GE Energy
Industrial Solutions

WORLDWIDE PARTNER

New

QuiXtra™630

Low Voltage distribution boards up to 630A

GE imagination at work

Safe

- Verification tested system enclosure
- Designed according to the new IEC 61439-2
- IP43 with door and IP43 profile
- Internal segregation up to Form 2
- Tempered glass for transparent door

Simple and Flexible

- Enclosures widths for 12, 24 and 36 modules
- Enclosures heights from 3 up to 12 rows of 150mm
- Horizontal coupling
- 1 functional unit = 1 reference, including all parts to mount LV devices
- Modular concept: all functional units in steps of 50mm in height

Door ready to mount

- 1 or 3 point locking system already mounted
- Hinges mounted
- Installation without tools
- 135° open angle

QuiXtra™630
Low Voltage panel

QUICK

SIMPLE

Attractive design

- Fits perfectly in commercial environments
- Colours RAL 9006 and RAL 7024

Easy and quick to assemble

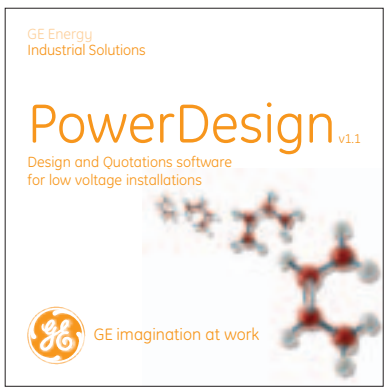
- Assembly by a single person
- Pre-assembled captive screws
- 90° screws for cover plates
- Click-in supports for functional units and busbar holders. No tools needed
- Frame to remove all cover plates at once!

Rigid and sturdy

- Rear panel 1,5 mm thick
- Bent to increase rigidity
- Die-cast aluminium corner parts

PowerDesign

New generation of software to help customers with the configuration, design and quotation of low voltage system enclosures



Applications

QuiXtra 630 has been developed as a range of system enclosures, GE's complete solution for low voltage distribution boards up to 630A for commercial and industrial environments.

QuiXtra 630 is delivered as a flat kit, to be assembled, equipped and wired by a panel builder or installer. The QuiXtra 630 range consists of both wall mounting and floor standing sheet steel enclosures, as well as busbars and functional units to easily integrate all types of low voltage electrical devices up to 630A.

The combination of the QuiXtra 630 enclosure and original GE LV electrical devices are designed according the new standard IEC 61439-2.

- Industrial
- High commercial
- Low commercial

Industrial
- Plants
- Small factories
- Waste recycling
- OEM
- Components-parts productions
- Printing

High commercial (as a secondary panel)
- Telecommunication
- Data–call centers
- Airports
- Hospitals
- Banks
- Public transportation
- Railways
- Subways
- Government buildings

Low commercial (as a main panel)
- Commercial offices
- Shopping malls
- Schools
- Stores
- Gasoline stations
- Restaurants
- Small shops

Description

QuiXtra 630 is a range of sheet steel system enclosures, delivered as a flat kit. It is GE's solution for low voltage distribution boars up to 630A, in commercial and industrial environments.

QuiXtra 630 is designed to be a reliable, simple, flexible and easy to use system enclosure, with the added value of its fresh and attractive design that integrates perfectly into a commercial environment.

The QuiXtra 630 range consists of 24 different enclosures. There are nine enclosure heights available, from 450mm up to 1800mm, and three enclosure widths, for functions of 12, 24 and 36 modules. All enclosures have the same depth (220mm without door and 250mm with door), allowing horizontal coupling and providing the user total flexibility to define the layout of the LV distribution boards.

A QuiXtra 630 system enclosure is assembled in 5 steps!

Step 1	Step 2	Step 3	Step 4	Step 5
The rear, top and bottom panels	The busbar system	The cable entry plates and functional units for the electrical devices	The side panels	The door (if required)

Assembling the top, bottom and side panels to the back-panel can be done by a single person. To facilitate this, the panel foresees guide ledges to avoid mistakes during assembly. The QuiXtra 630 enclosures can be coupled horizontally to build any required distribution board layout.

QuiXtra 630 can be installed as a wall mounting or as a floor standing enclosure. For the enclosures with a useful height of 1350mm or higher a 100mm high base needs to be added (ordered separately). For the smaller enclosures, the base is available as an option.

The QuiXtra 630 protection degree is either IP30, IP40 or IP43. IP30 is achieved simply using the coverplates delivered with each functional unit, without the need for a door. Simply adding a door to each enclosure increases the protection degree to IP40, without the need for an additional gasket. Adding the IP43 profile and the door, the protection degree is IP43.

GE's complete solution for low voltage distribution boards up to 630A for commercial and industrial environments.

Description (continued)

QuiXtra 630 offers plain and transparent (tempered glass) doors, for an easy inspection of the devices installed inside the enclosure. The doors are equipped with a one or a three point closing mechanism (depending on the enclosure height), operated by a central handle. The handle is delivered with a standard lock insert for key 2432E. The opening angle is 135 degrees. Attaching the doors to the enclosure is done without tools, using the simple pin-hinges. The doors are delivered with hinges and locking mechanism already mounted, to reduce assembly time.

All GE LV electrical devices up to 630A can be easily assembled in QuiXtra 630 using the appropriate functional units. Each functional unit kit includes everything necessary for assembly:

- A mounting plate or DIN rail
- A support to attach to the enclosure
- A coverplate (with precise cut-outs)
- The required screws and other fixation parts.

Attaching the mounting plates or DIN rails does not require tools: they are attached to the rear mounting profile using a "click in" support. The coverplates are attached to two profiles using captive 90° screws. By removing these profiles, all cover plates can be removed at the same time.

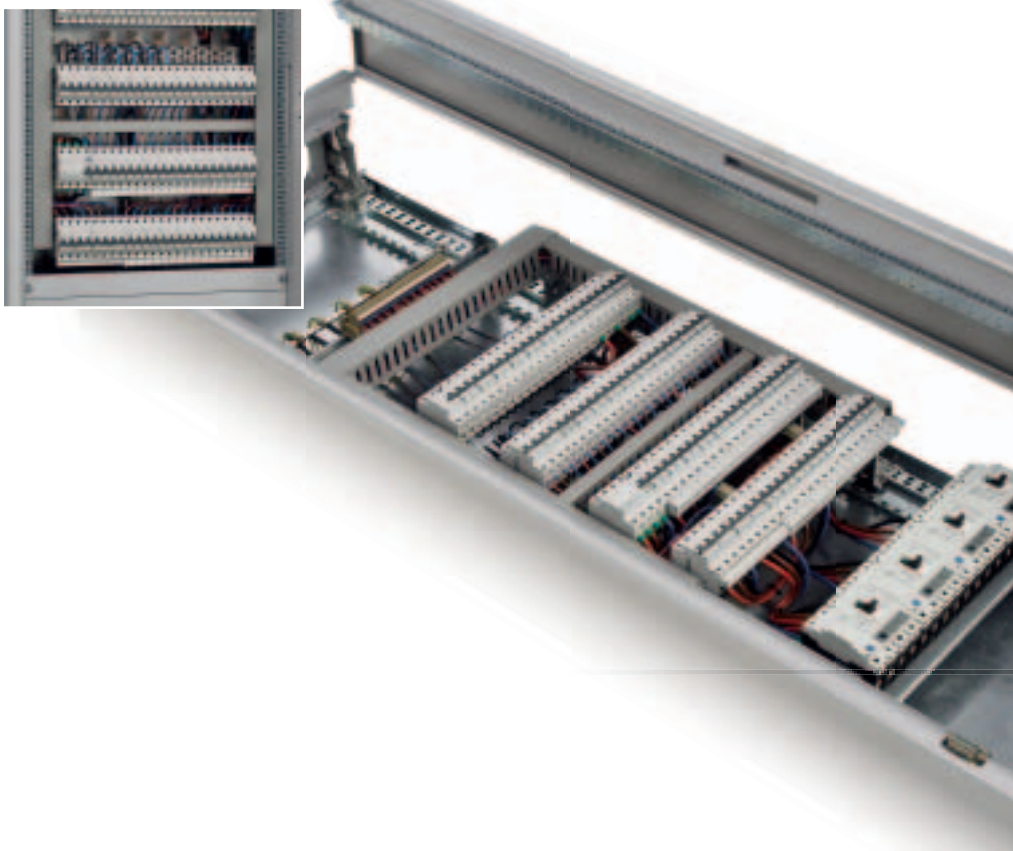
QuiXtra 630 has sufficient wiring space for any possible layout. Each side has room for a vertical 60mm cable-duct. The vertical and the horizontal cable-ducts can be integrated in different depths to suit the users' needs. QuiXtra 630 offers a variety of different cable entry plates for the top and bottom panels, to assure enough space for the cable entry and to cover all type of panel installations.

For upgrades and maintenance, the end user has direct access to the *vertical cable ducts* of up to 40 mm (in each side of the functions) in an installed panel, simply by removing the coverplates. If wider space is required, it's necessary to disassemble the *side panels*, which can be separately removed.

The connectivity in Quixtra 630 is based on rear mounted and staircase busbars. The *rear busbar* can be mounted horizontally or vertically. For the rear mounted busbar, a single insulator type is suitable for different cross sections of copper bars.

The *staircase busbar* can be installed vertically in the 12 module enclosure and horizontally in the 24 and 36 module enclosures. In either case, functions cannot be mounted on top.

The aesthetics of QuiXtra 630 make it particularly suitable for commercial environments. The QuiXtra 630 colour is is white aluminium, RAL 9006. The external corner parts, the handle and the base are in dark grey, RAL 7024. The tempered glass of the transparent door is lightly smoked grey.



Features and Benefits

Simple and flexible

- Enclosures widths for 12, 24 and 36 modules
- Enclosures heights from 3 up to 12 rows of 150mm
- Horizontal coupling of 2 or more enclosures
- Modular concept. All functions in steps of 50mm in height
- Functional kits for GE low voltage electrical devices up to 630A. Mounting of GE devices in vertical or horizontal position
- The busbars can be assembled in vertically or horizontally
- Accessories to facilitate panel wiring and assembly
- Each functional unit includes all parts necessary for assembly: mounting plate or DIN rail, supporting brackets, cover plate (with precise cut-outs) and all required fixation elements.

Easy and quick to assemble

- Assembly by a single person
- "Click in" supports for functions and busbar holders. No tools needed
- 90° screws for cover plates
- Pre-assembled captive screws
- Guiding ledges in back panel for top and side panel fixation
- Door assembly without tools. Doors delivered with locking system and hinges pre-mounted (key 2432E)
- Generous wiring space, enough for vertical cable ducts of 60mm on each side
- Frame allowing the removal of all cover plates at the same time
- Markings in the fixation profiles to quickly position the functional units and cover plates
- Pre-punched cable entry glands as option

Safe for users, reliable and sturdy

- Verification tested system enclosure, designed according to the new IEC 61439-2 standard
- IP43 with door, without additional gaskets
- IP40 with door and without IP43 profile
- IP30 without door
- Back panel galvanized sheet steel, 1,5mm
- External panels sheet steel, 1,25mm, power coated
- Aluminium corner parts provide additional rigidity to both stand-alone and coupled enclosures
- Internal segregation: Form 2
- Tempered glass for the transparent door

Attractive design

- Optimal integration in commercial environments
- Combination of two colours: RAL 9006 (metallic silver) and RAL 7024 (dark grey)

Kit structure

QuiXtra 630 is a system enclosure delivered in flat kits, to be assembled, equipped and wired by the panel builder and installer.

1. Basic kit

The kit includes:
- Rear panel
- Top panel
- Bottom panel
- Four die-cast aluminium corner parts
- Two rain profiles
- Two filler plates

- The rear panel already has the two functional mounting profiles integrated, to which the supports for the DIN rails, the mounting plates and the isolators can be attached.
- The filler plates serve to cover the corner parts and receive the door locking mechanism
- The die-cast aluminium corner parts are fixed to the back-panel using two screws.

✔ *For enclosures of useful height of 1350, 1500 and 1800mm, the bottom panel is not delivered. It is mandatory to add the floor base of 100mm.*

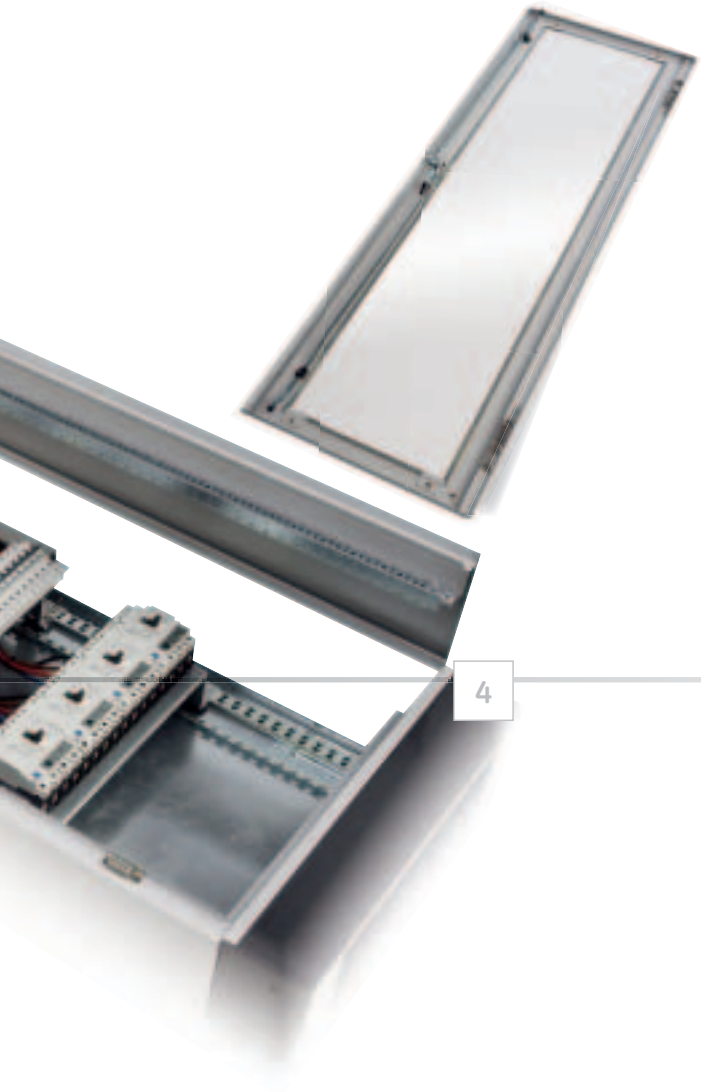
2. Side panel kit

The kit includes:
- Two side panels, with two vertical profiles to fix the coverplates
- Four external corner parts for the wall mounting sizes (between 450 and 1200mm)
- Two external corner parts for the floor standing sizes (1350, 1500 and 1800mm)

An enclosure is built of 3 main kits

3. Door

The kit includes:
- Plain door, available for all enclosure sizes
- Transparent door, for enclosure 24 and 36 modules wide
- The locking mechanism, handle and hinges are delivered mounted on the door
- One lock insert with two keys 2432E is included

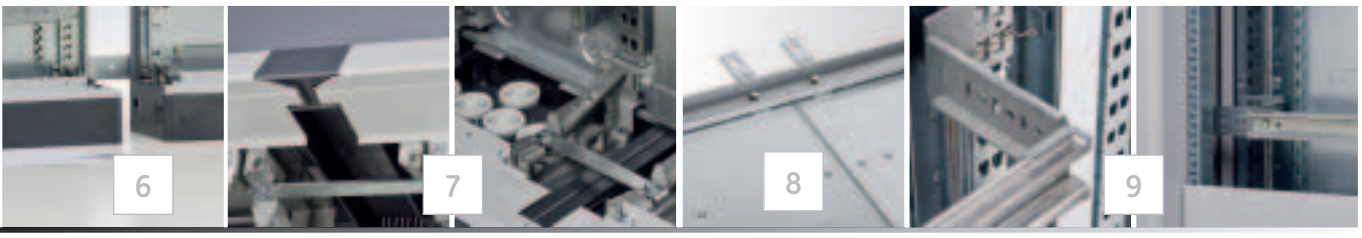


Additional options

Cable entry plates
Only one cable size entry plate, in 8 different configurations.
Coupling kit
- Vertical profiles to join the rear panels and U parts to join the aluminium corner parts
- A vertical beam for the front, with two vertical profiles to fix the coverplates
- Two plastic parts to join the top and bottom panels. (Photo 7)

Horizontal reinforcement profiles
Two horizontal profiles reinforce coupled enclosures. (Photo 8)
Floor base
Base and fixation elements. Removable front plate to improve accessibility. Rods can be inserted to transport a finished enclosure with a forklift.
Functional units
DIN rail or mounting plate with two supports to mount into the rear vertical profiles. Includes cover plate with precise cut-outs and all the fixation elements. (Photo 9)
Coverplates
Extra blind plates available.
Busbar supports
The kit includes the busbar holders and the support, delivered with all fixation parts.
Mounting plates
Includes plain metal mounting plate, supports and fixation elements.
Special functions
Meters, push-buttons P9

1	Without the cable entry plates, and with vertical profiles for the coverplates
2	Enclosure with floor base included
3	Side panels
4	Door
5	Cable entry plates
6	Coupling of enclosures
7	Coupling of enclosures (plastic parts)
8	Coupling the back panels and wall mounting brackets
9	Functional unit



Main technical characteristics

Useful and external dimensions (mm)

External height	Useful height	Rows 150mm	External width			Depth with door
			12 modules	24 modules	36 modules	
600	450	3	-	660	-	250
750	600	4	364	660	-	250
900	750	5	364	660	876	250
1050	900	6	364	660	876	250
1200	1050	7	364	660	876	250
1350	1200	8	364	660	876	250
1600	1350	9	364	660	876	250
1750	1500	10	364	660	876	250
2050	1800	12	364	660	876	250

Material and colour

Rear panel & mounting profiles	Sendzimir zinc plated steel 1,5 mm
Side, top and bottom panel	Epoxy-polyester coated sheet steel 1,25 mm
Plain door	Epoxy-polyester coated sheet steel 1,25 mm
Transparent door	Epoxy-polyester coated sheet steel 1,25 mm and smoked safety glass 3 mm.
Cover plates	Epoxy-polyester coated sheet steel 1 mm
External corner and coupling parts	ABS
Internal corner plates	Die-cast aluminium
Enclosure colour	RAL 9006
Floor base colour	RAL 7024

Protection degree and segregation form

Protection class	I
Pollution degree	2
Segregation	Form 1 & Form 2
Protection degree	
Without door	IP30, IK08
With plain door & without IP43 profile	IP40, IK09
With plain door and IP43 profile	IP43, IK09
With transparent door	Same IP as plain door, IK08

Standards and approvals

Standards	IEC 60439-1
	EN 60439-1(1)
Approval	KEMA KEUR
Certification	KEMA
RoHS	Compliant

Electrical characteristics

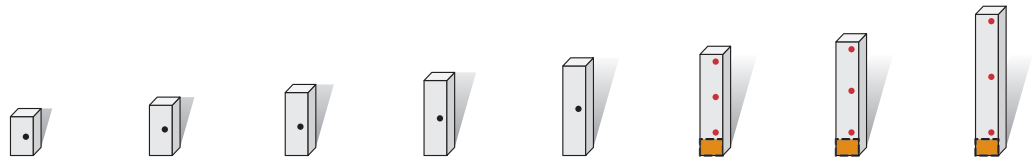
Rated current (In)	630 A
Rated operational voltage (Ue)	415 V
Rated insulation voltage (Ui)	690 V
Rated frequency (fn)	50/60 Hz
Rated short-circuit current (Icw)	30 kA/1s
Rated current of busbar systems	630 A in IP43

(1) According to EN 61439-2: KEMA approval pending.

