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# XCM
# medium power busbar system

Reference(s) :

**see relative catalogue for detailed reference tables**

CONTENT



## 1. USE

XCM is dedicated to the distribution of power in medium to large installations, including rising mains, in commercial and residential buildings.

XCM is the new Zucchini busbar trunking system ranging from 160A to 1000A, with aluminium alloy conductors, and from 250 A to 1000 A with 99.9% electrolytic copper conductors.

XCM system has a standard degree of protection up to IP55, when installed with the plug outlet cover, and is compliance with the IEC 61439-6 standard and reference ambient temperature is 40 °C.

XCM busbars guarantee maximum system functionality thanks to careful design of the components, easy installation, and the construction characteristics, which make XCM busbars among the strongest on the market.

The typical applications for XCM busbars are: industry, commercial and residential, hospitals, data centre, shopping centres and everywhere there is the need for power distribution up to 1000 A.

## 2. RANGE

### 2.1 Features

- All trunking components (straight lengths, elbows, etc.) are provided with a pre-assembled monobloc which considerably speeds up the installation of the system and makes transportation and storage operations easier.
- The monobloc and the shearhead bolt allow a very fast installation of the whole line.
- Tighten the shearhead bolt on the monobloc until the head breaks to electrically connect the elements. The breakage of the nut head guarantees long-lasting reliability and safety. The connection is service free. In case of a future modification on the line, the monobloc must be retightened using the second nut head with a torque wrench at the correct settings (see installation manual).
- If the monobloc has been tightened improperly, the head of the shearhead nut will prevent the mechanical coupling from closing.

The connection flanges and the seals serve as a protection for the element during transportation and ensure their degree of protection as well as their mechanical rigidity when being installed.

- XCM system has a standard IP55 protection when installed with the plug outlet cover.
- XCM system has lengths provided with a fire barrier (EI according to EN 1366-3) and structures which guarantee a time resistance against propagation of flames, transmission of gases, and transmission of heat. The fire load of XCM is extremely low compared to the quantity of plastic materials needed to insulate cables with the same capacity.
- All plastic materials are resistant and in compliance with the 'glow-wire' test (IEC EN61439-6).
- XCM is available in the following configurations:
    - 3P + N + PE casing
    - 3P + N + PE
    - 3P + N + FE + PE casing

  All version are available in a painted version (RAL to be defined by the customer)
- The monobloc connection of the XCM line is able to compensate for any heat expansion affecting the conductors, thus avoiding the need to insert special expansion lengths even in considerably long systems. If the XCM line is installed vertically (riser main) there is no need to install busbar thrust units because the monobloc prevents the conductors from sliding.
- XCM range has been designed and manufactured with a strong casing.The degree of impact resistance of the casing which houses this line is the maximum stated in IEC EN60068-2-62: IK10.
- XCM is available in:
    - aluminium alloy conductors (160 - 1000 A)
    - 99.9% electrolytic copper conductors (250 - 1000 A)

| *Available rating XCM [A]* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *ALUMINIUM* | 160 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 |
| *COPPER* | - | 250 | 315 | 400 | - | 630 | 800 | 1000 |

On request, also it is possible to have XCM line in non-standard versions. In the table below, some example of special version available

| Reference | Version description | Conductors |
|---|---|---|
| **53400P261** | **3Ph + N + PE casing** | 4 |
| **53410P261** | 3Ph + N + PE | 5 |
| **53410P261-E5** | 3Ph + N + FE + PE casing | 5 |
| **53420P261** | 3Ph + N + PE casing (painted version) | 4 |
| **53430P261** | 3Ph + N + PE (painted version) | 5 |
| **53430P261-E5** | 3Ph + N + FE + PE casing (painted version) | 5 |

*For more details on special versions, please contact Legrand.*

## 2.2 Installation requirements

Depending on installation requirements Legrand can provide various technical solutions:

- 90° elbows: available for carrying out changes of direction both horizontally and vertically. There is a quick connection, as for the straight lengths. The standard degree of protection is IP55;
- Tees, crossovers and double elbows available.
  The standard degree of protection is IP55;
- straight elements with fire barrier (internal + external) EI.
  Tested in laboratories (in compliance with Standards EN 1366-3) to confirm that, if correctly installed, they maintain the intrinsic fire-resistant properties of the wall;
- straight lengths with 5 outlets on one side; they are ideal for riser mains;
- straight lengths with 5+5 outlets on both sides; they are ideal for data centre solutions;
- straight lengths with no outlets, used for energy transport only.

## 2.3 Composition

XCM includes all the necessary components to enable any path for the busbar run that the project requires. The busbar system is composed of:

**2.3.1 STRAIGHT ELEMENTS** (for detailed references, see catalogue)
Designed for transport and distribution (with tap off outlets) of medium-power energy. Supplied with their pre-installed monobloc.

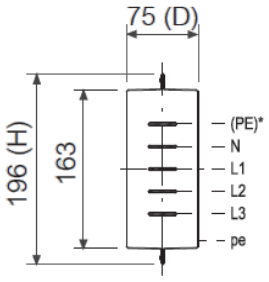
| Characteristic | Description |
|---|---|
| Reference standard | IEC 61439-6 |
| Reference temperature | 40 °C |
| Protection degree | IP55 |
| Thickness of metal sheet | 0.8 mm |
| N° of conductors | 4 with equal section 3P+N or 5 (3P+N+PE) |
| Dimension (LxH) | 75-135x196mm |

Conducting «flame retardant» in accordance with EN 60332-3
Separation between the conductors by plastic insulators reinforced with fibreglass, guarantees a degree of V0 self-extinguishing (according to UL94) and conform to the glow-wire test according to IEC 60695-2-10

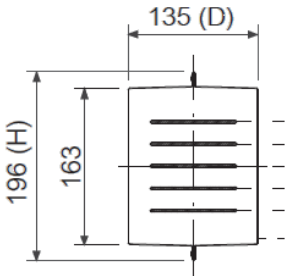
*STRAIGHT ELEMENTS for transport*

**Section dimension for:**
* for 3P+N+PE and 3P+N+FE+PE casing

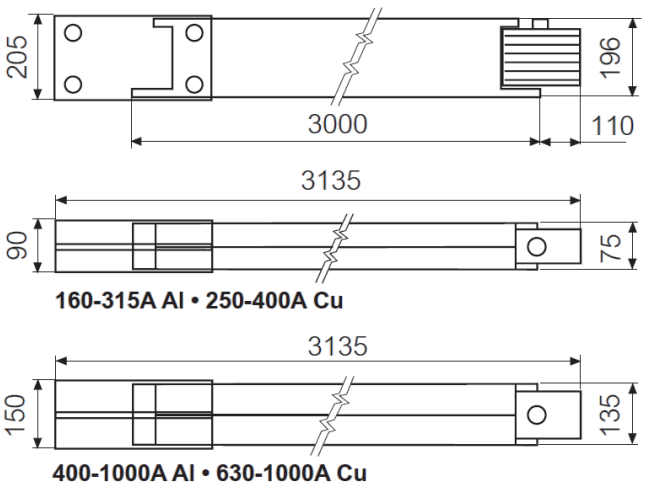
160-315A Al
250-400A Cu




400A-1000A Al
630-1000A Cu



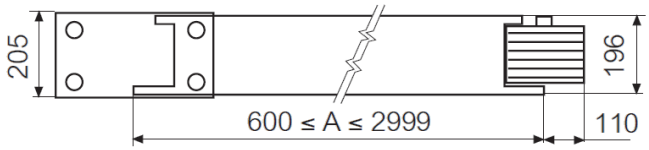

**Longitudinal dimension for:**
*- standard straight lengths (3000 mm)*

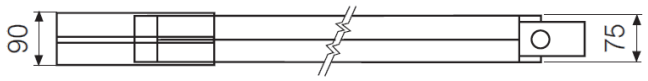


Reference(s) :

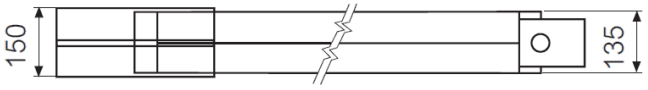
**see relative catalogue for detailed reference tables**

*- straight lengths at measure from 600 mm to 2999 mm*




**160-315A Al • 250-400A Cu**




**400-1000A Al • 630-1000A Cu**

*STRAIGHT ELEMENTS (for distribution)*

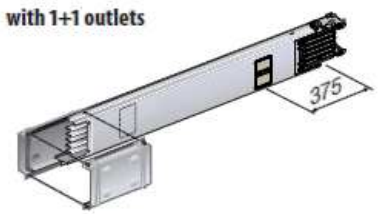
Supplied with their tap-off outlets

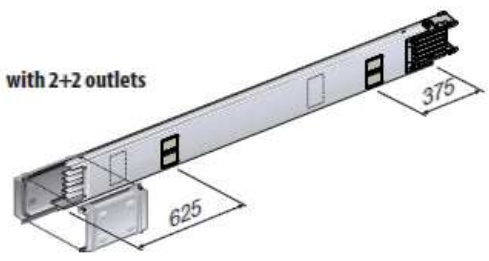
- standard length: 3 m
- standard tap-off outlets:
  - spaced at 1000mm intervals on both sides for Standard straight elements (IP55)
  - spaced at 500mm intervals on one side for vertical installation (IP55)
  - spaced at 600mm or 800mm on both sides for Data Center straight elements (IP40)

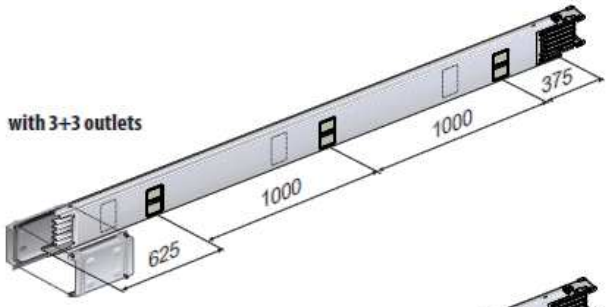
For each length, here the possible number of outlets:

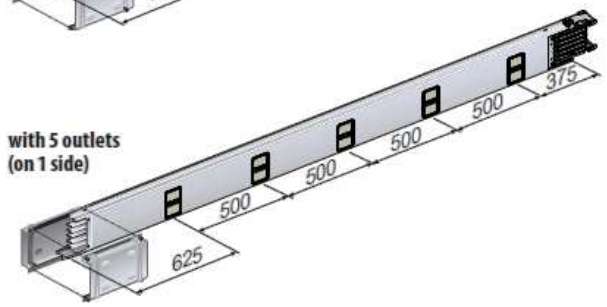
| Lenght [mm] | Outlet numbers |
|---|---|
| 1000÷1500 | 1+1 |
| 1501÷2999 | 2+2 |
| 3000 | 3+3 |
| 3000 | 5 |

**Inter distance lengths for different available versions:**




*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue.*

**2.3.2 EXAMPLE OF SPECIFIC INDOOR APPLICATION:**

**Data centre straight lengths (IP40)**

Straight lengths with 5+5 outlets on both sides; they are ideal for data centre solutions.

Straight lengths have a distance between outlets of 600 mm or 800 mm; in this way tap-off boxes are centered with the cabinet containing racks they should be connected with (see catalogue for detailed dedicated items)

It allows, in case of failure, rapid identification and intervention on the non-functioning rack.

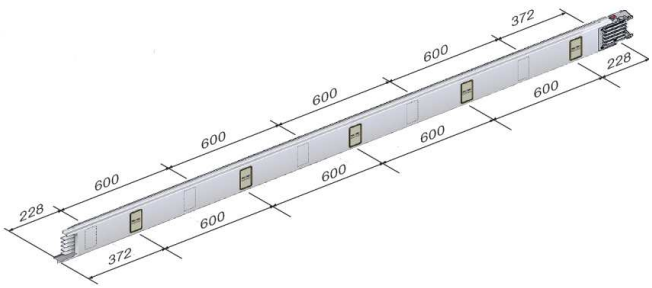
Standard tap-off boxes are also suitable for installation in data centers.

The straight lengths for data centres are available with IP40 protection, which is suitable for installation in the white space.

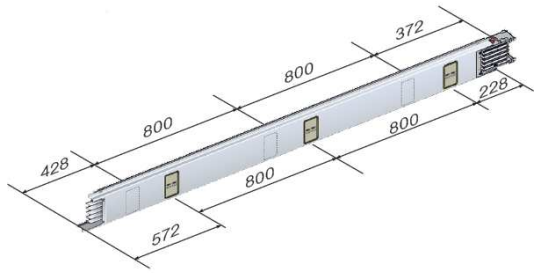
Here an example of connection between the cabinet containing rack and straight lengths.

