128, av. du Maréchal-de-Lattre-de-Tassigny - 87045 LIMOGES Cedex
Tél. : 33(0)5 55 06 87 87 - Fax : 33(0)5 55 06 88 88
www.legrand.com

Medium power busbar system
XCM Copper 630 A

Cat.Nos :
see relative catalog for detailed reference tables

CONTENT **Page**

1. USE

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

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 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.

2. RANGE

The range is designed to trunk several bars into a single structure. Two combinations of conductors are available: 4 conductors with the same section (3P+N) with PE made from the casing or 5 conductors when using XCM (3P+N+PE).

XCM 630 A is available in the following configurations:

- 3P + N + PE casing ;
- 3P + N + PE ;
- 3P + N + FE + PE casing

On request, it is possible to have non-standard XCM line versions.
See the following table for some example of available versions:

	Cat.Nos	Version description	Conductors
Standard version	53400P261	3Ph + N + PE casing	4
	53410P261	3Ph + N + PE	5
	53410P261-E5	3Ph + N + FE + PE casing	5
Special version	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.

3. TECHNICAL CHARACTERISTICS

3.1 Mechanical characteristics

Protection against solid bodies/liquids: IP 55 when installed with the plug outlet cover, and is compliant with the IEC 61439-6 standard.

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: IK 10.

3.2 Climate characteristics

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

Temperature derating

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

Daily average ambient temperature	General correction factor for ambient 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
55	0.89
60	0.86
65	0.82
70	0.78

Reference ambient temperature : 40 °C. From 40 °C it will be necessary to derate the busbar

3.3 Material characteristics

All version are available in a painted version (RAL to be defined by the customer). Conductors insulators are made with 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.

3. TECHNICAL DATAS *(continued)*

■ 3.4 Electrical characteristics

Number of conductors		4 CONDUCTORS	5 CONDUCTORS	
Configuration		**3P + N + PE (XCM4)**	**3P + N + PE + FE (XCM5)**	**3P + N + PE (XCM4R)**
Rated current	In [A]	630		
Overall dimension of the busbars	L x H [mm]	196 x 135		
Rated operational voltage	Ue [V]	1000		
Rated insulation voltage	Ui [V]	1000		
Frequency	f [Hz]	50		
Rated short-time current (1 s) ICW	[kA]rms	36		
Peak current	Ipk [kA]	76		
Allowable specific energy for three-phase fault	I^2t [MA^2s]	1296		
Rated short-time current of the neutral bar (1 s)	ICW [kA]rms	36		
Peak current of the neutral bar	Ipk [kA]	76		
Rated short-time current of the protective circuit (1 s)	ICW [kA]rms	13	13	36
Peak current of the protective circuit	Ipk [kA]	26	26	76
Phase resistance at 20°C	R20 [mΩ/m]	0,061	0,061	0,061
Phase reactance (50hz)	X [mΩ/m]	0,064	0,064	0,064
Phase impedance	Z [mΩ/m]	0,088	0,088	0,088
Phase resistance at thermal conditions	R [mΩ/m]	0,082	0,082	0,082
Phase impedance at thermal conditions	Z [mΩ/m]	0,104	0,104	0,104
Neutral resistance	R20 [mΩ/m]	0,061	0,061	0,061
Functional Earth resistance (FE)	R20 [mΩ/m]	-	0,061	-
Functional Earth reactance (FE) (50hz)	X [mΩ/m]	-	0,064	-
Resistance of the protective bar	RPE [mΩ/m]	0,257	0,257	0,049
Reactance of the protective bar (50hz)	XPE [mΩ/m]	0,180	0,180	0,005
Resistance of the fault loop	Ro [mΩ/m]	0,318	0,318	0,110
Reactance of the fault loop	Xo [mΩ/m]	0,244	0,244	0,069
Impedance of the fault loop	Zo [mΩ/m]	0,401	0,401	0,130
Zero-sequence short-circuit average resistance phase - N	Ro [mΩ/m]	0,081	0,081	0,081
Zero-sequence short-circuit average reactance phase - N	Xo [mΩ/m]	0,085	0,085	0,085
Zero-sequence short-circuit average impedance phase - N	Zo [mΩ/m]	0,118	0,118	0,118
Zero-sequence short-circuit average resistance phase - PE	Ro [mΩ/m]	0,277	0,277	0,069
Zero-sequence short-circuit average reactance phase - PE	Xo [mΩ/m]	0,201	0,201	0,026
Zero-sequence short-circuit average impedance phase - PE	Zo [mΩ/m]	0,342	0,342	0,074
Voltage drop with distribuited load ΔV [V/(m*A)]	cosϕ = 0,70	0,081	0,081	0,081
	cosϕ = 0,75	0,081	0,081	0,081
	cosϕ = 0,80	0,080	0,080	0,080
	cosϕ = 0,85	0,079	0,079	0,079
	cosϕ = 0,90	0,077	0,077	0,077
	cosϕ = 0,95	0,073	0,073	0,073
	cosϕ = 1,00	0,059	0,059	0,059
Weight	p [kg/m]	19,8	22,5	22,5
Degree of protection	IP	55	55	55
Losses for the Joule effect at nominal current	P [W/m]	82	82	82
Ambient temperature min/MAX (daily average)**	[°C]	-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.
The data on this page refer to the 50 Hz frequency. For 60 Hz, please contact Legrand.