More detailed technical data in chapter C

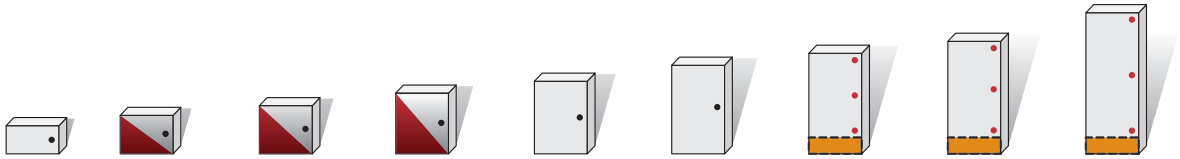
Full enclosure range

12 modules - width: 364 mm/depth: 250 mm



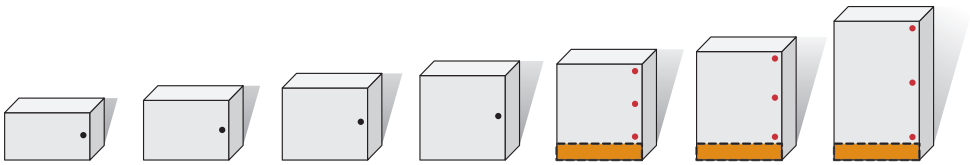
H	**600**/750	**750**/900	**900**/1050	**1050**/1200	**1200**/1350	**1350**/1600	**1500**/1750	**1800**/2050
R	4R	5R	6R	7R	8R	9R	10R	12R

24 modules - width: 660 mm/depth: 250 mm



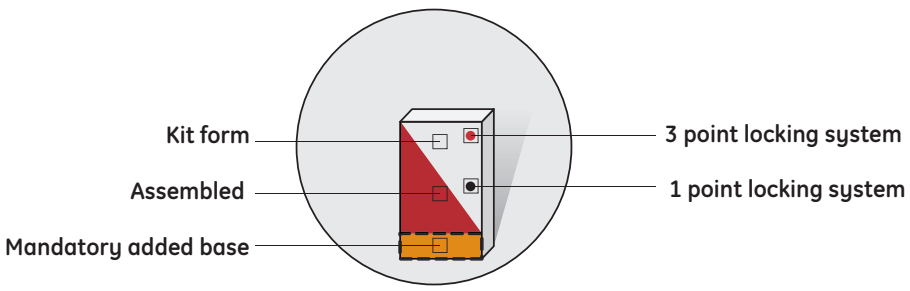
H	**450**/600	**600**/750	**750**/900	**900**/1050	**1050**/1200	**1200**/1350	**1350**/1600	**1500**/1750	**1800**/2050
R	3R	4R	5R	6R	7R	8R	9R	10R	12R

36 modules - width: 876 mm/depth: 250 mm



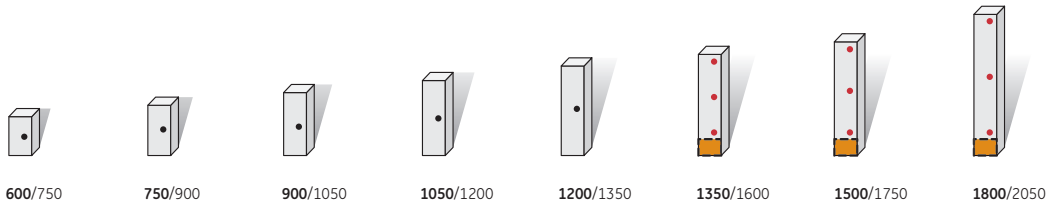
H	**750**/900	**900**/1050	**1050**/1200	**1200**/1350	**1350**/1600	**1500**/1750	**1800**/2050
R	5R	6R	7R	8R	9R	10R	12R

H **Useful height/**external height
R **Number of rows of 150 mm**



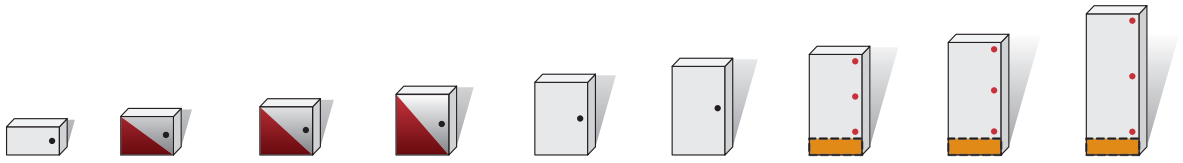
Order codes enclosures in kit form

12 modules - width: 364 mm/depth: 250 mm



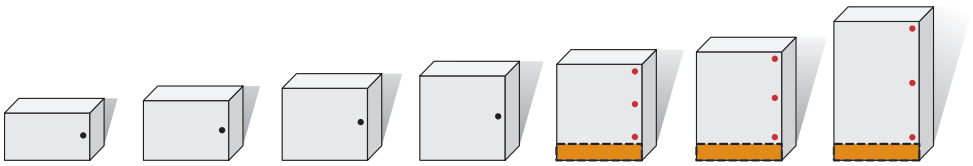
H	**600**/750	**750**/900	**900**/1050	**1050**/1200	**1200**/1350	**1350**/1600	**1500**/1750	**1800**/2050
R	4R	5R	6R	7R	8R	9R	10R	12R

24 modules - width: 660 mm/depth: 250 mm



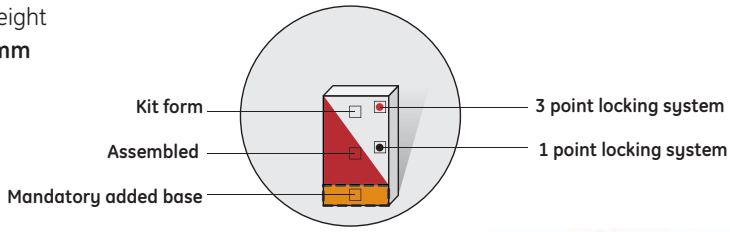
H	**450**/600	**600**/750	**750**/900	**900**/1050	**1050**/1200	**1200**/1350	**1350**/1600	**1500**/1750	**1800**/2050
R	3R	4R	5R	6R	7R	8R	9R	10R	12R

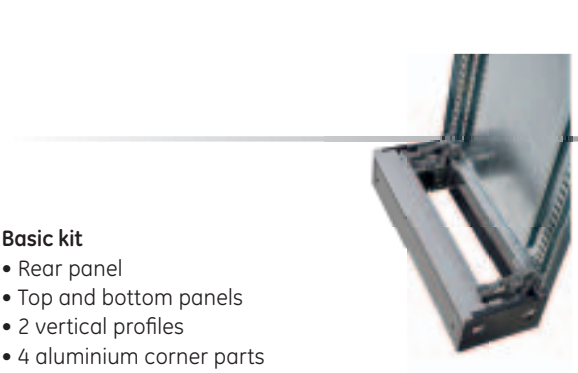
36 modules - width: 876 mm/depth: 250 mm



H	**750**/900	**900**/1050	**1050**/1200	**1200**/1350	**1350**/1600	**1500**/1750	**1800**/2050
R	5R	6R	7R	8R	9R	10R	12R

H **Useful height/**external height
R **Number of rows of 150 mm**





Basic kit
- Rear panel
- Top and bottom panels
- 2 vertical profiles
- 4 aluminium corner parts
- Fixation elements

✔ *Mandatory to add floor base for enclosures 9, 10 and 12 rows*

Side panel kit
- 2 side panels
- 2 profiles to fix coverplates
- Plastic corner parts
  - 4 units for enclosures up to 8 rows
  - 2 units for 9, 10 & 12 rows enclosures
- Fixation elements

12 modules enclosures - width: 364 mm/depth: 250 mm

External height (mm)	Useful height (mm)	# rows 150mm	# modules	Basic kit[1]		Side panel kit[3]		Plain door	Transparent door	Coupling kit[4]
				12 modules						
600	450	3	36	-		885027		-	-	-
750	600	4	48	885000	+	885028	+	885044	-	885036
900	750	5	60	885001	+	885029	+	885045	-	885037
1050	900	6	72	885002	+	885030	+	885046	-	885038
1200	1050	7	84	885003	+	885031	+	885047	-	885039
1350	1200	8	96	885004	+	885032	+	885048	-	885040
1600	1350	9	108	885005[2]	+	885033	+	885049	-	885041
1750	1500	10	120	885006[2]	+	885034	+	885050	-	885042
2050	1800	12	144	885007[2]	+	885035	+	885051	-	885043
Floor base	-	-	-	885084		-		-	-	-

24 modules enclosures - width: 660 mm/depth: 250 mm

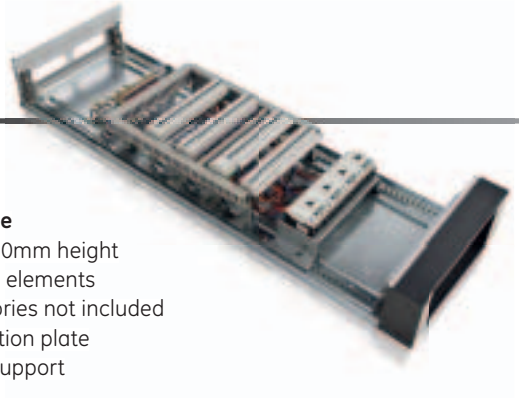
External height (mm)	Useful height (mm)	# rows 150mm	# modules	Basic kit[1]		Side panel kit[3]		Plain door	Transparent door	Coupling kit[4]
				24 modules						
600	450	3	72	885008		885027		885052	885068	-
750	600	4	96	885009	+	885028	+	885053	885069	885036
900	750	5	120	885010	+	885029	+	885054	885070	885037
1050	900	6	144	885011	+	885030	+	885055	885071	885038
1200	1050	7	168	885012	+	885031	+	885056	885072	885039
1350	1200	8	192	885013	+	885032	+	885057	885073	885040
1600	1350	9	216	885014[2]	+	885033	+	885058	885074	885041
1750	1500	10	240	885015[2]	+	885034	+	885059	885075	885042
2050	1800	12	288	885016[2]	+	885035	+	885060	885076	885043
Floor base	-	-	-	885085		-		-	-	-

36 modules enclosures - width: 876 mm/depth: 250 mm

External height (mm)	Useful height (mm)	# rows 150mm	# modules	Basic kit[1]		Side panel kit[3]		Plain door	Transparent door	Coupling kit[4]
				36 modules						
600	450	3	-	-		885027		-	-	-
750	600	4	-	-	+	885028	+	-	-	885036
900	750	5	180	885020	+	885029	+	885061	885077	885037
1050	900	6	216	885021	+	885030	+	885062	885078	885038
1200	1050	7	252	885022	+	885031	+	885063	885079	885039
1350	1200	8	288	885023	+	885032	+	885064	885080	885040
1600	1350	9	324	885024[2]	+	885033	+	885065	885081	885041
1750	1500	10	360	885025[2]	+	885034	+	885066	885082	885042
2050	1800	12	432	885026[2]	+	885035	+	885067	885083	885043
Floor base	-	-	-	885086		-		-	-	-

(1) Includes rear, top and bottom panel (side panels not included).
(2) Bottom panel not included. Mandatory to order the floor base separately.
(3) Includes two side panels and external corner parts.
(4) When coupling 2 or more enclosures, only 2 side panels are necessary.

How to order examples see page B.4

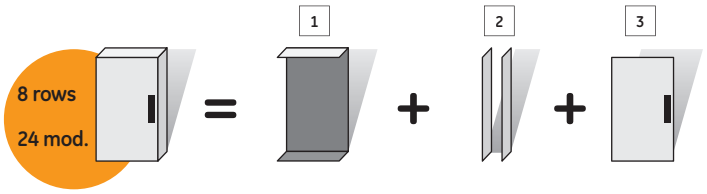


Floor base
- Base 100mm height
- Fixation elements
- Accessories not included
  - Separation plate
  - Cable support

Doors
- Door
- Locking mechanism assembled
- Handle assembled
- Locking insert key 2432E
- Hinges assembled

How to order

Example of individual 24 modules enclosure

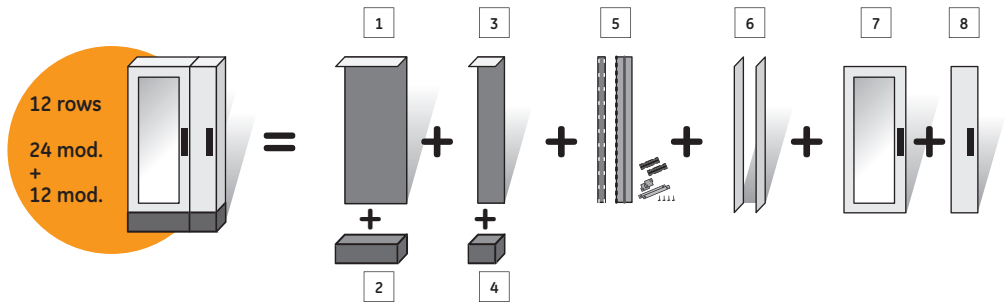


1 BASIC KIT 24 modules
2 SIDE PANEL KIT
3 DOOR (plain or transparent)

24 modules enclosures - width: 660 mm/depth: 250 mm

External height (mm)	Useful height (mm)	# rows 150mm	# modules	Basic kit[1]		Side panel kit[3]		Plain door	Transparent door	Coupling kit[4]
				24 modules						
600	450	3	72	885008		885027		885052	885068	-
750	600	4	96	885009	+	885028	+	885053	885069	885036
900	750	5	120	885010	+	885029	+	885054	885070	885037
1050	900	6	144	885011	+	885030	+	885055	885071	885038
1200	1050	7	168	885012	+	885031	+	885056	885072	885039
1350	**1200**	8	192	**885013**	+	**885032**	+	**885057**	**885073**	**885040**
1600	1350	9	216	885014[2]	+	885033	+	885058	885074	885041
1750	1500	10	240	885015[2]	+	885034	+	885059	885075	885042
2050	1800	12	288	885016[2]	+	885035	+	885060	885076	885043
Floor base	-	-	-	885085		-		-	-	-

Example of coupled 24 and 12 modules enclosures



1 BASIC KIT 24 modules
2 + floor base
3 BASIC KIT 12 modules
4 + floor base
5 COUPLING KIT
6 SIDE PANEL KIT
7 DOOR transparent, 24 mod.
8 DOOR plain, 12 mod.

24 modules enclosures - width: 660 mm/depth: 250 mm

External height (mm)	Useful height (mm)	# rows 150mm	# modules	Basic kit[1]		Side panel kit[3]		Plain door	Transparent door	Coupling kit[4]
				24 modules						
600	450	3	72	885008		885027		885052	885068	-
750	600	4	96	885009	+	885028	+	885053	885069	885036
900	750	5	120	885010	+	885029	+	885054	885070	885037
1050	900	6	144	885011	+	885030	+	885055	885071	885038
1200	1050	7	168	885012	+	885031	+	885056	885072	885039
1350	1200	8	192	885013	+	885032	+	885057	885073	885040
1600	1350	9	216	885014[2]	+	885033	+	885058	885074	885041
1750	1500	10	240	885015[2]	+	885034	+	885059	885075	885042
2050	**1800**	12	288	**885016[2]**	+	**885035**	+	**885060**	**885076**	**885043**
Floor base	-	-	-	**885085**		-		-	-	-

12 modules enclosures - width: 364 mm/depth: 250 mm

External height (mm)	Useful height (mm)	# rows 150mm	# modules	Basic kit[1]		Side panel kit[3]		Plain door	Transparent door	Coupling kit[4]
				12 modules						
600	450	3	36	-		885027		-	-	-
750	600	4	48	885000	+	885028	+	885044	-	885036
900	750	5	60	885001	+	885029	+	885045	-	885037
1050	900	6	72	885002	+	885030	+	885046	-	885038
1200	1050	7	84	885003	+	885031	+	885047	-	885039
1350	1200	8	96	885004	+	885032	+	885048	-	885040
1600	1350	9	108	885005[2]	+	885033	+	885049	-	885041
1750	1500	10	120	885006[2]	+	885034	+	885050	-	885042
2050	**1800**	12	144	**885007[2]**	+	**885035**	+	**885051**	-	**885043**
Floor base	-	-	-	**885084**		-		-	-	-

(1) Includes rear, top and bottom panel (side panels not included).
(2) Bottom panel not included. Mandatory to order the floor base separately.
(3) Includes two side panels and external corner parts.
(4) When coupling 2 or more enclosures, only 2 side panels are necessary.

Assembled enclosures

- Rear panel
- Top and bottom panels
- Back profiles
- Front profiles
- Side panels

✔ *Assembled enclosures are without door*

Assembled enclosures - order codes

Useful height (mm)	# rows 150mm	24 modules
600	4	885017
750	5	885018
900	6	885019

Reinforcement profiles

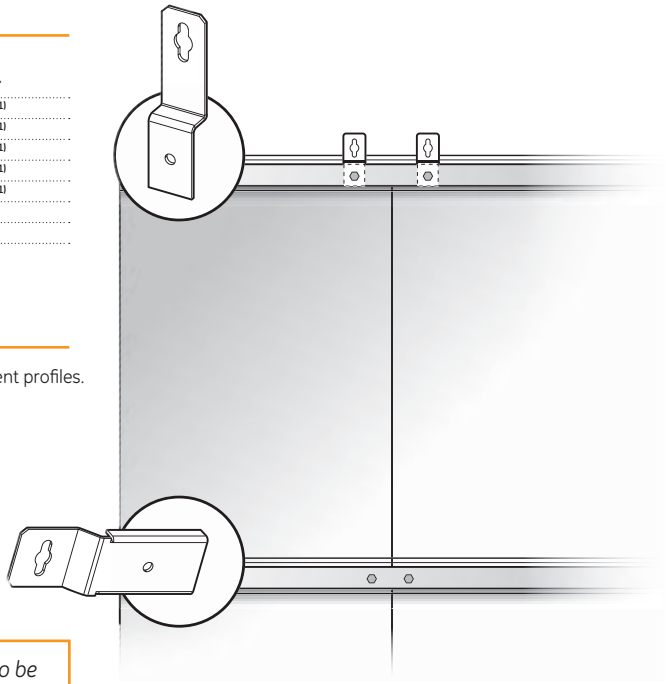
Kits to reinforce several coupled enclosures, and to facilitate the transportation of the complete switchboard.

- In each kit are included: Two horizontal profiles for the adequate combinations of enclosures, and the wall mounting brackets (top).
- The profiles are assembled horizontally through the enclosures, as it is shown in the picture.

Reinforcement profiles - order codes

	Ref. No.
For coupled 12 & 24 modules enclosures	885235(1)
For coupled 12 & 36 modules enclosures	885236(1)
For coupled 24 & 12 & 24 modules enclosures	885237(1)
For coupled 36 & 12 & 36 modules enclosures	885238(1)
For coupled 36 & 12 & 24 modules enclosures	885239(1)
Hooks to mount on sides (set of 4 hooks)	885240

(1) Vertical wall mounting supports 885256 included in reinforcement profiles.



✔ *For side mounting brackets a special set* **885240** *has to be ordered additionally. Only for horizontal wall mounting.*

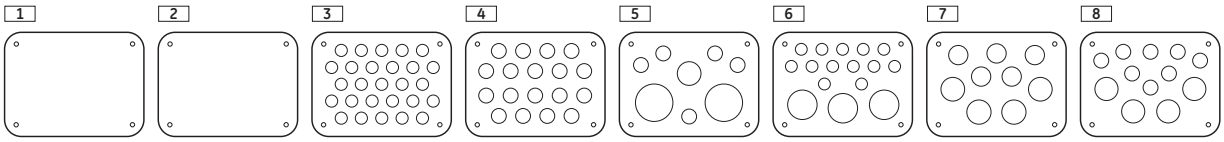
Cable entry plates

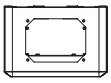
The enclosures are delivered without cable entry plates. The number and type of cable entry plates should be ordered following the table below.

Made in glass fibre reinforced polyester.

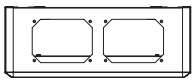
Cable entry plates - order codes

Type		Floor standing			Wall mounting			Ref. No.
		12 modules	24 modules	36 modules	12 modules	24 modules	36 modules	
Plain **metal IP40** (RAL 9006)	1	1	2	3	2	4	6	**885287**
In polyester IP43 (RAL 7035)								
Plain	2	1	2	3	2	4	6	**885228**
27xM20	3	1	2	3	2	4	6	**885229**
18xM25	4	1	2	3	2	4	6	**885230**
2xM63 + 1xM40 + 5xM25	5	1	2	3	2	4	6	**885231**
3xM50 + 13xM20	6	1	2	3	2	4	6	**885232**
4xM40 + 5xM32	7	1	2	3	2	4	6	**885233**
4xM40 + 8xM25	8	1	2	3	2	4	6	**885234**

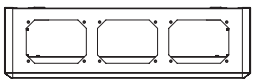




12 modules: 1 entry plate



24 modules: 2 entry plates



36 modules: 3 entry plates

Floor bases

Cable fixation

Separation for floor base

	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
Floor base height - 100 mm	**885084**	**885085**	**885086**
Horizontal cutted separation (set including cable glands)	**885087**	**885088**	**885089**
Horizontal plain separation (set)	**885090**	**885091**	**885092**
Set of cable fixation	**885093**	**885094**	**885095**

Functional units for modular devices

Content
- DIN rail
- Supports to fix the rear panel profiles
- Coverplate with cut-out
- Blanking plate
- Fixation elements

Functional units for modular devices

	Height (mm)	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
DIN rail for devices <63 A	150	**885098**	**885100**	**885103**
DIN rail for devices >63A	200	**885099**	**885101**	**885104**
DIN rail for Fixwell™ MCB's	150	-	**885102**	**885105**
DIN rails for MCB's Hti/Dilos 40/160A + Terminals	150	-	**885096**	**885097**

Functional units for terminals

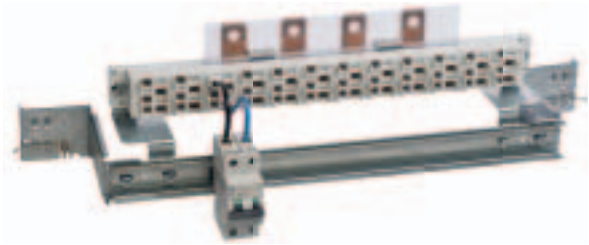
Content
- DIN rail adjustable in height
- Supports to fix the rear panel profiles
- Plain coverplate
- Fixation elements

Functional units for terminals

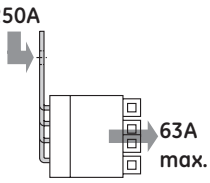
	Height (mm)	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
1 horizontal DIN rail for terminals	150	**885149**	**885150**	**885151**
1 vertical DIN rail for terminals (*)	900	**885152**	-	-
3/4 vertical DIN rails for terminals(**)	300	-	**885153**	**885154**
Earth bar	-	**885264***	**885138****	**885138****

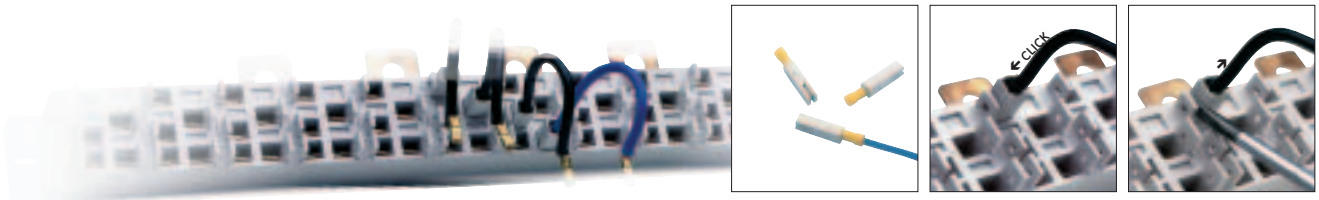
Moduclic plug-in distribution system

Moduclic is a secondary plug-in distribution system of 250A, 660V~ 60kA peak. Moduclic is a busbar for modular devices and this as well for MCB's as for comfort functions. Moduclic is mounted directly on the DIN-rail and is **independent** the type of **system enclosure**: Quixtra or VP-System.
The main advantage of Moduclic is the **safety** aspect (IP20): adding or **removing** electrical circuits in a panel board **without disconnecting** the power. All outgoing circuits stay in the operational function, due to the fact that all operations are done using the **insulated click connection**, without touching the life parts, even not when using an insulated tool.
Standard connections of 6 mm² (up to 40A) are shipped with Moduclic. The Moduclic distribution system is suitable for integration in **all system enclosures** conform to **IEC 60439-1**