**Dimensions.**

*Lengths with outlets centres 600 mm (on both sides) 3 m*

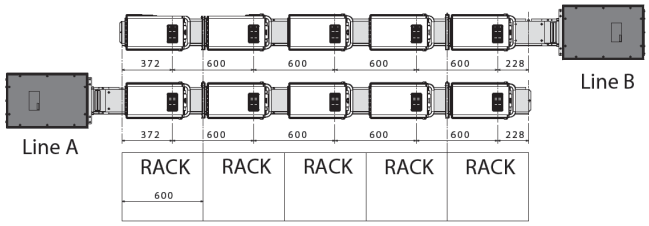


*Lengths with outlets centres 800 mm (on both sides) 2.4 m*



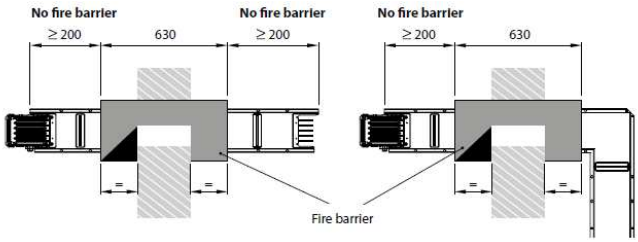

Connection between the cabinet containing 600 mm rack and busbar
Straight lenghts 3 m with 5 + 5 outlets centres 600 mm

- Line A: FRONT side is dedicated to supply of power, BACK side for the backup.
- Line B: FRONT and BACK side are dedicated for backup.



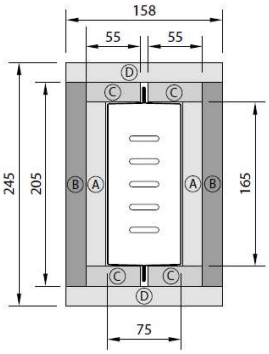

**2.3.3 SPECIAL ELEMENTS** (for detailed references, see catalogue)
Designed to meet any installation requirement.

*Fire barrier elements EI (EN 1366-3)*
When the busbar trunking system crosses fire resistant walls or ceilings, it must be fitted with appropriate fire barriers.
The fire barrier is 630 mm and must always be positioned in the middle of the fire resistant wall or ceiling crossed by the busbar.
After crossing fire resistant walls or ceilings, any cavity must be sealed with material meeting current regulations for the required building fire resistance class.
In order to ensure the maximum resistance class it is necessary to fit at the factory an internal fire barrier.

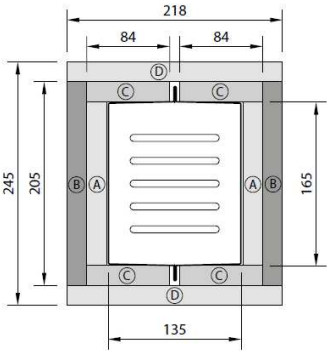



It is therefore necessary to indicate at the order stage what elements will cross fire resistant walls or ceilings.

**Section dimensions**




160÷315A Al
250÷400A Cu

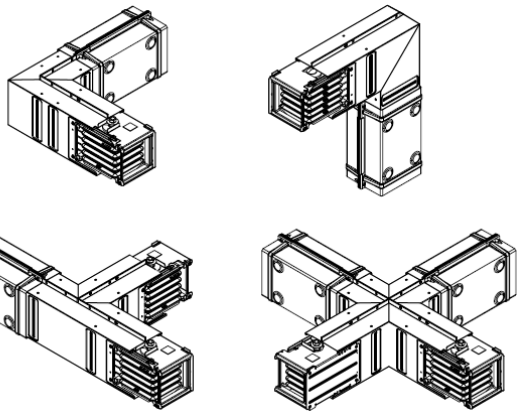



400÷1000A Al
630÷1000A Cu

To be comply to the Certification of Fire resistance it's necessary to install both internal (internal barrier in few ratings is not required) and external fire barrier supplied by Legrand.

**2.3.4 ROUTING COMPONENTS** (supplied with its pre-installed monobloc)
Elements able to meet any change of direction with standard or special solutions.
In particular, these are the possible types:

- Elbows (horizontal right/left and vertical right/left)
- Double elbows (horizontal, vertical, horizontal + vertical, vertical + horizontal), on request
- Horizontal standard T elements, right and left (300+300+300 mm)
- Standard crossovers (300+300+300+300 mm)



*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue.*

### 2.3.5 FEED UNIT

The Feed units are used at the end of the lines, when the busbar must be powered using cables.
They are available in:

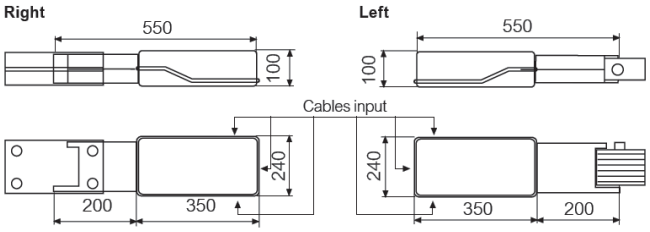
- plastic material (from 160A to 250A) for Al or Cu busbar and in type right or left
- metal material (for all ratings from 160A to 1000A) for Al or Cu busbar and in type right, left or intermediate

*Plastic Feed unit*

*Metal Feed unit*

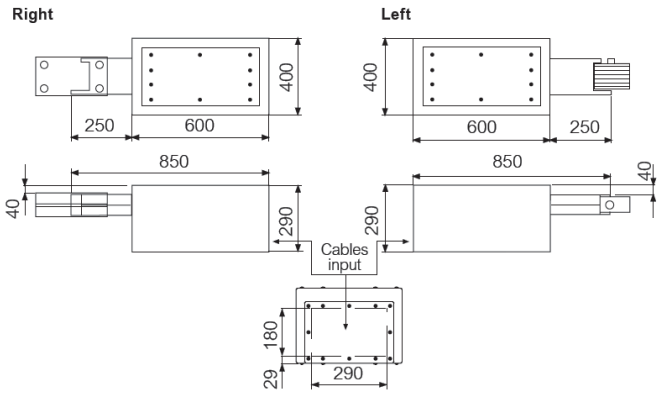
**Dimensions.**

*Plastic Feed unit*



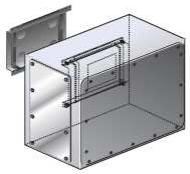

For cable connection: maximum section (3x120mm2 + 1x70mm2) or (3x150mm2) max PG 48

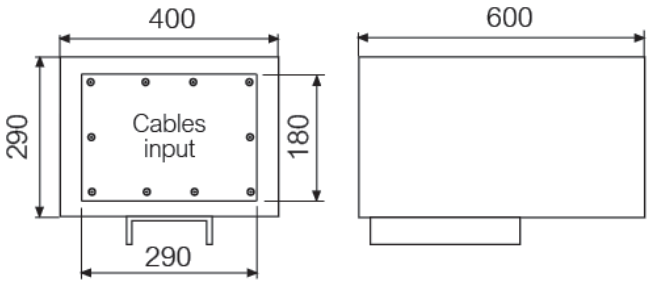
*Metallic Feed unit*




*Intermediate Metallic Feed unit*

Used to power a busbar from any intermediate point on the connection between two elements. The intermediate end feed unit can also be used for reducing the voltage drop of the line






Upon request, the feed units are available with AC23 switch disconnector installed

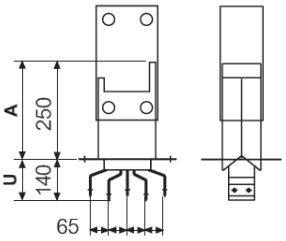
*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue.*

### 2.3.6 FEED UNIT for switchboard/ transformer

These components are designed direct connection of the busbar to a switchboard or to the LV terminals of a distribution transformer.
They can be in right or left type.

**Dimensions.**

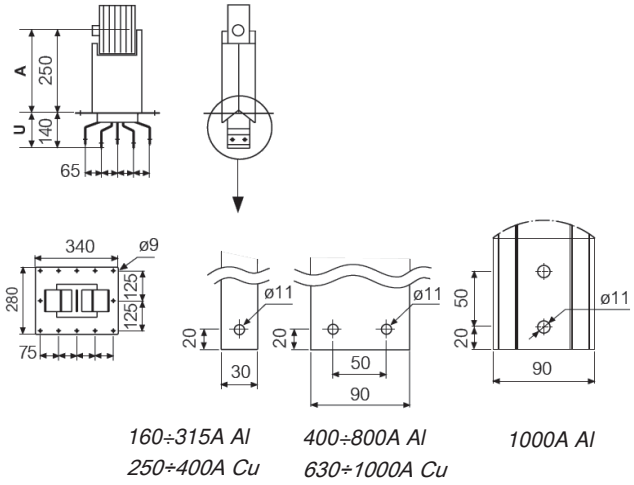
*Right type*




$A_{min}$ = 250 mm
$A_{max}$ = 849 mm

$U_{min}$ = 140 mm
(170 mm for $I_n$ = 1000A)
$U_{max}$ = 200 mm

*Left type*




*160÷315A Al* *400÷800A Al* *1000A Al*
*250÷400A Cu* *630÷1000A Cu*

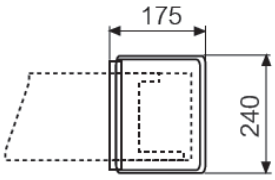
*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue.*

### 2.3.7 END COVER IP55

(Suitable for all XCM versions)

Used to ensures the closure and the IP55 degree of protection (EN 60529).

**Dimensions.**




*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue*

## 3. TECHNICAL INFORMATION

### 3.1 General features

XCM line is available in the standard range:

- from 160A to 1000A with aluminum alloy conductors
- from 250 to 1000A with 99.9% electrolytic copper conductors

XCM system has a standard degree of protection up to IP55, when installed with the plug outlet cover, and is compliance with the IEC 61439-6 standard and reference ambient temperature is 40 °C.

The wide range of tap-off boxes is capable of meeting all needs of the customer.

Tap-off boxes from 32 A to 1000 A are available, inside which it is possible to house protection devices, such as fuses, MCBs, and/or MCCBs.

Each component is made using high quality materials, in compliance with technical and safety requirements. During each stage of the manufacturing process, maximum attention is given to each and every element.

The unique design of the XCM monobloc compensates the thermal expansion of conductors.

This is a key benefit for vertical (rising mains) applications as the system does not require busbar blocking elements, or thermal expansion elements.

The components and the features of the XCM straight lengths are:

- a casing made of galvanized steel used as protective earth (PE).
- overall busbar dimensions: 75x196 and 135x196
- painted casing available on request;
- number of conductors: 4 with the same section (3P+N) with PE madefrom the casing or 5 when using XCM (3P+N+PE), available in the aluminum or electrolytic copper version with 99.9% purity
- conductors insulators are made by fiberglass reinforced plastic material, ensuring a V0 selfextinguishing degree (according to UL94), in compliance with the glow-wire test according to IEC 60695-2-10;
- tap-off outlets with a constant centre distance of 1 m on both sides of the busbar (3+3 outlets every 3m), set up for being connected to plug-in type tap-off boxes; These outlets open and close automatically when inserting or pulling out a tap-off box
- monobloc electric junction system made with tin plated aluminium for XCM Al and copper for XCM Cu system to connect conductors and PE in a fast and reliable way. The monobloc has shearhead bolts with a preset torque setting which ensure good, long-lasting electrical continuity

- all components and accessories of the XCM line are IP55
- the whole busbar is fire retardant in compliance with theIEC 60332-3 standard

Allows you to electrically power the XCM line through a cable line or directly connected to a distribution board. The 160 and 250A feed units have terminals for cables up to 150mm2; for higher ratings, the cable connection to the feed unit requires cable lugs to be fastened to the provided spreaders. The XCM line can be provided with intermediate feed units or end feed units with a switch-disconnector which allows you to isolate the whole line for carrying out maintenance operations or layout changes, if required.
The end cover ensures the IP55 protection degree at the end of the line.
In order to fix the line to the structure of the building, directly or withwall / ceiling / beam supports, it is necessary to use the bracket supportsor vertical suspension supports.

Tap-off boxes, used for energizing three-phase loads from 32A up to 1000A, they can be divided into two big categories:

1-Plug-in type tap-off boxes (from 32A up to 630A) with the following features:

- Intervention under load possible up to 32A
- disconnection device integrated into the cover of the boxes with arating from 63A to 630A, ensuring automatic absence of electriccurrent when the cover is opened
- possibility of padlocking box cover in the opendisconnected position sothat all maintenance operations of the loads connected to it can becarried out safely
- the supplied PE contact (protective conductor) is the first to make anelectrical connection when inserting the box into the outlet and it is the lastto disconnect when pulling it out
- all insulating plastic components are in compliance with the IEC 60695-2-1 glow-wire test and rated V2 self-extinguishing according to the UL94
- standard IP55 degree of protection without using additional accessories
- availability of boxes in the following versions:
    - with a set of three fuse carriers
    - with Lexic MCBs
    - with industrial sockets and Schuko sockets
    - with AC23 switch disconnector and fuse carrier
    - for MCCBs.