4. COMPOSITION

Depending on installation requirements Legrand can provide various technical solutions, like:

■ 4.1 Straight elements

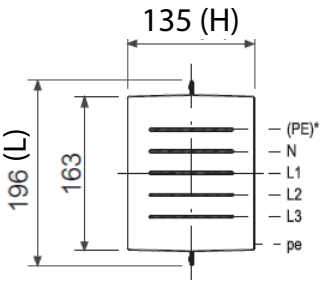
Straight elements are designed for transport and distribution (with tap off outlets) of mediumpower energy. Supplied with their pre-installed monobloc.

Characteristics	Description
Reference standard	IEC 61439-6
Reference temperature	40 °C
Protection degree	IP 55
Thickness of metal sheet	0.8 mm
Number of conductors	4 with equal section 3P + N or 5 (3P + N + PE)
Dimension (LxH)	75 - 135 x 196 mm

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.

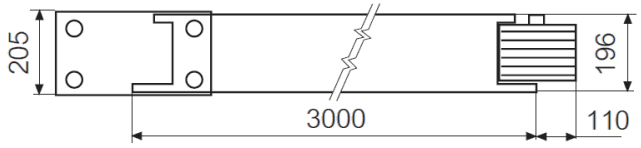
■ 4.2 Straight elements for transport

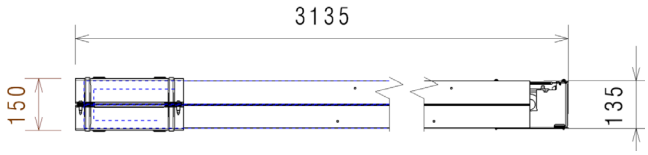
Section dimensions*



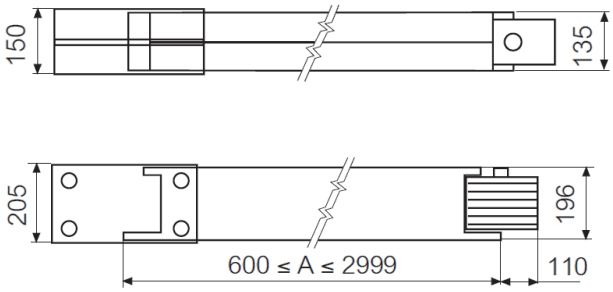
* for 3P+N+PE and 3P+N+FE+PE casing

Length
Standard straight elements length : 3000 mm





Straight elements from 600 mm to 2999 mm length



■ 4.3 Straight elements for distribution

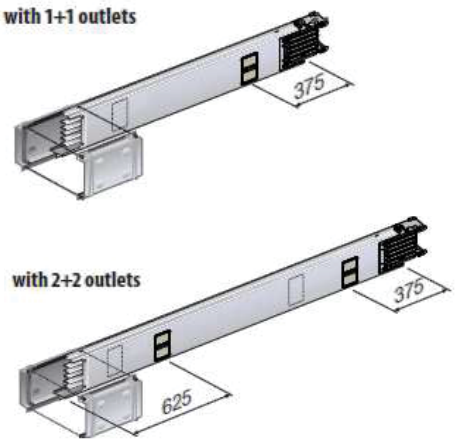
Standard length: 3000 mm
Straight elements for distribution are supplied with their tap-off outlets.

Standard tap-off outlets are spaced at :
- 1000 mm interval on both sides for standard straight elements (IP55)
- 500 mm interval on one side for vertical installation (IP55) ;
- 600 mm or 800 mm on both sides for data center straight elements (IP40)

For each length, here are the possible number of outlets:

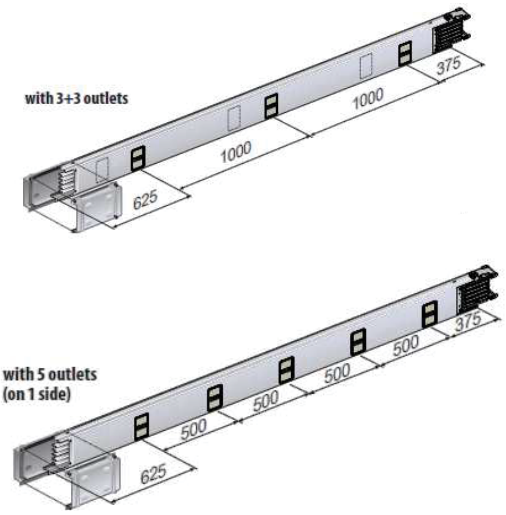
Length (mm)	Number of outlets
1000÷1500	1+1
1501÷2999	2+2
3000	3+3
3000	5

Interval between outlets for the different available versions :



4. COMPOSITION *(continued)*

■ 4.3 Straight elements for distribution *(continued)*

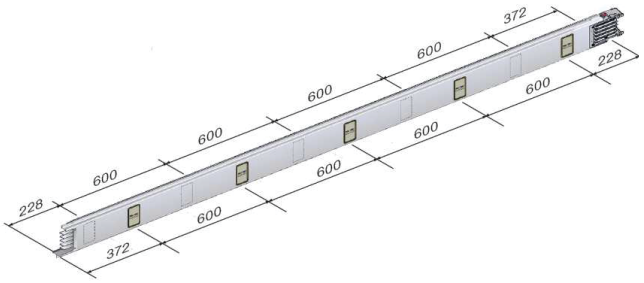


For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalog.