24 and 36 modules - 3P+2N - IP20



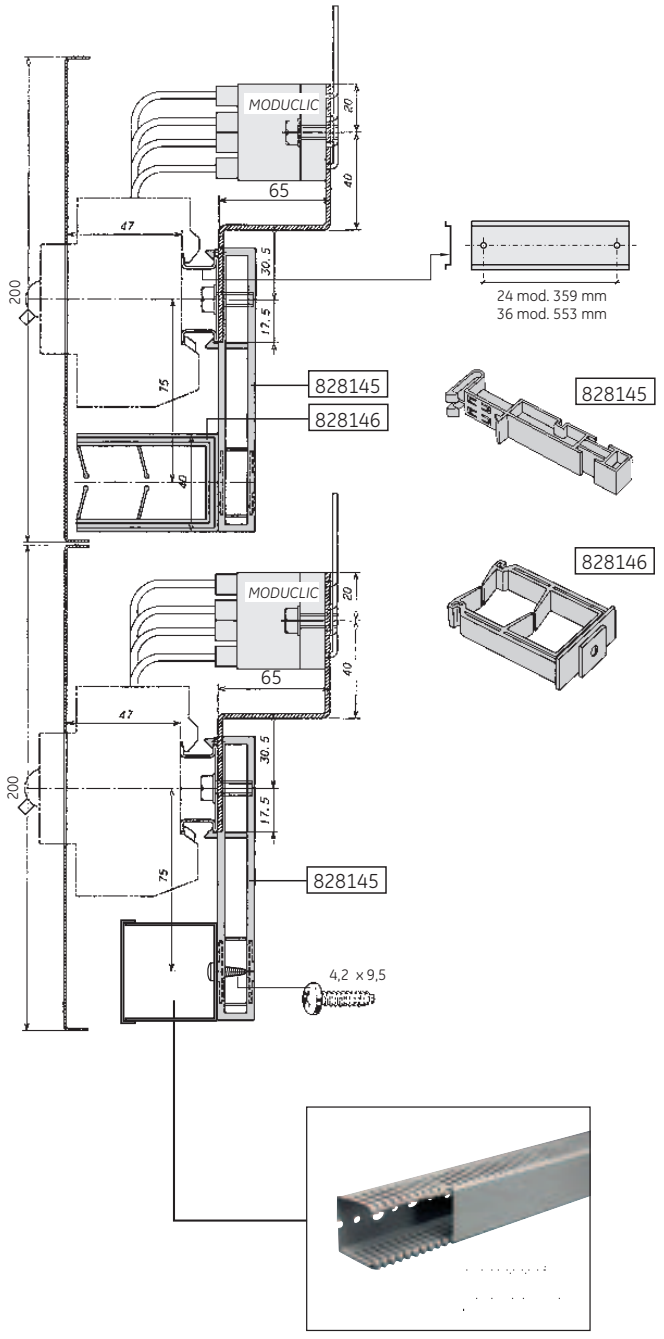


Moduclic distribution system

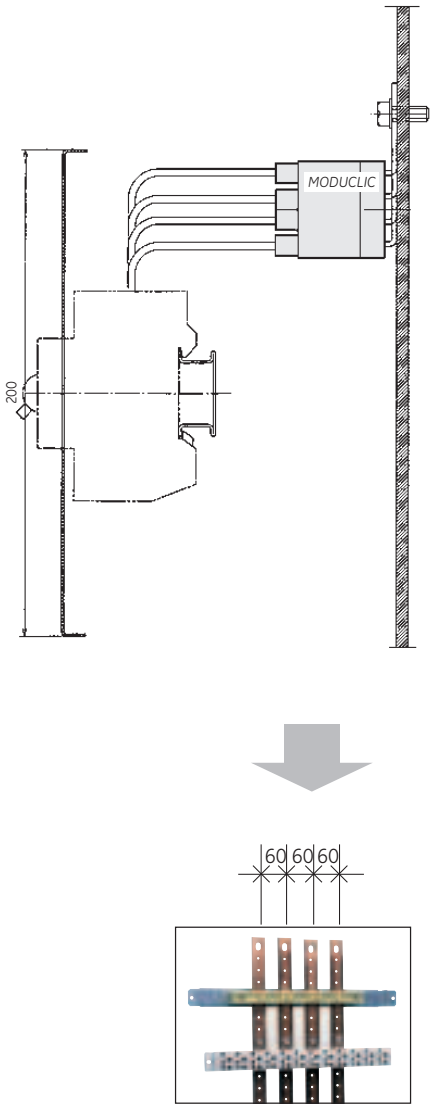
Description	Cables	Cable section (mm²)	Cable length (mm)	Ref. No.	Pack
Moduclic 24 modules 3P+2N + cables 3P+N				**880884**	1
	18 black cables	6	120		
	6 blue cables	6	120		
Moduclic 24 modules 3P+2N + cables mono				**880885**	1
	12 black cables	6	120		
	12 blue cables	6	120		
Moduclic 24 modules 3P+2N without cables		-	-	**880886**	1
Moduclic 36 modules 3P+2N + cable 3P+N				**885265**	1
	27 black cables	6	120		
	9 blue cables	6	120		
Moduclic 36 modules 3P+2N + cables mono				**885266**	1
	18 black cables	6	120		
	18 blue cables	6	120		
Moduclic 36 modules 3P+2N without cables		-	-	**885267**	1
Cables with end connector					
	6 black cables	6	120	**880887**	1
	6 blue cables	6	120	**880888**	1
	6 black cables	10	120	**880889**	1
	6 blue cables	10	120	**880890**	1
Stripped cables					
	6 black cables	6	320	**880891**	1
	6 blue cables	6	320	**880892**	1
	6 black cables	10	320	**880893**	1
	6 blue cables	10	320	**880894**	1
Cables for 2 x 4P MCB's - 6 black & 2 blue					
	8 cables	6	120	**880926**	1
	8 cables	10	120	**880928**	1
	8 cables	6	320	**880930**	1
	8 cables	10	320	**880932**	1
Cables for 4 x 2P MCB's - 4 black & 4 blue					
	8 cables	6	120	**880927**	1
	8 cables	10	120	**880929**	1
	8 cables	6	320	**880931**	1
	8 cables	10	320	**880933**	1
Plugs					
	1,5-2,5 mm² blue, 10 plugs			**880895**	1
	4-6 mm² yellow, 10 plugs			**880896**	1

Mounting of Moduclic

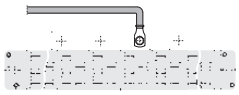
On DIN-rail (step = 200 mm)



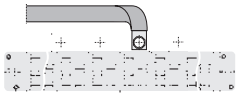
Direct on busbar (step = 200 mm)



Incoming connections



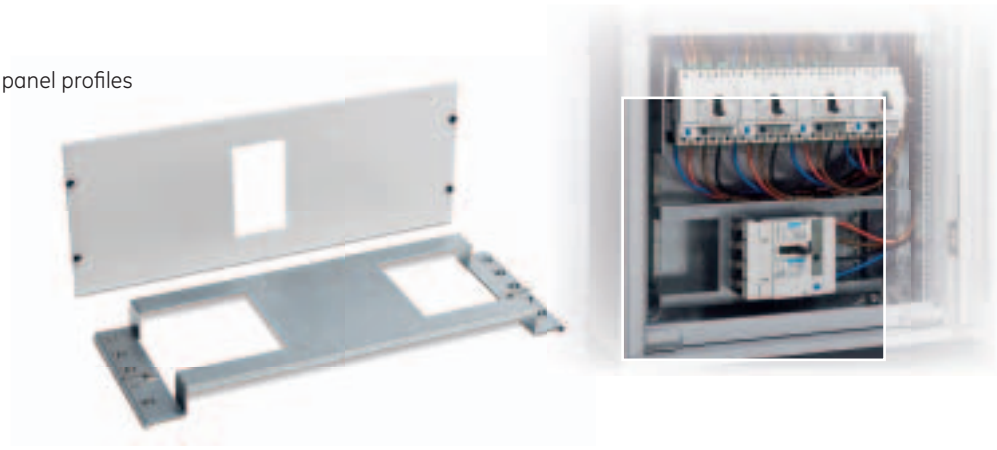
Cable max. 70 mm² - 170A



Flexibar 3 x 20 x 1 - 250A

Functional units for MCCB's - Record Plus

Content
- Mounting plate
- Supports to fix to the rear panel profiles
- Coverplate with cut-out
- Fixation elements



Horizontal assembly

Record Plus frame size	In (A)	Poles	RCD position	Height (mm)	# MCCB's	Ref. No.	# MCCB's	Ref. No.	# MCCB's	Ref. No.
					12 modules		24 modules		36 modules	
FD	160	3/4 poles	-	150	-	-	1	**885117**	-	-
FD+RCD	160	3 poles	Bottom	150	-	-	1	**885114**	-	-
FD+RCD	160	4 poles	Bottom	150	-	-	1	**885115**	-	-
FE	250	3/4 poles	-	200	-	-	1	**885121**	1	**885131**
FE+RCD	250	3/4 poles	Bottom	200	-	-	1	**885119**	1	**885130**
FG	630	3 poles	-	300	-	-	-	-	1	**885134**
FG	630	4 poles	-	300	-	-	-	-	1	**885135**
FG +RCD	630	3 poles	Bottom	300	-	-	-	-	1	**885132**
FG +RCD	630	4 poles	Bottom	300	-	-	-	-	1	**885133**

Vertical assembly

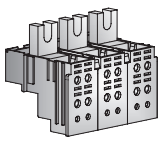
Record Plus frame size	In (A)	Poles	RCD position	Height (mm)	# MCCB's	Ref. No.	# MCCB's	Ref. No.	# MCCB's	Ref. No.
					12 modules		24 modules		36 modules	
FD	160	3/4 poles	-	300/250[1)]	1	**885107**	4	**885116**	6	**885127**
FD+RCD	160	3/4 poles	Lateral	300	1	**885106**	2	**885116**	3	**885127**
FE	250	3/4 poles	-	450	1	**885109**	3	**885120**	4	**885129**
FE+RCD	250	3/4 poles	Bottom	600	1	**885108**	3	**885118**	4	**885128**
FG	630	3 poles	-	600	1	**885112**	1	**885124**	-	-
FG	630	4 poles	-	600	1	**885113**	1	**885125**	-	-
FG +RCD	630	3 poles	Bottom	600	1	**885110**	1	**885122**	-	-
FG +RCD	630	4 poles	Bottom	600	1	**885111**	1	**885123**	-	-

(1) Height 300 mm in 12 modules
Height 400 mm in 24 and 36 modules.

Distribution terminals for Record Plus

Especially designed to allow the use of the moulded case circuit breaker Record Plus FE frame as a mains device with cables distributing the load over multiple outgoing circuits (or lines of multiple outgoing circuits).
The terminals are available as a three or four pole set allowing the line or load side of the breaker to be equipped. The sets consist of a number of fully insulated single pole units that can be assembled into a multipole distribution block before they are mounted on the breaker.

External connectors
Connector 6 copper cable cores 2,5 mm² up to 35 mm²
Set for equipping the line or load side of a breaker



Frame size	Conductors	Size of conductors	Strippable length	Max. torque on lug bolt
FE160/250	max. 6	4 x 2,5 - 35 mm²	12 mm	6 Nm
	-	2 x 2,5 - 16 mm²	12 mm	3 Nm

External connectors

	Ref. No.	Pack
Set 3 pole	**880954**	1
Set 4 pole	**880955**	1

Functional units for loadbreak disconnectors - Dilos

Content
- Mounting plate
- Supports to fix to the rear panel profiles
- Coverplate with cut-out
- Fixation elements

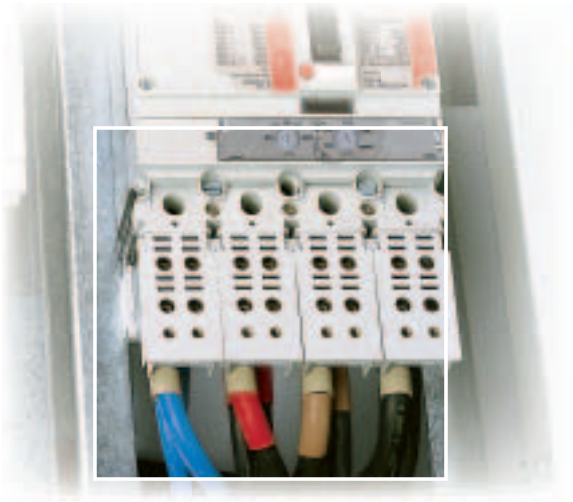
Horizontal assembly

Dilos size	In (A)	Poles	Height (mm)	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
Dilos 1H[1]	-	3/4 poles	300	-	**885140**	-
Dilos 3[1]	250-315	3/4 poles	300	-	**885142**	**885146**
Dilos 4[2]	400-630	3/4 poles	450	-	**885144**	**885147**

Vertical assembly

Dilos size	In (A)	Poles	Height (mm)	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
Dilos 1/2	-	3/4 poles	300	**885148**	-	-
Dilos 1H[1]	-	3/4 poles	300	**885136**	**885139**	-
Dilos 3[1]	250-315	3/4 poles	300	**885137**	**885141**	**885145**
Dilos 4[2]	400-630	3/4 poles	600	-	**885143**	-

(1) Use handle 730649 or 730650
(2) Use handle 730653



Busbars

Staircase busbars

The staircase busbar can be assembled in vertical position in the 12 modules enclosure and in horizontal position in the 24 and 36 modules enclosures.

- No electrical device can be mounted at the same level as the staircase busbar. Only a blind coverplate should be mounted over it.
- The kits for the vertical busbars include the metal supports to fix the holder in horizontal position in the enclosure.
- The kits for horizontal busbars includes the support to fix the holders in vertical position in the enclosure and all fixation elements.

Staircase busbars holders

	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
Vertical copper bars (support + isolator)	885197	-	-
Horizontal copper bars (support + isolators)	-	885198	885199

Rear mounted busbars

The rear mounted busbar can be assembled in vertical or in horizontal position in all type of enclosures.
Electrical devices can be mounted over the rear busbars: modular devices, terminals and MCB's Record Plus FD/FE frames(1).

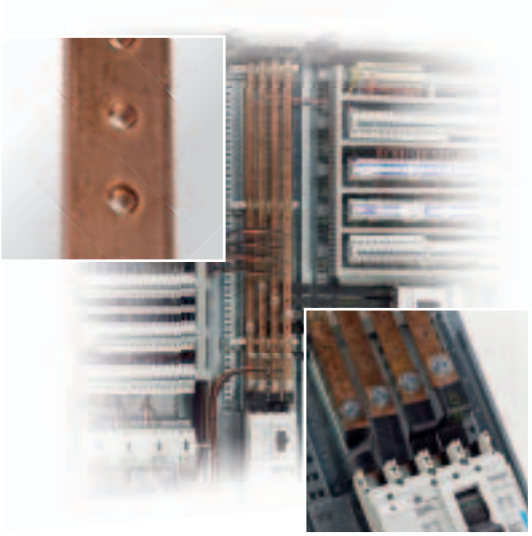
- The kits for the vertical busbars includes the metal supports to fix the holder in horizontal position in the enclosure.
- The kits for horizontal busbars includes the support to fix the holders in vertical position in the enclosure and all fixation elements.

Rear mounted busbars holders

	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
Vertical copper bars	885191	885192	885193
Horizontal copper bars	885194	885195	885196

(1) In the 12 modules enclosures no devices can be mounted over the rear busbars.

Copper bars
The copper bars are common for the staircase busbars and for the rear mounted busbars.
The cross-section selection should be done based on the table below:
- Rated nominal current (In)
- Rated short-circuit current (Icw)



Busbar system

Cross section in mm Phase bar	Neutral bar	Type	Connection[1]	Spacing between supports (mm)[2]	Spacing between busbars (mm)	Max. Current rating Amp	Short-circuit withstand strength Icw (kA) - sec[2]	Ipk (kA)
20x5	20x5	Standard	Plain	300	60	250	17,5 - 0,7	35
30x5	30x5	Standard	Plain	300	60	400	25 - 0,8	50
20x10	20x10	Standard	Plain	300	60	400	20 - 1	40
30x10	30x10	Standard	Plain	300	60	630	30 - 1	63
20x5	20x5	Standard	M6/25	300	60	250	17,5 - 0,35	35
30x5	30x5	Standard	M6/25	300	60	400	25 - 0,35	52,5
20x10	20x10	Standard	M6/25	300	60	400	20 - 0,75	40
30x10	30x10	Standard	M8/25	300	60	630	30 - 0,75	63
20x5	20x5	Staircase	M6/25	300	35	250	20 - 0,35	40
30x5	30x5	Staircase	M6/25	300	35	400	25 - 0,35	52,5
20x10	20x10	Staircase	M6/25	300	35	400	25 - 0,45	52,5
30x10	30x10	Staircase	M8/25	300	35	630	25 - 1	52,5

Copper bars

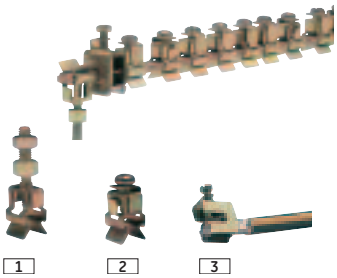
	Threaded holes[1]	Length (mm)	Ref. No.
Plain copper bar - 20x5mm	no	3000	**858034**
Plain copper bar - 30x5mm	no	3000	**885204**
Plain copper bar - 20x10mm	no	3000	**885205**
Plain copper bar - 30x10mm	no	3000	**885206**
Threaded copper bar - 20x5mm	M6	2000	**885207**
Threaded copper bar - 20x10mm	M6	2000	**885208**
Threaded copper bar - 30x5mm	M6	2000	**885209**
Threaded copper bar - 30x10mm	M8	2000	**885210**
4 threaded copper bars lenght 1m - 20x5 mm	M6	1000	**880847**
4 threaded copper bars lenght 1m - 32x5 mm	M6	1000	**880850**[3]
4 threaded copper bars lenght 1m - 30x10 mm	M8	1000	**880851**
Fastener bolts			
Bolts M6x16 mm (40 pcs)			**883617**
Bolts M8x20 mm (40 pcs)			**880852**

(1) Distance between holes: 25 mm
(2) Other values on demand
(3) Only for staircase busbar

Flexible copper

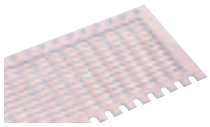
	Rated current (A)	Length (mm)	Ref. No.
Flexible copper 6x13x0,5	125	2000	**886530**
Flexible copper 2x20x1	160	2000	**886532**
Flexible copper 3x20x1	250	2000	**828162**
Flexible copper 4x32x1	400	2000	**828163**
Flexible copper connection between Record Plus FG and:			
staircase busbar 400A/630A in cable compartment			**885211**
staircase busbar 400A in cable compartment on **right** side from 36 mod. enclosure			**885289**
staircase busbar 400A in cable compartment on **left** side from 36 mod. enclosure			**885290**
staircase busbar 630A in cable compartment on **right** side from 36 mod. enclosure			**885291**
staircase busbar 630A in cable compartment on **left** side from 36 mod. enclosure			**885292**

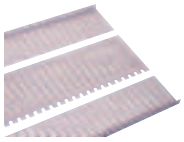
Earth bars

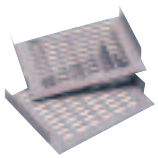


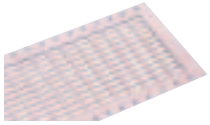
	Ref. No.
Main earth bar for enclosure	
12 modules	**885261**
24 modules	**885262**
36 modules	**885263**
Horizontal earth bar for enclosure	
12 modules	**885225**
24 modules	**885226**
36 modules	**885227**
1 Fixation clips M6 (set of 20 pcs)	**880637**
2 Connectors 16mm² (set of 20 pcs)	**880639**
3 Connectors 35mm² (set of 20 pcs)	**880638**

Protection shrouds









	Ref. No.
Frontal schroud for staircase busbar - length 1000mm	**885200**
Frontal and lateral (2) schrouds for staircase busbar - length 1000mm	**885201**
Top and bottom schroud for staircase busbar	**885202**
Frontal schroud for rear mounted busbar - length 1000mm	
for enclosure 12 modules	**885126**
for enclosure 24 and 36 modules	**885203**

Separation screen Form 2

QuiXtra 630 can be upgraded to internal segregation Form 2 by adding separation screens for the busbars. The vertical separation screen has to be installed between two coupled enclosures, in modules of 150mm.
Form 2 can not be achieved with the rear mounted busbar, if any electrical device is assembled over it.

Form 2 screens

	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
Vertical separation screen Form 2 - Height 150mm	885212	885212	885212
Horizontal separation screen Form 2	885213	885214	885215

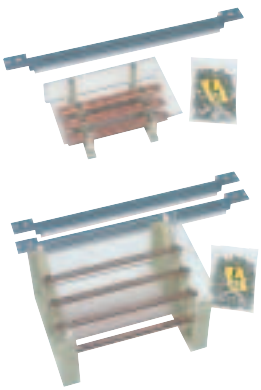
Content
- Isolated screen
- Fixation elements

4 Poles terminals

For DIN rail mounting

Terminals	Ref. No.
4P terminals for DIN rail mounting 63A	610022
4P terminals for DIN rail mounting 80A	880614
4P terminals for DIN rail mounting 125A	880742
4P terminals for DIN rail mounting 160A	610020
Shrouding for 4P terminal 160A	610021

For mounting on horizontal supports

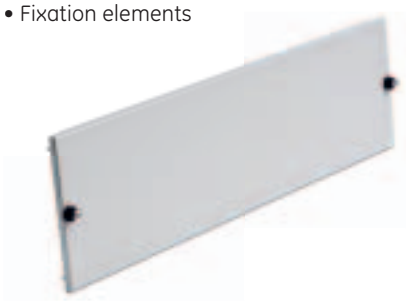


	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
4P terminal 250A	885217	885220	885223
4P terminal 400A	-	885221	885224

Content
- 4P terminals
- Fixing supports
- Protective plate
- Fixation elements

Cover plates

Blind cover plates
- Blind cover plate
- Fixation elements



Recessed cover plates
- Recessed 30 mm blind cover plate
- Fixation elements

Meter cover plates
- Cover plate with 1 cut-out and 2 or 4 pre-punched cut-outs
- Hinges
- Fixation elements

Push-buttons cover plates
- Cover plate with pre-punched cut-outs for Series P9 push-buttons: 10 in 24 modules and 12 in 36 modules
- Hinges
- Fixation elements

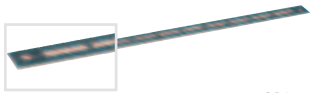
Cover plates

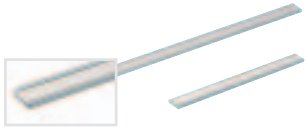
Height (mm)	Description	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
50	Blind	885166	885167	885168
150	Series P9 push-buttons, 10 or 12 cut-outs	-	885189	885190
150	Blind	885169	885170	885171
150	Meters 4 or 6 cut-outs 72x72	-	885185	885186
150	Meters 3 or 5 cut-outs 96x96	-	885187	885188
150	Cut-out for modular devices	885178	885179	885180
150	Recessed & cut-out for cable glands	-	885181	885182
200	Blind	885172	885173	885174
300	Blind	885175	885176	885177
300	Recessed & cut-out for cable glands	-	885183	885184
600	Blind	885161	-	-
750	Blind	885162	-	-
900	Blind	885163	-	-
1050	Blind	885164	-	-
1200	Blind	885165	-	-

Mounting plates

Height (mm)	Cover plate height (mm)	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
130	150	885155	885156	885157
280	300	885158	885159	885160

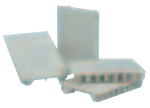
Accessories/spare parts

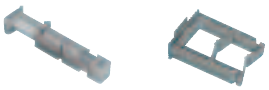


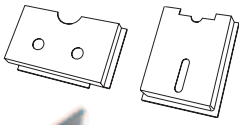


Photo?

