

# Low voltage switchgear MNS Light F and MNS Light SR

Catalogue 1TSC2210-EN, ed. 2



ABB LV Systems



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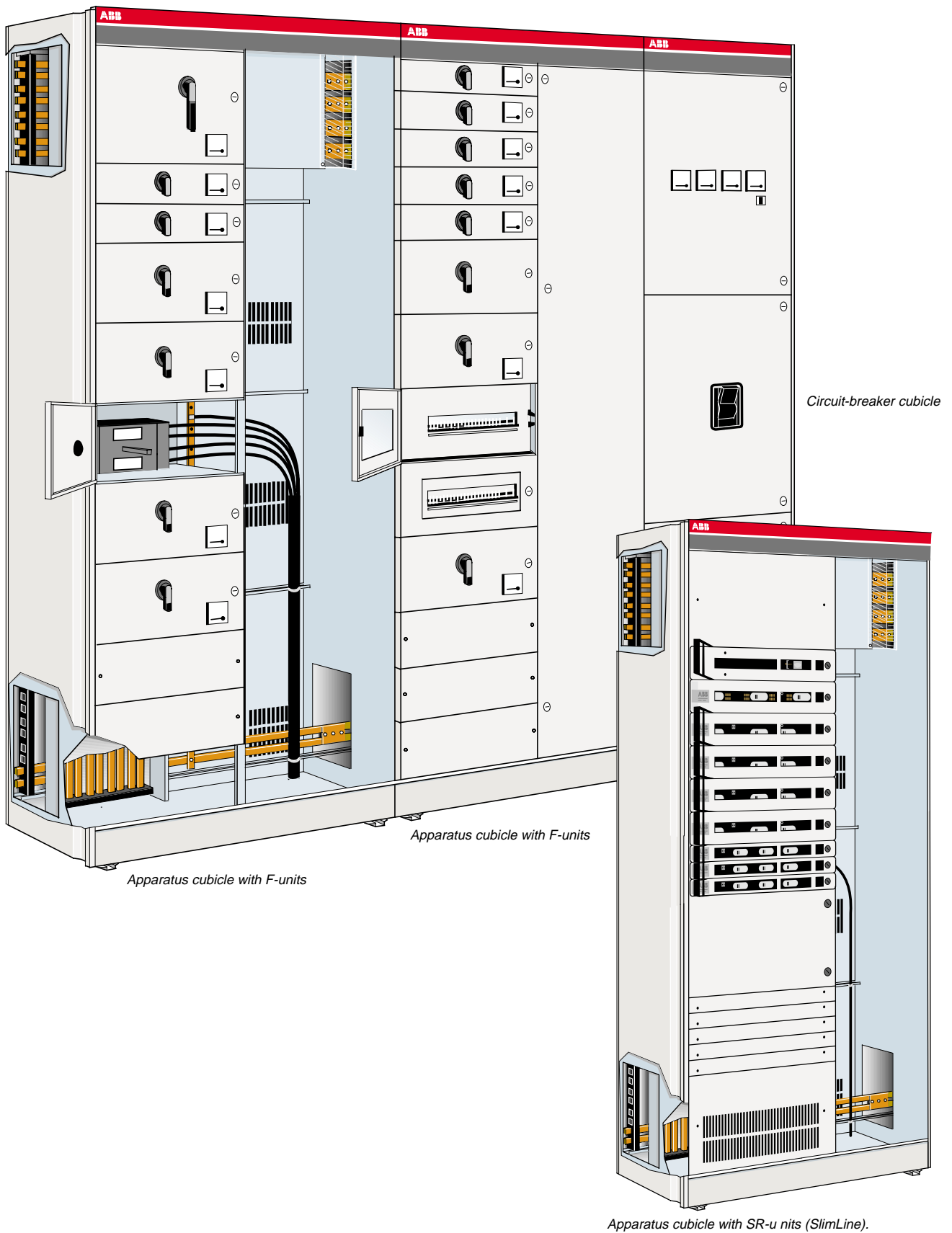
### For detailed information