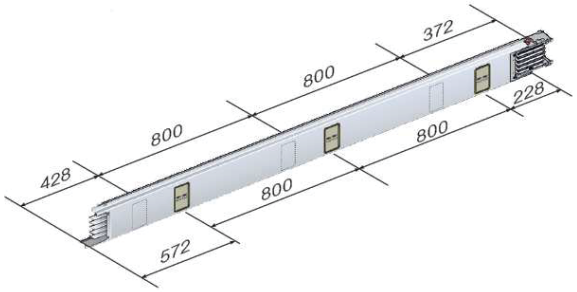
Straight element for distribution for data centers
Straight element with 5+5 outlets on both sides are ideal for data center solutions.

The distance between outlets is between:

- 600 mm



- or 800 mm.

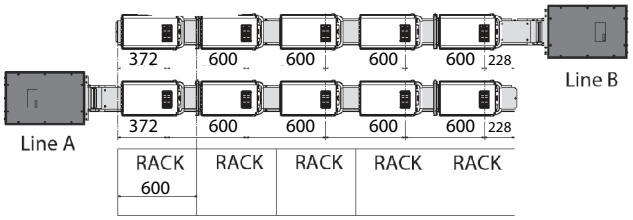


This way tap-off boxes are centered with the cabinet containing racks they should be connected with (see catalog for detailed dedicated items). It allows, in case of failure, a rapid identification and intervention on the non-functioning rack.

Standard tap-off boxes are also suitable for installation in data centers. The straight elements for data centers are available with IP40 protection, which is suitable for installation in the white space.

Example of connection between the cabinet containing rack and straight element :

Connection between the cabinet containing 600 mm rack and busbar for a 3000 mm length straight element (with 5+5 outlet).



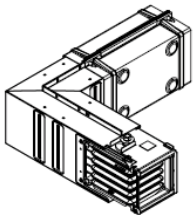
Line A:
FRONT side is dedicated to supply of power, BACK side for the backup.

Line B:
FRONT and BACK side are dedicated for backup.

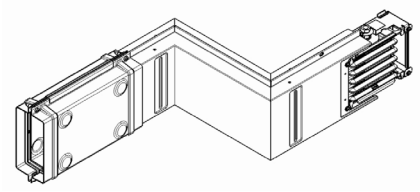
■ 4.4 Routing components

Routing components are supplied with their pre-installed monobloc. These elements enable any change of direction with standard or special solutions.

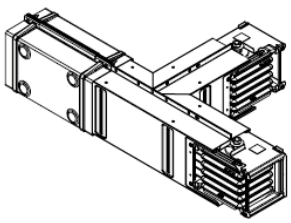
Elbows
Horizontal right/left and vertical right/left



Double elbows (on request)
Horizontal, vertical, horizontal + vertical, vertical + horizontal



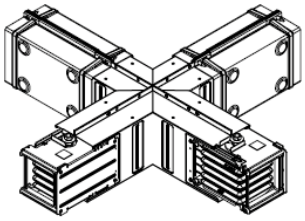
Horizontal standard T elements
Right and left (300+300+300 mm)



4. COMPOSITION *(continued)*

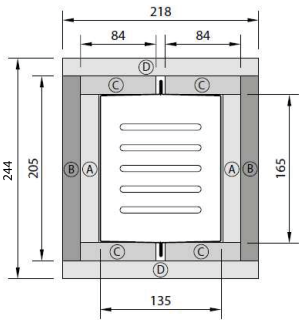
■ 4.4 Routing elements *(continued)*

Standard crossovers
(300+300+300+300 mm)



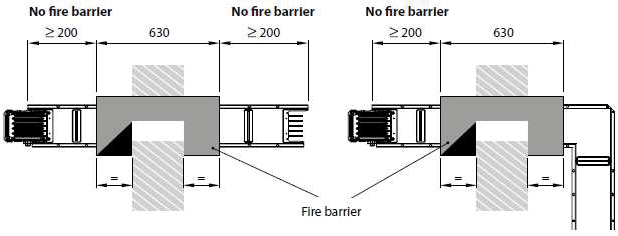
For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalog.

■ 4.5 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, it must always be positioned in the middle of the fire resistant wall or ceiling crossed by the busbar. It is therefore necessary to indicate at the order stage what elements will cross fire resistant walls or ceilings.



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.

To be comply to the Certification of Fire resistance it's necessary to install both internal and external fire barrier supplied by Legrand.