Description	Ref. No. 12 modules	Ref. No. 24 modules	Ref. No. 36 modules
DIN rail and adjustable brackets	885241	885242	885243
Cable support	885244	885245	885246
Lighting unit	-	885247	885248
Adhesive label holder	885249	885250	885251
Spreader box for enclosure	885282	885283	885284







Description	Ref. No.
Paint touch-up kit RAL9006	885252
Paint touch-up kit RAL7024	885253
Support for cable duct (set of 4 pcs)	885254
Blanking strips for 45 mm cut-out - length 1000mm - RAL 7035	828056
Blanking strips for 45 mm cut-out - length 72mm - RAL 7035 (set of 4 pcs)	610142
Vertical wall mounting brackets (set of 4 brackets)	885256
Screw M6x20 (bag of 50)	885257
Screw M8x25 (bag of 50)	885258
Captive washer for M6x20 (bag of 100)	885259
Captive washer for M8x25 (bag of 100)	885260
Cage nut M6 (bag of 100)	885288
Set cable tray support (20 supports)	828145
Set cable tray (10 trays)	828146
Document pocket DIN A5	832000
Document pocket DIN A4	811516
Closing caps for IP43 in backpanel	885286
Hinges for cover plate (set of 2 pcs)	885285
Earthing cable for door	885295
Lifting brackets	885240
IP43 profile 12 modules	885312
IP43 profile 24 modules	885313
IP43 profile 36 modules	885314

Description	Ref. No. 3 - 4 - 5 rows	Ref. No. 6 - 7 - 8 rows	Ref. No. 9 - 10 - 12 rows
Round lock V2432E with key	885300	885304	885308
Round lock 405E with key	885302	885306	885310
Round lock 455E with key	885303	885307	885311

Only for France job 49662

Tarif Jaune et Bleu

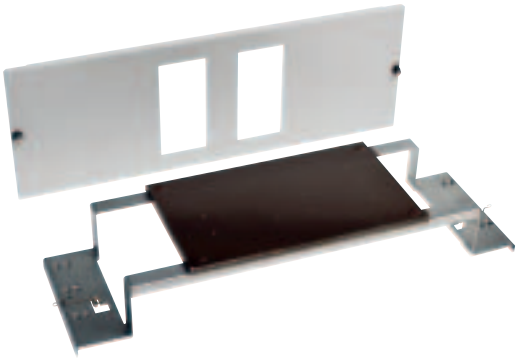
La note GTE 42 d'EDF du 23 janvier 1995 ainsi que l'évolution de la norme NFC 14-100 de septembre 1996 précisent les dispositions concernant le point de livraison du tarif jaune à comptage électronique.
Il est nécessaire:

- d'installer un appareil de sectionnement à coupure visible cadenassable situé en amont du disjoncteur général.
- de remplacer le disjoncteur de branchement par un disjoncteur standard. Le point de livraison étant situé au niveau des bornes aval du dispositif de sectionnement, définissant la frontière entre le distributeur (NFC 14-100) et l'utilisateur (NFC 15-100).

En fonction de la puissance souscrite , GE propose différentes fonctions pour une mise en oeuvre simple de votre tarif Jaune ou Bleu.

Tarif Bleu - montage vertical

Disjoncteurs	Hauteur (mm)	No. Réf.
		24 modules
1 pôle protégé	300	**885278**
3 pôles protégés	600	**885279**



Tarif Jaune - montage vertical

Disjoncteurs & Interupteur	In (A)	Position du différentiel	Hauteur (mm)	No. Réf.	No. Réf.
				12 modules	24 modules
Dilos 3	315	-	300	**885271**	-
Dilos 4	400	-	300	-	**885280**
Record Plus FD + différentiel	160	latéral	300	**885268**	-
Record Plus FE + différentiel	250	au dessous	600	**885269**	-
Record Plus FG + différentiel	400	au dessous	600	**885270**	-
Record Plus FE + différentiel	250	au dessous	600	-	**885274**
Record Plus FE + différentiel + Dilos 3	250	au dessous	600	-	**885275**
Record Plus FG + différentiel	400	au dessous	600	-	**885277**

Tarif Jaune - montage horizontal

Disjoncteurs & Interupteur	In (A)	Position du différentiel	Hauteur (mm)	No. Réf.	No. Réf.
				12 modules	24 modules
Record+ FD+ Dilos 1ou 2 (montage sur rail DIN)	160	au dessous	200+150	-	**885272**
Record+ FE	250	au dessous	200	-	**885273**

Technical data

QuiXtra 630 is a range of sheet steel system enclosures, delivered as a flat kit: the GE solution for low voltage distribution boards up to 630A, in commercial and industrial environments.

QuiXtra 630 is designed to be a reliable, simple, flexible and easy to use system enclosure, with the added value of its fresh and attractive design that integrates perfectly into a commercial environment.

The QuiXtra 630 range consists of 24 different enclosures. There are nine enclosure heights available, from 450mm up to 1800mm, and three enclosure widths, for functions of 12, 24 or 36 modules. All enclosures have the same depth (220mm without door and 250mm with door), allowing horizontal coupling and providing the user total flexibility to define the layout of the LV distribution boards.

The kit form design allows the fixation of the functional units to the rear panel and the mounting and wiring of the electrical devices with accessibility from all sides. After wiring, the enclosure can be closed by the top, bottom and side panels and cover plates.

Thanks to the QuiXtra intelligent design, the labour time required to build a distribution panel is minimal.

The attractive design of QuiXtra 630 makes it suitable for commercial environments. The QuiXtra 630 colour is metallic silver, RAL9006; the external corner parts, the handle and the base are in dark grey, RAL7024. The tempered glass of the transparent door is lightly smoked in grey.

Main technical characteristics

Useful and external dimensions (mm)

External height	Useful height	Rows 150mm	External width			Depth with door
			12 modules	24 modules	36 modules	
600	450	3	-	660	-	250
750	600	4	364	660	-	250
900	750	5	364	660	876	250
1050	900	6	364	660	876	250
1200	1050	7	364	660	876	250
1350	1200	8	364	660	876	250
1600	1350	9	364	660	876	250
1750	1500	10	364	660	876	250
2050	1800	12	364	660	876	250

Material and colour

Rear panel & mounting profiles	Sendzimir zinc plated steel 1,5 mm
Side, top and bottom panel	Epoxy-polyester coated sheet steel 1,25 mm
Plain door	Epoxy-polyester coated sheet steel 1,25 mm
Transparent door	Epoxy-polyester coated sheet steel 1,25 mm and smoked safety glass 3 mm.
Cover plates	Epoxy-polyester coated sheet steel 1 mm
External corner and coupling parts	ABS
Internal corner plates	Die-cast aluminium
Enclosure colour	RAL 9006
Floor base colour	RAL 7024

Protection degree and segregation form

Protection class	I
Pollution degree	2
Segregation	Form 1 & Form 2
Protection degree	
Without door	IP30, IK08
With plain door & without IP43 profile	IP40, IK09
With plain door and IP43 profile	IP43, IK09
With transparent door	Same IP as plain door, IK08

Standards and approvals

Standards	IEC 60439-1
	EN 60439-1(1)
Approval	KEMA KEUR
Certification	KEMA
RoHS	Compliant

Electrical characteristics

Rated current (In)	630 A
Rated operational voltage (Ue)	415 V
Rated insulation voltage (Ui)	690 V
Rated frequency (fn)	50/60 Hz
Rated short-circuit current (Icw)	30 kA/1s
Rated current of busbar systems	630 A in IP43

(1) According to EN 61439-2: KEMA approval pending.

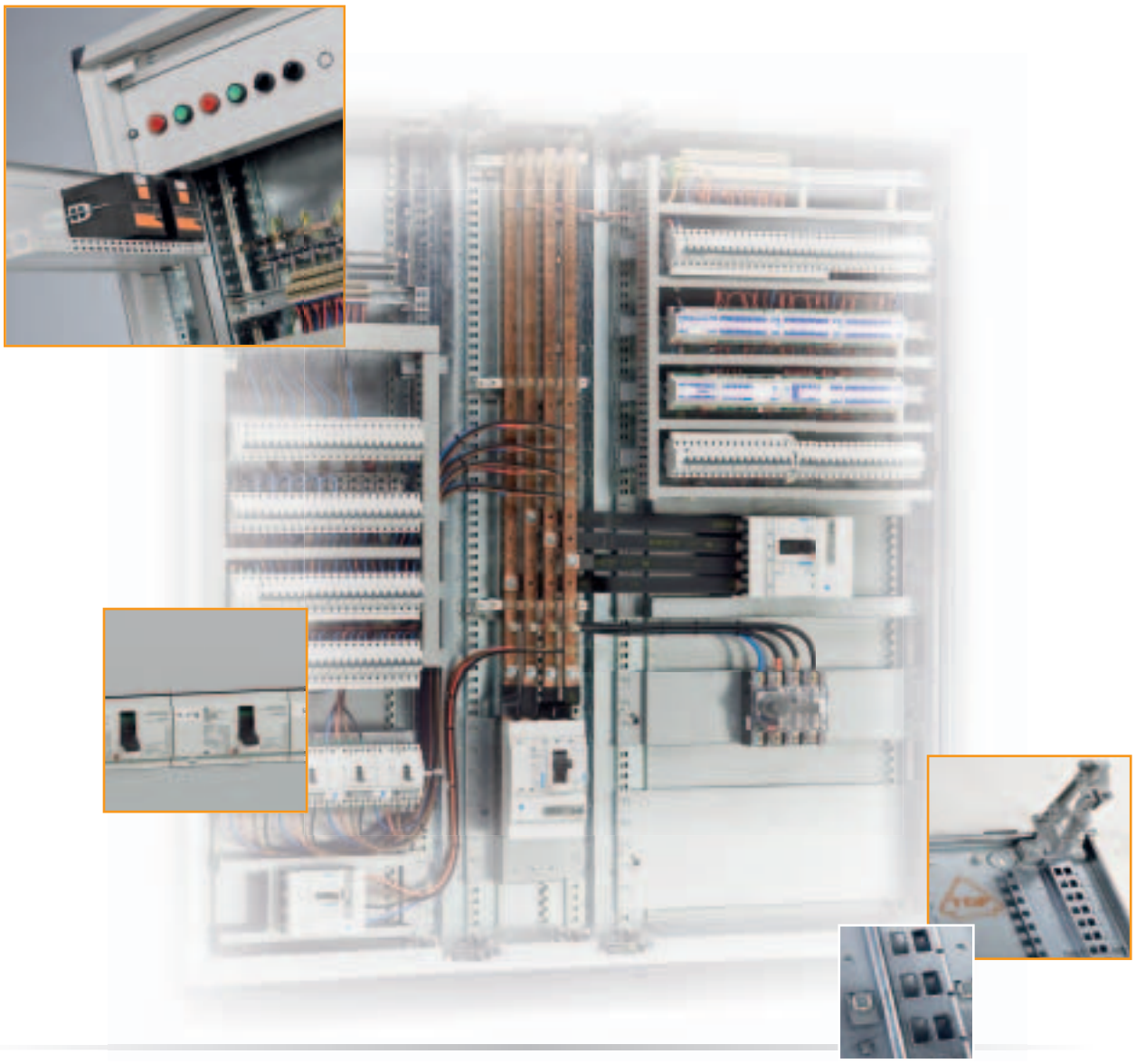
More detailed technical data in chapter C

Enclosure

The basic QuiXtra 630 enclosure has to be ordered by using 3 kits

- One basic kit for the rear, top and bottom panels
- One basic kit for the side panels
- One basic kit for the door, if it is required

The rear panel is used as the base for the fixation of all functional units and busbars. These are attached to the rear panel using two vertical profiles. The profiles have a pattern of cut-outs, into which the supports of the functional units fit, without the need for tools. At the same time, to facilitate the mounting of the functional units in height, the vertical profiles are marked each 50mm.



The vertical profiles are fixed to the rear panel using slots punched into both parts. Final fixation is done via the die-cast aluminium corner parts.

The die-cast aluminium corner parts have a triple function-ality: the fixation of all external panels and the base, the reinforcement of the overall enclosure and the horizontal coupling of enclosures.

The material of the rear plate and the vertical profiles is Sendzimir zinc plated steel 1,5 mm thick. These parts are not painted.

The side, top and bottom panels are made of epoxy-polyester coated sheet steel, with a thickness of 1,25 mm. These panels have been intelligently designed with smart bends to maximize the sturdiness of the enclosure and to achieve a protection degree IP43, just adding the IP43 profile, but without the use of an additional gasket.

The top and bottom panels have one, two or three cut-outs (depending on the width of the enclosure) for the different types of cable entry plates. The top and bottom panels are fixed to the rear panel by swiveling them over the corner parts, snapping them in place, and fixing them with screws to the die-cast aluminium corner parts.

The assembly of the side panels follows the same process as the top and bottom panels.

Assembling the top, bottom and side panels to the rear panel can be done by a single person. To facilitate this, the panel has guide ledges to avoid mistakes during assembly

Finally, to complete the enclosure, four plastic pieces snap into the corners. These plastic corner parts guarantee the IP degree.

QuiXtra 630 offers a variety of different cable entry plates for the top and bottom panels, to ensure plenty of space for cable entry and to cover all types of panel installations.
The cable entry plates IP43 are made of hot moulded fiber-glass reinforced polyester and one in metal for IP40.
Plain and pre-punched entry plates are available.
The dimension of the cable entry plates is 240 x 180mm.
For the 12 modules wide enclosure, one cable entry plate is needed for the top and another for the bottom panels.
For the 24 modules enclosure, two cable entry plates are required for each panel, and three are necessary for the 36 modules enclosure in width. Floor standing versions 9-12 rows do not have a bottom plate.

QuiXtra 630 can be installed as a wall mounting or a floor standing enclosure. The enclosures with a useful height of 1350mm or greater are mandatory to add the 100mm high floor base. For the smaller enclosure sizes, the floor base is available as an accessory.

Door

QuiXtra 630 offers plain and transparent (tempered glass) doors. The doors are equipped with a centrally operated one or three point locking mechanism (depending on the height). The handle is delivered with a standard lock insert for key 2432E.
Other lock inserts are available, and can be easily changed. The opening angle is 135 degrees, for both types of doors. Mounting the doors to the enclosure is done without tools, using the simple pin-hinges. The doors are delivered with hinges and the locking mechanism mounted, to reduce assembly time.
The door is standard delivered left hinging. Changing to right hinging is done easily.

Functional units

All GE LV electrical devices up to 630A can be easily assembled in QuiXtra 630 using the appropriate functional units. Each functional kit includes all parts necessary for assembly:
- A mounting plate or DIN rail
- A cover plate (with precise cut-outs)
- Fixation parts

Attaching the mounting plates or DIN rails does not require tools: they are attached to the rear mounting profile using a “click in” support. The cover plates are attached to two profiles using captive 90° screws. By disassembling these profiles, all cover plates can be removed at the same time.

QuiXtra 630 has sufficient wiring space for all possible layouts. Each side has room for a vertical 60mm cable duct. The vertical and horizontal cable ducts can be integrated in different depths to suit the user needs.

For upgrades and maintenance, the end user has direct access to the vertical cable ducts of up to 40 mm (in each side of the functions) in an installed panel, simply by removing the cover plates. If wider space is required, it’s necessary to disassemble the side panels, which can be separately removed.

The mounting plates of the functional unis are made of sendzimir zinc plated steel 1,5 mm, and the cover plates of epoxy-polyester coated sheet steel 1 mm.

Coupling of enclosures

The QuiXtra 630 allows unlimited horizontal coupling. Coupling is done using a vertical profile mounted between two enclosures to assure the rigidity of the assembly. Specific plastic pieces are delivered to use instead of the external corner parts between the coupled enclosures.
As an option, horizontal profiles can be added to reinforce the complete assembly, and to facilitate the transportation of the panel when it is completely wired and closed. Ready-made profiles are available for the most common combinations of enclosures.

Corrosion protection

The enclosure is protected against corrosion by epoxy polyester coating of the external panels. The unpainted parts (the rear panel, vertical profiles, mounting plates and functional supports) are made of sendzimir zinc plated steel.

Painting and coating

All external panels and cover plates are powder coated. The colour is RAL 9006, with a minimum thickness of 75 µm.
The painting procedure is as follows:

Phase 1: Degreasing in simultaneous degreasing and iron phosphating bath. Temp.45-55°C
Phase 2: Degreasing in the same bath. Temp. 15-26 °C
Phase 3: Degreasing in the same bath. Temp. 15-26 °C
Phase 4: Iron phosphating in the same bath. Temp. 25-35 °C
Phase 5: Rinsing
Phase 6: Passivation process in bath without chromium 6+. Temp. 15-26°C
Phase 7: Rinsing with demineralised water
Phase 8: Heat drying in oven. Temp. 120 °C
Phase 9: Manual electrostatic powder coating in required colour
Phase 10: Curing in oven. Temp. 180°C
Phase 11: Quality control of random samples
- visual inspection
- control of coating thickness
- cross cut test

Protection degree

The QuiXtra 630 protection degree is either IP30, IP40 or IP43. IP30 is achieved simply using the coverplates delivered with each functional unit, without the need for a door. Simply adding a door and the IP43 profile to each enclosure increases the protection degree to IP43, without the need for a gasket. With the doors, but without the IP43 profiles, the protection degree is IP40.

Busbars

The busbar system for QuiXtra 630 is developed to ensure easy installation of the copper bars, easy and quick wiring of electrical devices and the most compact solution possible.

QuiXtra 630 offers two types of busbar systems. The staircase busbar is developed for easy accessibility to the four phases during wiring, because the copper bars are mounted at different depths. The rear mounted busbar allows the assembly of the copper bars between the rear-plate and the electrical devices. In both cases the maximum rated current is 630A in IP30 and in IP43 and the rated short -circuit current (Icw) is 30 kA/1s.

The *copper bars* have standard dimensions 20x5, 30x5, 20x10 and 30x10mm, and can be delivered either with threads (M6 or M8 threaded depending on the cross-section of the copper bars) or without them. Threaded-holes copper bars are 2m long. Plain copper bars are 3m long.

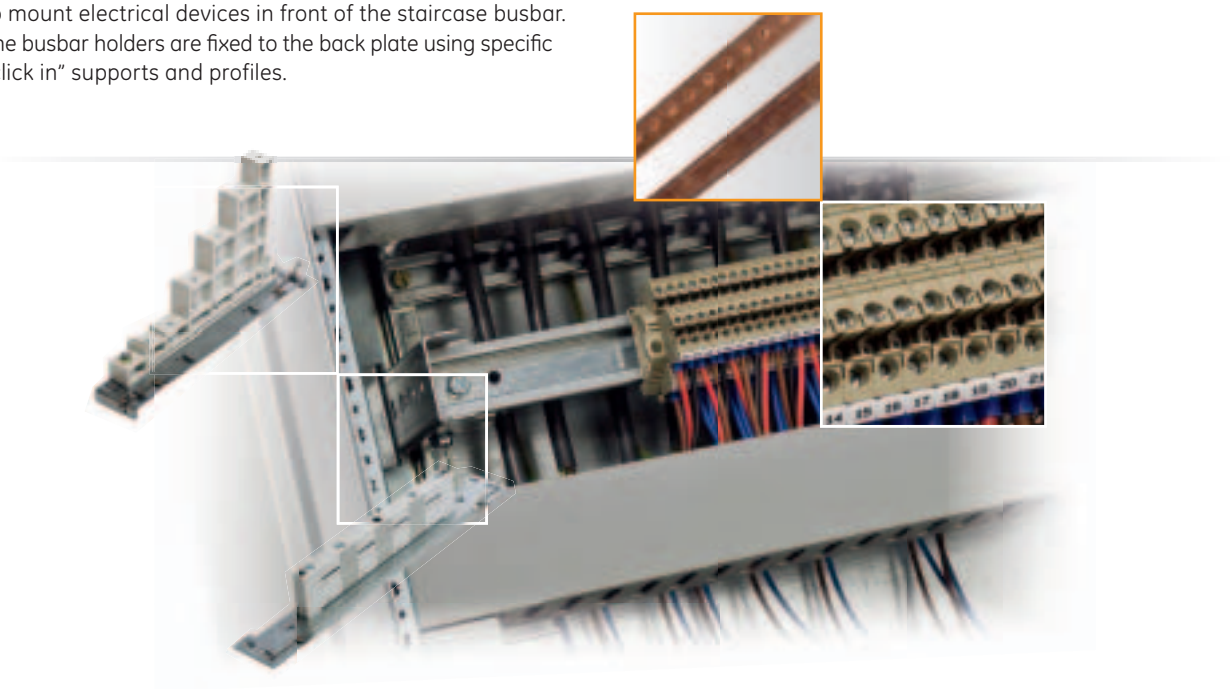
The *staircase busbar* can be assembled in vertical position in the 12 module wide enclosure, and in horizontal position in the 24 and 36 modules-wide enclosure. It's not possible to mount electrical devices in front of the staircase busbar. The busbar holders are fixed to the back plate using specific "click in" supports and profiles.

The *rear busbar* can be mounted in vertical or in horizontal position in all types of enclosures. Electrical devices can be mounted in front of the rear busbar, when the busbar is assembled in vertical position in the 24 & 36 modules-wide enclosures. The RecordPlus FG & Dilos 4 can not be assembled over the rear busbar. A horizontal rear busbar can span multiple enclosures. The busbar holders are fixed to the back plate using specific "click in" supports and profiles.

The busbars can be covered with a protective shroud, offering Form 2 internal separation.

The connectivity offer is completed by four pole terminals up to 400A, assembled in DIN rails or in dedicated profiles.

The table on page C.8 indicate the copper bar cross section required, depending on the rated current and the IP degree for the busbar systems. The table also indicate the maximum distance between supports to achieve the Icw required, the references for copper bars with or without threaded holes and the references for the isolators.



Busbar system

Cross section in mm Phase bar	Neutral bar	Type	Connection[1]	Spacing between supports (mm)[2]	Spacing between busbars (mm)	Max. Current rating Amp	Short-circuit withstand strength Icw (kA) - sec[2]	Ipk (kA)
20x5	20x5	Standard	Plain	300	60	250	17,5 - 0,7	35
30x5	30x5	Standard	Plain	300	60	400	25 - 0,8	50
20x10	20x10	Standard	Plain	300	60	400	20 - 1	40
30x10	30x10	Standard	Plain	300	60	630	30 - 1	63
20x5	20x5	Standard	M6/25	300	60	250	17,5 - 0,35	35
30x5	30x5	Standard	M6/25	300	60	400	25 - 0,35	52,5
20x10	20x10	Standard	M6/25	300	60	400	20 - 0,75	40
30x10	30x10	Standard	M8/25	300	60	630	30 - 0,75	63
20x5	20x5	Staircase	M6/25	300	35	250	20 - 0,35	40
30x5	30x5	Staircase	M6/25	300	35	400	25 - 0,35	52,5
20x10	20x10	Staircase	M6/25	300	35	400	25 - 0,45	52,5
30x10	30x10	Staircase	M8/25	300	35	630	25 - 1	52,5

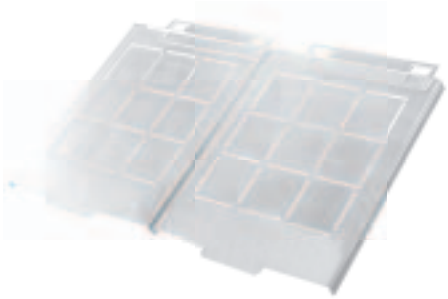
(1) Distance between holes: 25 mm
(2) Other values on demand

Form of internal separation

QuiXtra 630 is available with internal separation up to Form 2.

Form 1: Functional units, busbars and terminals are protected against outside contact within the QuiXtra enclosure, but are internally not separated from each other.
Form 2: Same as Form 1, but an insulating screen separates the busbars from the functional units and terminals.

