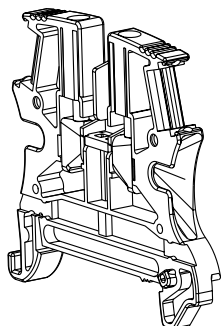


Terminal Blocks-Viking 3- Screw connection ATEX - IECEx

Cat. Nos.: 0 371 00/01/02/03/04/05/07/08/09/20/21/30/31
0 371 51/52/60/61/62/63/64/65/66/67/68/69
0 371 70/71/72/73/74/75/77/78/79/98/99



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1. GENERALITIES ATEX - IECEx

In the industrial world, certain atmospheres are made explosive by the presence of flammable substances such as gases, vapors, mists (mines, refineries) or by the presence of dust (cereal silos).

Potential sources of ignition are numerous: sparks, flames, electric arcs, high surface temperatures, release of acoustic energy, optical, electromagnetic or other radiation. Electrical and non-electrical appliances used in explosive atmospheres shall be designed and operated in a manner that does not present a risk to the safety of persons, animals or property.

The European Directive «ATEX» 2014/34 / EU of 26/02/2014, whose application is compulsory since 20/04/2016, and the IECEx regulations for the zone outside Europe define the essential safety requirements for these equipments. These documents classify the devices into groups and categories according to the intended use and describe the procedures for assessing their conformity. Devices conforming to this Directive and Regulations must bear a specific marking in order to facilitate their use.

The standards IEC / EN 60079-0 (general requirements) give a list of the different possible modes of protection for «Electrical equipment for explosive atmospheres». These modes of protection correspond to different standardized technical means:

- Gaz - Flammeproof enclosure "d",
- Gaz - Pressurized enclosures "p",
- Gaz - Powder filling "q",
- Gaz - Oil immersion "o",
- Gaz - Increased safety "e",
- Gaz - Intrinsic safety "i",
- Gaz - Different protection modes "n",
- Gaz and dusts - Encapsulation "m",
- Dusts - Ignition protection "t",
- Dusts - Pressurized enclosures "pD".

The use of these methods of protection must be based on several parameters, including the nature of the atmosphere (chemical composition) and the geographical zone of installation of the equipment:

- Zones 0 and 20 : Gas explosive atmosphere and presence of dust fuels permanently,
- Zones 1 and 21 Gas explosive atmosphere and presence of intermittently combustible dust,
- Zones 2 and 22 : Gaseous explosive atmosphere and presence of combustible dust episodically.

2. VIKING 3 ATEX - IECEx

2.1 Overview

Electrical equipment, such as general purpose connections boxes and junction boxes (*), are generally found in zones 1, 21, 2 and 22.

The Viking 3 terminal blocks are certified as COMPONENTS for incorporation into devices, enclosures or end systems with the following protection mode:

- Increased safety «e»: measures are applied to avoid, with a high safety factor, the possibility of excessive temperatures and the occurrence of arcs or sparks on the inside and on the external parts of the electrical equipment which does not produce such in normal service.

The Viking 3 terminal blocks can be used for the connection of intrinsically safe circuits type «ia» or «ib» depending on the level of protection of the connected equipment.

For use in dust explosive atmospheres, Viking 3 terminal blocks shall be installed in certified envelopes for the particular application.

(*) § 6.7 and annex E of IEC/EN 60079-7 standards.

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2. VIKING 3 ATEX - IECEx (cont.)

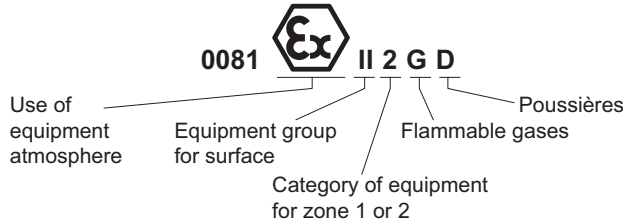
2.2 Marking and use

The terminal blocks are marked as follow:

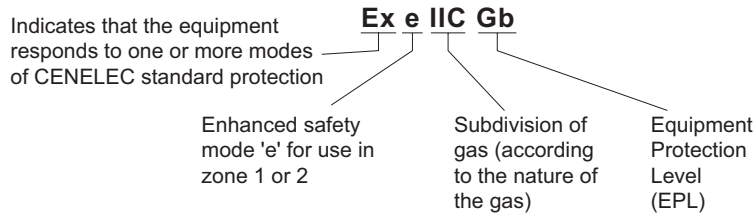
- 0081: Identification number of the notified body responsible for surveillance

0081  II 2 G D
Ex e IIC Gb
LCIE 16 ATEX 3049U
IECEx LCIE 16.0036 U

- Possible use of the terminal blocks embedded in the following devices:



- Protection modes:



LCIE 16 ATEX 3049U

UE type examination certificate n° 3049 for component (U) established by notified body L.C.I.E.