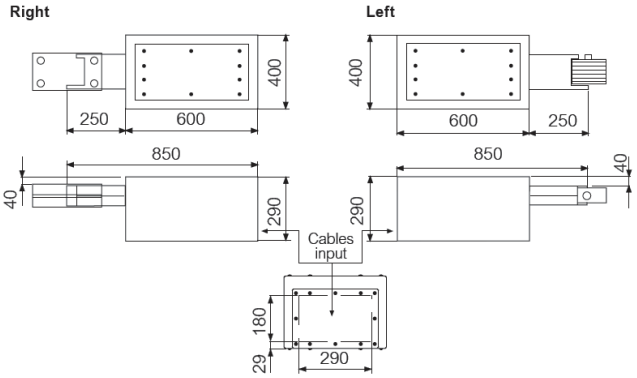
■ 4.6 Feed units

The feed units are used at the end of the lines, when the busbar must be powered using cables.

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.

Metal feed unit (160A to 1000A)
for aluminium or copper busbar and in right, left or intermediate type.

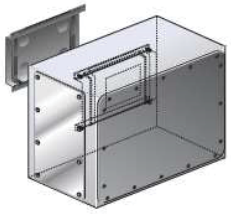
Dimensions:



Range XCM Cu (A)	630 A
Phase cross section (eq Cu) is rounded up	600 mm^2
Number of connection holes for each conductor	2
Number of unipolar cables that can be connected to each phase	2 x 300

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.

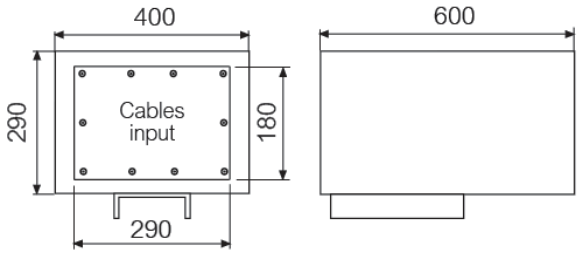


4. COMPOSITION *(continued)*

■ 4.6 Feed units *(continued)*

Metal feed unit (160A to 1000A) *(continued)*

Dimensions:

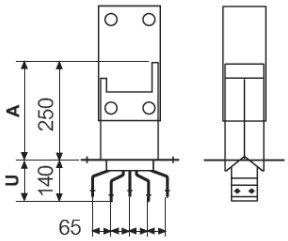


For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalog.

Switchboard/transformer feed units

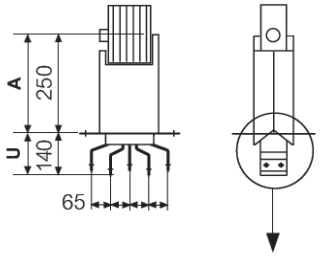
It is used at the end of the lines to connect the busbar directly to boards or to the LV terminals of a distribution transformer. They can be :

- right type



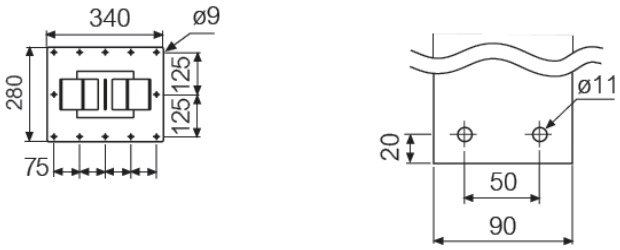
Dimensions (mm)	
A (min/MAX)	250/849
U (min/MAX)	140 (170 for I_n = 1000 A)/200

- left type



Dimensions (mm)	
A (min/MAX)	250/849
U (min/MAX)	140 (170 for I_n = 1000 A)/200

Specicfic dimensions for both right and left type:

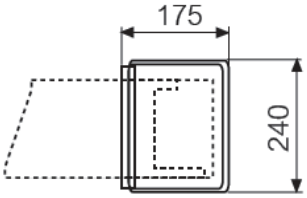


For more details, item per item, on the weights of specific outlet versions and for each current rating and material, please see XCM catalog.

■ 4.7 End cover IP 55

The end cover suited for all XCM versions.

It is used to ensures the closure and the IP 55 protection degree (EN 60529) at the end of the line.



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

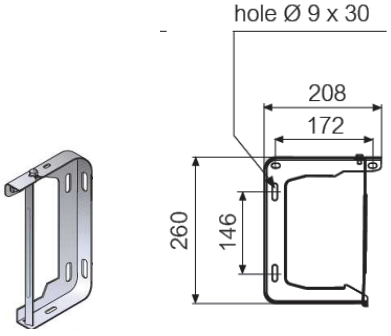
5. ACCESSORIES

■ 5.1 Brackets

The brackets enable sturdy installation of the busbar to the system's support structures.
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 support or vertical suspension supports.