Circuit-breaker Sace Emax (ACB) .....	1TSCB 649253/012 en
Circuit-breaker Sace Megamax F (ACB) .....	1TSCB TC/10/AA/10
Circuit-breaker Sace Isomax S (MCCB) .....	1TSCB 649240/011 en
Circuit-breaker Sace Limitor (MCCB) .....	Cat 2-9 6-1992
Miniature switches Stotz (MCB) .....	G STO 3041 97 S0002
Blade fuses ABB Control Oy .....	OF 1 SE 96-03
Switch-disconnector, earthing switch ABB Control Oy ....	OETL 1A GB 97-03/97-07
Switch with fuse ABB Control Oy .....	OESA 1A GB 96-12/97-08
	OESA 2A GB 97-09
Contactors, thermal overload relays .....	FRCTL 0107 97 GB
Motor cut-out MS325	
Pushbuttons, status lamps PDA	
Current limiter ProLim	
Arcing protection TVOC .....	1SFC 10015-SV and 1SFC 10016-SV

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*Design, data and dimensions may be  
subject to change without prior notice.*



# Description

MNS Light F is a modular designed, factory fitted low voltage switchgear that can be used as the main switchgear unit and sub-switchgear unit.

## Standards

MNS Light F complies with the demands set out in the international standard SS EN 60 439-1 and any other referred IEC-publications.

SS EN 60 439-1 contains a number of sections where the design shall be "as agreed between the user and the manufacturer". If no other special agreement is made, the switchgear is supplied according to ABB Installation standard.

## Operating conditions

MNS Light F is intended for installation in service rooms for electrical equipment adapted to the switchgear's protection class.

IP31-cubicles have ventilation grilles in the rear panel and roof panels. All individual distribution units always have at least IP41 protection.

IP41 cubicles are protected from contact by means of a fine mesh grille is fitted to ventilation openings.

IP54-cubicles do not have ventilation openings and all doors and top plates are sealed.

## Corrosion protection

All visible plates such as doors, end panels, rear panels, etc. are protected by a 20 µm thick layer of zinc.

Non painted panels and parts of the frame are manufactured of 1.5 mm Aluzink® which is a corrosion resistant sheet steel with a 25 µm thick zinc coating.

Anchor rails and hinges are made of zinc plated (12 µm) plate, which is the bright or yellow chromium plated.

## Mechanical design

The cubicles are based on frame sections that are bolted together.

Only the outer sides to the left or right in a row of cubicles or on an individual cubicle need to be fitted with end panels.

An extra rear panel is available as an option for IP21-cubicles, if a more attractive rear panel is required. Cubicles with protection class IP31, IP43 or IP 54 are always fitted with this rear panel.

## Modular divisions

The cubicles are divided into module heights. 1 M module = 50 mm.

## Cubicle signs

The cubicles are supplied complete with engraved legend plates on top for cubicle identification, designation plates on the withdrawable/removable units and the rating plate on the bottom of the cubicle in accordance with SS EN 60 439-1.