2-Boxes bolted onto the connection (from 630A to 1000A) which include the following features:

- very easy, fast and reliable installation
- high rated current
- rigid connection to the busbar through the use of a monobloc junction similar to the straight element system
- possibility of removing the boxes only when the busbar is not energized (isolated busbar)
- availability of boxes in the following versions:
    - AC23 switch disconnector and fuse carrier
    - for MCCBs

### 3.2 Weights

In the following tables, the specific weights for each line and material are shown.

#### 3.2.1 XCM Aluminium

| XCM Aluminium | | |
|---|---|---|
| In [A] | Weight [Kg/m] | |
| | 4 conductors | 5 conductors |
| 160 | 7.1 | 7.3 |
| 250 | 7.6 | 7.8 |
| 315 | 8.3 | 8.7 |
| 400 | 11.0 | 11.8 |
| 500 | 12.7 | 13.9 |
| 630 | 14.0 | 15.5 |
| 800 | 15.0 | 16.8 |
| 1000 | 17.0 | 19.2 |

#### 3.2.1 XCM Copper

| XCM Copper | | |
|---|---|---|
| In [A] | Weight [Kg/m] | |
| | 4 conductors | 5 conductors |
| 250 | 9.5 | 10.2 |
| 315 | 10.4 | 11.3 |
| 400 | 14.3 | 15.9 |
| 630 | 19.8 | 22.5 |
| 800 | 25.4 | 29.5 |
| 1000 | 29.5 | 34.6 |

### 3.3 Temperature derating

Here below the tables showing the general correction factor for ambient temperature for XCM lines.

*For ambient temperatures under -5°C contact Legrand technical support.*

*Data in the table are referred to 50Hz.*

*For 60 Hz, please contact Legrand technical support.*

| Daily average ambient temperature | General correction factor for amb. temperatures different from 40°C ($k_t$) |
|---|---|
| -5 | 1.28 |
| 0 | 1.25 |
| 5 | 1.22 |
| 10 | 1.19 |
| 15 | 1.16 |
| 20 | 1.13 |
| 25 | 1.10 |
| 30 | 1.07 |
| 35 | 1.03 |
| 40 | 1 |
| 45 | 0.97 |
| 50 | 0.93 |

From 40°C it will be necessary to derate the busbar

## 4. CONFORMITY

XCM line has been given Type- Approval Certifications by the most prestigious Electro-technical agencies:

- Certificate of Compliance with Standard: IEC 61439-6
- GOST Type-Approval (Russia) In order to obtain these recognitions, the XCM range has undergone the following type tests, as confirmation of their quality:
    - Fire Barrier Test
    - IEC 60331-1 / CEI EN 50362 - Fire Resisting Test
    - XCM product has been subjected to seismic tests in accordance with IEEE Std 693-2018 and consequently certified.

XCM is self-supporting and the degree of impact resistance of the casing which houses this line is the maximum stated in IEC EN60068-2-62: IK10

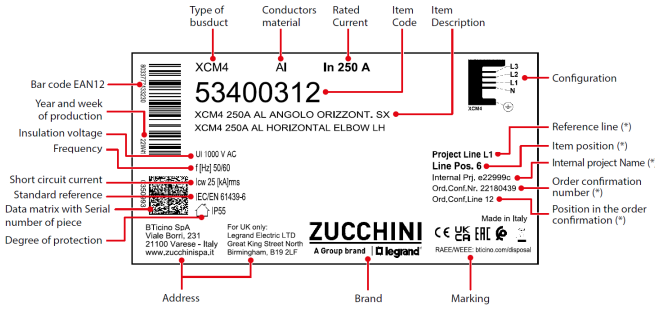
XCM busbar trunking systems are fire retardant in compliance with IEC 20-22 (IEC 332-3: 1992).

Product suitable for these climates:

- IEC 60068 2-11: Environmental tests Part 2-11: Tests – Test Ka: Salt mist.
- IEC 60068 2-30: Environmental tests Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)

### 4.1 Marking

Here below an example of the adhesive label found on each component, with highlighted all the details:




** optional fields*

## 5. ACCESSORIES

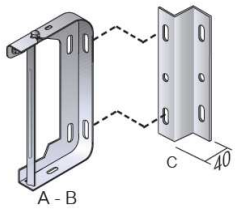
### 5.1 Brackets

The brackets enable sturdy installation of the busbar to the system support structures.

They can be divided into suspension brackets and for vertical (wall fixing) elements.

*To have a clear vision concerning with choosing criterias and installations rules, please see XCM catalogue and installation and user manual.*

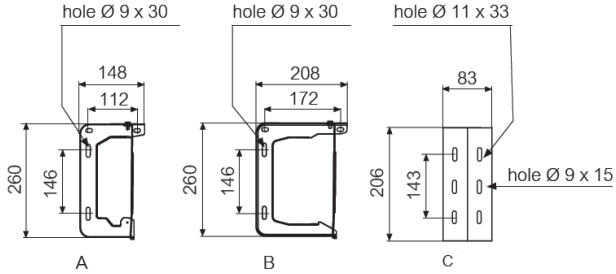
#### 5.1.1 Suspension brackets




A: suspension brackets for bars for:
Al: 160A-250A-315A
Cu: 250A-315A-400A

B: suspension brackets for bars for:
Al: 400-500-630-800-1000A
Cu: 630-800-1000A

C: wall spacer, required when the bracket needs to be fixed directly to the wall (40 mm)

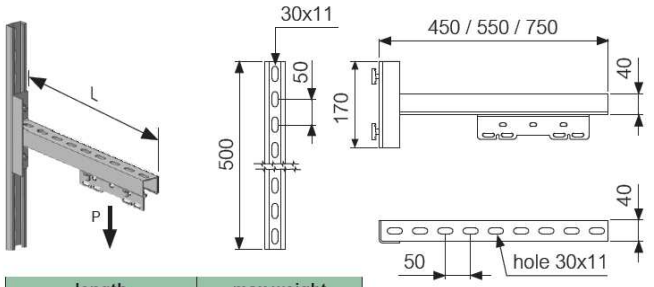


Dedicated suspension have been designed for:

- suspension bracket for vertical elements, suitable for riser mains up to 4 m and for weights up to 300 kg.
  To be used together with type A and B.
- suspension bracket with springs for riser mains.
  This bracket is used in vertical applications Use one bracket every 300 Kg

*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue.*

### 5.1.2 Wall fixing brackets




| length | max weight |
|---|---|
| L= 0.45 m | p max = 80 kg |
| L= 0.55 m | p max = 68 kg |
| L= 0.75 m | p max = 50 kg |

*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue.*

Depending on the capacity of the busbar, the quantity and the type of brackets being installed, checked that the selected distance (D) is the same or less than the maximum distance (Dmax) between two subsequent bracket with springs.
See tables below:

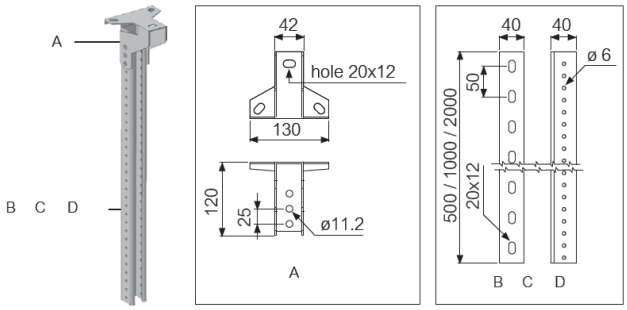
| XCM 4 conductors | | |
|---|---|---|
| | D max (m) | |
| In (A) | Al | Cu |
| 160 | 19 | - |
| 250 | 19 | 17 |
| 315 | 18 | 16 |
| 400 | 15 | 13 |
| 500 | 14 | - |
| 630 | 13 | 10 |
| 800 | 13 | 9 |
| 1000 | 12 | 8 |

| XCM 5 conductors | | |
|---|---|---|
| | D max (m) | |
| In (A) | Al | Cu |
| 160 | 19 | - |
| 250 | 18 | 16 |
| 315 | 17 | 15 |
| 400 | 15 | 12 |
| 500 | 13 | - |
| 630 | 12 | 9 |
| 800 | 12 | 8 |
| 1000 | 11 | 7 |

The max load applicable to the brackets is 300 kg.
The values in the table have been calculated taking into consideration, in addition to the weight of the busbar, also the estimated weight of the accessories (25 kg for each element).

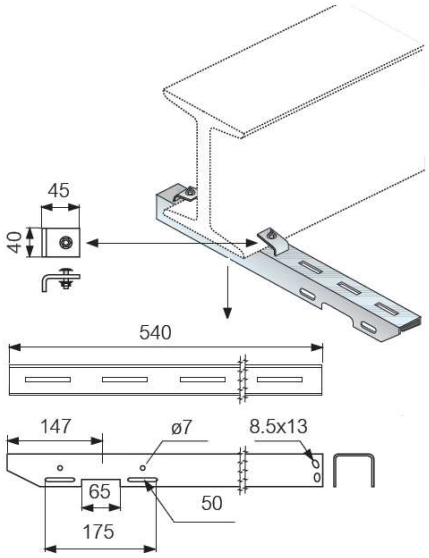
### 5.1.3 Fixing accessories

Ceiling fixing bracket with a base to be fixed to the ceiling and a drilled u-shaped section bar available in various lengths the section bar holes are suitable for being installed with the XCM brackets




*A = Ceiling flange*
*B = U-shaped bar L= 0.5 m*
*C = U-shaped bar L= 1 m*
*D = U-shaped bar L= 2 m*

Beam fixing bracket:
bracket holder that has a bracket and two clamps that are hooked to the wings of the beam




*For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalogue.*

Reference(s) :

**see relative catalogue for detailed reference tables**

### 5.2 Tap-off boxes (TOB)

Elements used for connecting and energizing electric loads, suitable, in the new range, for both XCM and XCP-S/-HP.

Available in fibre-glass or metal sheet and equipped with a sectioning cover that can be installed and removed when the busbar is energised. Both characterised by simple installation and fast connection thanks to the new layout of the hooks that offer safety and speed of assembly.

According to the rating, TOB can be divided in 3 types (for both fiberglass and metal).

*To have a complete vision of the product in terms of perimeter, terminal dimensions and installation rules, please see XCM catalogue pages and installation manual or contact Legrand for special requests.*

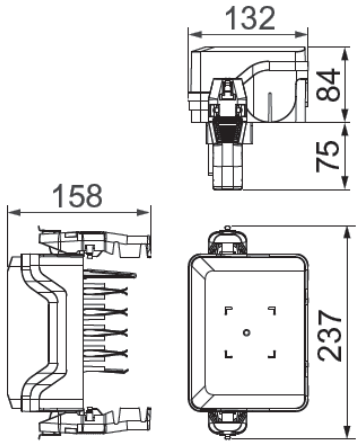
#### 5.2.1 Fibre-glass tap-off boxes (TOB)

They can be divided in:

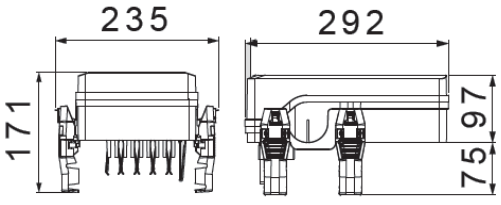
- *MCCB ready (from 63A to 250A):* prepared for Legrand MCCB (not provided) and available with rotary handle already installed on the cover and rotary mechanism inside the box
- *with fuse carriers (from 32A to 250A),* fuses not included
- *Empty (from 32A to 250A)*

Here below the main dimension [mm] overview for each type.