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

Suspension brackets

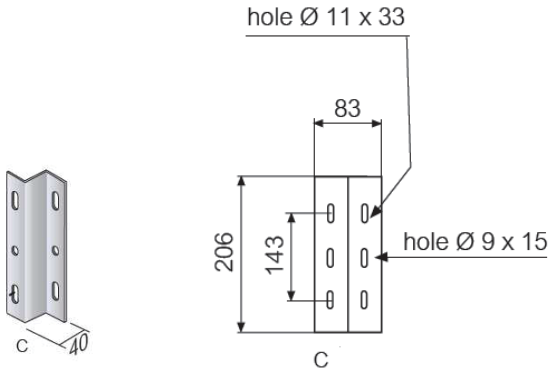


5. ACCESSORIES *(continued)*

■ 5.1 Brackets *(continued)*

Suspension brackets *(continued)*

When the bracket needs to be fixed directly to the wall (40 mm), a wall spacer (C) is required.



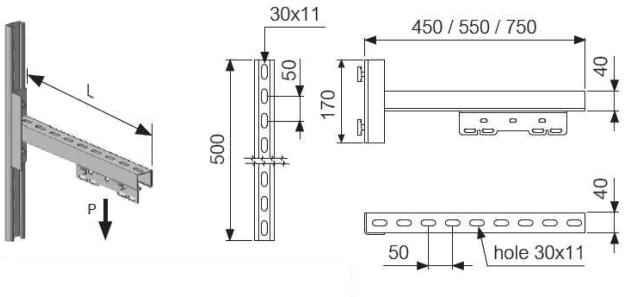
Dedicated suspension have been designed for:

- suspension bracket for vertical elements, suitable for riser mains up to 4 meters and for weights up to 300 kg.
It is to be used together with type A and B brackets.

- suspension bracket with springs for riser mains.
It 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 catalog.

Wall fixing brackets
Adjustable arm both in height and in depth. The bracket holder can be combined with the XCM - MS - TS brackets.



Length (mm)	Maximum weight (kg)
450	80
550	68
750	50

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

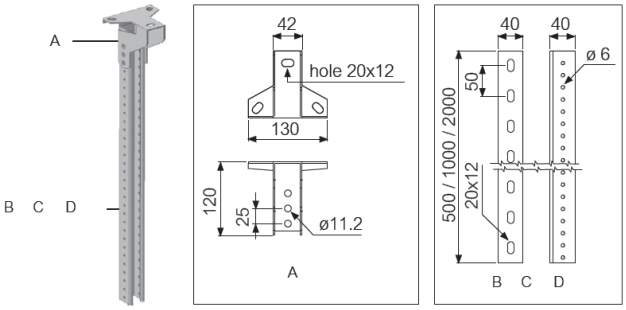
Depending on the capacity of the busbar, the quantity and the type of brackets being installed, checked that the selected distance (D) is the same or less than the maximum distance (Dmax) between two subsequent bracket with springs.

D max (m)		
In(A)	XCM 4 conductors	XCM 5 conductors
	Copper	
630	10	9

The maximum load applicable to the brackets is 300 kg.

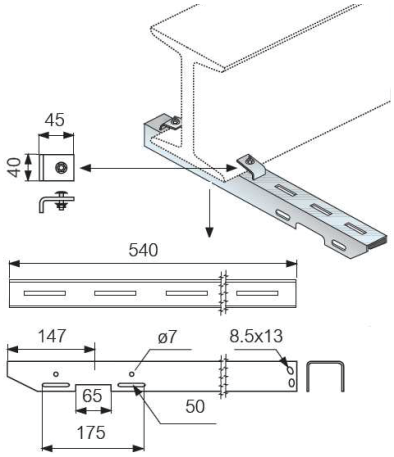
The values in the table have been calculated taking into consideration, in addition to the weight of the busbar, also the estimated weight of the accessories (25 kg for each element).

Ceiling fixing bracket
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= 500 mm)
C = U-shaped bar (L= 1000 mm)
D = U-shaped bar (L= 2000 mm)

Beam fixing brackets
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 catalog.

■ 5.2 Tap-off boxes

Tap-off boxes are used for energizing three-phase loads from 32A up to 1000A, suitable, in the new range, for both XCM, XCP-S and XCP-HP.
They can be divided in two categories per rating:
- plug-in tap-off boxes;
- boxes bolted onto the connection.

Tap-off boxes are also 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.

According to the rating, tap-off boxes can be divided in 3 types (for both fiberglass and metal):
- MCCB ready (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 (32A to 250A) fuses not provided;

- and empty (32A to 250A).

5. ACCESSORIES *(continued)*

Plug-in tap-off boxes (32A up to 630A)
Plug-in tap off boxes have IP 55 degree of protection without using additional accessories.

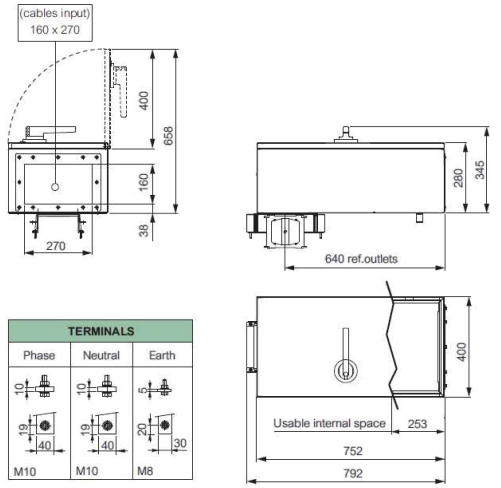
With plug-in tap-off boxes, it is possible to intervene up to a 32 A load, and to disconnect device integrated into the cover of the boxes with a rating from 63A to 630A, ensuring automatic absence of electric current when the cover is opened.