The Form 2 kit, to be used for internal separation of 2 coupled enclosures, can be ordered separately (vertical separation). Each kit includes a 150mm separation screen and its mounting hardware; so one kit needs to be ordered for each 150mm of enclosure height.



Earthing concept

The earth continuity in QuiXtra 630 is assured via the screws that fix the panels to the corner parts. Each special screw removes the paint in the contact area.

The earth continuity of the cover plates is guaranteed by removing the paint in the contact area with the enclosure.

Verification of acceptable temperature rise

The verification of the acceptable temperature rises in QuiXtra 630 may be made by calculation if all of the following conditions are fulfilled.

1. There is an approximately even distribution of power losses inside the enclosure
2. The load current of the circuits of QuiXtra 630 shall not exceed 80% of the rated current mentioned on the switching device and electrical components included in the circuit.
   Circuit breakers and thermal motor protection shall be selected to ensure adequate protection to outgoing circuits at the calculated temperature in the assembly.
   Influence of temperature on the tripping times is available in the appropriate product catalogue.
3. The mechanical parts and the installed equipment are so arranged that air circulation is not significantly impeded.
4. Conductor carrying currents in excess of 200A, and the adjacent metal structural parts are so arranged that eddy-currents and hysteresis losses are minimized
5. All conductors shall have a minimum cross-sectional based on the current rating of the device according to IEC 60364-5-52.
   Minimum sections as defined in table 5 & 6 (page C.19), unless larger conductors are specified in the QuiXtra 630 assembling instructions.

Examples on how to adapt the conductor sections for conditions inside QuiXtra 630 are given in table 1 & 2 (page C.17)

6. Calculate the total power losses in the QuiXtra:
   a. Power losses of the components (Record Plus, Dilos, Fulos, Redline/ElfaPlus)
   b. Power losses of the conductors and busbars
   c. Power losses of other auxiliaries
   d. Add all the power losses
7. Choose the appropriate size of QuiXtra 630 enclosure:
   a. Look for the appropriate table power dissipation/ temperature rise: tables are available for different positioning of the enclosure
   b. Maximum allowed temperature rise at the top of the enclosure: **40K**
      Limit accessible parts during normal operation to max **+30K**
   c. The temperature in °C in the enclosure is the **sum** of the **ambient** temperature outside the QuiXtra and the **temperature rise** in K found in the tables.
      Record Plus can be used up to **70°C**
      Dilos/Fulos up to **60°C**
      Redline/ElfaPlus can be used up to **50°C**
      Apply the appropriate current derating of these components (see page C.10 - C.16).

Examples on page C.24 - C.25

Derating tables for ElfaPlus MCB's

Influence of ambient air temperature on the rated current

The maximum value of the current which can flow through a MCB depends of the nominal current of the MCB, the conductor cross-section as well as of the ambient air temperature.

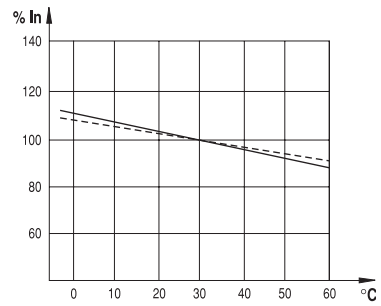
The values shown in the table below are for devices in the free air. For devices installed with other modular devices in the same switchboard a correction factor (K) shall be applied reletive to the mounting situation of the MCB, the ambient temperature and the number of main circuits in the installation (EN 60439-1):

No. of devices	K
2 or 3	0,9
4 or 5	0,8
6 to 9	0,7
> 10	0,6

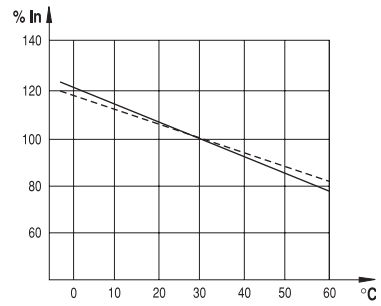
Calculation example
Within a distribution board consisting of eight 2P MCB C16 with an operating ambient temperature of 45°C, which is the highest temperature the MCB can operate without unwanted tripping.

Calculation
The correction factor is K=0,7 for use in a eight circuit installation: 16A x 0,7= 11,2A
As the MCB is working at 45°C it shall be applied another factor (90% = 0,9):
In at 45°C = In at 30°C x 0,9 = 11,2A x 0,9 = 10,1A

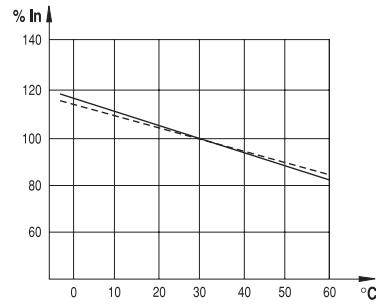
0,5 - 6A



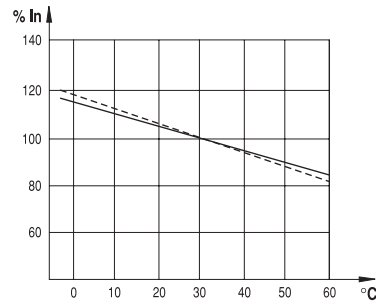
10A



16 - 40A



50 - 63A



——— : 1P (single pole)
— — : mP (multiPole)

The thermal calibration of the MCB's was carried out at ambient temperature of 30°C. Ambient temperatures different from 30°C influence the bimetal and this results in earlier or later thermal tripping.

Derating tables for ElfaPlus RCD's

Influence of air ambient temperature on the rated current

Influence of temperature on RCCB's

The maximum value of the current which can flow through an RCCB depends of the nominal current as well as the ambient air temperature. The protective device placed up-stream of the RCCB must ensure the disconnection at the values in the following table:

In	25°C	30°C	40°C	50°C	60°C
16A	19	18	16	14	13
25A	31	28	25	23	25
40A	48	44	40	36	32
63A	76	69	63	57	51
80A	97	88	80	72	65
100A	121	110	100	90	81
125A	151	137	125	112	101

The above mentioned values are for devices in the free air. For devices installed with other modular devices in the same switchboard, a correction coefficient (K) shall be applied in relation to the number of main circuits in the installation (EN 60439-1):

No. of devices	K
2 or 3	0,9
4 or 5	0,8
6 to 9	0,7
> 10	0,6

Calculation example

Within a distribution panel consisting in eight 2P MCB C16 and with an operating ambient temperature of 45°C, which is the highest temperature the MCB can operate at without unwanted tripping.

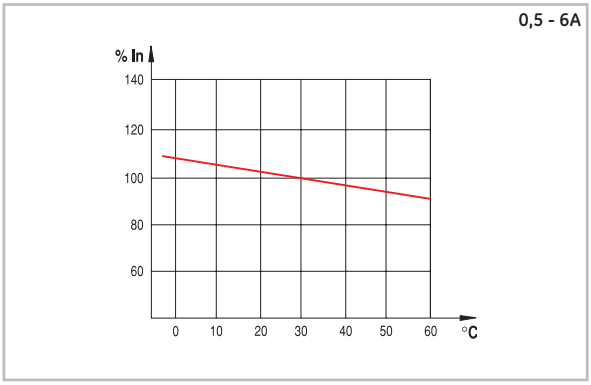
Calculation

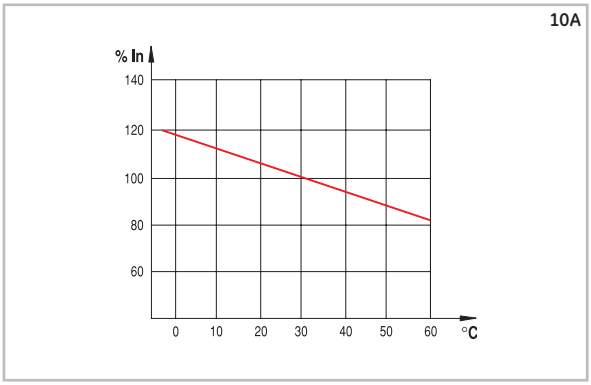
The correction factor is K=0,7 for use in an eight circuit installation: 16A x 0,7= 11,2A

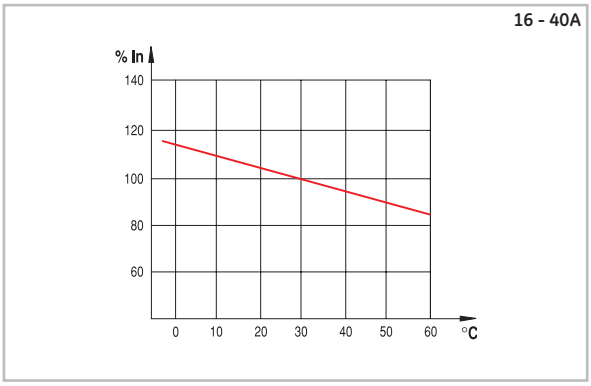
As the MCB is working at 45°C another factor is applied (90% = 0,9): At 45°C = In at 30°C x 0,9 = 11,2A x 0,9 = 10,1A

Influence of temperature on RCBO's Series DP & DPE

The thermal calibration of the RCBO was carried out at an ambient temperature of 30°C. Ambient temperatures different from 30°C influence the bimetal and this results in earlier or later thermal tripping.







Derating tables for MCCB's Record Plus™

Thermal magnetic trip units

The ambient temperature in the direct vicinity of a protective device has an influence on its current carrying properties. The Record Plus™ breakers with thermal magnetic and magnetic only protection units as the MO, LTM and LTMD types can be used at currents and temperatures as indicated in the table.

Maximum permissible current at an ambient temperature of:

		Fixed breaker							Plug in or drawout breaker						
Type	In (A)	40°C	45°	50°C	55°C	60°C	65°C	70°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
FD63, FD160, FE160 & FE250	16	16,0	15,5	15,0	14,6	14,1	13,6	13,1	15,0	14,6	14,1	13,7	13,2	12,8	12,3
	25	25,0	24,3	23,5	22,8	22,0	21,3	20,5	23,5	22,8	22,1	21,4	20,7	20,0	19,3
	32	32,0	31,0	30,1	29,1	28,2	27,2	26,2	30,1	29,2	28,3	27,4	26,5	25,6	24,7
	40	40,0	38,8	37,6	36,4	35,2	34,0	32,8	37,6	36,5	35,3	34,2	33,1	32,0	30,8
	50	50,0	48,5	47,0	45,5	44,0	42,5	41,0	47,0	45,6	44,2	42,8	41,4	40,0	38,5
	63	63,0	61,1	59,2	57,3	55,4	53,6	51,7	59,2	57,4	55,7	53,9	52,1	50,3	48,6
	80	80,0	77,6	75,2	72,8	70,4	68,0	65,6	75,2	72,9	70,7	68,4	66,2	63,9	61,7
	100	100	97,0	94,0	91,0	88,0	85,0	82,0	94,0	91,2	88,4	85,5	82,7	79,9	77,1
FD160	125	125	121	118	114	110	106	103	118	114	110	107	103	100	96
	160	160	155	150	146	141	136	131	-	-	-	-	-	-	-
FE160 & FE250	125	125	121	118	114	110	106	103	118	114	110	107	103	100	96
	160	160	155	150	146	141	136	131	150	146	141	137	132	128	123
	200	200	194	188	182	176	170	164	188	182	177	171	165	160	154
	250	250	243	235	228	220	213	205	235	228	221	214	207	200	193
FK800 & FK1250	630	630	611	592	573	554	536	517	630	611	563	545	527	509	491
	800	800	776	752	728	704	680	656	800	760	714	692	669	646	623
	1000	1000	970	940	910	880	850	820	1000	950	893	865	836	808	779
	1250	1250	1213	1175	1138	1100	1063	1025	1250	1188	1116	1081	1045	1009	974
FD63 & FD160 FE160 & FE250 with RCD	16	16,0	15,5	15,0	14,6	14,1	13,6	13,1	15,0	14,6	14,1	13,7	13,2	12,8	12,3
	25	25,0	24,3	23,5	22,8	22,0	21,3	20,5	23,5	22,8	22,1	21,4	20,7	20,0	19,3
	32	32,0	31,0	30,1	29,1	28,2	27,2	26,2	30,1	29,2	28,3	27,4	26,5	25,6	24,7
	40	40,0	38,8	37,6	36,4	35,2	34,0	32,8	37,6	36,5	35,3	34,2	33,1	32,0	30,8
	50	50,0	48,5	47,0	45,5	44,0	42,5	41,0	47,0	45,6	44,2	42,8	41,4	40,0	38,5
	63	63,0	61,1	59,2	57,3	55,4	53,6	51,7	59,2	57,4	55,7	53,9	52,1	50,3	48,6
	80	80,0	77,6	75,2	72,8	70,4	68,0	65,6	75,2	72,9	70,7	68,4	66,2	63,9	61,7
	100	100	97,0	94,0	91,0	88,0	85,0	82,0	94,0	91,2	88,4	85,5	82,7	79,9	77,1
FD160 with RCD	125	119	115	110	108	97	101	97	110	107	104	101	97	94	91
	160	152	147	141	138	125	129	125	141	137	133	129	124	120	116
FE160 & FE250 with RCD	125	125	121	118	114	110	106	103	118	114	110	107	103	100	96
	160	152	147	141	138	125	129	125	141	137	133	129	124	120	116
	200	190	184	177	173	156	162	156	177	171	166	161	156	150	145
	250	238	230	221	216	195	202	195	221	214	208	201	194	188	181

Electronic trip units

Electronic trip units are less sensitive to fluctuations in ambient temperature than thermal magnetic trip units. However, to prevent the device and its environment from exceeding their design values, certain limits must be taken into account.

The table indicates the maximum values to which the LT or overload protection of the electronic trip unit of the Record Plus™ breaker can be set. This at ambient temperatures from 40 to 70°C.

Maximum permissible current at an ambient temperature of:

		Fixed breaker							Plug in or drawout breaker						
Type	Is[1](A)	40°C	45°	50°C	55°C	60°C	65°C	70°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
FE160	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
	160	160	160	160	156	152	148	144	160	156	152	148	144	140	136
FE250	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
	160	160	160	160	160	160	160	160	160	156	152	148	144	140	136
	250	250	250	250	244	238	231	225	250	244	238	231	225	219	213
FG400	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
	350	350	350	350	350	350	350	350	350	350	350	350	350	350	340
	400	400	400	400	390	380	370	360	400	390	380	370	360	350	340
FG630	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
	500	500	500	500	500	500	500	500	500	500	500	500	500	500	481
	630	630	614	599	583	567	551	536	583	568	554	539	524	510	481
FK800	800	800	800	760	760	760	680	-	760	741	722	703	722	646	-
FK1250	1000	1000	1000	950	950	900	850	-	950	950	903	879	855	808	-
	1250	1250	1250	1188	1188	1125	1000	-	1188	1158	1128	1098	1069	950	-
FK1600	1600	1600	1600	1520	1440	1408	1280	-	1600	1536	1444	1408	1368	1216	-
FE160 with RCD	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
	125	125	125	125	125	125	125	125	125	125	125	125	125	125	106
	160	160	156	152	148	144	141	137	152	148	144	141	137	133	129
FE250 with RCD	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
	250	250	244	238	244	238	231	225	238	232	226	220	214	208	202
FG400 with RCD	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
	350	350	350	350	341	333	324	315	350	351	342	333	324	315	306
	400	400	370	360	350	340	330	320	360	351	342	333	324	315	306
FG630 with RCD	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
	500	500	500	500	500	500	500	488	500	500	494	481	468	455	442
	630	630	567	551	536	520	504	488	520	507	494	481	468	455	442

Derating tables for disconnectors Dilos

Derating tables for Dilos

			Dilos 00	Dilos 00	Dilos 00	Dilos 00	Dilos 0	Dilos 0	Dilos 0
Conventional enclosed thermal current Ithe = Ith		(A)	**16**	**25**	**32**	**40**	**32**	**40**	**63**
Number of poles			3	3	3	3	2/3/4	2/3/4	2/3/4
Frequency		(Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated thermal current at	40°C	(A)	16	25	32	40	32	40	63
	50°C	(A)	16	25	32	40	32	40	63
	60°C	(A)	16	25	32	40	32	40	63
Power loss per pole		(W)	0,12	0,35	0,6	1	0,6	1	1,6
Terminal capacity (Cu)	minimum	(mm²)	1,5	1,5	1,5	1,5	2,5	2,5	2,5
	maximum	(mm²)	16	16	16	16	25	25	25

			Dilos 1	Dilos 1	Dilos 1	Dilos 1	Dilos 1
Conventional enclosed thermal current Ithe = Ith		(A)	**40**	**63**	**80**	**100**	**125**
Number of poles			2/3/4	2/3/4	2/3/4	2/3/4	2/3/4
Frequency		(Hz)	50/60	50/60	50/60	50/60	50/60
Rated thermal current at	40°C	(A)	40	63	80	100	125
	50°C	(A)	40	63	80	100	125
	60°C	(A)	40	63	80	100	125
Power loss per pole		(W)	0,48	1,2	1,84	2,9	4,5
Terminal capacity (Cu)	minimum	(mm²)	6	6	6	6	6
	maximum	(mm²)	50	50	50	50	50

			Dilos 2	Dilos 2	Dilos 1H	Dilos 1H	Dilos 1H
Conventional enclosed thermal current Ithe = Ith		(A)	**160**	**200**	**40**	**63**	**125**
Number of poles			2/3/4	2/3/4	3/4	3/4	3/4
Frequency		(Hz)	50/60	50/60	50/60	50/60	50/60
Rated thermal current at	40°C	(A)	160	200	40	63	125
	50°C	(A)	160	200	40	63	125
	60°C	(A)	160	200	40	63	125
Power loss per pole		(W)	6,5	10	0,9	2,2	8,5
Terminal capacity (Cu)	minimum	(mm²)	Cu-rail	Cu-rail	6	6	6
	maximum	(mm²)	20x6	20x6	50	50	50

			Dilos 3	Dilos 3	Dilos 3	Dilos 3	Dilos 4	Dilos 4	Dilos 4
Conventional enclosed thermal current Ithe = Ith		(A)	**160**	**200**	**250**	**315**	**400**	**500**	**630**
Number of poles			3/4	3/4	3/4	3/4	3/4	3/4	3/4
Frequency		(Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated thermal current at	40°C	(A)	160	200	250	315	400	500	630
	50°C	(A)	160	200	250	315	400	500	630
	60°C	(A)	160	200	250	315	400	500	630
Power loss per pole		(W)	3	4,8	7,5	12	10,5	16	26
Terminal capacity (Cu)	minimum	(mm²)	Cu-rail	Cu-rail	Cu-rail	Cu-rail	Cu-rail	Cu-rail	Cu-rail
	maximum	(mm²)	30x6	30x6	30x6	30x6	40x6	40x6	40x6

Power losses ElfaPlus RCCB's and RCBO's

The power losses are calculated by measuring the voltage drop between the incoming and the outgoing terminals of the device at rated current.

Power loss per pole

In (A)	Voltage drop (V)	Energy loss (W)	Resistance (mOhm)
0,5	2,230	1,115	4458,00
1	1,270	1,272	1272,00
2	0,620	1,240	310,00
3	0,520	1,557	173,00
4	0,370	1,488	93,00
6	0,260	1,570	43,60
8	0,160	1,242	19,40
10	0,160	1,560	15,60
13	0,155	2,011	11,90
16	0,162	2,586	10,10
20	0,138	2,760	6,90
25	0,128	3,188	5,10
32	0,096	3,072	3,00
40	0,100	4,000	2,50
50	0,090	4,500	1,80
63	0,082	5,160	1,30
80	0,075	6,000	0,90
100	0,075	7,500	0,75
125	0,076	9,500	0,60

RCBO - Series DP

In (A)	Z (mOhm)	Pw (W)
4	125	2,0
6	53	1,9
10	16,5	1,6
13	11,9	2,0
16	9,8	2,5
20	7,1	2,8
25	5,6	3,5
32	4,7	4,8
40	3,6	5,8

RCBO - Series DPE

In (A)	Z (mOhm)	Pw (W)
6	45,8	1,65
10	16,4	1,7
13	12,5	2,1
16	10,6	2,7
20	7,3	2,9
25	5,4	3,3
32	3,2,	3,4
40	2,6	4,2
50	1,9	4,8
63	1,4	5,6

RCCB - Series FP

In (A)	Z (mOhm)	Pw (W)
16	9,95	2,55
25	3,75	2,33
40	2,15	3,43
63	1,30	5,16
80	1,3	8,3
100	0,9	8,7

Coupled MCB EP + Add-on RCD

In (A)	Z (mOhm)	Pw (W)
6	45,4	1,6
10	17,4	1,7
13	13,7	2,3
16	11,9	3,0
20	8,7	3,5
25	6,9	4,3
32	4,8	4,9
40	3,6	5,8
50	2,9	7,3
63	2,4	9,6

Power losses Record Plus™

Power dissipation
The power dissipation tables included here indicate the DC resistance of the Record Plus™ breakers in cold condition. The power dissipation per pole can be calculated with this value and the average current flowing within the circuit (formula I2R). The tables indicate the Watt loss per pole based on the maximum current load of the breaker. To calculate the total Watt loss for a three or four pole breaker these values are multiplied by three.*

* for circuits with a high 3rd harmonic content, please contact us

Power dissipation - FD63 frame

		Thermal magn. type (LTM, LTMD, GTM)							Mag Break™ (MO)						Switch (Y)
	In (A)[1]	16	20	25	32	40	50	63	3	7	12,5	20	30	50	63
Fixed version	R in mΩ per pole	11,00	5,70	4,00	2,90	2,90	2,25	1,60	110,00	55,00	17,85	10,65	4,75	3,00	0,40
	Dissipation Watt single pole	2,82	2,28	2,50	2,97	4,64	5,63	6,35	0,99	2,70	2,79	4,26	4,28	7,50	1,59
	Dissipation Watt three poles	8,45	6,84	7,50	8,91	13,92	16,88	19,05	2,97	8,09	8,37	12,78	12,83	22,50	4,76
Plug-in version	R in mΩ per pole	11,07	5,77	4,07	2,97	2,97	2,32	1,67	110,07	55,07	17,92	10,72	4,82	3,07	0,47
	Dissipation Watt single pole	0,28	0,44	0,69	0,75	1,17	1,83	2,91	0,99	2,70	2,80	0,31	0,47	1,31	1,87
	Dissipation Watt three poles	0,84	1,32	2,06	2,25	3,52	5,50	8,73	2,97	8,10	8,40	0,94	1,42	3,94	5,60
Fixed version with RCD	R in mΩ per pole	11,08	5,78	4,08	2,98	2,98	2,33	1,68	110,08	55,08	17,93	10,73	4,83	3,08	0,48
	Dissipation Watt single pole	0,29	0,45	0,70	0,76	1,19	1,87	2,96	0,99	2,70	2,80	0,33	0,50	1,39	1,91
	Dissipation Watt three poles	0,86	1,34	2,10	2,29	3,58	5,60	8,89	2,97	8,10	8,40	1,00	1,50	4,18	5,72
Plug-in version with RCD	R in mΩ per pole	11,15	5,85	4,15	3,05	3,05	2,40	1,75	110,15	55,15	18,00	10,80	4,90	3,15	0,55
	Dissipation Watt single pole	0,31	0,49	0,76	0,83	1,30	2,03	3,23	0,99	2,70	2,81	0,36	0,54	1,51	2,18
	Dissipation Watt three poles	0,94	1,46	2,29	2,50	3,90	6,10	9,68	2,97	8,11	8,44	1,09	1,63	4,54	6,55