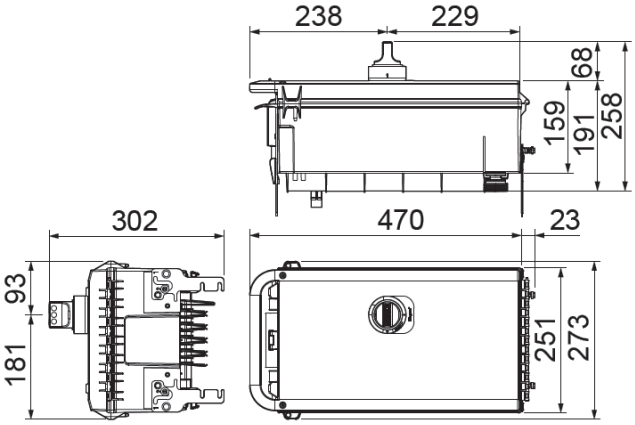
Type 1 (32A) – with fuse carriers



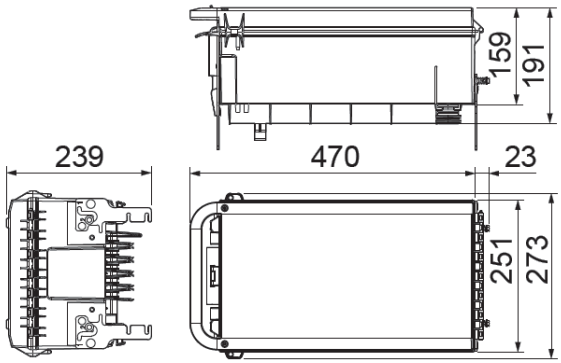

Type 1L (32A) – empty



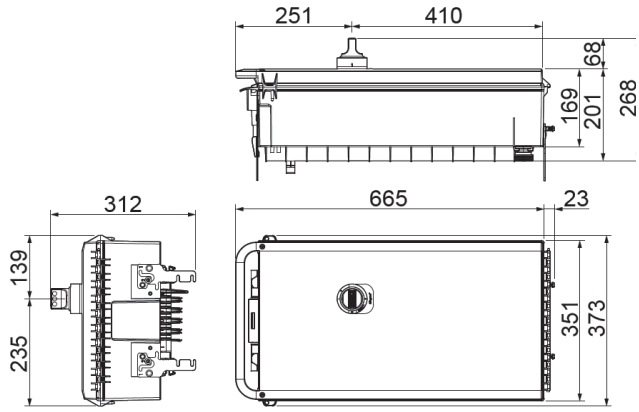

Type 2 (63/ 160A) – MCCB ready




Type 2 (63/125/160A) – with fuse carriers / empty



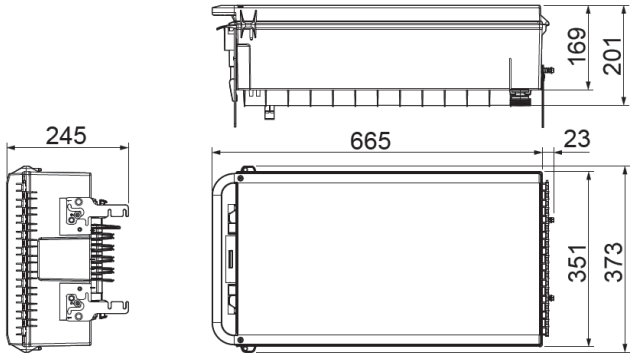

Type 3 (250A) – MCCB ready



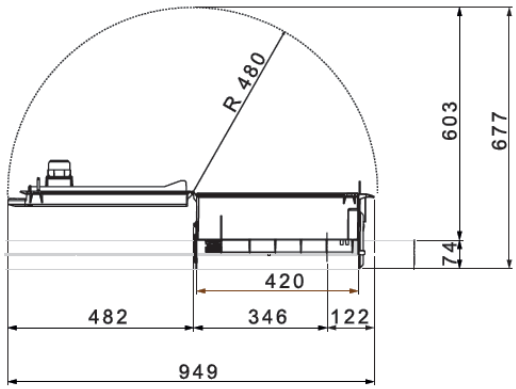
Reference(s) :

**see relative catalogue for detailed reference tables**

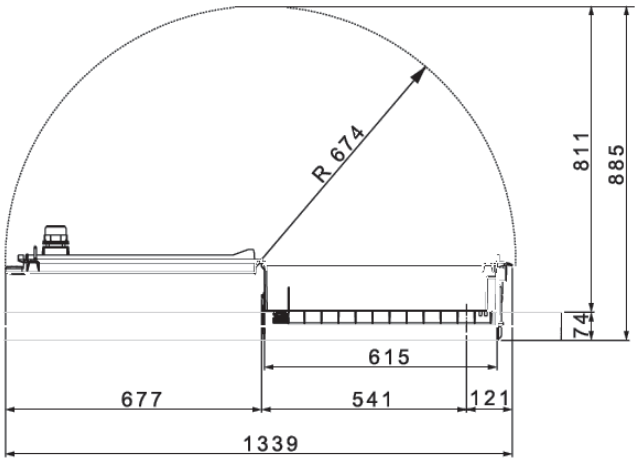
Type 3 (250A) – with fuse carriers / empty



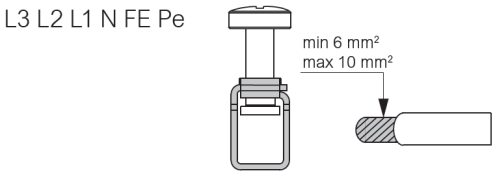

Total dimensions with cover open – Type 2




Total dimensions with cover open – Type 3




Terminal dimension Type 1




For Type 2 and Type 3 size terminals, see metal TOBs taking into account that:

- Fibre-glass Type 2 terminals = metal Type 1 terminals
- Fibre-glass Type 3 terminals = metal Type 2 terminals

*For further mounting details on TOBs, please refer to XCM user and installation manual*

**5.2.2 Metal tap-off boxes (TOB)**

They can be divided in:

- *MCCB ready (from 63A to 630A):* IP55, prepared for Legrand MCCB (not provided) and available in 2 versions: with hinged cover and with completely removable cover. Supplied with rotary handle already installed on the cover and rotary mechanism inside the box
- *with fuse carriers (from 63A to 630A):* IP55, fuses not included
- *with switch fuse (from 32A to 630A):* IP55, equipped with a switch disconnector (AC23) and a fuse carrier. The disconnector switch is operated through a rotary handle on the cover (not shown in the pictures).
  Cover with AC21A disconnection: not possible to open, close, install or pullout the TOB if the switch in in ON position.
  Fuses not included
- *Empty (from 32A to 630A), IP55*

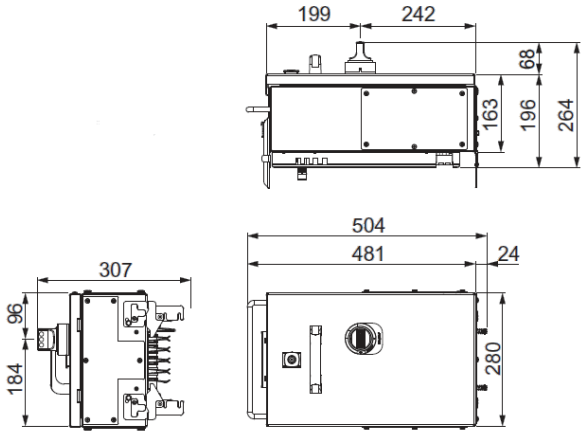
Table that summarize the different metal TOBs versus size and busbar rating:

| Types | Ratings [A] | | | | | |
|---|---|---|---|---|---|---|
| Description | 63 | 125 | 160 | 250 | 400 | 630 |
| MCCB ready | 1 | 1 | 1 | 2 | 3 | 3 |
| With fuse carriers | 1 | 1 | 1 | 2 | 3 | 3 |
| With switch fuse | 1 | 1 | 1-2 | 2 | 3 | 3 |
| Empty | 1 | 1 | 1 | 2 | - | 3 |

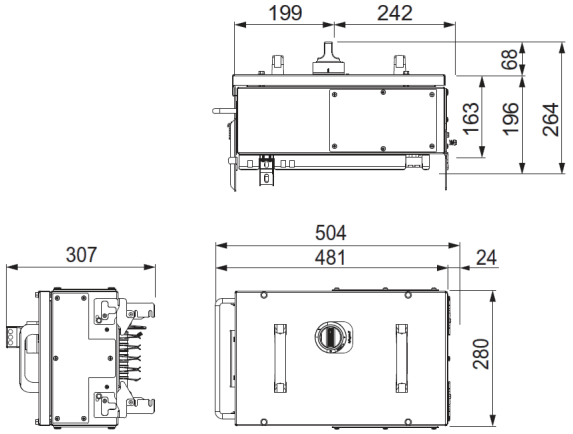
Reference(s) :

**see relative catalogue for detailed reference tables**

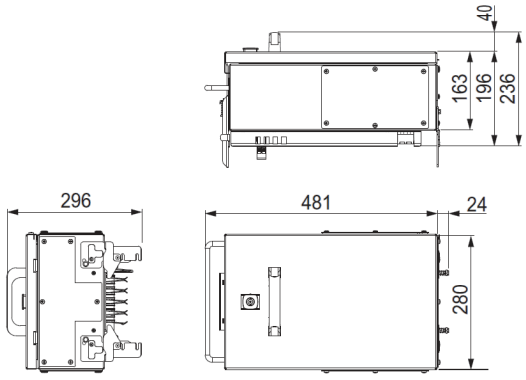
Type 1 (63/125/160A) – MCCB ready



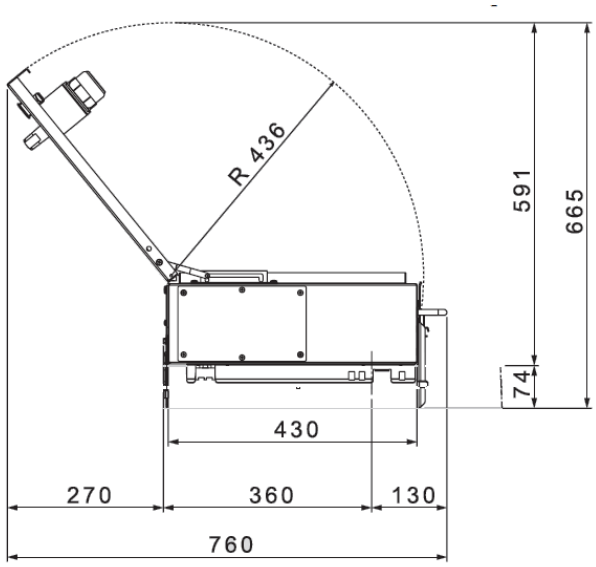

Type 1 (63/125/160A) – MCCB ready (with removable cover)




Type 1 (125/160A) – Empty and with fuse carriers

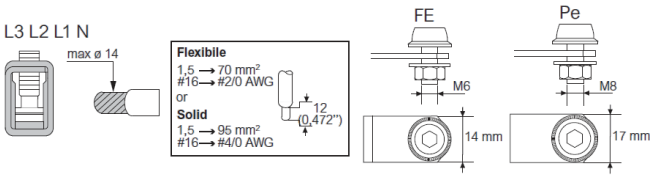



Total dimensions with cover open – Type 1

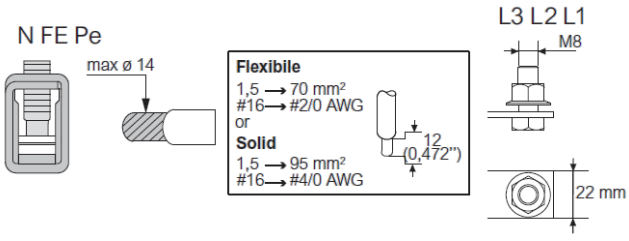



*For further mounting details on TOBs, please refer to XCM user and installation manual*

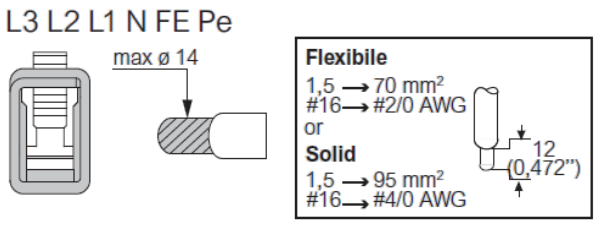
Terminal dimension Type 1 – MCCB ready




Terminal dimension Type 1 – with fuse carriers



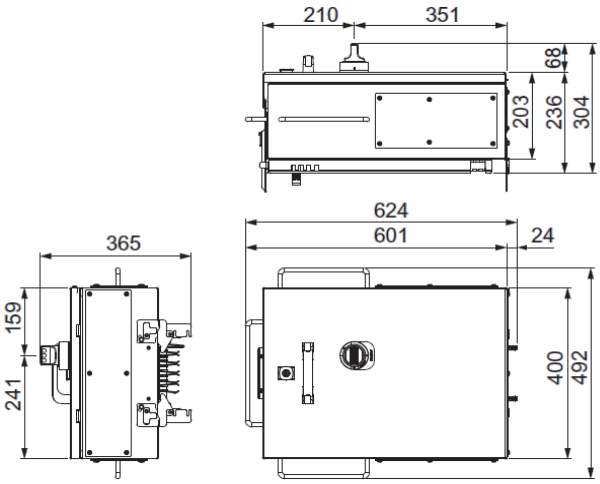

Terminal dimension Type 1 – empty



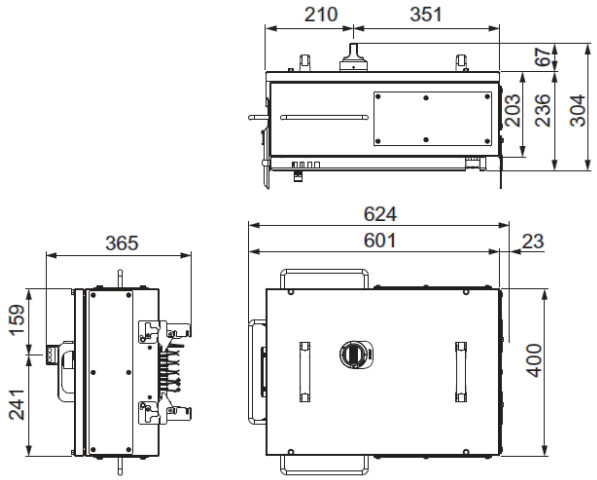
Reference(s) :