It is possible to padlock the box cover in the open disconnected position so that all maintenance operations of the loads connected to it can be carried out safely.

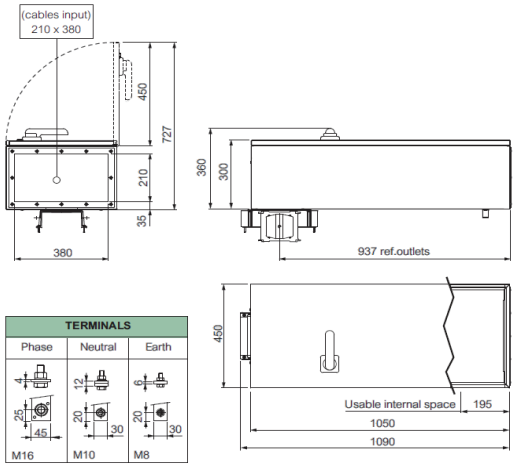
All insulating plastic components are in compliance with the IEC 60695-2-1 glow-wire test and rated V2 self-extinguishing according to the UL94

Bolt-on tap-off boxes (from 630A to 1000A)
Boxes bolted onto the connection are suited for high rated current.
They ensure a rigid connection to the busbar by using of a monobloc junction similar to the straight element system.
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 catalog for more details).

The typology involved are with fuse carriers.
630A

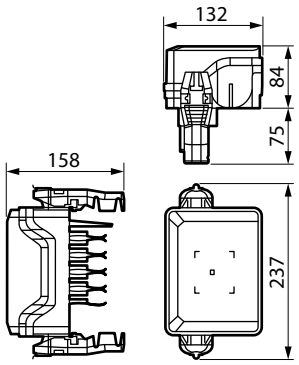


800/1000A

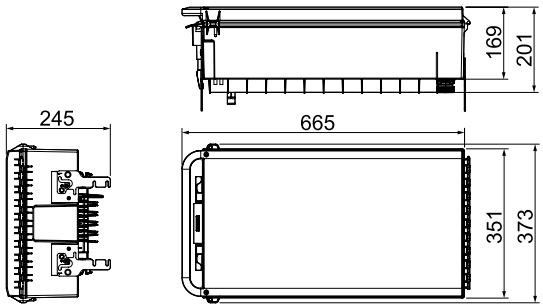


For further mounting details on TOBs, please refer to XCM user and installation manual

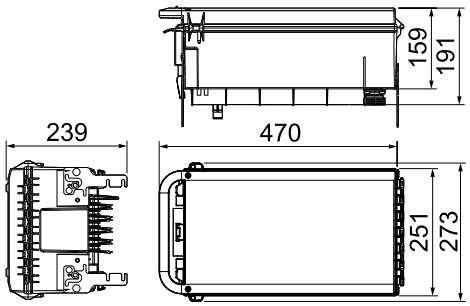
Fiber-glass taf-off boxes
Type 1
- (32 A)–with fuse carriers.



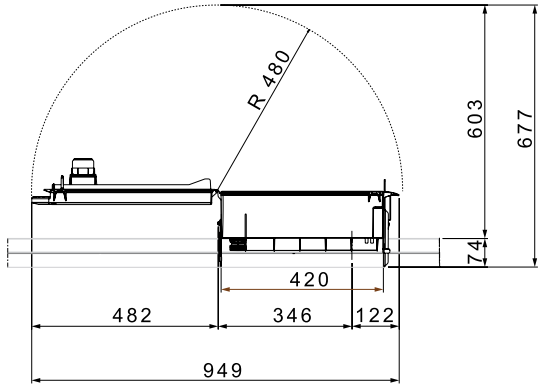
Type 2
- (63 A/160 A)–MCCB ready,



- (63 A/125 A/160 A)–with fuse carriers/empty,



- Total dimensions with cover open.