Power dissipation - FD160 frame

		Thermal magn. type (LTM, LTMD, GTM)				Mag Break™ (MO)		Switch (Y)
	In (A)	80	100	125	160	80	100	160
Fixed version	R in mΩ per pole	0,95	0,70	0,40	0,40	0,45	0,45	0,40
	Dissipation Watt single pole	6,08	7,00	6,25	10,24	2,88	4,50	10,24
	Dissipation Watt three poles	18,24	21,00	18,75	30,72	8,64	13,50	30,72
Plug-in version	R in mΩ per pole	1,02	0,77	0,47	0,47	0,52	0,52	0,47
	Dissipation Watt single pole	6,53	7,70	7,34	12,03	3,33	5,20	12,03
	Dissipation Watt three poles	19,58	23,10	22,03	36,10	9,98	15,60	24,06
Fixed version with RCD	R in mΩ per pole	1,03	0,78	0,48	0,48	0,53	0,53	0,48
	Dissipation Watt single pole	6,59	7,80	7,50	12,29	3,39	5,30	12,29
	Dissipation Watt three poles	19,78	23,40	22,50	36,86	10,18	15,90	36,86
Plug-in version with RCD	R in mΩ per pole	1,10	0,85	0,55	0,55	0,60	0,60	0,55
	Dissipation Watt single pole	7,04	8,50	8,59	14,08	3,84	6,00	14,08
	Dissipation Watt three poles	21,12	25,50	25,78	42,24	11,52	18,00	42,24

Power dissipation - FE160 frame

		Thermal magn. type (LTMD, GTM)									Switch (Y)
	In (A)	25	32	40	50	63	80	100	125	160	160
Fixed version	R in mΩ per pole	6,30	2,80	2,80	2,05	1,80	1,20	0,70	0,63	0,48	0,30
	Dissipation Watt single pole	3,94	2,87	4,48	5,13	7,14	7,68	7,00	9,84	12,29	7,68
	Dissipation Watt three poles	11,81	8,60	13,44	15,38	21,43	23,04	21,00	29,53	36,86	23,04
Plug-in version	R in mΩ per pole	6,36	2,86	2,86	2,11	1,86	1,26	0,76	0,69	0,54	0,36
	Dissipation Watt single pole	3,98	2,93	4,58	5,28	7,38	8,06	7,60	10,78	13,82	5,63
	Dissipation Watt three poles	11,93	8,79	13,73	15,83	22,15	24,19	22,80	32,34	41,47	11,25
Fixed version with RCD	R in mΩ per pole	6,37	2,87	2,87	2,12	1,87	1,27	0,77	0,70	0,55	0,38
	Dissipation Watt single pole	3,98	2,94	4,59	5,30	7,42	8,13	7,70	10,94	14,08	5,94
	Dissipation Watt three poles	11,94	8,82	13,78	15,90	22,27	24,38	23,10	32,81	42,24	17,81
Plug-in version with RCD	R in mΩ per pole	6,43	2,93	2,93	2,18	1,93	1,33	0,83	0,76	0,61	0,44
	Dissipation Watt single pole	4,02	3,00	4,69	5,45	7,66	8,51	8,30	11,88	15,62	11,56
	Dissipation Watt three poles	12,06	9,00	14,06	16,35	22,98	25,54	24,90	35,63	46,85	33,79

		Mag BreakTM (MO)										FE160 frame electronic type (SMR1)			
	In (A)[1]	3	7	12,5	20	30	50	80	100	125	160	25	63	125	160
Fixed version	R in mΩ per pole	410,00	110,00	13,30	13,30	3,60	1,70	0,60	0,60	0,32	0,32	0,35	0,35	0,35	0,35
	Dissipation Watt single pole	5,02	5,39	2,08	5,32	3,24	4,25	3,84	6,00	3,84	3,84	0,22	1,39	5,47	8,96
	Dissipation Watt three poles	15,07	16,17	7,27	15,96	11,34	12,75	11,52	18,00	11,52	11,52	0,66	4,17	16,41	26,88
Plug-in version	R in mΩ per pole	410,06	110,06	13,36	13,36	3,66	1,76	0,66	0,66	0,38	0,38	0,41	0,41	0,41	0,41
	Dissipation Watt single pole	5,02	5,39	2,09	5,34	3,29	4,40	4,22	6,60	5,94	9,73	0,26	1,63	6,41	10,50
	Dissipation Watt three poles	15,07	16,18	6,26	16,03	9,88	13,20	12,67	19,80	17,81	29,18	0,77	4,88	19,22	31,49
Fixed version with RCD	R in mΩ per pole	410,07	110,07	13,37	13,37	3,67	1,77	0,67	0,67	0,39	0,39	0,42	0,42	0,42	0,42
	Dissipation Watt single pole	5,02	5,39	2,09	5,35	3,30	4,43	4,29	6,70	6,09	9,98	0,26	1,67	6,56	10,75
	Dissipation Watt three poles	15,07	16,18	6,27	16,04	9,91	13,28	12,86	20,10	18,28	29,95	0,79	5,00	19,69	32,26
Plug-in version with RCD	R in mΩ per pole	410,13	110,13	13,43	13,43	3,73	1,83	0,73	0,73	0,45	0,45	0,48	0,48	0,48	0,48
	Dissipation Watt single pole	5,02	5,40	2,10	5,37	3,36	4,58	4,67	7,30	7,03	11,52	0,30	1,91	7,50	12,29
	Dissipation Watt three poles	15,07	16,19	6,30	16,12	10,07	13,73	14,02	21,90	14,02	14,02	0,90	5,72	22,50	36,86

(1) All 3A magnetic only ratings can be used at 3,5A

Power dissipation - FE250 frame

		Thermal magn. type (LTMD, GTM)						Switch (Y)
	In (A)	80	100	125	160	200	250	250
Fixed version	R in mΩ per pole	1,10	0,60	0,55	0,40	0,33	0,24	0,20
	Dissipation Watt single pole	7,04	6,00	8,59	10,24	13,20	15,00	12,50
	Dissipation Watt three poles	21,12	18,00	25,78	30,72	39,60	45,00	37,50
Plug-in version	R in mΩ per pole	1,16	0,66	0,61	0,46	0,39	0,30	0,26
	Dissipation Watt single pole	7,42	6,60	9,53	11,78	15,60	18,75	16,25
	Dissipation Watt three poles	22,27	19,80	28,59	35,33	46,80	56,25	48,75
Fixed version with RCD	R in mΩ per pole	1,17	0,67	0,62	0,47	0,40	0,31	0,27
	Dissipation Watt single pole	7,49	6,70	9,69	12,03	16,00	19,38	16,88
	Dissipation Watt three poles	22,46	20,10	29,06	36,10	48,00	58,13	50,63
Plug-in version with RCD	R in mΩ per pole	1,23	0,73	0,68	0,53	0,46	0,37	0,33
	Dissipation Watt single pole	7,87	7,30	10,63	13,57	18,40	23,13	20,63
	Dissipation Watt three poles	23,62	21,90	31,88	40,70	55,20	69,38	61,88

		Mag Break™(MO)			FE250 frame Electronic type (SMR1)		
	In (A)	160	200	250	125	160	250
Fixed version	R in mΩ per pole	0,33	0,24	0,20	0,20	0,20	0,20
	Dissipation Watt single pole	8,45	2,40	15,00	3,13	5,12	12,50
	Dissipation Watt three poles	25,34	7,20	45,00	9,38	15,36	37,50
Plug-in version	R in mΩ per pole	0,39	0,30	0,30	0,26	0,26	0,26
	Dissipation Watt single pole	9,98	3,00	18,75	4,06	6,66	16,25
	Dissipation Watt three poles	29,95	9,00	56,25	12,19	19,97	48,75
Fixed version with RCD	R in mΩ per pole	0,40	0,31	0,31	0,27	0,27	0,27
	Dissipation Watt single pole	10,24	3,10	19,38	4,22	6,91	16,88
	Dissipation Watt three poles	30,72	9,30	58,13	12,66	20,74	50,63
Plug-in version with RCD	R in mΩ per pole	0,46	0,37	0,37	0,33	0,33	0,33
	Dissipation Watt single pole	11,78	3,70	23,13	5,16	8,45	20,63
	Dissipation Watt three poles	35,33	11,10	69,38	15,47	25,34	61,88

Power dissipation - FG400 & FG 630 frame

		FG400/630 frame electronic type (SMR1 & 2)					Mag Break™ (MO)		Switch (Y)	
	In (A)	250	350	400	500	630	350	500	400	630
Fixed version	R in mΩ per pole	0,11	0,11	0,11	0,10	0,10	0,11	0,10	0,11	0,10
	Dissipation Watt single pole	6,88	13,48	17,60	25,00	39,69	13,48	23,75	17,60	39,69
	Dissipation Watt three poles	20,63	40,43	52,80	75,00	119,07	40,43	71,25	52,80	119,07
Plug-in/Drawout version	R in mΩ per pole	0,13	0,13	0,13	0,12	0,12	0,13	0,12	0,13	0,12
	Dissipation Watt single pole	8,13	15,93	20,80	30,00	47,63	15,93	30,00	20,80	47,63
	Dissipation Watt three poles	24,38	74,78	62,40	90,00	142,88	47,78	90,00	62,40	142,88
Fixed version with RCD	R in mΩ per pole	0,16	0,16	0,16	0,15	0,15	0,16	0,15	0,16	0,15
	Dissipation Watt single pole	10,00	19,60	25,60	37,50	59,54	19,60	37,50	25,60	59,54
	Dissipation Watt three poles	30,00	58,80	76,80	112,50	178,61	58,80	112,50	76,80	178,61
Plug-in/Drawout version with RCD	R in mΩ per pole	0,16	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17
	Dissipation Watt single pole	10,00	20,21	26,40	41,25	65,49	20,21	41,25	26,40	65,49
	Dissipation Watt three poles	30,00	60,64	79,20	123,75	196,47	60,64	123,75	79,20	196,47

Power dissipation - FK800, FK1250 & FK1600 frame

		Thermal magn. type (LTM)				Mag Break™ (MO)		Switch (Y)		
	In (A)	630	800	1000	1250	800	1250	800	1250	1600
Fixed version	R in mΩ per pole	0,04	0,04	0,04	0,04	0,02	0,02	0,02	0,02	0,01
	Dissipation Watt single pole	15,88	25,60	35,00	54,69	12,80	23,44	12,80	31,25	25,60
	Dissipation Watt three poles	47,63	76,80	105,00	164,06	38,40	70,31	38,40	93,75	76,80
Draw-out version	R in mΩ per pole	0,07	0,07	0,07	0,07	0,05	0,05	0,05	0,05	0,04
	Dissipation Watt single pole	27,78	44,80	65,00	101,56	32,00	70,31	32,00	78,13	102,40
	Dissipation Watt three poles	83,35	134,40	195,00	304,69	96,00	210,94	96,00	234,38	307,20

		FK800,1250-1600 frame electronic type (SMR1e, s & g)			
	In (A)	800	1000	1250	1600
Fixed version	R in mΩ per pole	0,04	0,04	0,04	0,03
	Dissipation Watt single pole	25,60	35,00	54,69	76,80
	Dissipation Watt three poles	76,80	105,00	164,06	230,40
Draw-out version	R in mΩ per pole	0,07	0,07	0,07	0,06
	Dissipation Watt single pole	25,60	35,00	54,69	76,80
	Dissipation Watt three poles	76,80	105,00	164,06	230,40

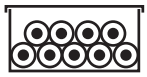
(1) All 3A magnetic only ratings can be used at 3,5A

Operating current and power loss of copper conductors

The following tables provide guidance values for conductor operating currents and power losses under ideal conditions within an ASSEMBLY. The calculation methods used to establish these values are given to enable values to be calculated for other conditions.

Table 1 - Operating current and power loss of single-core copper cables with a permissible conductor temperature of 70 °C (ambient temperature inside the ASSEMBLY: 55 °C)

Table 1: according IEC 61439-1

Conductor arrangement	 Single-core cables in a cable trunking on a wall, run horizontally. 6 of the cables (2 three-phase circuits) continuously loaded		 Single-core cables, touching free in air or on a perforated tray. 6 cables (2 three-phase circuits) continuously loaded		Spacing at least one cable diameter  Single-core cables, spaced horizontally in free air	
Crosssectional area of conductor (mm²)	Resistance of conductor at 20°C, R_{20}[a] (mΩ/m)	Max. operating current Imax[b] (A)	Power losses per conductor P_V (W/m)	Max. operating current Imax[c] (A)	Power losses per conductor P_V (W/m)	Max. operating current Imax[d] (A)	Power losses per conductor P_V (W/m)
1,5	12,1	8	0,8	9	1,3	15	3,2
2,5	7,41	10	0,9	13	1,5	21	3,7
4	4,61	14	1,0	18	1,7	28	4,2
6	3,08	18	1,1	23	2,0	36	4,7
10	1,83	24	1,3	32	2,3	50	5,4
16	1,15	33	1,5	44	2,7	67	6,2
25	0,727	43	1,6	59	3,0	89	6,9
35	0,524	54	1,8	74	3,4	110	7,7
50	0,387	65	2,0	90	3,7	134	8,3
70	0,268	83	2,2	116	4,3	171	9,4
95	0,193	101	2,4	142	4,7	208	10,0
120	0,153	117	2,5	165	5,0	242	10,7
150	0,124			191	5,4	278	11,5
185	0,0991			220	5,7	318	12,0
240	0,0754			260	6,1	375	12,7

$$I\text{max} = I_{30} \times k_1 \times k_2 \qquad P_V = I^2\text{max} \times R_{20} \times [1 + \alpha \times (T_C - 20\ °)]$$

k_1 Reduction factor for air temperature inside the enclosure around the conductors (IEC 60364-5-52, Table A.52-14).
k_1 = 0,61 for conductor temperature 70 °C, ambient temperature 55 °C.
k_1 for other air temperatures: See Table H.2.
k_2 Reduction factor for groups of more than one circuit (IEC 60364-5-52, Table A.52-17).
α Temperature coefficient of resistance, α = 0,004 K^{-1}
T_C Conductor temperature
a) Values from IEC 60228, Table 2 (stranded conductors)
b) Current carrying capacity I_{30} for one three-phase circuit from IEC 60364-5-52, Table A.52-4, col. 4 (Method of installation: Item 6 in table 52-3). k_2=0,8 (item 1 in Table A.52-17, two circuits)
c) Current carrying capacity I_{30} for one three-phase circuit from IEC 60364-5-52, Table A.52-10, col. 5 (Method of installation: Item F in table A.52-1). Values for cross-sections less than 25 mm² calculated following Annex C of IEC 60364-5-52. k_2=0,88 (item 4 in Table A.52-17, two circuits)
d) Current carrying capacity I_{30} for one three-phase circuit from IEC 60364-5-52, Table A.52-10, col. 7 (Method of installation: Item G in Table A.52-1). Values for cross-sections less than 25 mm² calculated following Annex C of IEC 60364-5-52. (k_2=1)

Table 2 – Reduction factor k1 for cables with a permissible conductor temperature of 70 °C (extract from IEC 60364-5-52, Table A.52-14)

Note: If the operating current in Table 2 is converted for other air temperatures using the reduction factor k1, then also the corresponding power losses must be calculated using the formula given above.

Table 2

Air temperature °C[1]	Reduction factor k_1
20	1,12
25	1,06
30	1,00
35	0,94
40	0,87
45	0,79
50	0,71
55	0,61
60	0,50

(1) inside the enclosure around the conductors °C

Table 3 – Operating current and power loss of bare copper busbars with rectangular cross-section, run horizontally and arranged with their largest face vertical, frequency 50 Hz to 60 Hz (ambient temperature inside the ASSEMBLY: 55 °C, temperature of the conductor 70 °C).

Table 3: according IEC 61439-1 Power losses of conductors table 3 and table 4

Height x thickness of bars	Cross sectional area of bar	One bar per phase			Two bars per phase (spacing = thickness of bars)		
		K_3	Operating current	Powerlosses per phase conductor P_V	K_3	Operating current	Powerlosses per phase conductor P_V
(mm × mm)	(mm²)		(A)	(W/m)		(A)	(W/m)
12 × 2	23,5	1,00	70	4,5	1,01	118	6,4
15 × 2	29,5	1,00	83	5,0	1,01	138	7,0
15 × 3	44,5	1,01	105	5,4	1,02	183	8,3
20 × 2	39,5	1,01	105	6,1	1,01	172	8,1
20 × 3	59,5	1,01	133	6,4	1,02	226	9,4
20 × 5	99,1	1,02	178	7,0	1,04	325	11,9
20 × 10	199	1,03	278	8,5	1,07	536	16,6
25 × 5	124	1,02	213	8,0	1,05	381	13,2
30 × 5	149	1,03	246	9,0	1,06	437	14,5
30 × 10	299	1,05	372	10,4	1,11	689	18,9
40 × 5	199	1,03	313	10,9	1,07	543	17,0
40 × 10	399	1,07	465	12,4	1,15	839	21,7
50 × 5	249	1,04	379	12,9	1,09	646	19,6
50 × 10	499	1,08	554	14,2	1,18	982	24,4
60 × 5	299	1,05	447	15,0	1,10	748	22,0
60 × 10	599	1,10	640	16,1	1,21	1 118	27,1
80 × 5	399	1,07	575	19,0	1,13	943	27,0
80 × 10	799	1,13	806	19,7	1,27	1 372	32,0
100 × 5	499	1,10	702	23,3	1,17	1 125	31,8
100 × 10	999	1,17	969	23,5	1,33	1 612	37,1
120 × 10	1 200	1,21	1 131	27,6	1,41	1 859	43,5

$$P_V = \frac{I^2 \times k_3}{\alpha \times \kappa} \times [1 + \alpha \times (T_C - 20\ °)]$$

where
P_V is the power loss per metre;
I is the operating current;
k_3 is the current displacement factor;
κ is the conductivity of copper, $\kappa = 56 \frac{m}{\Omega \times mm^2}$;
A is the cross-sectional area of bar;
α is the temperature coefficient of resistance, $\alpha = 0{,}004\ K^{-1}$;
T_C is the temperature of the conductor.
The operating currents can be converted for other ambient air temperatures inside the ASSEMBLY and/or for a conductor temperature of 90 °C by multiplying the values of Table 3 by the corresponding factor k4 from Table 4. Then the power losses must be calculated using the formula given above accordingly.

Table 4 – Factor k4 for different temperatures of the air inside the ASSEMBLY and / or for the conductors

Table 4

	Factor k_4	
Air temperature inside the enclosure around the conductors °C	**Conductor temperature of 70 °C**	**Conductor temperature of 90 °C**
20	2,08	2,49
25	1,94	2,37
30	1,82	2,26
35	1,69	2,14
40	1,54	2,03
45	1,35	1,91
50	1,18	1,77
55	1,00	1,62
60	0,77	1,48

It shall be considered that, dependent upon the design of the assembly, quite different ambient and busbar temperatures can occur, especially with higher operating currents. Verification of the actual temperature rise under these conditions shall be determined by test. The power losses can then be calculated by the same method as used for this Table 4. At higher currents additional eddy current losses may be significant which are not included in the values of the table.

Table 5 – Copper test conductors for rated currents up to 400A inclusive.

Table 5: according IEC 61439-1 (§ 10.10.2.3.2)

Range of rated current[1] A		Conductor cross-sectional area [2][3] mm²	AWG/MCM
0	8	1,0	18
8	12	1,5	16
12	15	2,5	14
15	20	2,5	12
20	25	4,0	10
25	32	6,0	10
32	50	10	8
50	65	16	6
65	85	25	4
85	100	35	3
100	115	35	2
115	130	50	1
130	150	50	0
150	175	70	0
175	200	95	0
200	225	95	0
225	250	120	250
250	275	150	300
275	300	185	350
300	350	185	400
350	400	240	500

(1) The value of the rated current shall be greater than the first value in the first column and less than or equal to the second value in that column.
(2) For convenience of testing and with the Manufacturer's consent, smaller test conductors than those given for a stated rated current may be used.
(3) Either of the two conductors specified may be used.

Table 6 – Copper test conductors for rated currents from 400A to 4000A.

Table 6: according IEC 61439-1 (§ 10.10.2.3.2)

Range of rated current [1] A	Test conductors			
	Cables		Copper bars (2)	
	#	Cross-sectional area mm²	#	Dimensions mm (W × D)
400 to 500	2	150	2	30 × 5
500 to 630	2	185	2	40 × 5
630 to 800	2	240	2	50 × 5

(1) The value of the rated current shall be greater than the first value and less than or equal to the second value.
(2) Bars are assumed to be arranged with their long faces (W) vertical. Arrangements with long faces horizontal may be used if specified by the manufacturer.