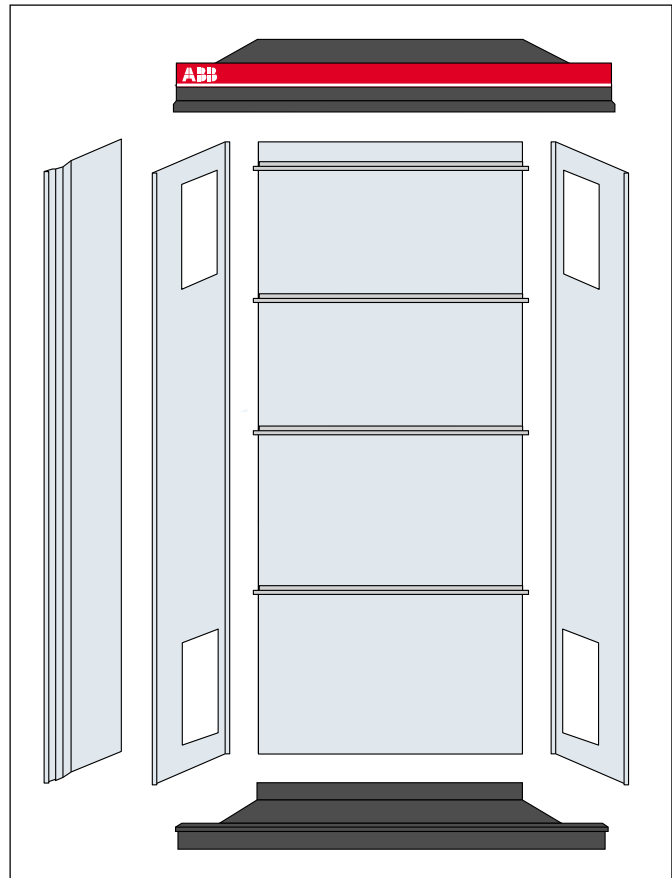
## Measurement instruments

ABB Cewe Instrument are used as measuring instruments. Sizes are 96 x 96, 72 x 72 or 48 x 48 mm depending on the height of the distribution unit.

**Voltmeters** are of the IQ - type with a selector for measuring between phases and between phases and neutral. A 3-pole MCB is supplied. Voltmeters are supplied for the measurement ranges 0–250 V, 0–500 V and 0–600 V.

**Ammeters** are fed by the current transformers and are available in two models:

- with instantaneous display (IQ)
- with combined instantaneous and maximum display (IQB).



### Protective circuit continuity

Cubicle components that have been painted are assembled using self-tapping screws that cut through the painted surface and thereby ensuring a good electrical contact.

### Busbar system

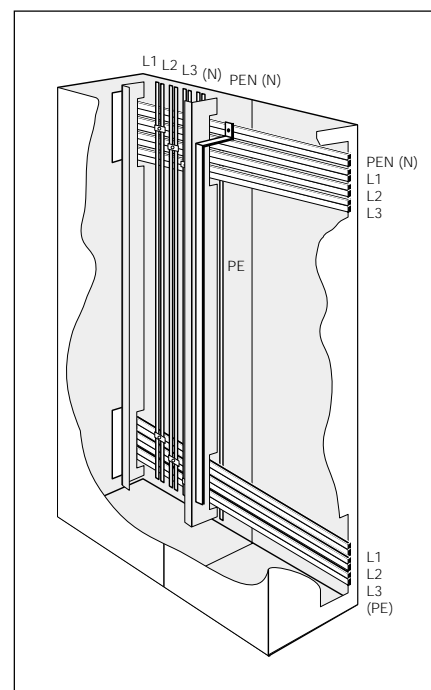
The busbar system is installed in the cubicle before delivery and consist of horizontal main busbars with neutral and protective earth busbars as well as vertical busbars.

The **horizontal busbars system** includes PEN-conductors placed in a separate area at the top of the cubicle to prevent accidental contact. A further busbar system can be placed at the bottom in F- and SR-unit cubicles. The busbars are interconnected between cubicles, which facilitates setup and the assembly of the switchgear.

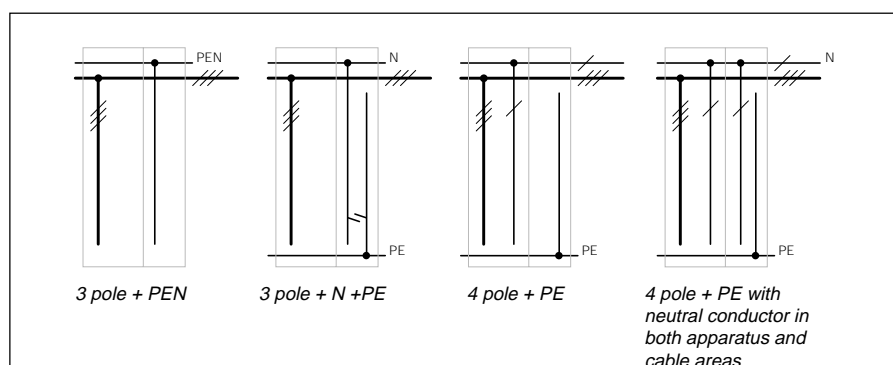
The **vertical busbar system** is available in 3 or 4 pole designs. The apparatus units are fixed to the vertical busbars using screws.