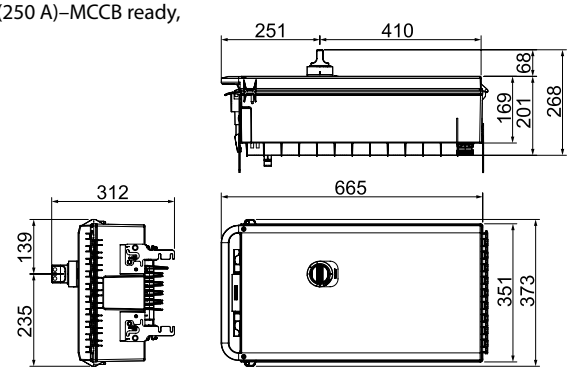
5. ACCESSORIES *(continued)*

■ 5.2 Tap-off boxes *(continued)*

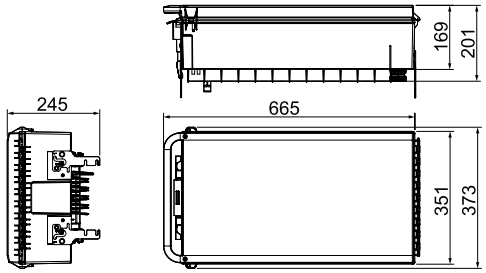
Fiber-glass tap-off boxes

Type 3

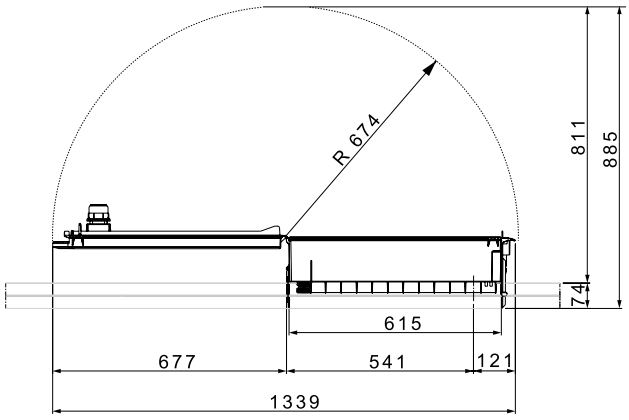
- (250 A)–MCCB ready,



- (250 A)–with fuse carriers/empty,



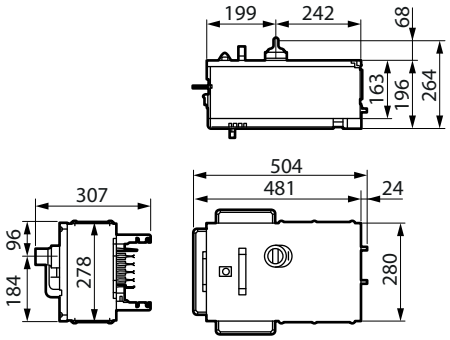
- Total dimensions with cover open.



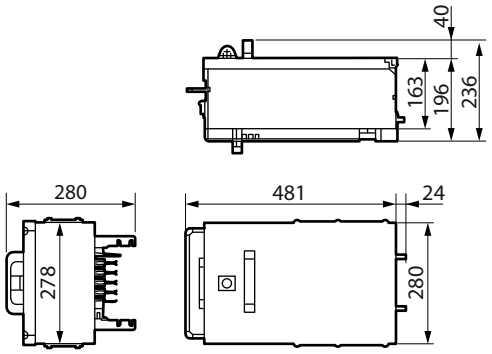
Metal tap-off box

Type 1

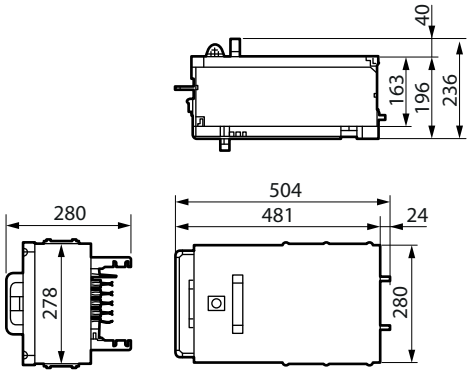
- (63 A/125 A/160 A)–MCCB ready,



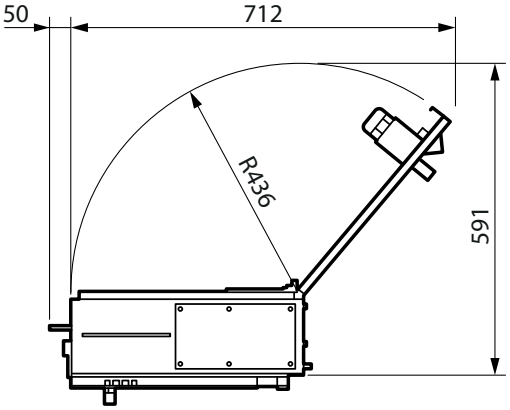
- (63 A/125 A/160 A)–with fuse carriers,



- (63 A/125 A/160 A)–empty,

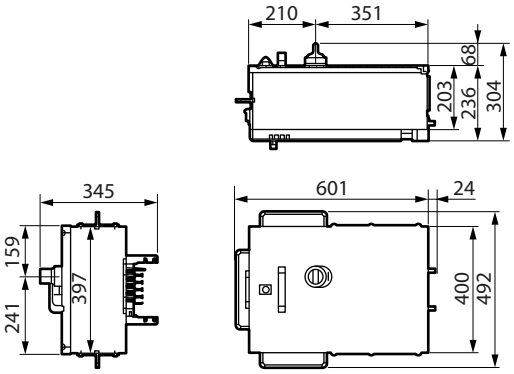


- Total dimensions with cover open.