Minimum fixation torque

Device	Nm
Miniature Circuit Breakers (MCB's) ElfaPlus	3
Residual Current Devices (RCD's) ElfaPlus	4
Moulded Case Circuit Breakers (MCCB's) Record Plus FD frame	8
Moulded Case Circuit Breakers (MCCB's) Record Plus FE frame	15
Moulded Case Circuit Breakers (MCCB's) Record Plus FG frame	20
Loadbreak disconnectors Dilos 00	2,2
Loadbreak disconnectors Dilos 1	12
Loadbreak disconnectors Dilos 2 & 3	12
Loadbreak disconnectors Dilos 4	60
Wiring to copper bar 20x5 M6	4,5
Wiring to copper bar 20x10 M6	6
Wiring to copper bar 30x5 M6	4,5
Wiring to copper bar 30x10 M8	8
Copper to copper connections with M6[1]	8
Copper to copper connections with M8[1]	20
Copper to copper connections with M10[1]	40
Copper to copper connections with M12[1]	70
Copper to copper connections with M16[1]	140

(1) Bolts 8,8

Heat dissipation tables: enclosure 12 modules

According IEC 60890, temperature rise in Kelvin

Rear against wall - external dimensions

Watt	750x364x250 12 mod./4 row.		900x364x250 12 mod./5 row.		1050x364x250 12 mod./6 row.		1200x364x250 12 mod./7 row.		1350x364x250 12 mod./8 row.		1500x364x250 12 mod./9 row.		1650x364x250 12 mod./10 row.		1950x364x250 12 mod./12 row.	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	5	6	4	6	*	*	*	*	*	*	*	*	*	*	*	*
20	9	11	8	10	*	*	*	*	*	*	*	*	*	*	*	*
30	12	15	11	13	*	*	*	*	*	*	*	*	*	*	*	*
40	15	19	13	17	*	*	*	*	*	*	*	*	*	*	*	*
50	18	23	16	20	*	*	*	*	*	*	*	*	*	*	*	*
60	21	26	19	23	*	*	*	*	*	*	*	*	*	*	*	*
70	24	29	21	27	*	*	*	*	*	*	*	*	*	*	*	*
80	26	33	24	30	*	*	*	*	*	*	*	*	*	*	*	*
90	29	36	26	32	*	*	*	*	*	*	*	*	*	*	*	*
100	31	39	28	35	*	*	*	*	*	*	*	*	*	*	*	*
110	34	42	30	38	*	*	*	*	*	*	*	*	*	*	*	*
120	36	45	33	41	*	*	*	*	*	*	*	*	*	*	*	*
130	39	49	35	44	*	*	*	*	*	*	*	*	*	*	*	*
140	41	52	37	46	*	*	*	*	*	*	*	*	*	*	*	*
150	44	54	39	49	*	*	*	*	*	*	*	*	*	*	*	*
160	46	57	41	52	*	*	*	*	*	*	*	*	*	*	*	*
170	48	60	43	54	*	*	*	*	*	*	*	*	*	*	*	*
180	50	63	45	57	*	*	*	*	*	*	*	*	*	*	*	*
190	53	66	47	59	*	*	*	*	*	*	*	*	*	*	*	*
200	55	69	49	62	*	*	*	*	*	*	*	*	*	*	*	*
210	57	71	51	64	*	*	*	*	*	*	*	*	*	*	*	*
220	-	-	53	67	*	*	*	*	*	*	*	*	*	*	*	*
230	-	-	55	69	*	*	*	*	*	*	*	*	*	*	*	*
240	-	-	57	71	*	*	*	*	*	*	*	*	*	*	*	*
250	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*

Front and one side free - external dimensions

Watt	750x364x250 12 Mod/4Row		900x364x250 12 Mod/5Row		1050x364x250 12 Mod/6Row		1200x364x250 12 Mod/7Row		1350x364x250 12 Mod/8Row		1500x364x250 12 Mod/9Row		1650x364x250 12 Mod/10Row		1950x364x250 12 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	5	7	5	6	*	*	*	*	*	*	*	*	*	*	*	*
20	9	11	8	10	*	*	*	*	*	*	*	*	*	*	*	*
30	13	16	11	14	*	*	*	*	*	*	*	*	*	*	*	*
40	16	20	14	18	*	*	*	*	*	*	*	*	*	*	*	*
50	19	24	17	21	*	*	*	*	*	*	*	*	*	*	*	*
60	22	28	20	25	*	*	*	*	*	*	*	*	*	*	*	*
70	25	31	22	28	*	*	*	*	*	*	*	*	*	*	*	*
80	28	35	25	31	*	*	*	*	*	*	*	*	*	*	*	*
90	31	38	27	34	*	*	*	*	*	*	*	*	*	*	*	*
100	33	42	30	37	*	*	*	*	*	*	*	*	*	*	*	*
110	36	45	32	40	*	*	*	*	*	*	*	*	*	*	*	*
120	39	48	34	43	*	*	*	*	*	*	*	*	*	*	*	*
130	41	52	37	46	*	*	*	*	*	*	*	*	*	*	*	*
140	44	55	39	49	*	*	*	*	*	*	*	*	*	*	*	*
150	46	58	41	52	*	*	*	*	*	*	*	*	*	*	*	*
160	49	61	43	54	*	*	*	*	*	*	*	*	*	*	*	*
170	51	64	46	57	*	*	*	*	*	*	*	*	*	*	*	*
180	54	67	48	60	*	*	*	*	*	*	*	*	*	*	*	*
190	56	70	50	62	*	*	*	*	*	*	*	*	*	*	*	*
200	-	-	52	65	*	*	*	*	*	*	*	*	*	*	*	*
210	-	-	54	68	*	*	*	*	*	*	*	*	*	*	*	*
220	-	-	56	70	*	*	*	*	*	*	*	*	*	*	*	*
230	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*
240	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*
250	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*

Front side free - external dimensions

Watt	750x364x250 12 Mod/4Row		900x364x250 12 Mod/5Row		1050x364x250 12 Mod/6Row		1200x364x250 12 Mod/7Row		1350x364x250 12 Mod/8Row		1500x364x250 12 Mod/9Row		1650x364x250 12 Mod/10Row		1950x364x250 12 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	6	7	5	6	*	*	*	*	*	*	*	*	*	*	*	*
20	10	12	9	11	*	*	*	*	*	*	*	*	*	*	*	*
30	14	17	12	15	*	*	*	*	*	*	*	*	*	*	*	*
40	17	21	15	19	*	*	*	*	*	*	*	*	*	*	*	*
50	21	26	18	23	*	*	*	*	*	*	*	*	*	*	*	*
60	24	30	21	26	*	*	*	*	*	*	*	*	*	*	*	*
70	27	34	24	30	*	*	*	*	*	*	*	*	*	*	*	*
80	30	37	26	33	*	*	*	*	*	*	*	*	*	*	*	*
90	33	41	29	37	*	*	*	*	*	*	*	*	*	*	*	*
100	36	45	32	40	*	*	*	*	*	*	*	*	*	*	*	*
110	39	48	34	43	*	*	*	*	*	*	*	*	*	*	*	*
120	42	52	37	46	*	*	*	*	*	*	*	*	*	*	*	*
130	44	55	39	49	*	*	*	*	*	*	*	*	*	*	*	*
140	47	59	42	52	*	*	*	*	*	*	*	*	*	*	*	*
150	50	62	44	55	*	*	*	*	*	*	*	*	*	*	*	*
160	52	65	46	58	*	*	*	*	*	*	*	*	*	*	*	*
170	55	69	49	61	*	*	*	*	*	*	*	*	*	*	*	*
180	58	72	51	64	*	*	*	*	*	*	*	*	*	*	*	*
190	-	-	53	67	*	*	*	*	*	*	*	*	*	*	*	*
200	-	-	55	69	*	*	*	*	*	*	*	*	*	*	*	*
210	-	-	58	72	*	*	*	*	*	*	*	*	*	*	*	*
220	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*
230	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*
240	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*
250	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*

* not available

Heat dissipation tables: enclosure 24 modules

According IEC 60890, temperature rise in Kelvin

Rear against wall - external dimensions

Watt	600x660x250 24 Mod/3Row		750x660x250 24 Mod/4Row		900x660x250 24 Mod/5Row		1050x660x250 24 Mod/6Row		1200x660x250 24 Mod/7Row		1350x660x250 24 Mod/8Row		1500x660x250 24 Mod/9Row		1650x660x250 24 Mod/10Row		1950x660x250 24 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	4	5	4	5	3	5	3	4	3	4	2	4	*	*	*	*	*	*
20	7	9	7	8	6	8	5	8	5	7	4	7	*	*	*	*	*	*
30	10	12	9	11	8	11	7	11	6	10	6	9	*	*	*	*	*	*
40	13	15	12	14	10	14	9	13	8	13	7	12	*	*	*	*	*	*
50	15	18	14	17	12	17	11	16	10	15	9	14	*	*	*	*	*	*
60	18	21	16	19	14	20	12	19	11	17	10	16	*	*	*	*	*	*
70	20	24	18	22	16	23	14	21	16	20	12	18	*	*	*	*	*	*
80	22	26	20	25	17	25	16	24	14	22	13	20	*	*	*	*	*	*
90	25	29	22	27	19	28	17	26	16	24	14	22	*	*	*	*	*	*
100	27	32	24	29	21	30	19	28	17	26	15	24	*	*	*	*	*	*
110	29	34	26	32	22	32	20	30	18	28	17	26	*	*	*	*	*	*
120	31	37	28	34	24	35	22	33	20	30	18	28	*	*	*	*	*	*
130	33	39	30	36	26	37	23	35	21	32	19	30	*	*	*	*	*	*
140	35	41	32	38	27	39	25	37	22	34	20	32	*	*	*	*	*	*
150	37	44	34	41	29	42	26	39	24	36	21	33	*	*	*	*	*	*
160	39	46	36	43	30	44	27	41	25	38	22	35	*	*	*	*	*	*
170	41	48	37	45	32	46	29	43	26	40	23	37	*	*	*	*	*	*
180	43	51	39	47	33	48	30	45	27	42	25	39	*	*	*	*	*	*
190	45	53	41	49	35	50	31	47	29	44	26	40	*	*	*	*	*	*
200	47	55	43	51	36	53	33	49	30	46	27	42	*	*	*	*	*	*
220	51	59	46	55	39	57	35	53	32	49	29	45	*	*	*	*	*	*
240	54	64	49	59	42	61	38	57	34	53	31	49	*	*	*	*	*	*
260	58	68	53	63	45	65	41	61	37	57	33	52	*	*	*	*	*	*
280	61	72	56	67	47	69	43	65	39	60	35	55	*	*	*	*	*	*
300	-	-	59	71	50	73	45	68	41	63	37	58	*	*	*	*	*	*
320	-	-	-	-	-	-	48	72	43	67	39	61	*	*	*	*	*	*
340	-	-	-	-	-	-	-	-	46	70	41	64	*	*	*	*	*	*
360	-	-	-	-	-	-	-	-	-	-	43	67	*	*	*	*	*	*
380	-	-	-	-	-	-	-	-	-	-	45	70	*	*	*	*	*	*
400	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*	*	*

Front and one side free - external dimensions

Watt	600x660x250 24 Mod/3Row		750x660x250 24 Mod/4Row		900x660x250 24 Mod/5Row		1050x660x250 24 Mod/6Row		1200x660x250 24 Mod/7Row		1350x660x250 24 Mod/8Row		1500x660x250 24 Mod/9Row		1650x660x250 24 Mod/10Row		1950x660x250 24 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	4	5	4	5	4	4	3	5	3	4	3	4	*	*	*	*	*	*
20	8	9	7	8	6	8	5	8	5	7	4	7	*	*	*	*	*	*
30	10	12	10	11	9	11	7	11	7	10	6	9	*	*	*	*	*	*
40	13	16	12	14	11	13	9	14	9	13	8	12	*	*	*	*	*	*
50	16	19	14	17	13	16	11	16	10	15	9	14	*	*	*	*	*	*
60	18	22	17	20	15	18	13	19	12	18	11	17	*	*	*	*	*	*
70	21	24	19	23	17	21	15	22	13	20	12	19	*	*	*	*	*	*
80	23	27	21	25	19	23	16	24	15	23	14	21	*	*	*	*	*	*
90	25	30	23	28	21	25	18	26	16	25	15	23	*	*	*	*	*	*
100	28	32	25	30	23	28	20	29	18	27	16	25	*	*	*	*	*	*
110	30	35	27	33	24	30	21	31	19	29	18	27	*	*	*	*	*	*
120	32	38	29	35	26	32	23	33	21	31	19	29	*	*	*	*	*	*
130	34	40	31	37	28	34	24	36	22	33	20	31	*	*	*	*	*	*
140	36	43	33	40	30	36	26	38	23	35	21	33	*	*	*	*	*	*
150	38	45	35	42	31	38	27	40	25	37	23	35	*	*	*	*	*	*
160	40	47	37	44	33	40	29	42	26	39	24	36	*	*	*	*	*	*
170	42	50	38	46	35	42	30	44	27	41	25	38	*	*	*	*	*	*
180	44	52	40	48	36	44	31	46	29	43	26	40	*	*	*	*	*	*
190	46	54	42	51	38	46	33	48	30	45	27	42	*	*	*	*	*	*
200	48	57	44	53	40	48	34	50	31	47	28	44	*	*	*	*	*	*
220	52	61	47	57	43	52	37	54	34	51	31	47	*	*	*	*	*	*
240	56	66	51	61	46	56	39	58	36	55	33	51	*	*	*	*	*	*
260	60	70	54	65	49	60	42	62	39	58	35	54	*	*	*	*	*	*
280	-	-	57	69	52	63	45	66	41	62	37	57	*	*	*	*	*	*
300	-	-	61	73	55	67	47	70	43	65	39	60	*	*	*	*	*	*
320	-	-	-	-	58	71	-	-	46	69	41	64	*	*	*	*	*	*
340	-	-	-	-	-	-	-	-	48	72	43	67	*	*	*	*	*	*
360	-	-	-	-	-	-	-	-	-	-	46	70	*	*	*	*	*	*
380	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*	*	*

Front side free - external dimensions

Watt	600x660x250 24 Mod/3Row		750x660x250 24 Mod/4Row		900x660x250 24 Mod/5Row		1050x660x250 24 Mod/6Row		1200x660x250 24 Mod/7Row		1350x660x250 24 Mod/8Row		1500x660x250 24 Mod/9Row		1650x660x250 24 Mod/10Row		1950x660x250 24 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	4	5	4	5	4	5	3	5	3	4	3	4	*	*	*	*	*	*
20	8	9	7	9	6	8	6	8	5	8	5	7	*	*	*	*	*	*
30	11	13	10	12	9	11	8	11	7	10	7	10	*	*	*	*	*	*
40	14	16	12	15	11	14	10	14	9	13	8	12	*	*	*	*	*	*
50	16	19	15	18	14	17	12	17	11	16	10	15	*	*	*	*	*	*
60	19	22	17	21	16	19	13	19	12	18	11	17	*	*	*	*	*	*
70	21	25	19	23	18	22	15	22	14	21	13	19	*	*	*	*	*	*
80	24	28	22	26	20	24	17	24	16	23	14	22	*	*	*	*	*	*
90	26	31	24	29	22	27	19	27	17	25	16	24	*	*	*	*	*	*
100	29	33	26	31	24	29	20	29	19	28	17	26	*	*	*	*	*	*
110	31	36	28	33	26	31	22	31	20	30	19	28	*	*	*	*	*	*
120	33	39	30	36	27	34	24	34	22	32	20	30	*	*	*	*	*	*
130	35	41	32	38	29	36	25	36	23	34	21	32	*	*	*	*	*	*
140	37	44	34	41	31	38	27	38	24	36	22	34	*	*	*	*	*	*
150	39	46	36	43	33	40	28	40	26	38	24	36	*	*	*	*	*	*
160	42	49	38	45	35	42	30	43	27	40	25	38	*	*	*	*	*	*
170	44	51	39	48	36	44	31	45	29	42	26	40	*	*	*	*	*	*
180	46	54	41	50	38	46	33	47	30	44	28	41	*	*	*	*	*	*
190	48	56	43	52	40	49	34	49	31	46	29	43	*	*	*	*	*	*
200	50	58	45	54	41	51	35	51	33	48	30	45	*	*	*	*	*	*
220	54	63	49	58	45	55	38	55	35	52	32	49	*	*	*	*	*	*
240	58	68	52	63	48	59	41	59	38	56	35	52	*	*	*	*	*	*
260	61	72	56	67	51	62	44	63	40	59	37	56	*	*	*	*	*	*
280	-	-	59	71	54	66	47	67	43	63	39	59	*	*	*	*	*	*
300	-	-	-	-	57	70	49	71	45	67	42	63	*	*	*	*	*	*
320	-	-	-	-	-	-	-	-	48	70	44	66	*	*	*	*	*	*
340	-	-	-	-	-	-	-	-	-	-	46	69	*	*	*	*	*	*
360	-	-	-	-	-	-	-	-	-	-	48	72	*	*	*	*	*	*
380	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*	*	*

* not available

Heat dissipation tables: enclosure 36 modules

According IEC 60890, temperature rise in Kelvin

Rear against wall - external dimensions

Watt	900x876x250		1050x876x250		1200x876x250		1350x876x250		1500x876x250		1650x876x250		1950x876x250	
	36 Mod/5Row		36 Mod/6Row		36 Mod/7Row		36 Mod/8Row		36 Mod/9Row		36 Mod/10Row		36 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	3	4	2	3	2	3	2	3	2	3	2	2	*	*
20	5	7	4	6	4	5	3	5	3	5	3	4	*	*
30	7	9	6	8	5	7	4	7	4	6	4	6	*	*
40	8	12	7	11	6	9	6	8	5	8	5	7	*	*
50	10	14	9	13	8	11	7	10	6	9	6	9	*	*
60	12	16	10	15	9	13	8	12	7	11	6	10	*	*
70	13	18	12	17	10	15	9	13	8	12	7	11	*	*
80	15	20	13	18	11	16	10	15	9	14	8	13	*	*
90	16	22	14	20	12	18	11	16	10	15	9	14	*	*
100	18	24	15	22	13	20	12	17	11	16	10	15	*	*
120	20	28	18	26	15	23	13	20	12	19	11	18	*	*
140	23	32	20	29	17	26	15	23	14	22	13	20	*	*
160	26	36	22	32	19	29	17	25	16	24	14	22	*	*
180	28	39	25	35	21	31	18	28	17	26	16	24	*	*
200	31	43	27	39	23	34	20	30	19	29	17	27	*	*
220	33	46	29	42	25	37	22	33	20	31	18	29	*	*
240	35	49	31	45	27	40	23	35	22	33	20	31	*	*
260	38	53	33	48	29	42	25	38	23	36	21	33	*	*
280	40	56	35	51	30	45	26	40	24	38	22	35	*	*
300	42	59	37	53	32	47	28	42	26	40	24	37	*	*
320	45	62	39	56	34	50	29	44	27	42	25	39	*	*
340	47	65	41	59	35	52	31	47	29	44	26	41	*	*
360	49	68	43	62	37	55	32	49	30	46	27	43	*	*
380	51	71	45	65	39	57	34	51	31	48	28	45	*	*
400	-	-	47	67	40	60	35	53	33	50	30	47	*	*
420	-	-	49	70	42	62	37	55	34	52	31	48	*	*
440	-	-	-	-	44	64	38	57	35	54	32	50	*	*
460	-	-	-	-	45	67	39	59	36	56	33	52	*	*
480	-	-	-	-	47	69	41	61	38	58	34	54	*	*
500	-	-	-	-	48	71	42	64	39	60	36	56	*	*
520	-	-	-	-	-	-	43	66	40	62	37	57	*	*
540	-	-	-	-	-	-	45	68	41	64	38	59	*	*
560	-	-	-	-	-	-	46	70	43	66	39	61	*	*
580	-	-	-	-	-	-	-	-	44	68	40	63	*	*
600	-	-	-	-	-	-	-	-	45	70	41	64	*	*
650	-	-	-	-	-	-	-	-	-	-	44	69	*	*
700	-	-	-	-	-	-	-	-	-	-	47	73	*	*
750	-	-	-	-	-	-	-	-	-	-	-	-	*	*

Front and one side free - external dimensions

Watt	900x876x250		1050x876x250		1200x876x250		1350x876x250		1500x876x250		1650x876x250		1950x876x250	
	36 Mod/5Row		36 Mod/6Row		36 Mod/7Row		36 Mod/8Row		36 Mod/9Row		36 Mod/10Row		36 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	3	4	3	4	2	3	2	3	2	3	2	2	*	*
20	5	7	4	6	4	6	3	5	3	5	3	4	*	*
30	7	9	6	9	5	8	5	7	4	6	4	6	*	*
40	9	12	8	11	7	10	6	9	5	8	5	8	*	*
50	10	14	9	13	8	12	7	10	6	10	6	9	*	*
60	12	16	11	15	9	14	8	12	7	11	7	10	*	*
70	14	19	12	17	11	15	9	14	8	12	8	12	*	*
80	15	21	13	19	12	17	10	15	9	14	9	13	*	*
90	17	23	15	21	13	19	11	17	10	15	9	14	*	*
100	18	25	16	23	14	20	12	18	11	17	10	16	*	*
120	21	29	19	26	16	24	14	21	13	19	12	18	*	*
140	24	33	21	30	18	27	16	24	14	22	13	21	*	*
160	26	36	23	33	20	30	18	26	16	24	15	23	*	*
180	29	40	26	37	23	33	20	29	18	27	16	25	*	*
200	32	43	28	40	25	36	21	32	19	29	18	27	*	*
220	34	47	30	43	26	38	23	34	21	31	19	30	*	*
240	37	50	33	46	28	41	25	37	22	34	21	32	*	*
260	39	54	35	49	30	44	26	39	24	36	22	34	*	*
280	41	57	37	52	32	47	28	41	25	38	23	36	*	*
300	44	60	39	55	34	49	29	44	27	40	25	38	*	*
320	46	63	41	58	36	52	31	46	28	42	26	40	*	*
340	48	66	43	61	38	55	33	48	29	44	27	42	*	*
360	51	70	45	64	39	57	34	51	31	47	29	44	*	*
380	53	73	47	67	41	60	36	53	32	49	30	46	*	*
400	-	-	49	69	43	62	37	55	34	51	31	48	*	*
420	-	-	51	72	45	65	39	57	35	53	32	50	*	*
440	-	-	-	-	46	67	40	60	36	55	34	52	*	*
460	-	-	-	-	48	70	42	62	37	57	35	54	*	*
480	-	-	-	-	50	72	43	64	39	59	36	55	*	*
500	-	-	-	-	-	-	44	66	40	61	37	57	*	*
520	-	-	-	-	-	-	46	68	41	63	38	59	*	*
540	-	-	-	-	-	-	47	70	43	65	40	61	*	*
560	-	-	-	-	-	-	49	72	44	66	41	63	*	*
580	-	-	-	-	-	-	-	-	45	68	42	64	*	*
600	-	-	-	-	-	-	-	-	46	70	43	66	*	*
650	-	-	-	-	-	-	-	-	-	-	46	71	*	*
700	-	-	-	-	-	-	-	-	-	-	-	-	*	*

* not available

Heat dissipation tables: enclosure 36 modules

According IEC 60890, temperature rise in Kelvin

Front side free - external dimensions

	900x876x250		1050x876x250		1200x876x250		1350x876x250		1500x876x250		1650x876x250		1950x876x250	
Watt	36 Mod/5Row		36 Mod/6Row		36 Mod/7Row		36 Mod/8Row		36 Mod/9Row		36 Mod/10Row		36 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	3	4	3	4	2	3	2	3	2	3	2	3	*	*
20	5	7	5	6	4	6	4	5	3	5	3	4	*	*
30	7	9	6	9	6	8	5	7	4	6	4	6	*	*
40	9	12	8	11	7	10	6	9	5	8	5	8	*	*
50	11	14	10	13	9	12	7	11	7	10	6	9	*	*
60	12	17	11	15	10	14	9	12	8	11	7	11	*	*
70	14	19	13	17	11	16	10	14	9	13	8	12	*	*
80	16	21	14	19	12	18	11	16	10	14	9	14	*	*
90	17	23	15	21	14	19	12	17	11	16	10	15	*	*
100	19	25	17	23	15	21	13	19	11	17	11	16	*	*
120	22	29	19	27	17	24	15	22	13	20	12	19	*	*
140	25	33	22	30	19	28	17	25	15	22	14	21	*	*
160	27	36	25	34	22	31	19	27	17	25	16	24	*	*
180	30	40	27	37	24	34	21	30	18	27	17	26	*	*
200	33	44	29	40	26	37	23	33	20	30	19	28	*	*
220	35	47	32	44	28	40	24	35	22	32	20	30	*	*
240	38	50	34	47	30	42	26	38	23	34	22	33	*	*
260	40	54	36	50	32	45	28	40	25	36	23	35	*	*
280	43	57	38	53	34	48	30	43	26	39	25	37	*	*
300	45	60	41	56	36	51	31	45	28	41	26	39	*	*
320	48	64	43	59	38	53	33	48	29	43	27	41	*	*
340	50	67	45	62	40	56	35	50	31	45	29	43	*	*
360	53	70	47	65	42	59	36	53	32	47	30	45	*	*
380	55	73	49	68	43	61	38	55	33	49	31	47	*	*
400	-	-	51	70	45	64	40	57	35	52	33	49	*	*
420	-	-	53	73	47	67	41	59	36	54	34	51	*	*
440	-	-	-	-	49	69	43	62	38	56	35	53	*	*
460	-	-	-	-	51	72	44	64	39	58	37	55	*	*
480	-	-	-	-	-	-	46	66	40	60	38	57	*	*
500	-	-	-	-	-	-	47	68	42	62	39	59	*	*
520	-	-	-	-	-	-	49	71	43	64	40	61	*	*
540	-	-	-	-	-	-	-	-	44	66	42	63	*	*
560	-	-	-	-	-	-	-	-	46	68	43	65	*	*
580	-	-	-	-	-	-	-	-	47	69	44	66	*	*
600	-	-	-	-	-	-	-	-	48	71	45	68	*	*
650	-	-	-	-	-	-	-	-	-	-	48	73	*	*
700	-	-	-	-	-	-	-	-	-	-	-	-	*	*

* not available

Heat dissipation values

According to EN 62208, IEC 62208 and IEC 60890

For each enclosures range (12, 24, 36 mod):

1. The 3 different matrix tables contain all the enclosure **dimensions**.
2. The tables are created according to the **positioning** of the enclosure.
3. **Two different values** of temperature rise are given depending on the measuring point in the cabinet: **half way** or **on top**.

