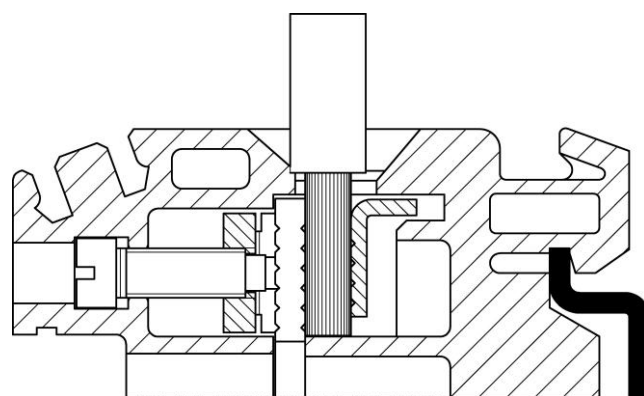


Fig. B

POSITION	COMPONENT
1	Insulating body
2	Conducting body
3	Wire clamping collar
4	Tightening screw

TERMINAL BLOCK	STRIPPING LENGTH [mm]	TIGHTENING TORQUE [Nm] (*)
RN.2	8	0,4

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

Terminal block type RN.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

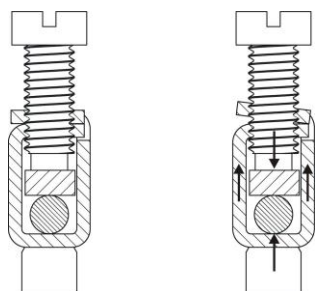
The insertion of the cable is eased by:

- 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 gasproof, 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.3 - 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.

	Ex e Instruction manual	N°	Page	Rev.	Date	Issued	Approved
		22	3	3	26/07/10	Raffelli	

Declaration of Conformity to ATEX 94/9/EC Directive and to the IEC Ex Certification Scheme


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 and to the IEC Ex Certification Scheme

Terminal blocks “at increased safety” (Ex e) are manufactured according to IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 61241-0 Stds. and bear, on the insulating body, the name of the product and the electrical characteristics.

ATEX Marking

0722  **I M2/ II 2 G D**

0722 = number of Notifying Body (CESI) for the ATEX surveillance

I M2 = group **I** (mines), category **M2**

II 2 G D = group **II** (surface) category **2 G** (gas) **D** (dusts)

Ex e = type of protection

V = rated voltage

For the mounting of terminal blocks type BPL.4 - TPL.4 - BPL/R, IT IS NECESSARY TO USE FIXING SCREWS OF INSULATING MATERIAL

The CE Marking indicates the Conformity to 73/23 Low Voltage Directive.




Terminal blocks must be installed in enclosures “at increased safety”; the enclosure / terminal blocks assembly must be subjected to separate certification

IEC Ex Marking

Ex e = “increased safety” protection mode

II = group II (surface)


The Legal Representative


	Ex e Instruction manual	N°	Page	Rev.	Date	Issued	Approved
		22	4	3	26/07/10		

Ex e Instruction Manual N° 18

Terminal block at “increased safety” type TR.2, is manufactured according to the prescriptions given by IEC / EN 60079-0, IEC / EN 60079-7, IEC / EN 61241-0 Standards and is in compliance with the ATEX 94/9/CE Directive and the IEC Ex Certification Scheme

Terminal block type TR.2 is also designed and manufactured in compliance with IEC / EN 60947-1 and IEC / EN 60947-7-2 reference product standards.

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

Terminal block type TR.2 is suited for a temperature range between - 40 and + 80 °C

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

ATEX Marking:



0722

I M 2 / II 2 GD

Ex e

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**

D = explosive atmosphere with presence of **DUST**

Ex e = “increased safety” protection mode



TR = terminal block series or type

2 = rated cross-section of terminal block (2,5 mm²)