IECEx LCIE 16.0036 U

Conformity certificate n° 0036 for component (U) established by LCIE under IECEx scheme.

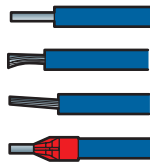
The ATEX certificate of the Viking 3 terminal blocks is a partial (component) attestation; it can be used as a basis for the attestation of an appliance or a protection system that would integrate these terminal blocks.

This implies the use of the terminal blocks in accordance with the technical data of the certified product.

2.3 Type of conductor

The conductors to be connected must be of copper, flexible type or rigid type:

- Class 1, rigid core:
- Class 2, cabled rigid core:
- Class 5, flexible core:
- Flexible core with ferrule:



2.4 Connection

2.4.1 Connection capacity

Block pitch (mm)	Nominal cross-section (mm ²)	Capacity (mm ²)	
		Rigid conductor	Flexible conductor ⁽²⁾
5	2.5	0.2 to 4 ⁽¹⁾	0.2 to 2.5
6	4	0.2 to 6	0.2 to 4
8	6	0.5 to 10	0.2 to 6
10	10	1.5 to 16	2.5 to 10
12	16	1.5 to 25	4 to 16
15	35	2.5 to 50	4 to 35
22	70	25 to 95	16 to 70

⁽¹⁾ Rigid conductor capacity blocks Cat Nos. 0 371 51/52: 2,5 mm² maxi with comb.

⁽²⁾ With or without ferrule

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2. VIKING 3 ATEX - IECEx (cont.)

2.4 Connection (cont.)


2.4.2 Tapping

Tapping is not allowed for protective conductor terminal blocks
Cat Nos. 0 371 70 to 75 and 0 371 79.

For other Cat Nos, it is possible to connect together 2 conductors at a single point of connection under following conditions:

- do not mix rigid and flexible cores.
 - do not mix 2 rigid core conductors with different cross-sections.
- Combinaison of 2 conductors at a single point are allowed as described into table below (mm²):

	Class 1 solid rigid core	Class 2 cabled rigid core	Class 5 flexible core	Flexible core with single ferrule	Class 5 flexible core (different cross- sections)
Pitch 5 2.5 mm ²	2 x 0.5 2 x 0.75 2 x 1		2 x 0.5 2 x 0.75 2 x 1	2 x 0.5	0.5 + 0.75
					0.5 + 1
					0.75 + 1
					0.75 + 1.5
Pitch 6 4 mm ²	2 x 0.5 2 x 0.75 2 x 1 2 x 1.5		2 x 0.5 2 x 0.75 2 x 1 2 x 1.5	2 x 0.5	0.5 + 0.75
					0.5 + 1
					0.75 + 1
					0.75 + 1.5
					1 + 1.5
					1 + 2.5
Pitch 8 6 mm ²	2 x 0.5 2 x 0.75 2 x 1 2 x 1.5 2 x 2.5		2 x 0.5 2 x 0.75 2 x 1 2 x 1.5 2 x 2.5	2 x 0.5 2 x 0.75 2 x 1	0.5 + 0.75
					0.5 + 1
					0.75 + 1
					0.75 + 1.5
					1 + 1.5
					1 + 2.5
					1.5 + 2.5
					1.5 + 4
					1 + 1.5
					1 + 2.5
Pitch 10 10 mm ²	2 x 1 2 x 1.5 2 x 2.5 2 x 4		2 x 1 2 x 1.5 2 x 2.5 2 x 4	2 x 1 2 x 1.5	1.5 + 2.5
					1.5 + 4
					2.5 + 4
					1.5 + 2.5
					1.5 + 4
					2.5 + 4
Pitch 12 16 mm ²	2 x 1.5 2 x 2.5 2 x 4		2 x 1.5 2 x 2.5 2 x 4	2 x 1.5 2 x 2.5 2 x 4	1.5 + 2.5
					1.5 + 4
					2.5 + 4
					2.5 + 6
					4 + 6
					2.5 + 4
					2.5 + 6
Pitch 15 35 mm ²	2 x 1.5 2 x 2.5 2 x 4 2 x 6		2 x 1.5 2 x 2.5 2 x 4 2 x 6	2 x 2.5 2 x 4 2 x 6	2.5 + 4
					2.5 + 6
					4 + 6
					4 + 10
					6 + 10
					6 + 16
Pitch 22 70 mm ²	2 x 16 2 x 25 2 x 35		2 x 16 2 x 25 2 x 35	-	16 + 25
					16 + 35
					25 + 35

 The intensity in the conductors shall not exceed the rated intensity of table § 2.8.