What is acceptable acc. to EN 62208, IEC 62208 and IEC 60890

- For common electrical applications, a **temperature rise of 50K** is generally accepted. If the rise is above 50K, a larger enclosure should be chosen. More volume results in a decrease of the temperature rise.
- The **absolute** temperature in °C in the enclosure is **the sum** of the ambient temperature in °C and the **temperature rise** in K. According to the standards, the absolute temperature is **max. 70°C**

How to use a matrix?
First choose the right matrix according to the position and the size of the enclosure.
Second calculate the effective power loss in Watt (left column). Add 10-20% to the total effective power loss of the components in order to compensate the small wiring and connections.
Third read in the matrix the temperature rise in the cabinet due to the thermal power dissipation.

Example 1: Individual enclosure

Enclosure 8 rows/36 modules. Dimensions 1350x876x250 mm (see table below)
Placed against the wall.
The calculated effective power loss of the installed components is **300 W**.
The components are equally distributed in the enclosure.
In the table **'rear against wall'** (see below) read for 300 W (dissipation) and column '36 Mod/8Row' (dimensions) the temperature rise (K).
'Half' is the temperature rise (K) in the middle of the enclosure.
'Top' is the temperature rise (K) on top of the enclosure.

With an ambient temperature of 20°C, the absolute temperature around the components will be approximately 20+28 = 48 °C in the middle and 20+42 = 62 °C on top of the enclosure.
If the temperature is too high for the components, then choose a larger enclosure to allow air ventilation.
For the max. ambient temperature for the devices, read the technical documentation from the manufacturer or contact the customer service.
According the standards, the absolute temperature is **max. 70 °C**.

Rear against wall - enclosure 36 modules - external dimensions

	900x876x250		1050x876x250		1200x876x250		1350x876x250		1500x876x250		1650x876x250		1950x876x250	
Watt	36 Mod/5Row		36 Mod/6Row		36 Mod/7Row		36 Mod/8Row		36 Mod/9Row		36 Mod/10Row		36 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	3	4	2	3	2	3	2	3	2	3	2	2	*	*
20	5	7	4	6	4	5	3	5	3	5	3	4	*	*
30	7	9	6	8	5	7	4	7	4	6	4	6	*	*
40	8	12	7	11	6	9	6	8	5	8	5	7	*	*
50	10	14	9	13	8	11	7	10	6	9	6	9	*	*
60	12	16	10	15	9	13	8	12	7	11	6	10	*	*
70	13	18	12	17	10	15	9	13	8	12	7	11	*	*
80	15	20	13	18	11	16	10	15	9	14	8	13	*	*
90	16	22	14	20	12	18	11	16	10	15	9	14	*	*
100	18	24	15	22	13	20	12	17	11	16	10	15	*	*
120	20	28	18	26	15	23	13	20	12	19	11	18	*	*
140	23	32	20	29	17	26	15	23	14	22	13	20	*	*
160	26	36	22	32	19	29	17	25	16	24	14	22	*	*
180	28	39	25	35	21	31	18	28	17	26	16	24	*	*
200	31	43	27	39	23	34	20	30	19	29	17	27	*	*
220	33	46	29	42	25	37	22	33	20	31	18	29	*	*
240	35	49	31	45	27	40	23	35	22	33	20	31	*	*
260	38	53	33	48	29	42	25	38	23	36	21	33	*	*
280	40	56	35	51	30	45	26	40	24	38	22	35	*	*
300	**42**	**59**	**37**	**53**	**32**	**47**	**28**	**42**	26	40	24	37	*	*
320	45	62	39	56	34	50	29	44	27	42	25	39	*	*
340	47	65	41	59	35	52	31	47	29	44	26	41	*	*
360	49	68	43	62	37	55	32	49	30	46	27	43	*	*
380	51	71	45	65	39	57	34	51	31	48	28	45	*	*
400	-	-	47	67	40	60	35	53	33	50	30	47	*	*
420	-	-	49	70	42	62	37	55	34	52	31	48	*	*
440	-	-	-	-	44	64	38	57	35	54	32	50	*	*
460	-	-	-	-	45	67	39	59	36	56	33	52	*	*
480	-	-	-	-	47	69	41	61	38	58	34	54	*	*
500	-	-	-	-	48	71	42	64	39	60	36	56	*	*
520	-	-	-	-	-	-	43	66	40	62	37	57	*	*
540	-	-	-	-	-	-	45	68	41	64	38	59	*	*
560	-	-	-	-	-	-	46	70	43	66	39	61	*	*
580	-	-	-	-	-	-	-	-	44	68	40	63	*	*
600	-	-	-	-	-	-	-	-	45	70	41	64	*	*
650	-	-	-	-	-	-	-	-	-	-	44	69	*	*
700	-	-	-	-	-	-	-	-	-	-	47	73	*	*
750	-	-	-	-	-	-	-	-	-	-	-	-	*	*

* not available

Example 2: coupled enclosures

Enclosure 5 rows/36 modules. Dimensions 900x876x250 mm
Enclosure 5 rows/12 modules. Dimensions 900x364x250 mm
Enclosure 5 rows/24 modules. Dimensions 900x660x250 mm
(see tables below).
Placed against the wall, 12 module enclosure in the middle.
The calculated effective power loss of the installed components is each enclosure.
The components are equally distributed in the enclosure.

Example: 5 rows/36 modules: 200 W
5 rwowsw/12 modules: 100 W
5 rows/24 modules: 150 W

Do the same calculation as above for each individual enclosure.

Choose the right matrix!
For 5 rows/36 modules and 5 rows/24 modules take the matrix **'front and one side free'**.
For 5 rows/12 modules take the matrix **'front side free'**.

In the table read for the calculated dissipation (W) and corresponding dimensions the temperature rise (K) 'Half' is the temperature rise (K) in the middle of the enclosure.
'Top' is the temperature rise (K) on top of the enclosure.

Example: 5 rows/36 modules: Top: 32 K Middle: 43 K
5 rows/12 modules: Top: 32 K Middle: 40 K
5 rows/24 modules: Top: 31 K Middle: 38 K

With an ambient temperature of 20°C, the absolute temperature around the components will be approximately:

Example: 5 rows/36 modules: Top: 52 °C Middle: 63 °C
5 rows/12 modules: Top: 52 °C Middle: 60 °C
5 rows/24 modules: Top: 51°C Middle: 58 °C

If the temperature is too high for the components, then choose a larger enclosure to allow air ventilation.
For the max. ambient temperature for the devices, read the technical documentation
from the manufacturer or contact the customer service.
According the standards, the absolute temperature is **max. 70 °C.**

Front and one side free - enclosure 36 modules - external dimensions

Watt	900x876x250 36 Mod/5Row		1050x876x250 36 Mod/6Row		1200x876x250 36 Mod/7Row		1350x876x250 36 Mod/8Row		1500x876x250 36 Mod/9Row		1650x876x250 36 Mod/10Row		1950x876x250 36 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	3	4	3	4	2	3	2	3	2	3	2	2	*	*
20	5	7	4	6	4	6	3	5	3	5	3	4	*	*
30	7	9	6	9	5	8	5	7	4	6	4	6	*	*
40	9	12	8	11	7	10	6	9	5	8	5	8	*	*
50	10	14	9	13	8	12	7	10	6	10	6	9	*	*
60	12	16	11	15	9	14	8	12	7	11	7	10	*	*
70	14	19	12	17	11	15	9	14	8	12	8	12	*	*
80	15	21	13	19	12	17	10	15	9	14	9	13	*	*
90	17	23	15	21	13	19	11	17	10	15	9	14	*	*
100	18	25	16	23	14	20	12	18	11	17	10	16	*	*
120	21	29	19	26	16	24	14	21	13	19	12	18	*	*
140	24	33	21	30	18	27	16	24	14	22	13	21	*	*
160	26	36	23	33	20	30	18	26	16	24	15	23	*	*
180	29	40	26	37	23	33	20	29	18	27	16	25	*	*
200	**32**	**43**	28	40	25	36	21	32	19	29	18	27	*	*
220	34	47	30	43	26	38	23	34	21	31	19	30	*	*

Front side free - enclosure 12 modules - external dimensions

Watt	750x364x250 12 Mod/4Row		900x364x250 12 Mod/5Row		1050x364x250 12 Mod/6Row		1200x364x250 12 Mod/7Row		1350x364x250 12 Mod/8Row		1500x364x250 12 Mod/9Row		1650x364x250 12 Mod/10Row		1950x364x250 12 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	6	7	5	6	*	*	*	*	*	*	*	*	*	*	*	*
20	10	12	9	11	*	*	*	*	*	*	*	*	*	*	*	*
30	14	17	12	15	*	*	*	*	*	*	*	*	*	*	*	*
40	17	21	15	19	*	*	*	*	*	*	*	*	*	*	*	*
50	21	26	18	23	*	*	*	*	*	*	*	*	*	*	*	*
60	24	30	21	26	*	*	*	*	*	*	*	*	*	*	*	*
70	27	34	24	30	*	*	*	*	*	*	*	*	*	*	*	*
80	30	37	26	33	*	*	*	*	*	*	*	*	*	*	*	*
90	33	41	29	37	*	*	*	*	*	*	*	*	*	*	*	*
100	36	45	**32**	**40**	*	*	*	*	*	*	*	*	*	*	*	*
110	39	48	34	43	*	*	*	*	*	*	*	*	*	*	*	*

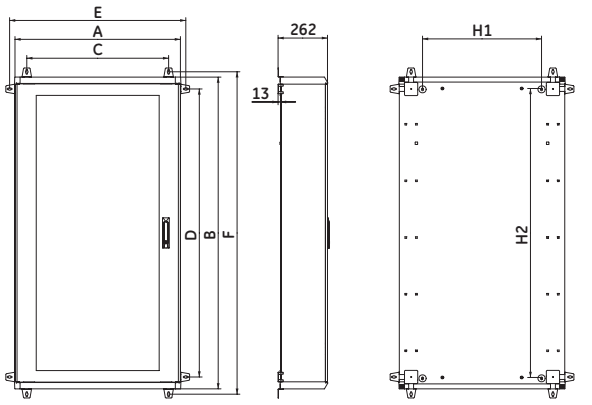
Front and one side free - enclosure 24 modules - external dimensions

Watt	600x660x250 24 Mod/3Row		750x660x250 24 Mod/4Row		900x660x250 24 Mod/5Row		1050x660x250 24 Mod/6Row		1200x660x250 24 Mod/7Row		1350x660x250 24 Mod/8Row		1500x660x250 24 Mod/9Row		1650x660x250 24 Mod/10Row		1950x660x250 24 Mod/12Row	
	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top	Half	Top
10	4	5	4	5	4	4	3	5	3	4	3	4	*	*	*	*	*	*
20	8	9	7	8	6	8	5	8	5	7	4	7	*	*	*	*	*	*
30	10	12	10	11	9	11	7	11	7	10	6	9	*	*	*	*	*	*
40	13	16	12	14	11	13	9	14	9	13	8	12	*	*	*	*	*	*
50	16	19	14	17	13	16	11	16	10	15	9	14	*	*	*	*	*	*
60	18	22	17	20	15	18	13	19	12	18	11	17	*	*	*	*	*	*
70	21	24	19	23	17	21	15	22	13	20	12	19	*	*	*	*	*	*
80	23	27	21	25	19	23	16	24	15	23	14	21	*	*	*	*	*	*
90	25	30	23	28	21	25	18	26	16	25	15	23	*	*	*	*	*	*
100	28	32	25	30	23	28	20	29	18	27	16	25	*	*	*	*	*	*
110	30	35	27	33	24	30	21	31	19	29	18	27	*	*	*	*	*	*
120	32	38	29	35	26	32	23	33	21	31	19	29	*	*	*	*	*	*
130	34	40	31	37	28	34	24	36	22	33	20	31	*	*	*	*	*	*
140	36	43	33	40	30	36	26	38	23	35	21	33	*	*	*	*	*	*
150	38	45	35	42	**31**	**38**	27	40	25	37	23	35	*	*	*	*	*	*
160	40	47	37	44	33	40	29	42	26	39	24	36	*	*	*	*	*	*

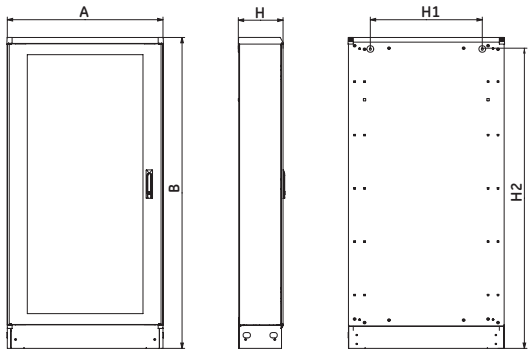
* not available

Dimensional drawings

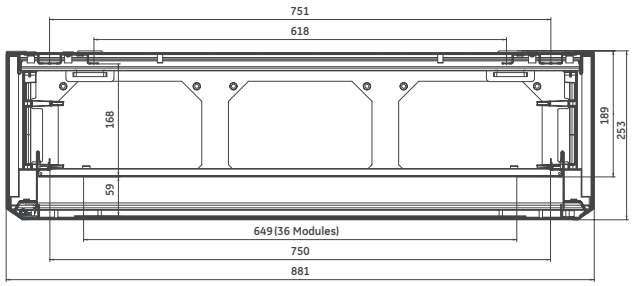
Wall mounting



Floor standing



Cross-section



Width 12 modules

	A	B	C	D	E	F	H	H1	H2
4 rows	364	750	239	625	421	807	252	120	630
5 rows	364	900	239	775	421	957	252	120	780
6 rows	364	1050	239	925	421	1107	252	120	930
7 rows	364	1200	239	1075	421	1257	252	120	1080
8 rows	364	1350	239	1225	421	1407	252	120	1230
9 rows + base	364	1600	239	-	-	-	252	120	1380
10 rows + base	364	1750	239	-	-	-	252	120	1530
12 rows + base	364	2050	239	-	-	-	252	120	1830

Width 24 modules

	A	B	C	D	E	F	H	H1	H2
3 rows	660	600	535	475	717	657	252	415	480
4 rows	660	750	535	625	717	807	252	415	630
5 rows	660	900	535	775	717	957	252	415	780
6 rows	660	1050	535	925	717	1107	252	415	930
7 rows	660	1200	535	1075	717	1257	252	415	1080
8 rows	660	1350	535	1225	717	1407	252	415	1230
9 rows + base	660	1600	535	-	-	-	252	415	1380
10 rows + base	660	1750	535	-	-	-	252	415	1530
12 rows + base	660	2050	535	-	-	-	252	415	1830

Width 36 modules

	A	B	C	D	E	F	H	H1	H2
5 rows	876	900	751	775	933	957	252	630	780
6 rows	876	1050	751	925	933	1107	252	630	930
7 rows	876	1200	751	1075	933	1257	252	630	1080
8 rows	876	1350	751	1225	933	1407	252	630	1230
9 rows + base	876	1600	751	-	-	-	252	630	1380
10 rows + base	876	1750	751	-	-	-	252	630	1530
12 rows + base	876	2050	751	-	-	-	252	630	1830

Specifications for tender documents

System Enclosure for Low Voltage distribution boards up to 630A

Conformity to standards
The panels are designed according to the IEC 61439-2 standard. All verification tests and individual tests required by the standard have been done.
Internal separation is Form 1. Form 2 can be achieved, as option.

Technical characteristics
The panel is designed of kit-form enclosures made from sheet steel, which can be stand alone or coupled next to each other, for indoor use.

Each enclosure consists of in a high-strength rear plate, made of galvanized sheet steel 1,5 mm thick, with four aluminum corner parts bolted in each corner. The external panels and the doors are made in epoxy polyester power coating sheetsteel 1,25mm thick. All the external panels (top, bottom and side panels) are fixed, using screws, to the aluminium corner parts. Each one can be disassembled independently from the rest of the external panels.

The sheet steel parts are pre-treated with iron phosphate and protected with epoxy polyester powdercoating RAL 9006, giving a smooth finish. The colour for the external corner parts, the handle and the base is RAL 7024.

The range of QuiXtra 630 consists of 24 different sizes:
- Three external widths: 364 660 and 876 mm
- Nine heights: external dimensions from 600 up to 2050mm.
- One depth: 220mm without door and 250mm with the door
- Useful dimensions:
  - Widths for 12, 24 and 36 modules 18mm
  - Heights from 450 up to 1800mm

The DIN rails or mounting plates of the functional units, and the busbar holders are fixed with special "click-in" support, attaching to the vertical profiles which are fixed to the rear panel. QuiXtra 630 allows free accessibility from all sides for the wiring of electrical devices mounted on the DIN rails and mounting plates, fixed to the rear panel on the functional kits.

The functional units, based on a modular concept with a height in steps of 50 mm are available for:
- Modular devices, for 12, 24 and 36 modules of 18mm. In two different heights, 150 and 200 mm. One special function for screwless MCB's is available.
- Meters
- Push-buttons
- Moulded case circuit breakers. Up to 630A. To mount in horizontal or in vertical position
- Load break switches. Up to 630A. To mount in horizontal or in vertical position.
- Terminals
- Plain mounting plates

Two busbar systems can be mounted in the enclosure:
- Staircase busbar. Developed for easy accessibility during wiring, to the four phases, because the holder shape puts the copper bars at different depths. The staircase busbar can be assembled in vertical position in the 12 module wide enclosure, and in horizontal position in the 24 and 36 module wide enclosure. Electrical devices cannot be mounted in front of a staircase busbar. The busbar holders are fixed to the rear panel using specific "click in" supports and profiles.
- Rear mounted busbar. It Allows the assembly of the copper bars between the rear panel and the electrical devices. The rear busbar can be mounted in vertical or in horizontal position in all types of enclosure. The electrical devices can be mounted in front of the rear busbar in the enclosures 24 and 36 modules wide, except RecordPlus FG and Dilos 3&4. A busbar can span multiple coupled enclosures. The busbar holders are fixed to the back plate using specific "click in" supports and profiles
- Vertical and horizontal separation screens allow the upgrade of the internal segregation form to form 2, according the IEC 61439-2

The enclosures can be closed with two types of doors, plain and transparent. The plain door is available for the three enclosure widths and the transparent door is available for the 24 and 36 modules wide enclosures. The locking system is operated by a central handle and consists of a one or a three point locking mechanism, depending on the height of the enclosure. The doors are equipped with a lock insert for a 2432E key. The door can be assembled and disassembled without any tools, and can be opened from the right or the left side of the enclosure. The opening angle is 135°.

The enclosure offers maximum protection to the users and equipment thanks to an IP 43 protection degree with door and IP43 profile, following IEC 60529 and the IEC 62262,

The enclosure has the KEMA approval.

Electrical characteristics
Rated operational voltage: 415V
Rated insulation voltage: 690V
Rated short-circuit current: 30kA /1s
Rated busbar current system: up to 630A
Protection degree: IP43 with door and IP43 profile, IP40 with door and without IP43 profile, IP30 without door
The panel is designed for indoor use only
Ambient temperature: 35°C

Appendix

IEC 60439 vs IEC 61439 for Assemblies up to 630A

The QuiXtra is designed according the recently published norm IEC 61439-1 and IEC 61439-2, pertaining to this type of system enclosure, in mind.

The new IEC 61439-2 supersedes the IEC 60439-1 norm. IEC 60439 was the norm that introduced the world to "type tested" and "partially type tested" assemblies. Because this terminology in the norm was open to gray zones and subjective interpretations, and therefore safety risks, they cease to exist in the new norm. The new standard IEC 61439 introduce the "Design verification" approach. The Design verification is achieved by testing, calculation or measurement and satisfying the design rules defined by the original manufacturer (OEM).
The structure of the new IEC 61439 evolves from the IEC 60439. The structure for the new standard is:
- IEC 61439-1. General rules
- IEC 61439-2. Power Switchgear and Controlgear assemblies (PSC-Assemblies)

IEC 61439-1 introduces a few new terms.

- Original Manufacturer (OEM): company producing enclosures & electrical switchgear: Here: GE
- Assembly Manufacturer: company assembling enclosures & equipping them with electrical switchgear. Responsible of the complete Assembly. Here: Panel Builder
- Verification test: test performed by the original manufacturer to ensure that its enclosures and electrical switchgear are compliant with the norms.

In order for an assembly to comply to the new IEC 61439-2 norm, the original manufacturer needs to have conducted and passed verification tests for its enclosures & components. For those enclosures and components, the OEM needs to provide documentation (typically in the form of Tables), enabling calculation of the critical parameters (heat dissipation, cable cross-sections) of an assembly, as well as clear instructions for its assembly and use.

The Assembly Manufacturer then makes this calculation for each assembly, and builds the assembly, strictly adhering to the instructions of the OEM.

If an assembly manufacturer uses a component not tested by the OEM of the enclosure, or if he makes modifications to the assembly not following the OEM's use instructions, it becomes his responsibility to ensure compliance with IEC 61439-2. That compliance must then be tested via a comprehensive test, to be performed by the assembly manufacturer.

GE has taken care to design the QuiXtra, together with original Record Plus, Dilos, Fulos and Redline/ElfaPlus equipment, to be fully compliant to IEC 61439-2. When building an assembly with GE components, and using the tables and calculation methods provided by GE, the assembly manufacturer can rest assured that his end product is fully IEC 61439-2 compliant.

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