**Protective earth and neutral busbars** can be selected from the following options:

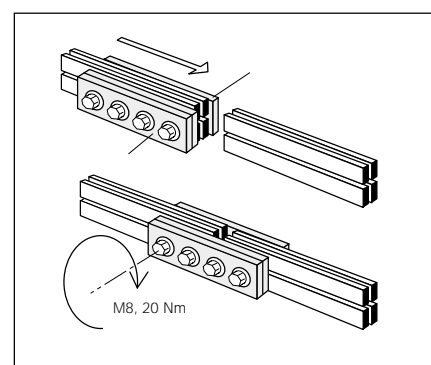
- 3 pole + PEN
- 3 pole + N + PE
- 4 pole + PE.



Busbar system in apparatus cubicle for F-units.



Protective earth and neutral busbars.



Interconnecting horizontal busbars.

### Connection to outgoing units

The main circuit's power lines are connected directly to the apparatus terminals or via cable clamps. The auxiliary circuit line is connected to one or more 10-pole terminal blocks.

The maximum connection area is stated in the MNS Light Installation manual.

### Ventilation

Heat loss from busbars and distribution units is led off by means of self-ventilation. Air enters the cubicle via intakes in the front of cubicle between the door and cubicle frame and is released through the openings on the rear panel.

### Arcing protection

The switchgear can be fitted with arcing protection against personal injury and material damage in the event of short-circuiting with arcing.

## General

ProLight is a projecting and quotation tool for MNS switchgear. It is a PC based application that minimizes manual work during projecting.

The user answers questions regarding the switchgear data and distribution objects. The application then dimensions and selects suitable switchgear modules such as circuit-breakers, starters distribution units, busbar systems, etc. based on the data and organizes them in an optimal switchgear layout.

## Easy to alter proposed layout

The computer generated switchgear layout can be easily changed by the user. For example, if a distribution unit needs to be over-dimensioned to allow future expansion this can be done with a simple command. ProLight facilitates the testing of alternative layouts. Planning a switchgear often means that several different solutions must be tried. Using ProLight it is easy to try other designs and then see the results.

## Information to be entered

**General switchgear data**, e.g. main voltage, degree of protection.

**Information about incoming supply** e.g. transformer size, demands for incoming circuit-breakers or busbar trunking units.

**Object information**, from object list or single line diagrams or the like. This is information about the object to be supplied and protected by the switchgear.

## Computer generated information

The software will automatically generate:

### Technical specification

**Block diagrams**, front-layouts and single line drawings

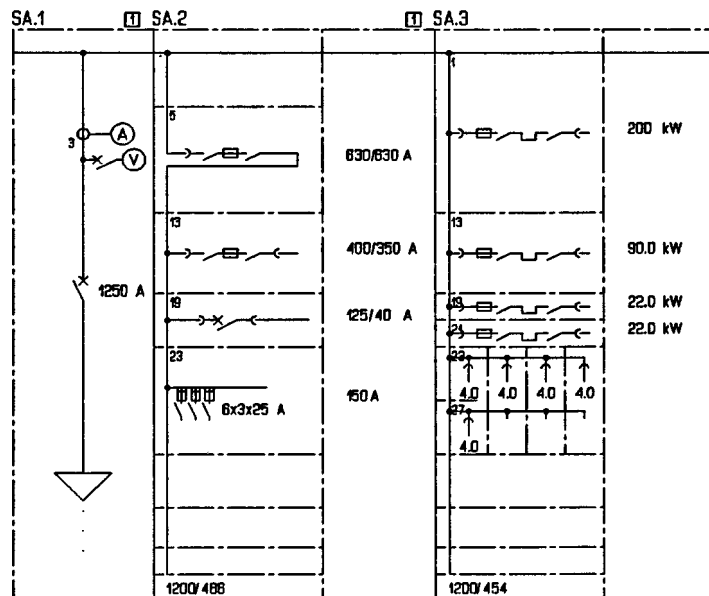
**Circuit diagrams**

### Spread worldwide

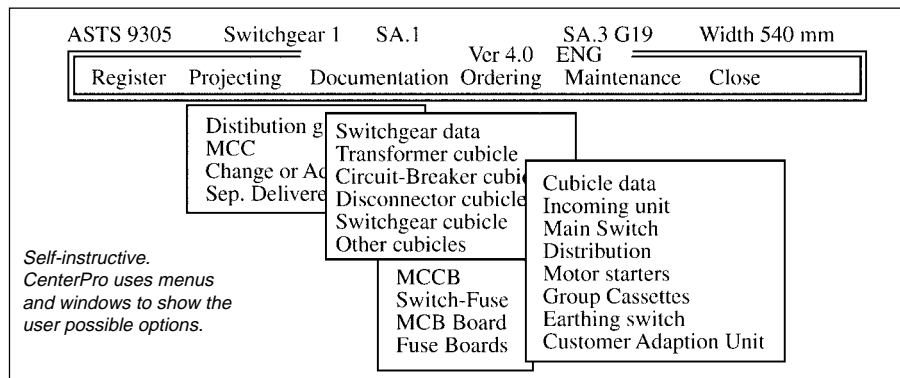
ProLight is used by electrical consultants, in large industries and utility companies as well as within the ABB group.

ProLight is supplied on diskettes with a User Manual.

Low voltage switchgear  
3/PEN, 400V 50Hz  $I_n=1250A$ ,  $I_k=35kA$ , IP31

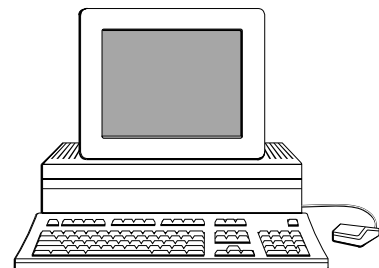


Computer generated switchgear layout based on the entered specification.



## Computer requirements

- Computer** IBM PC or compatible with INTEL 386/486 processor.
- RAM** Min. 580 kbytes available.
- Hard disk** Min 2.5 Mbytes available.
- Operating system** MS-DOS 3.3 or later.
- Graphics** EGA
- Printer** IBM-compatible graphic printer  
HPGL-compatible printer or plotter HP 7550 is required for single line drawings and circuit diagrams.



<b>Standard</b>	Type tested switchgear assemblies according to SS EN 60 439-1
<b>Test certificates</b>	ABB Laboratory, supervised by Lloyds
<b>Rated insulation voltage, busbars</b>	1000 V AC
<b>Rated operating voltage</b>	Up to 690 V AC, depending on components used
<b>Rated thermal current, busbars at 35 °C ambient temperature</b>	
IP21, IP31	Up to 1900 A
IP43, IP54	Up to 1600 A
<b>Rated short-circuit strength (1 s)</b>	35 or 50 kA
<b>Derating of distribution units at IP54</b>	10 %
<b>Environment according to SS EN 60 439-1</b>	
Ambient temperature	max. 35 °C in any 24 hour period
Relative humidity	max. 50 % at <40 °C
<b>Degree of protection according to SS EN 60 529-1</b>	
Protection class with closed door	IP21, IP31, IP 43, IP54
Protection class with open door	IP 20
Internal separation	Form 3b, Form 4a
<b>Dimensions (excl. transformer cubicle)</b>	
Height	2129 mm (39 modules)
Depth	450 mm (for circuit-breaker cubicle ACB with circuit-breaker Megamax 650 mm)
Width	500, 600, 1000 and 1200 mm
Module height	1 M = 50 mm
<b>Dimensions transformer cubicle</b>	
Height	2440 mm
Depth	1300 mm
Width	1800, 2100 mm
<b>Cubicle material</b>	Aluzink® zinc plated sheet steel, 1.5 mm
<b>Busbar material</b>	Copper and/or Exconal
<b>Surface finish</b>	
Door and external panels	Polyester based enamel: light grey RAL 7035 or as an option: light beige ASEA H Munsell 5Y 8/1
Frame, roof, inner panels	Aluzink®
<b>Installation</b>	Indoors in dry conditions or in moderate humidity levels and factors of air pollution ("Normal operating conditions" according to SS EN 60 439-1).
<b>Phase order on busbars</b>	
Horizontal	N(PEN), L1, L2, L3, N from the top downwards PE busbar is placed at the bottom of the cubicle
Vertical	L1, L2, L3, N(PEN), PE from left to right

# Transformer cubicle

## Design

The fronts of the cubicles are made up of hinged doors screwed to the frame.