IEC Ex Marking

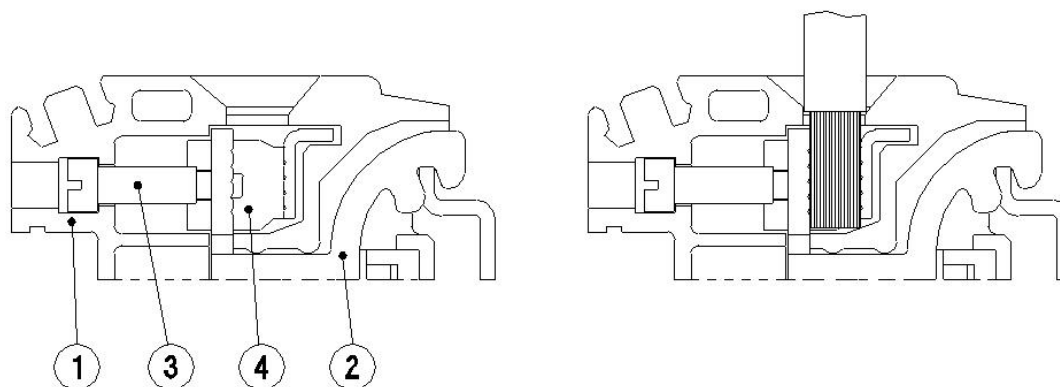
Ex e = “increased safety” protection mode

II = group **II** (surface)

	Ex e Instruction manual	N°	Page	Rev.	Date	Issued by	Approved by
		18	1	4	17/02/11	Raffelli	

Terminal block	Rated cross section [mm ²]	Gauge according to IEC 60947-1	Minimum / maximum flexible conductor [mm ²]	Rated current [A] (*) (**)	Resistance of the terminal block [Ω] (**)	Material group
TR.2	2,5	A3	0,2 / 4	24	5,33 x 10 ⁻⁴	I according to IEC 60079-7

Note: (*) : According to paragraph 8.4.5 of IEC 60947-7-1 Std.
(**): Values calculated from the results of the voltage drop test according to paragraph 8.4.4 of IEC 60947-7-1 and with reference to paragraph 8.3.4 of IEC 60947-7-2 Std. (Ucs test)
(***) : Ambient temperature according to paragraph 8.3.3.3.1 of IEC 60947-1 Std.



POSITION	COMPONENT
1	Insulating body
2	Conducting and contact body
3	Tightening screw
4	Wire clamping collar

TERMINAL BLOCK	INSULATION STRIPPING LENGTH [mm]	TIGHTENING TORQUE VALUES [Nm] (*)
TR.2	8	0,4

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

Cabur type TR.2 terminal block 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.

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. In such a way resistance towards vibrations is guaranteed.

For the connection of the conductor it is necessary to::

- 1) Loosen the tightening screw (Pos.3 - Fig. A) until it frictions, making the collar (Pos.4 - 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.

	Ex e Instruction manual	N°	Page	Rev.	Date	Issued by	Approved by
		18	2	4	17/02/11	Raffetti	

Declaration of Conformity to ATEX 94/9/EC Directive and to IEC Ex Scheme


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 and to the IEC Ex certification Scheme

Terminal blocks "at increased safety" (Ex e) are manufactured according to IEC / EN 60079-0, IEC / EN 60079-7 and IEC / EN 61241-0 Stds. and bear, on the insulating body, the name of the product and the electrical characteristics.

ATEX Marking:

0722  **I M2/ II 2 G D**

0722 = number of Notifying Body (CESI) for the ATEX surveillance

I M2 = group **I** (mines), category **M2**

II 2 G D = group **II** (surface) category **2 G** (gas) **D** (dusts)

Ex e = type of protection

V = rated voltage

For the mounting of terminal blocks type BPL.4 - TPL.4 - BPL/R, IT IS NECESSARY TO USE FIXING SCREWS OF INSULATING MATERIAL

The CE Marking indicates the Conformity to 73/23 Low Voltage Directive.




Terminal blocks must be installed in enclosures "at increased safety"; the enclosure / terminal blocks assembly must be subjected to separate certification

IEC Ex Marking

Ex e = "increased safety" protection mode

II = group **II** (surface)


The Legal Representative


	Ex e Instruction manual	N°	Page	Rev.	Date	Issued by	Approved by
		18	3	4	17/02/11		

Ex e Instruction Manual N° 23

Terminal block at “increased safety” type TR.4, is manufactured according to the prescriptions given by IEC / EN 60079-0, IEC / EN 60079-7, IEC / EN 61241-0 Standards and is in compliance with the ATEX 94/9/CE Directive and the IEC Ex Certification Scheme

Terminal block type TR.4 is also designed and manufactured in compliance with IEC / EN 60947-1 and IEC / EN 60947-7-2 reference product standards.