2. VIKING 3 ATEX - IECEx (cont.)

2.4 Connection (cont.)

2.4.2 Tapping (cont.)

Cat. Nos.		Comptability with twin ferrule Starfix			
		0 376 87 2 x 0.75 mm ²	0 376 88 2 x 1 mm ²	0 376 89 2 x 1.5 mm ²	0 376 90 2 x 2.5 mm ²
Block	Pitch de 5 2,5 mm ²	●	-	-	-
	Pitch de 6 4 mm ²	●	●	●	-
	Pitch de 8 6 mm ²	●	●	●	●
	Pitch de 10 10 mm ²	●	●	●	●

2.4.3 Stripping length of conductors

Block Pitch (mm)	Length (mm)
5	6 to 8
6	
8	10 to 12
10	
12	13 to 17
15	14 to 18
22	15 to 22

2.5 Thigtening torque

Block Pitch (mm)	Torque (Nm)	Srew driver Ø blade (mm)	Other tool
5	0.8	3.5	-
6	1.4	4	
8	1.4	4	
10	2	5.5	
12	2	5.5	PZ2
15	4	6.5	PZ2
22	10	-	Allen key 5 mm

For rail mounting of protective protection terminals with metal foil foot (Cat. Nos. 0 371 70 to 75, 0 371 79), torques are:

Block Pitch (mm)	Torque (Nm)	Srew driver Ø blade (mm)
5	srewless	
6		
8		
10		
12	1.4	4
15	1.4	4

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2. VIKING 3 ATEX - IECEx (cont.)

2.6 Operating temperature

These devices are designed to operate in the temperature range of -30°C to +55°C under maximum intensity as described in table of § 2.8.

2.7 Permissible material temperature


Temperature comprised between - 30°C and + 85°C. In use, without manipulation, the lower limit temperature is -45°C

2.8 Rated current

These values are based on the main supply of 5 adjacent blocks, it is necessary to include heating of conductors and terminal blocks when installed in order to fit with limit temperatures (maximum dissippable power into enclosure for desired temperature of the whole and maximum permissible temperature of terminal block material).

Table according to connected conductor.

Cross-section conductor (mm ²)	Rated current (A)
2.5	18
4	23
6	30
10	42
16	57
35	93
70	145

 The intensity in the block shall not exceed the intensity corresponding to its nominal cross section (§ 2.4.1).

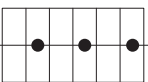
2.9 Operating voltage of terminal blocks

Blocks ^(*)	Operating voltage according to EN 60079-7(art. 4.3 and 4.4 safety "e")
1 level	500 V
2 entries - 2 outlets	250 V
2 and 3 levels	250 V

(*) last terminal of a same size group must be equipped with an ending isolating divider.

2.10 Operating voltage with accessories

The interposition of blocks between shunted blocks decreases the operating voltage value according to the table below.

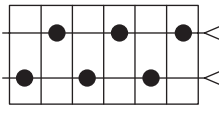
	Blocks	Type of interposed blocks	
		Protective conductor (metal foil foot)	Other blocks
 Simple alternated connection (1 comb)	Pitch of 5 mm 1 level	250 V	400 V
	Pitch of 6 mm 1 entry - 1 outlet	250 V	400 V
	Pitch of 8 mm	250 V	250 V
	Pitch of 10 mm	125 V	125 V
	Pitch of 12 mm	250 V	250 V
	Pitch of 15 mm	250 V	250 V
	Pitch of 6 mm 2 entries - 1 outlets	250 V	250 V
	2 and 3 levels ⁽¹⁾	-	250 V

⁽¹⁾On upper level only for 3 level blocks.

2. VIKING 3 ATEX - IECEx (cont.)

2.10 Operating voltage with accessories (cont.)

The use of insulated combs for a parallel "alternated" equipotential connection decreases initial operating voltage value of terminal blocks as described in table below.

 Parallel alternated connection (2 combs)	Pitch of 5 mm	125 V
	Pitch of 6 mm	125 V
	Pitch of 8 mm	125 V
	2 entries - 2 outlets	125 V
	2 and 3 levels ⁽²⁾	125 V

⁽²⁾On upper level only..