The cubicles are supplied in kit form with assembly instructions. Self-tapping screws are used for assembly and require either an electric or pneumatic screwdriver.

Protection class IP21 (the cubicle is intended for placement in switchgear rooms).

## Installation configurations

A transformer cubicle equipped with busbar system can be directly connected with MNS Light F switchgear with a depth of 450 mm.

Cubicle rows can either be placed to the left or right of the transformer cubicle.

Installation is normally min. 40 mm from surrounding walls.

## Horizontal busbar system

The horizontal busbar system included in the transformer cubicle is stepped, which means the apparatus cubicles can only be connected to the left or right of the transform cubicle.

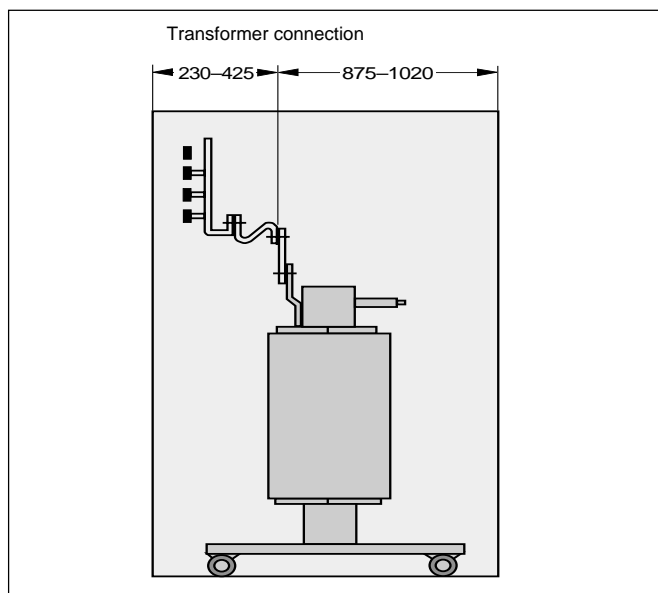
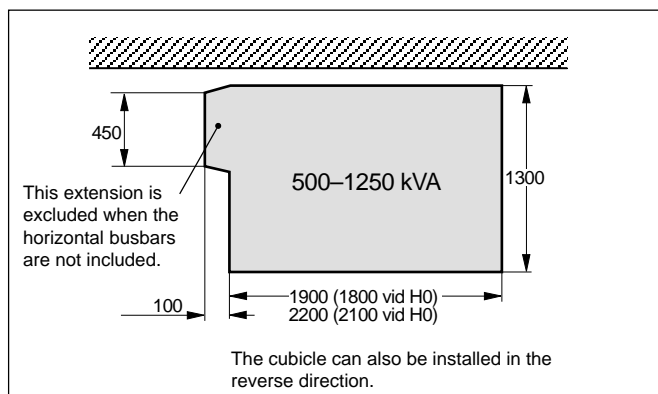
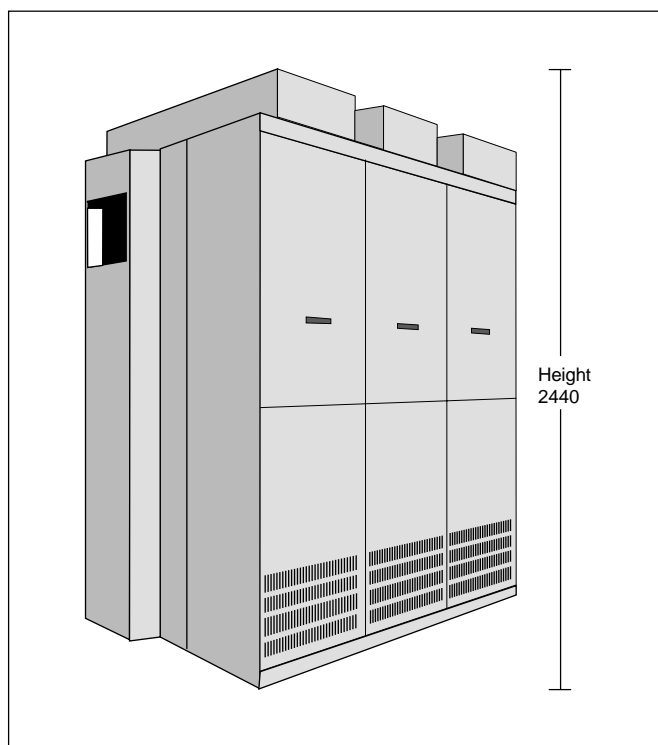
## Neutral and protection earth conductors