**see relative catalogue for detailed reference tables**

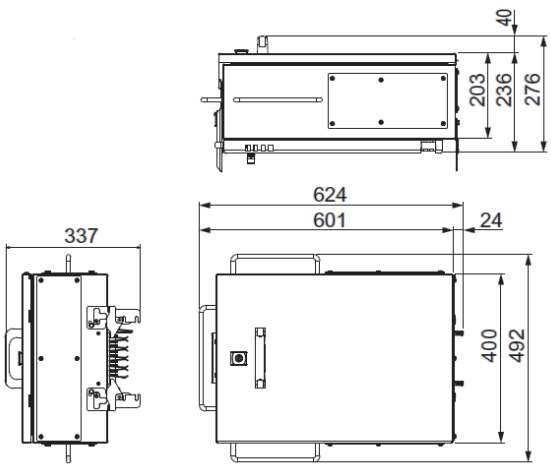
Type 2 (250A) – MCCB ready



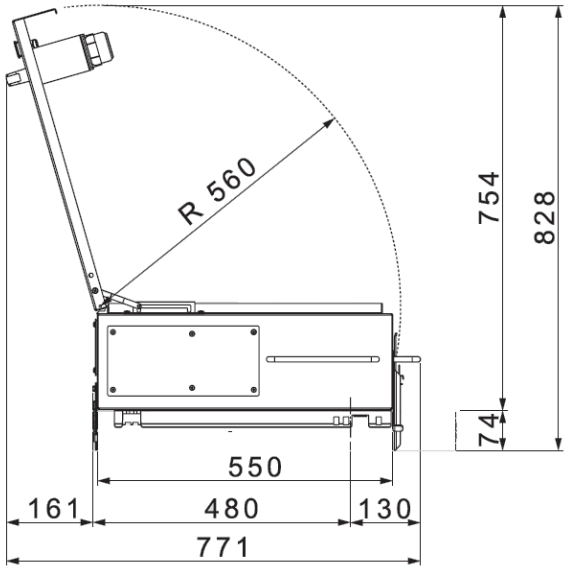

Type 2 (250A) – MCCB ready (with removable cover)




Type 2 (250A) – Empty and with fuse carriers

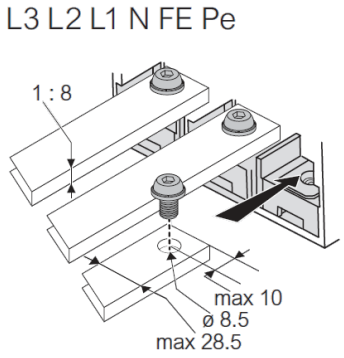



Total dimensions with cover open – Type 2

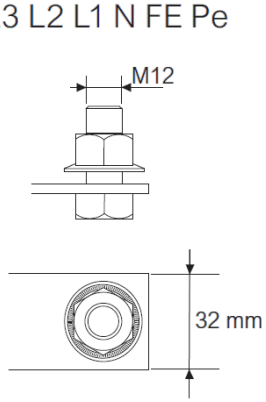



*For further mounting details on TOBs, please refer to XCM user and installation manual*

Terminal dimension Type 2 – MCCB ready and empty



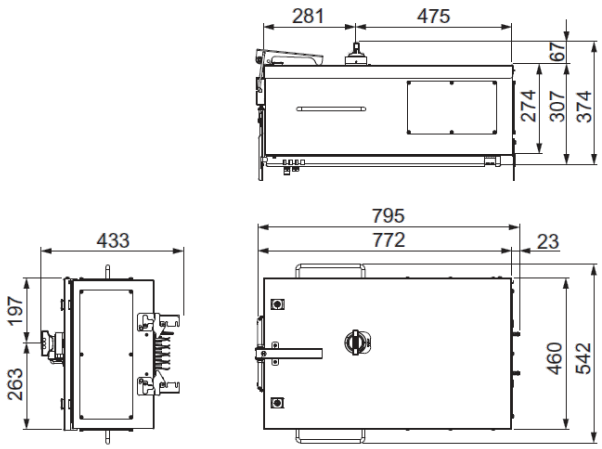

Terminal dimension Type 2 – with fuse carriers



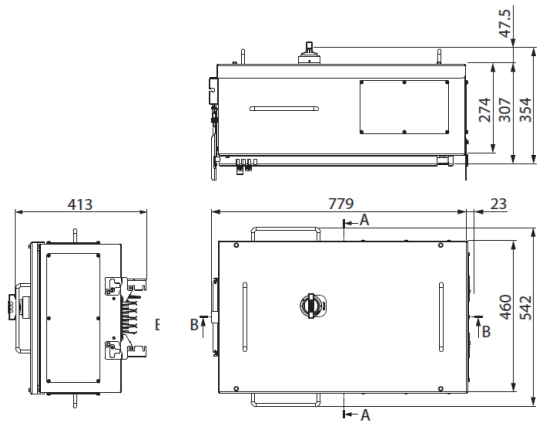
Reference(s) :

**see relative catalogue for detailed reference tables**

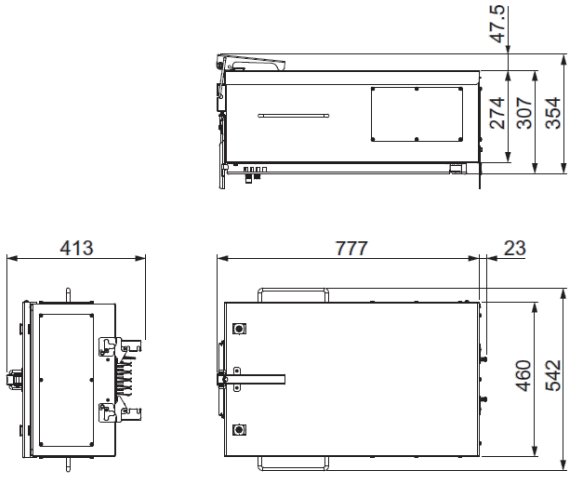
Type 3 (400/630A) – MCCB ready



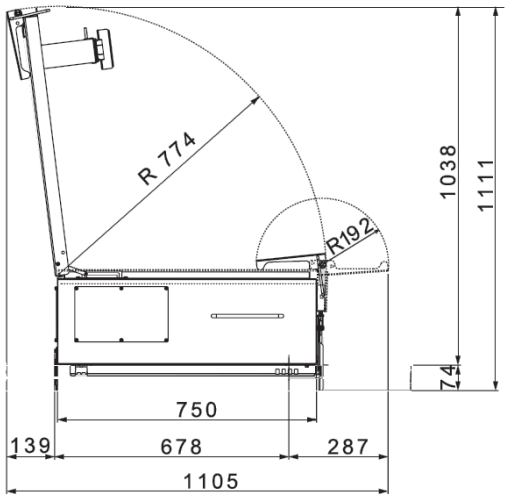

Type 3 (400/630A) – MCCB ready (with removable cover)




Type 3 (400/630A) – Empty and with fuse carriers

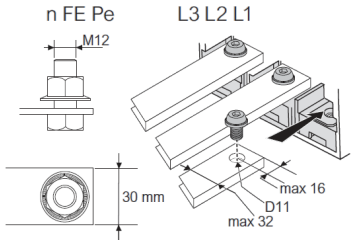



Total dimensions with cover open – Type 3

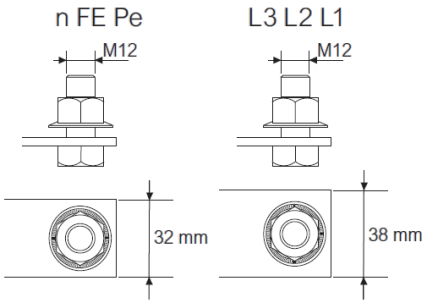



*For further mounting details on TOBs, please refer to XCM user and installation manual*

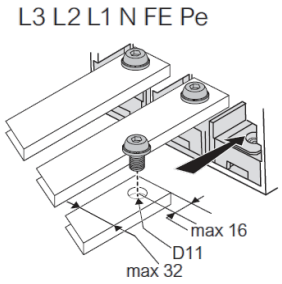
Terminal dimension Type 3 – MCCB ready




Terminal dimension Type 3 – with fuse carriers




Terminal dimension Type 3 – empty



Reference(s) :

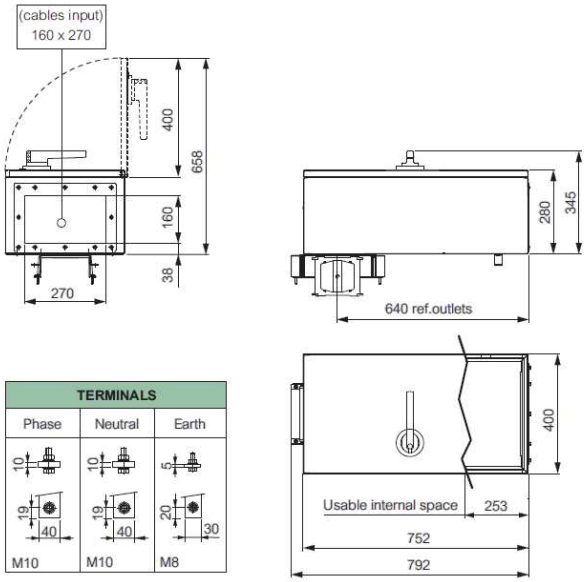
**see relative catalogue for detailed reference tables**

### 5.2.3 Bolt-on tap-off boxes (TOB)

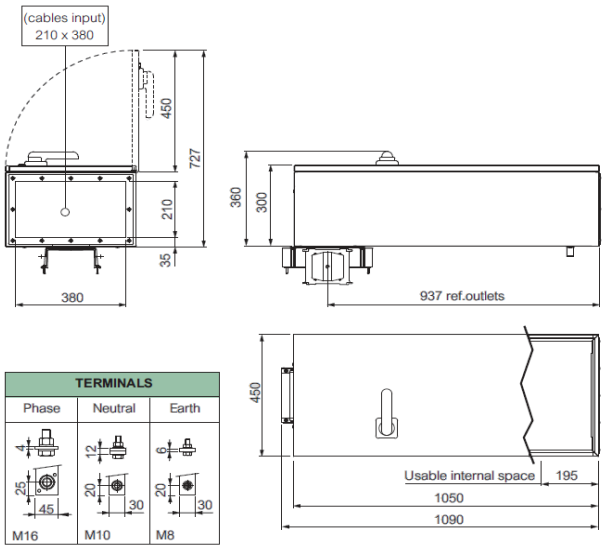
They are installed on the junction between 2 straight length.
As this connection affects live conductors, it can not be carried out when the line is energized, but only if isolated.
There are different item for aluminium and copper (see XCM catalogue for more details).
The typology involved are with fuse carriers.

**Dimensions.**

630A




800/1000A




*For further mounting details on TOBs, please refer to XCM user and installation manual*