Type 2

- (250 A)–MCCB ready,

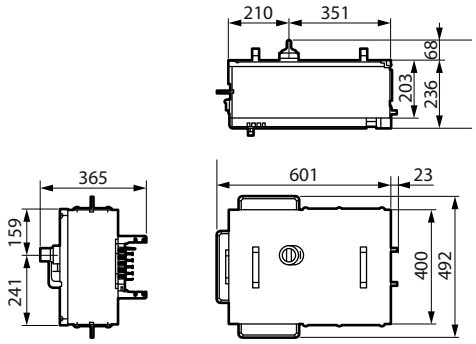


5. ACCESSORIES *(continued)*

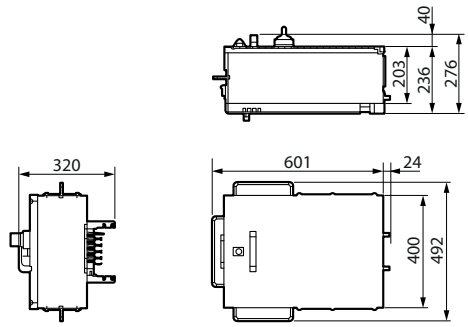
■ **5.2 Tap-off boxes *(continued)***

Metal tap-off boxes
Type 2 *(continued)*

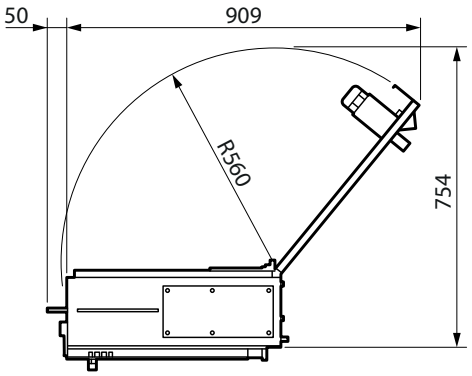
- (250 A)–MCCB ready (removable cover),



- (250 A)–empty/with fuse carriers,

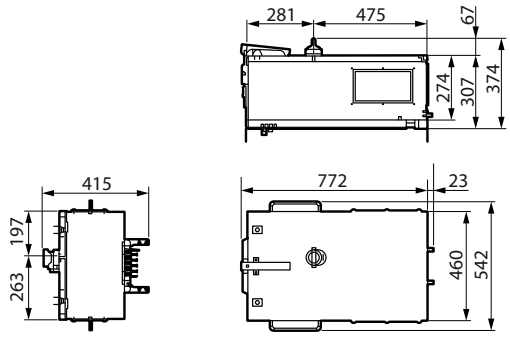


- Total dimensions with cover open.

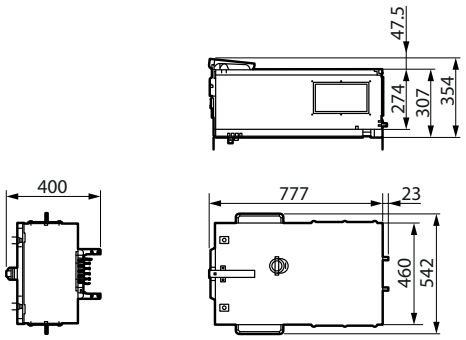


Type 3

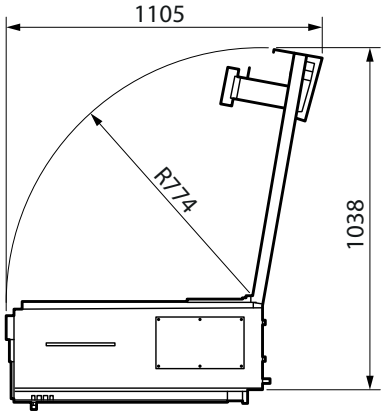
- (400 A/630 A)–MCCB ready,



- (400 A/630 A)–with fuse carriers,



- Total dimensions with cover open.



6. STANDARDS AND REGULATIONS

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)

RoHS: Compliance with the 2011/65/EU Directive (RoHS), as modified by the 2015/863/EU Delegated Di-rective, on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

REACH: The substances identified as SVHC (Substances of Very High Concern) according to the REACH Regulation (1907/2006), if present in the products at a concentration above 0.1% weight by weight, are declared inside the European SCIP database. At the date of publication of this document none of the substance listed in the annex XIV is found in this product.

WEEE: WEEE Directive (2012/19/EU): the sale of this product includes a

6. STANDARDS AND REGULATIONS *(continued)*

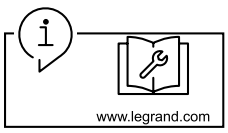
contribution to the appointed environmental bodies of each European country in charge of handling, at the end of their life, the products falling within the scope of the EU Directive on Electrical and Electronic Equipment Waste..

Packaging : Design and manufacture of packaging compliant with European Directive 94/62/CE.

7. OTHER INFORMATION

XLPro Calcul: Calculation notes creation software, addressed to installers, design office and maintenance operators. Definition of the electrical characteristics of a low voltage installation in compliance with the applicable standards

Workshop book: mounting informations, equipments, accessories and spare parts available on e-catalog.



Instruction sheet : detailed installation information available in e-catalog.

PEP: available on e-catalog.

For specific information, please contact Legrand support.
Unless otherwise indicated, data reported in this document refers exclusively to test conditions according to product standards. For different conditions of use of the product, inside electrical equipment or in any different installation context, refer to the regulatory requirements of the equipment, local regulations and design specifications of the system.