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

Terminal block type TR.4 is suited for a temperature range between - 40 and + 80 °C

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

ATEX Marking:



0722

I M 2 / II 2 GD

Ex e

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**

D = explosive atmosphere with presence of **DUST**

Ex e = “increased safety” protection mode




TR = terminal block series or type

4 = rated cross-section of terminal block (4 mm²)

IEC Ex Marking

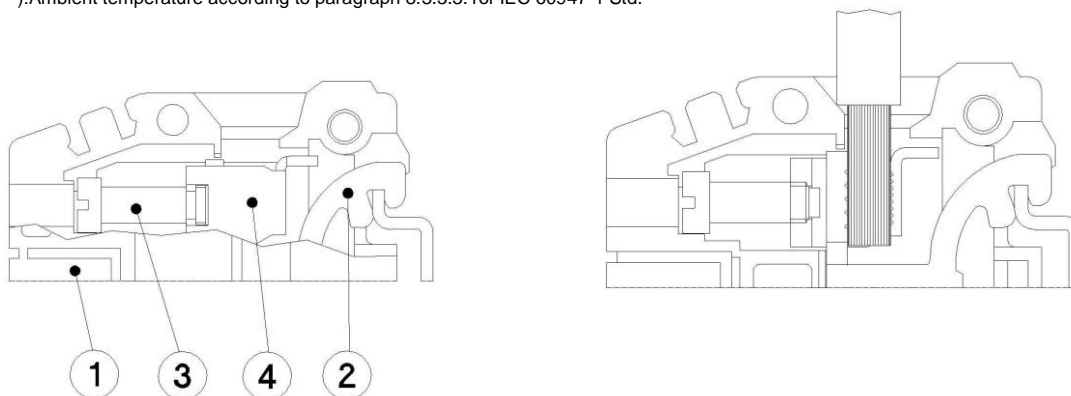
Ex e = “increased safety” protection mode

II = group **II** (surface)

	Ex e Instruction manual	N°	Page	Rev.	Date	Issued by	Approved by
		23	1	3	17/02/11		

Terminal block	Rated cross section [mm ²]	Gauge according to IEC 60947-1	Minimum / maximum flexible conductor [mm ²]	Rated current [A] (*) (**) (***)	Resistance of the terminal block [Ω] (**)	Material group
TR.4	4	A4	0,2 / 6	32	5,16 x 10 ⁻⁴	I - according to IEC 60079-7

Note: (*) : According to paragraph 8.4.5 of IEC 60947-7-1 Std.
(**): Values calculated from the results of the voltage drop test according to paragraph 8.4.4 of IEC 60947-7-1 and with reference to paragraph 8.3.4 of IEC 60947-7-2 Std. (Ucs test)
(***) : Ambient temperature according to paragraph 8.3.3.3.1 of IEC 60947-1 Std.



POSITION	COMPONENT
1	Insulating body
2	Conducting and contact body
3	Tightening screw
4	Wire clamping collar

TERMINAL BLOCK	INSULATION STRIPPING LENGTH [mm]	TIGHTENING TORQUE VALUES [Nm] (*)
TR.4	9	0,5

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

Cabur type TR.4 terminal block 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 60947-1 Std.)

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.

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. In such a way resistance towards vibrations is guaranteed.

For the connection of the conductor it is necessary to::

- 1) Loosen the tightening screw (Pos.3 - Fig. A) until it frictions, making the collar (Pos.4 - 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.

	Ex e Instruction manual	N°	Page	Rev.	Date	Issued by	Approved by
		23	2	3	17/02/11	Raffelli	

Declaration of Conformity to ATEX 94/9/EC Directive and to IEC Ex Scheme


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 and to the IEC Ex certification Scheme

Terminal blocks "at increased safety" (Ex e) are manufactured according to IEC / EN 60079-0, IEC / EN 60079-7 and IEC / EN 61241-0 Stds. and bear, on the insulating body, the name of the product and the electrical characteristics.

ATEX Marking:

0722  **I M2/ II 2 G D**

0722 = number of Notifying Body (CESI) for the ATEX surveillance

I M2 = group **I** (mines), category **M2**

II 2 G D = group **II** (surface) category **2 G** (gas) **D** (dusts)

Ex e = type of protection

V = rated voltage

For the mounting of terminal blocks type BPL.4 - TPL.4 - BPL/R, IT IS NECESSARY TO USE FIXING SCREWS OF INSULATING MATERIAL

The CE Marking indicates the Conformity to 73/23 Low Voltage Directive.


Terminal blocks must be installed in enclosures "at increased safety"; the enclosure / terminal blocks assembly must be subjected to separate certification

IEC Ex Marking

Ex e = "increased safety" protection mode

II = group **II** (surface)


The Legal Representative


	Ex e Instruction manual	N°	Page	Rev.	Date	Issued by	Approved by
		23	3	3	17/02/11	