## 6. Technical data

### 6.1.1 XCM ALUMINIUM *(4 Conductors):* 3P+N+PE (50Hz)

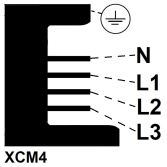
| Rated current | $I_n$ [A] | 160 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 |
|---|---|---|---|---|---|---|---|---|---|
| Overall dimension of the busbars | L x H [mm] | 196 x 75 | 196 x 75 | 196 x 75 | 196 x 135 | 196 x 135 | 196 x 135 | 196 x 135 | 196 x 135 |
| Rated operational voltage | Ue [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 690 |
| Rated insulation voltage | Ui [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 690 |
| Frequency | f [Hz] | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Rated short-time current (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 25 * | 25 * | 25 | 30 | 36 | 36 | 36 |
| Peak current | $I_{pk}$ [kA] | 30 | 53 | 53 | 53 | 63 | 76 | 76 | 76 |
| Allowable specific energy for three-phase fault | $I^2t$ [MA²s] | 23 | 63 | 63 | 625 | 900 | 1296 | 1296 | 1296 |
| Rated short-time current of the neutral bar (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 25 * | 25 * | 25 | 30 | 36 | 36 | 36 |
| Peak current of the neutral bar | $I_{pk}$ [kA] | 28 | 49 | 49 | 49 | 59 | 70 | 70 | 70 |
| Rated short-time current of the protective circuit (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 15 * | 15 * | 13 | 13 | 13 | 13 | 13 |
| Peak current of the protective circuit | $I_{pk}$ [kA] | 30 | 30 | 30 | 26 | 26 | 26 | 26 | 26 |
| Phase resistance at 20°C | $R_{20}$ [mΩ/m] | 0,493 | 0,331 | 0,202 | 0,120 | 0,077 | 0,060 | 0,052 | 0,037 |
| Phase reactance (50hz) | X [mΩ/m] | 0,150 | 0,150 | 0,150 | 0,140 | 0,070 | 0,070 | 0,070 | 0,060 |
| Phase impedance | Z [mΩ/m] | 0,515 | 0,363 | 0,252 | 0,184 | 0,104 | 0,092 | 0,087 | 0,070 |
| Phase resistance at thermal conditions | R [mΩ/m] | 0,651 | 0,485 | 0,285 | 0,152 | 0,098 | 0,080 | 0,074 | 0,053 |
| Phase impedance at thermal conditions | Z [mΩ/m] | 0,668 | 0,507 | 0,322 | 0,207 | 0,120 | 0,106 | 0,102 | 0,080 |
| Neutral resistance | $R_{20}$ [mΩ/m] | 0,493 | 0,331 | 0,202 | 0,120 | 0,077 | 0,060 | 0,052 | 0,037 |
| Functional Earth resistance (FE) | $R_{20}$ [mΩ/m] | - | - | - | - | - | - | - | - |
| Functional Earth reactance (FE) (50hz) | X [mΩ/m] | - | - | - | - | - | - | - | - |
| Resistance of the protective bar | $R_{PE}$ [mΩ/m] | 0,310 | 0,310 | 0,310 | 0,257 | 0,257 | 0,257 | 0,257 | 0,257 |
| Reactance of the protective bar (50hz) | $X_{PE}$ [mΩ/m] | 0,220 | 0,220 | 0,220 | 0,180 | 0,180 | 0,180 | 0,180 | 0,180 |
| Resistance of the fault loop | $R_o$ [mΩ/m] | 0,803 | 0,641 | 0,512 | 0,377 | 0,334 | 0,317 | 0,309 | 0,294 |
| Reactance of the fault loop | $X_o$ [mΩ/m] | 0,370 | 0,370 | 0,370 | 0,320 | 0,250 | 0,250 | 0,250 | 0,240 |
| Impedance of the fault loop | $Z_o$ [mΩ/m] | 0,884 | 0,740 | 0,632 | 0,494 | 0,417 | 0,404 | 0,397 | 0,380 |
| Zero-sequence short-circuit average resistance phase - N | $R_o$ [mΩ/m] | 0,657 | 0,441 | 0,269 | 0,160 | 0,103 | 0,080 | 0,069 | 0,049 |
| Zero-sequence short-circuit average reactance phase - N | $X_o$ [mΩ/m] | 0,200 | 0,200 | 0,200 | 0,187 | 0,093 | 0,093 | 0,093 | 0,080 |
| Zero-sequence short-circuit average impedance phase - N | $Z_o$ [mΩ/m] | 0,687 | 0,485 | 0,335 | 0,246 | 0,139 | 0,123 | 0,116 | 0,094 |
| Zero-sequence short-circuit average resistance phase - PE | $R_o$ [mΩ/m] | 0,474 | 0,420 | 0,377 | 0,297 | 0,283 | 0,277 | 0,274 | 0,269 |
| Zero-sequence short-circuit average reactance phase - PE | $X_o$ [mΩ/m] | 0,270 | 0,270 | 0,270 | 0,227 | 0,203 | 0,203 | 0,203 | 0,200 |
| Zero-sequence short-circuit average impedance phase - PE | $Z_o$ [mΩ/m] | 0,546 | 0,500 | 0,464 | 0,374 | 0,348 | 0,344 | 0,341 | 0,335 |
| *Voltage drop with distribuited load* *ΔV [V/(m*A)]* | cosφ = 0,70 | 0,429 | 0,326 | 0,233 | 0,167 | 0,095 | 0,084 | 0,080 | 0,063 |
| | cosφ = 0,75 | 0,446 | 0,336 | 0,237 | 0,167 | 0,096 | 0,084 | 0,079 | 0,062 |
| | cosφ = 0,80 | 0,462 | 0,344 | 0,239 | 0,165 | 0,096 | 0,083 | 0,078 | 0,061 |
| | cosφ = 0,85 | 0,477 | 0,351 | 0,239 | 0,162 | 0,095 | 0,082 | 0,076 | 0,059 |
| | cosφ = 0,90 | 0,489 | 0,356 | 0,237 | 0,157 | 0,093 | 0,079 | 0,073 | 0,056 |
| | cosφ = 0,95 | 0,497 | 0,357 | 0,231 | 0,148 | 0,089 | 0,075 | 0,068 | 0,051 |
| | cosφ = 1,00 | 0,480 | 0,333 | 0,201 | 0,116 | 0,074 | 0,059 | 0,052 | 0,037 |
| *Weight* | p [kg/m] | 7,1 | 7,6 | 8,3 | 11,0 | 12,7 | 14,0 | 15,0 | 17,0 |
| Degree of protection | IP | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Losses for the Joule effect at nominal current | P [W/m] | 43 | 72 | 69 | 64 | 64 | 81 | 115 | 128 |
| Ambient temperature min/MAX (daily average)** | [°C] | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** |

* Reference time = 0,1 sec.

** **For temperatures over 40°C it will be necessary to derate the busbar and for ambient temperatures under -5°C contact the technical support.

See chapter “3.3 Temperature derating”, on pag. 8 in this technical sheet

*The data on this page refer to the 50 Hz frequency. For 60 Hz, please contact Legrand.*



XCM4

### 6.1.2 XCM ALUMINIUM *(5 Conductors):* 3P+N+PE+FE (50Hz)

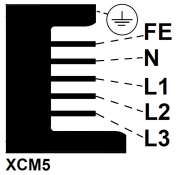
| Rated current | $I_n$ [A] | 160 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 |
|---|---|---|---|---|---|---|---|---|---|
| Overall dimension of the busbars | L x H [mm] | 196 x 75 | 196 x 75 | 196 x 75 | 196 x 135 | 196 x 135 | 196 x 135 | 196 x 135 | 196 x 135 |
| Rated operational voltage | Ue [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 690 |
| Rated insulation voltage | Ui [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 690 |
| Frequency | f [Hz] | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Rated short-time current (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 25 * | 25 * | 25 | 30 | 36 | 36 | 36 |
| Peak current | $I_{pk}$ [kA] | 30 | 53 | 53 | 53 | 63 | 76 | 76 | 76 |
| Allowable specific energy for three-phase fault | $I^2t$ [MA$^2$s] | 23 | 63 | 63 | 625 | 900 | 1296 | 1296 | 1296 |
| Rated short-time current of the neutral bar (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 25 * | 25 * | 25 | 30 | 36 | 36 | 36 |
| Peak current of the neutral bar | $I_{pk}$ [kA] | 28 | 49 | 49 | 49 | 59 | 70 | 70 | 70 |
| Rated short-time current of the protective circuit (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 15 * | 15 * | 13 | 13 | 13 | 13 | 13 |
| Peak current of the protective circuit | $I_{pk}$ [kA] | 30 | 30 | 30 | 26 | 26 | 26 | 26 | 26 |
| Phase resistance at 20°C | $R_{20}$ [mΩ/m] | 0,493 | 0,331 | 0,202 | 0,120 | 0,077 | 0,060 | 0,052 | 0,037 |
| Phase reactance (50hz) | X [mΩ/m] | 0,150 | 0,150 | 0,150 | 0,140 | 0,070 | 0,070 | 0,070 | 0,060 |
| Phase impedance | Z [mΩ/m] | 0,515 | 0,363 | 0,252 | 0,184 | 0,104 | 0,092 | 0,087 | 0,070 |
| Phase resistance at thermal conditions | R [mΩ/m] | 0,651 | 0,485 | 0,285 | 0,152 | 0,098 | 0,080 | 0,074 | 0,053 |
| Phase impedance at thermal conditions | Z [mΩ/m] | 0,668 | 0,507 | 0,322 | 0,207 | 0,120 | 0,106 | 0,102 | 0,080 |
| Neutral resistance | $R_{20}$ [mΩ/m] | 0,493 | 0,331 | 0,202 | 0,120 | 0,077 | 0,060 | 0,052 | 0,037 |
| Functional Earth resistance (FE) | $R_{20}$ [mΩ/m] | 0,493 | 0,331 | 0,202 | 0,120 | 0,077 | 0,060 | 0,052 | 0,037 |
| Functional Earth reactance (FE) (50hz) | X [mΩ/m] | 0,150 | 0,150 | 0,150 | 0,140 | 0,070 | 0,070 | 0,070 | 0,060 |
| Resistance of the protective bar | $R_{PE}$ [mΩ/m] | 0,310 | 0,310 | 0,310 | 0,257 | 0,257 | 0,257 | 0,257 | 0,257 |
| Reactance of the protective bar (50hz) | $X_{PE}$ [mΩ/m] | 0,220 | 0,220 | 0,220 | 0,180 | 0,180 | 0,180 | 0,180 | 0,180 |
| Resistance of the fault loop | $R_o$ [mΩ/m] | 0,803 | 0,641 | 0,512 | 0,377 | 0,334 | 0,317 | 0,309 | 0,294 |
| Reactance of the fault loop | $X_o$ [mΩ/m] | 0,370 | 0,370 | 0,370 | 0,320 | 0,250 | 0,250 | 0,250 | 0,240 |
| Impedance of the fault loop | $Z_o$ [mΩ/m] | 0,884 | 0,740 | 0,632 | 0,494 | 0,417 | 0,404 | 0,397 | 0,380 |
| Zero-sequence short-circuit average resistance phase - N | $R_o$ [mΩ/m] | 0,657 | 0,441 | 0,269 | 0,160 | 0,103 | 0,080 | 0,069 | 0,049 |
| Zero-sequence short-circuit average reactance phase - N | $X_o$ [mΩ/m] | 0,200 | 0,200 | 0,200 | 0,187 | 0,093 | 0,093 | 0,093 | 0,080 |
| Zero-sequence short-circuit average impedance phase - N | $Z_o$ [mΩ/m] | 0,687 | 0,485 | 0,335 | 0,246 | 0,139 | 0,123 | 0,116 | 0,094 |
| Zero-sequence short-circuit average resistance phase - PE | $R_o$ [mΩ/m] | 0,474 | 0,420 | 0,377 | 0,297 | 0,283 | 0,277 | 0,274 | 0,269 |
| Zero-sequence short-circuit average reactance phase - PE | $X_o$ [mΩ/m] | 0,270 | 0,270 | 0,270 | 0,227 | 0,203 | 0,203 | 0,203 | 0,200 |
| Zero-sequence short-circuit average impedance phase - PE | $Z_o$ [mΩ/m] | 0,546 | 0,500 | 0,464 | 0,374 | 0,348 | 0,344 | 0,341 | 0,335 |
| *Voltage drop with distribuited load* *Δ V [V/(m*A)]* | cosφ = 0,70 | 0,429 | 0,326 | 0,233 | 0,167 | 0,095 | 0,084 | 0,080 | 0,063 |
| | cosφ = 0,75 | 0,446 | 0,336 | 0,237 | 0,167 | 0,096 | 0,084 | 0,079 | 0,062 |
| | cosφ = 0,80 | 0,462 | 0,344 | 0,239 | 0,165 | 0,096 | 0,083 | 0,078 | 0,061 |
| | cosφ = 0,85 | 0,477 | 0,351 | 0,239 | 0,162 | 0,095 | 0,082 | 0,076 | 0,059 |
| | cosφ = 0,90 | 0,489 | 0,356 | 0,237 | 0,157 | 0,093 | 0,079 | 0,073 | 0,056 |
| | cosφ = 0,95 | 0,497 | 0,357 | 0,231 | 0,148 | 0,089 | 0,075 | 0,068 | 0,051 |
| | cosφ = 1,00 | 0,480 | 0,333 | 0,201 | 0,116 | 0,074 | 0,059 | 0,052 | 0,037 |
| *Weight* | p [kg/m] | 7,3 | 7,8 | 8,7 | 11,8 | 13,9 | 15,5 | 16,8 | 19,2 |
| Degree of protection | IP | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Losses for the Joule effect at nominal current | P [W/m] | 43 | 72 | 69 | 64 | 64 | 81 | 115 | 128 |
| Ambient temperature min/MAX (daily average)** | [°C] | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** |

* Reference time = 0,1 sec.

** **For temperatures over 40°C it will be necessary to derate the busbar and for ambient temperatures under -5°C contact the technical support.

See chapter “3.3 Temperature derating”, on pag. 8 in this technical sheet

*The data on this page refer to the 50 Hz frequency. For 60 Hz, please contact Legrand.*



XCM5

### 6.1.3 XCM ALUMINIUM *(5 Conductors):* 3P+N+FE+PE casing (50Hz)

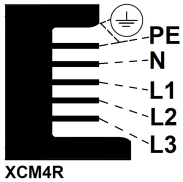
| Rated current | $I_n$ [A] | 160 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 |
|---|---|---|---|---|---|---|---|---|---|
| Overall dimension of the busbars | L x H [mm] | 196 x 75 | 196 x 75 | 196 x 75 | 196 x 135 | 196 x 135 | 196 x 135 | 196 x 135 | 196 x 135 |
| Rated operational voltage | Ue [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 690 |
| Rated insulation voltage | Ui [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 690 |
| Frequency | f [Hz] | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Rated short-time current (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 25 * | 25 * | 25 | 30 | 36 | 36 | 36 |
| Peak current | $I_{pk}$ [kA] | 30 | 53 | 53 | 53 | 63 | 76 | 76 | 76 |
| Allowable specific energy for three-phase fault | $I^2t$ [MA²s] | 23 | 63 | 63 | 625 | 900 | 1296 | 1296 | 1296 |
| Rated short-time current of the neutral bar (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 25 * | 25 * | 25 | 30 | 36 | 36 | 36 |
| Peak current of the neutral bar | $I_{pk}$ [kA] | 28 | 49 | 49 | 49 | 59 | 70 | 70 | 70 |
| Rated short-time current of the protective circuit (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 25 * | 25 * | 25 | 30 | 36 | 36 | 36 |
| Peak current of the protective circuit | $I_{pk}$ [kA] | 28 | 49 | 49 | 49 | 59 | 70 | 70 | 70 |
| Phase resistance at 20°C | $R_{20}$ [mΩ/m] | 0,493 | 0,331 | 0,202 | 0,120 | 0,077 | 0,060 | 0,052 | 0,037 |
| Phase reactance (50hz) | X [mΩ/m] | 0,150 | 0,150 | 0,150 | 0,140 | 0,070 | 0,070 | 0,070 | 0,060 |
| Phase impedance | Z [mΩ/m] | 0,515 | 0,363 | 0,252 | 0,184 | 0,104 | 0,092 | 0,087 | 0,070 |
| Phase resistance at thermal conditions | R [mΩ/m] | 0,651 | 0,485 | 0,285 | 0,152 | 0,098 | 0,080 | 0,074 | 0,053 |
| Phase impedance at thermal conditions | Z [mΩ/m] | 0,668 | 0,507 | 0,322 | 0,207 | 0,120 | 0,106 | 0,102 | 0,080 |
| Neutral resistance | $R_{20}$ [mΩ/m] | 0,493 | 0,331 | 0,202 | 0,120 | 0,077 | 0,060 | 0,052 | 0,037 |
| Functional Earth resistance (FE) | $R_{20}$ [mΩ/m] | - | - | - | - | - | - | - | - |
| Functional Earth reactance (FE) (50hz) | X [mΩ/m] | - | - | - | - | - | - | - | - |
| Resistance of the protective bar | $R_{PE}$ [mΩ/m] | 0,196 | 0,162 | 0,122 | 0,084 | 0,060 | 0,050 | 0,045 | 0,034 |
| Reactance of the protective bar (50hz) | $X_{PE}$ [mΩ/m] | 0,102 | 0,093 | 0,089 | 0,081 | 0,051 | 0,052 | 0,052 | 0,047 |
| Resistance of the fault loop | $R_o$ [mΩ/m] | 0,689 | 0,493 | 0,324 | 0,204 | 0,137 | 0,110 | 0,097 | 0,071 |
| Reactance of the fault loop | $X_o$ [mΩ/m] | 0,252 | 0,243 | 0,239 | 0,221 | 0,121 | 0,122 | 0,122 | 0,107 |
| Impedance of the fault loop | $Z_o$ [mΩ/m] | 0,734 | 0,550 | 0,403 | 0,301 | 0,182 | 0,164 | 0,156 | 0,129 |
| Zero-sequence short-circuit average resistance phase - N | $R_o$ [mΩ/m] | 0,657 | 0,441 | 0,269 | 0,160 | 0,103 | 0,080 | 0,069 | 0,049 |
| Zero-sequence short-circuit average reactance phase - N | $X_o$ [mΩ/m] | 0,200 | 0,200 | 0,200 | 0,187 | 0,093 | 0,093 | 0,093 | 0,080 |
| Zero-sequence short-circuit average impedance phase - N | $Z_o$ [mΩ/m] | 0,687 | 0,485 | 0,335 | 0,246 | 0,139 | 0,123 | 0,116 | 0,094 |
| Zero-sequence short-circuit average resistance phase - PE | $R_o$ [mΩ/m] | 0,361 | 0,272 | 0,190 | 0,124 | 0,085 | 0,070 | 0,062 | 0,046 |
| Zero-sequence short-circuit average reactance phase - PE | $X_o$ [mΩ/m] | 0,152 | 0,143 | 0,139 | 0,128 | 0,074 | 0,075 | 0,076 | 0,067 |
| Zero-sequence short-circuit average impedance phase - PE | $Z_o$ [mΩ/m] | 0,392 | 0,307 | 0,235 | 0,178 | 0,113 | 0,102 | 0,098 | 0,082 |
| *Voltage drop with distribuited load* *Δ V [V/(m*A)]* | cosφ = 0,70 | 0,429 | 0,326 | 0,233 | 0,167 | 0,095 | 0,084 | 0,080 | 0,063 |
| | cosφ = 0,75 | 0,446 | 0,336 | 0,237 | 0,167 | 0,096 | 0,084 | 0,079 | 0,062 |
| | cosφ = 0,80 | 0,462 | 0,344 | 0,239 | 0,165 | 0,096 | 0,083 | 0,078 | 0,061 |
| | cosφ = 0,85 | 0,477 | 0,351 | 0,239 | 0,162 | 0,095 | 0,082 | 0,076 | 0,059 |
| | cosφ = 0,90 | 0,489 | 0,356 | 0,237 | 0,157 | 0,093 | 0,079 | 0,073 | 0,056 |
| | cosφ = 0,95 | 0,497 | 0,357 | 0,231 | 0,148 | 0,089 | 0,075 | 0,068 | 0,051 |
| | cosφ = 1,00 | 0,480 | 0,333 | 0,201 | 0,116 | 0,074 | 0,059 | 0,052 | 0,037 |
| *Weight* | p [kg/m] | 7,3 | 7,8 | 8,7 | 11,8 | 13,9 | 15,5 | 16,8 | 19,2 |
| Degree of protection | IP | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Losses for the Joule effect at nominal current | P [W/m] | 43 | 72 | 69 | 64 | 64 | 81 | 115 | 128 |
| Ambient temperature min/MAX (daily average)** | [°C] | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** |

* Reference time = 0,1 sec.

** **For temperatures over 40°C it will be necessary to derate the busbar and for ambient temperatures under -5°C contact the technical support.

See chapter “3.3 Temperature derating”, on pag. 8 in this technical sheet

*The data on this page refer to the 50 Hz frequency. For 60 Hz, please contact Legrand.*



XCM4R

### 6.2.1 XCM COPPER *(4 Conductors):* 3P+N+PE (50Hz)

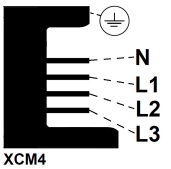
| Rated current | $I_n$ [A] | 160 | 315 | 400 | 630 | 800 | 1000 |
|---|---|---|---|---|---|---|---|
| Overall dimension of the busbars | L x H [mm] | 196 x 75 | 196 x 75 | 196 x 75 | 196 x 135 | 196 x 135 | 196 x 135 |
| Rated operational voltage | Ue [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Rated insulation voltage | Ui [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Frequency | f [Hz] | 50 | 50 | 50 | 50 | 50 | 50 |
| Rated short-time current (1 s) | $I_{CW}$ [kA]$_{rms}$ | 25 * | 25 * | 30 * | 36 | 36 | 36 |
| Peak current | $I_{pk}$ [kA] | 53 | 53 | 63 | 76 | 76 | 76 |
| Allowable specific energy for three-phase fault | $I^2t$ [MA²s] | 63 | 63 | 90 | 1296 | 1296 | 1296 |
| Rated short-time current of the neutral bar (1 s) | $I_{CW}$ [kA]$_{rms}$ | 25 * | 25 * | 30 * | 36 | 36 | 36 |
| Peak current of the neutral bar | $I_{pk}$ [kA] | 53 | 53 | 63 | 76 | 76 | 76 |
| Rated short-time current of the protective circuit (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 15 * | 15 * | 13 | 13 | 13 |
| Peak current of the protective circuit | $I_{pk}$ [kA] | 30 | 30 | 30 | 26 | 26 | 26 |
| Phase resistance at 20°C | $R_{20}$ [mΩ/m] | 0,239 | 0,182 | 0,099 | 0,061 | 0,040 | 0,032 |
| Phase reactance (50hz) | X [mΩ/m] | 0,158 | 0,138 | 0,119 | 0,064 | 0,064 | 0,056 |
| Phase impedance | Z [mΩ/m] | 0,287 | 0,228 | 0,155 | 0,088 | 0,075 | 0,064 |
| Phase resistance at thermal conditions | R [mΩ/m] | 0,320 | 0,254 | 0,133 | 0,082 | 0,054 | 0,046 |
| Phase impedance at thermal conditions | Z [mΩ/m] | 0,357 | 0,289 | 0,179 | 0,104 | 0,084 | 0,073 |
| Neutral resistance | $R_{20}$ [mΩ/m] | 0,239 | 0,182 | 0,099 | 0,061 | 0,040 | 0,032 |
| Functional Earth resistance (FE) | $R_{20}$ [mΩ/m] | - | - | - | - | - | - |
| Functional Earth reactance (FE) (50hz) | X [mΩ/m] | - | - | - | - | - | - |
| Resistance of the protective bar | $R_{PE}$ [mΩ/m] | 0,310 | 0,310 | 0,310 | 0,257 | 0,257 | 0,257 |
| Reactance of the protective bar (50hz) | $X_{PE}$ [mΩ/m] | 0,220 | 0,220 | 0,220 | 0,180 | 0,180 | 0,180 |
| Resistance of the fault loop | $R_o$ [mΩ/m] | 0,549 | 0,492 | 0,409 | 0,318 | 0,297 | 0,289 |
| Reactance of the fault loop | $X_o$ [mΩ/m] | 0,378 | 0,358 | 0,339 | 0,244 | 0,244 | 0,236 |
| Impedance of the fault loop | $Z_o$ [mΩ/m] | 0,667 | 0,608 | 0,531 | 0,401 | 0,384 | 0,373 |
| Zero-sequence short-circuit average resistance phase - N | $R_o$ [mΩ/m] | 0,319 | 0,243 | 0,132 | 0,081 | 0,053 | 0,043 |
| Zero-sequence short-circuit average reactance phase - N | $X_o$ [mΩ/m] | 0,211 | 0,184 | 0,159 | 0,085 | 0,085 | 0,075 |
| Zero-sequence short-circuit average impedance phase - N | $Z_o$ [mΩ/m] | 0,382 | 0,305 | 0,206 | 0,118 | 0,101 | 0,086 |
| Zero-sequence short-circuit average resistance phase - PE | $R_o$ [mΩ/m] | 0,390 | 0,371 | 0,343 | 0,277 | 0,270 | 0,268 |
| Zero-sequence short-circuit average reactance phase - PE | $X_o$ [mΩ/m] | 0,273 | 0,266 | 0,260 | 0,201 | 0,201 | 0,199 |
| Zero-sequence short-circuit average impedance phase - PE | $Z_o$ [mΩ/m] | 0,476 | 0,457 | 0,430 | 0,342 | 0,337 | 0,334 |
| *Voltage drop with distribuited load ΔV [V/(m*A)]* | cosφ = 0,70 | 0,331 | 0,226 | 0,154 | 0,081 | 0,076 | 0,061 |
| | cosφ = 0,75 | 0,340 | 0,230 | 0,155 | 0,081 | 0,076 | 0,060 |
| | cosφ = 0,80 | 0,348 | 0,232 | 0,154 | 0,080 | 0,075 | 0,059 |
| | cosφ = 0,85 | 0,355 | 0,234 | 0,153 | 0,079 | 0,073 | 0,057 |
| | cosφ = 0,90 | 0,359 | 0,233 | 0,149 | 0,077 | 0,071 | 0,054 |
| | cosφ = 0,95 | 0,359 | 0,228 | 0,142 | 0,073 | 0,067 | 0,050 |
| | cosφ = 1,00 | 0,333 | 0,201 | 0,116 | 0,059 | 0,052 | 0,037 |
| *Weight* | p [kg/m] | 9,5 | 10,4 | 14,3 | 19,8 | 25,4 | 29,5 |
| Degree of protection | IP | 55 | 55 | 55 | 55 | 55 | 55 |
| Losses for the Joule effect at nominal current | P [W/m] | 51 | 62 | 54 | 82 | 87 | 111 |
| Ambient temperature min/MAX (daily average)** | [°C] | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** |

* Reference time = 0,1 sec.

** **For temperatures over 40°C it will be necessary to derate the busbar and for ambient temperatures under -5°C contact the technical support.

See chapter “3.3 Temperature derating”, on pag. 8 in this technical sheet

*The data on this page refer to the 50 Hz frequency. For 60 Hz, please contact Legrand.*



XCM4

### 6.2.2 XCM COPPER *(5 Conductors):* 3P+N+PE+FE (50Hz)

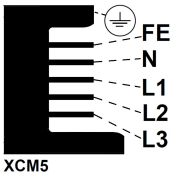
| Rated current | $I_n$ [A] | 160 | 315 | 400 | 630 | 800 | 1000 |
|---|---|---|---|---|---|---|---|
| Overall dimension of the busbars | L x H [mm] | 196 x 75 | 196 x 75 | 196 x 75 | 196 x 135 | 196 x 135 | 196 x 135 |
| Rated operational voltage | Ue [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Rated insulation voltage | Ui [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Frequency | f [Hz] | 50 | 50 | 50 | 50 | 50 | 50 |
| Rated short-time current (1 s) | $I_{CW}$ [kA]$_{rms}$ | 25 * | 25 * | 30 * | 36 | 36 | 36 |
| Peak current | $I_{pk}$ [kA] | 53 | 53 | 63 | 76 | 76 | 76 |
| Allowable specific energy for three-phase fault | $I^2t$ [MA$^2$s] | 63 | 63 | 90 | 1296 | 1296 | 1296 |
| Rated short-time current of the neutral bar (1 s) | $I_{CW}$ [kA]$_{rms}$ | 25 * | 25 * | 30 * | 36 | 36 | 36 |
| Peak current of the neutral bar | $I_{pk}$ [kA] | 53 | 53 | 63 | 76 | 76 | 76 |
| Rated short-time current of the protective circuit (1 s) | $I_{CW}$ [kA]$_{rms}$ | 15 * | 15 * | 15 * | 13 | 13 | 13 |
| Peak current of the protective circuit | $I_{pk}$ [kA] | 30 | 30 | 30 | 26 | 26 | 26 |
| Phase resistance at 20°C | $R_{20}$ [mΩ/m] | 0,239 | 0,182 | 0,099 | 0,061 | 0,040 | 0,032 |
| Phase reactance (50hz) | X [mΩ/m] | 0,158 | 0,138 | 0,119 | 0,064 | 0,064 | 0,056 |
| Phase impedance | Z [mΩ/m] | 0,287 | 0,228 | 0,155 | 0,088 | 0,075 | 0,064 |
| Phase resistance at thermal conditions | R [mΩ/m] | 0,320 | 0,254 | 0,133 | 0,082 | 0,054 | 0,046 |
| Phase impedance at thermal conditions | Z [mΩ/m] | 0,357 | 0,289 | 0,179 | 0,104 | 0,084 | 0,073 |
| Neutral resistance | $R_{20}$ [mΩ/m] | 0,239 | 0,182 | 0,099 | 0,061 | 0,040 | 0,032 |
| Functional Earth resistance (FE) | $R_{20}$ [mΩ/m] | 0,239 | 0,182 | 0,099 | 0,061 | 0,040 | 0,032 |
| Functional Earth reactance (FE) (50hz) | X [mΩ/m] | 0,158 | 0,138 | 0,119 | 0,064 | 0,064 | 0,056 |
| Resistance of the protective bar | $R_{PE}$ [mΩ/m] | 0,310 | 0,310 | 0,310 | 0,257 | 0,257 | 0,257 |
| Reactance of the protective bar (50hz) | $X_{PE}$ [mΩ/m] | 0,220 | 0,220 | 0,220 | 0,180 | 0,180 | 0,180 |
| Resistance of the fault loop | $R_o$ [mΩ/m] | 0,549 | 0,492 | 0,409 | 0,318 | 0,297 | 0,289 |
| Reactance of the fault loop | $X_o$ [mΩ/m] | 0,378 | 0,358 | 0,339 | 0,244 | 0,244 | 0,236 |
| Impedance of the fault loop | $Z_o$ [mΩ/m] | 0,667 | 0,608 | 0,531 | 0,401 | 0,384 | 0,373 |
| Zero-sequence short-circuit average resistance phase - N | $R_o$ [mΩ/m] | 0,319 | 0,243 | 0,132 | 0,081 | 0,053 | 0,043 |
| Zero-sequence short-circuit average reactance phase - N | $X_o$ [mΩ/m] | 0,211 | 0,184 | 0,159 | 0,085 | 0,085 | 0,075 |
| Zero-sequence short-circuit average impedance phase - N | $Z_o$ [mΩ/m] | 0,382 | 0,305 | 0,206 | 0,118 | 0,101 | 0,086 |
| Zero-sequence short-circuit average resistance phase - PE | $R_o$ [mΩ/m] | 0,390 | 0,371 | 0,343 | 0,277 | 0,270 | 0,268 |
| Zero-sequence short-circuit average reactance phase - PE | $X_o$ [mΩ/m] | 0,273 | 0,266 | 0,260 | 0,201 | 0,201 | 0,199 |
| Zero-sequence short-circuit average impedance phase - PE | $Z_o$ [mΩ/m] | 0,476 | 0,457 | 0,430 | 0,342 | 0,337 | 0,334 |
| *Voltage drop with distribuited load ΔV [V/(m*A)]* | cosφ = 0,70 | 0,331 | 0,226 | 0,154 | 0,081 | 0,076 | 0,061 |
| | cosφ = 0,75 | 0,340 | 0,230 | 0,155 | 0,081 | 0,076 | 0,060 |
| | cosφ = 0,80 | 0,348 | 0,232 | 0,154 | 0,080 | 0,075 | 0,059 |
| | cosφ = 0,85 | 0,355 | 0,234 | 0,153 | 0,079 | 0,073 | 0,057 |
| | cosφ = 0,90 | 0,359 | 0,233 | 0,149 | 0,077 | 0,071 | 0,054 |
| | cosφ = 0,95 | 0,359 | 0,228 | 0,142 | 0,073 | 0,067 | 0,050 |
| | cosφ = 1,00 | 0,333 | 0,201 | 0,116 | 0,059 | 0,052 | 0,037 |
| *Weight* | p [kg/m] | 10,2 | 11,3 | 15,9 | 22,5 | 29,5 | 34,6 |
| Degree of protection | IP | 55 | 55 | 55 | 55 | 55 | 55 |
| Losses for the Joule effect at nominal current | P [W/m] | 51 | 62 | 54 | 82 | 87 | 111 |
| Ambient temperature min/MAX (daily average)** | [°C] | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** |

* Reference time = 0,1 sec.

** **For temperatures over 40°C it will be necessary to derate the busbar and for ambient temperatures under -5°C contact the technical support.

See chapter “3.3 Temperature derating”, on pag. 8 in this technical sheet

*The data on this page refer to the 50 Hz frequency. For 60 Hz, please contact Legrand.*



### 6.2.3 XCM COPPER *(5 Conductors):* 3P+N+FE+PE casing (50Hz)

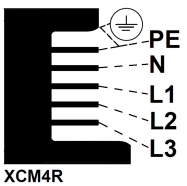
| Rated current | $I_n$ [A] | 160 | 315 | 400 | 630 | 800 | 1000 |
|---|---|---|---|---|---|---|---|
| Overall dimension of the busbars | L x H [mm] | 196 x 75 | 196 x 75 | 196 x 75 | 196 x 135 | 196 x 135 | 196 x 135 |
| Rated operational voltage | Ue [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Rated insulation voltage | Ui [V] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Frequency | f [Hz] | 50 | 50 | 50 | 50 | 50 | 50 |
| Rated short-time current (1 s) | $I_{CW}$ [kA]$_{rms}$ | 25 * | 25 * | 30 * | 36 | 36 | 36 |
| Peak current | $I_{pk}$ [kA] | 53 | 53 | 63 | 76 | 76 | 76 |
| Allowable specific energy for three-phase fault | $I^2t$ [MA²s] | 63 | 63 | 90 | 1296 | 1296 | 1296 |
| Rated short-time current of the neutral bar (1 s) | $I_{CW}$ [kA]$_{rms}$ | 25 * | 25 * | 30 * | 36 | 36 | 36 |
| Peak current of the neutral bar | $I_{pk}$ [kA] | 53 | 53 | 63 | 76 | 76 | 76 |
| Rated short-time current of the protective circuit (1 s) | $I_{CW}$ [kA]$_{rms}$ | 25 * | 25 * | 30 * | 36 | 36 | 36 |
| Peak current of the protective circuit | $I_{pk}$ [kA] | 53 | 53 | 63 | 76 | 76 | 76 |
| Phase resistance at 20°C | $R_{20}$ [mΩ/m] | 0,239 | 0,182 | 0,099 | 0,061 | 0,040 | 0,032 |
| Phase reactance (50hz) | X [mΩ/m] | 0,158 | 0,138 | 0,119 | 0,064 | 0,064 | 0,056 |
| Phase impedance | Z [mΩ/m] | 0,287 | 0,228 | 0,155 | 0,088 | 0,075 | 0,064 |
| Phase resistance at thermal conditions | R [mΩ/m] | 0,320 | 0,254 | 0,133 | 0,082 | 0,054 | 0,046 |
| Phase impedance at thermal conditions | Z [mΩ/m] | 0,357 | 0,289 | 0,179 | 0,104 | 0,084 | 0,073 |
| Neutral resistance | $R_{20}$ [mΩ/m] | 0,239 | 0,182 | 0,099 | 0,061 | 0,040 | 0,032 |
| Functional Earth resistance (FE) | $R_{20}$ [mΩ/m] | - | - | - | - | - | - |
| Functional Earth reactance (FE) (50hz) | X [mΩ/m] | - | - | - | - | - | - |
| Resistance of the protective bar | $R_{PE}$ [mΩ/m] | 0,135 | 0,115 | 0,075 | 0,049 | 0,034 | 0,028 |
| Reactance of the protective bar (50hz) | $X_{PE}$ [mΩ/m] | 0,036 | 0,025 | 0,010 | 0,005 | 0,002 | 0,002 |
| Resistance of the fault loop | $R_o$ [mΩ/m] | 0,374 | 0,297 | 0,174 | 0,110 | 0,074 | 0,060 |
| Reactance of the fault loop | $X_o$ [mΩ/m] | 0,194 | 0,163 | 0,129 | 0,069 | 0,066 | 0,058 |
| Impedance of the fault loop | $Z_o$ [mΩ/m] | 0,421 | 0,339 | 0,217 | 0,130 | 0,100 | 0,083 |
| Zero-sequence short-circuit average resistance phase - N | $R_o$ [mΩ/m] | 0,319 | 0,243 | 0,132 | 0,081 | 0,053 | 0,043 |
| Zero-sequence short-circuit average reactance phase - N | $X_o$ [mΩ/m] | 0,211 | 0,184 | 0,159 | 0,085 | 0,085 | 0,075 |
| Zero-sequence short-circuit average impedance phase - N | $Z_o$ [mΩ/m] | 0,382 | 0,305 | 0,206 | 0,118 | 0,101 | 0,086 |
| Zero-sequence short-circuit average resistance phase - PE | $R_o$ [mΩ/m] | 0,215 | 0,175 | 0,108 | 0,069 | 0,048 | 0,039 |
| Zero-sequence short-circuit average reactance phase - PE | $X_o$ [mΩ/m] | 0,089 | 0,071 | 0,050 | 0,026 | 0,024 | 0,020 |
| Zero-sequence short-circuit average impedance phase - PE | $Z_o$ [mΩ/m] | 0,232 | 0,189 | 0,119 | 0,074 | 0,053 | 0,044 |
| *Voltage drop with distribuited load ΔV [V/(m*A)]* | cosφ = 0,70 | 0,331 | 0,226 | 0,154 | 0,081 | 0,076 | 0,061 |
| | cosφ = 0,75 | 0,340 | 0,230 | 0,155 | 0,081 | 0,076 | 0,060 |
| | cosφ = 0,80 | 0,348 | 0,232 | 0,154 | 0,080 | 0,075 | 0,059 |
| | cosφ = 0,85 | 0,355 | 0,234 | 0,153 | 0,079 | 0,073 | 0,057 |
| | cosφ = 0,90 | 0,359 | 0,233 | 0,149 | 0,077 | 0,071 | 0,054 |
| | cosφ = 0,95 | 0,359 | 0,228 | 0,142 | 0,073 | 0,067 | 0,050 |
| | cosφ = 1,00 | 0,333 | 0,201 | 0,116 | 0,059 | 0,052 | 0,037 |
| *Weight* | p [kg/m] | 10,2 | 11,3 | 15,9 | 22,5 | 29,5 | 34,6 |
| Degree of protection | IP | 55 | 55 | 55 | 55 | 55 | 55 |
| Losses for the Joule effect at nominal current | P [W/m] | 51 | 62 | 54 | 82 | 87 | 111 |
| Ambient temperature min/MAX (daily average)** | [°C] | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** | -5/70 ** |

* Reference time = 0,1 sec.

** **For temperatures over 40°C it will be necessary to derate the busbar and for ambient temperatures under -5°C contact the technical support.

See chapter “3.3 Temperature derating”, on pag. 8 in this technical sheet

*The data on this page refer to the 50 Hz frequency. For 60 Hz, please contact Legrand.*



XCM4R