Horizontal neutral and protection earth conductors (PEN) are located at the top of the cubicle. Connection between the conductor and the transformer N connectors is made using RK type cables or busbars assembled on site.

Busbars for connection to PE (with 5-wire system) in the bottom of the cubicles are included.

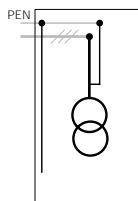
## Transformer connection bars

Down lead conductors are designed for the direct connection of ABB transformers Resiblock type DYHK10 and type TFTTK-F for 10/0.4 kV.





## Cubicle (delivered in kit form)



Width mm	Type name	For transformer type
1800	VML451-D18 <sup>1)</sup>	Lepper Resiblock type DYHK10 size 500, 630 kVA
1900	VML451-D19	Lepper Resiblock type DYHK10 size 500, 630 kVA
2100	VML451-D21 <sup>1)</sup>	Lepper Resiblock type DYHK10 size 800, 1000, 1250 kVA National Elektro type TFTTK-F size 500, 630, 800, 1000, 1250 kVA
2200	VML451-D22	Lepper Resiblock type DYHK10 size 800, 1000, 1250 kVA National Elektro type TFTTK-F size 500, 630, 800, 1000, 1250 kVA

<sup>1)</sup> Only as freestanding cubicles

## Horizontal busbar system including neutral and protective earth conductors PEN or N + PE

Rated current A	Type designation
-	-H0
1000	-H4
1250	-H4A
1600	-H5
1900	-H6

## Transformer connection bars

Rated current A	Type name	For transformer type
1250	+A4	Lepper Resiblock type DYHK10 size 500, 630, 800 kVA
1900	+A6	Lepper Resiblock type DYHK10 size 1000, 1250 kVA
1250	+A4B	National Elektro type TFTTK-F size 500, 630, 800 kVA
1900	+A6B	National Elektro type TFTTK-F size 1000, 1250 kVA

## Options

- Short-circuit strength 50 kA ..... +M9
- Bracket for contact thermometer ..... +P12

# Supply cubicle

## Design

The supply cubicle is manufactured according to SS 436 21 31, issue 2 and in collaboration with the Swedish Electricity Board.

The cubicle has space for incoming units and measurement equipment.

Protection class IP21.

## Current transformer insert

Current transformers are mounted on removable busbars and are easy to change. The space is sealed and only intended for the energy supplier's equipment. Also contains voltage fuses.

## Measurement circuit breaker

The circuit-breaker, which is a MCCB, makes up the measurement fuse and main switch. It is of the Sace Isomax type and has the following functions:

- short-circuit protection in the form of a direct magnetic overcurrent release, individually settable on each phase
- adjustable thermal overload release
- two change-over auxiliary contacts
- a shunt release
- a signal contact

The measurement circuit-breaker is available in fixed mounted and withdrawable versions. (Withdrawable to facilitate disconnection, or when both measured and unmeasured cubicles and fed from the supply and distribution cubicle.)

## Switch-fuse circuit-breaker

The incoming units consists of up to six switch-fuses with breaking on both sides of the fuse.

Connections are made from below and cables are not bent. The height of the space from the ground is more than 600 mm.

## Supply and distribution fuses

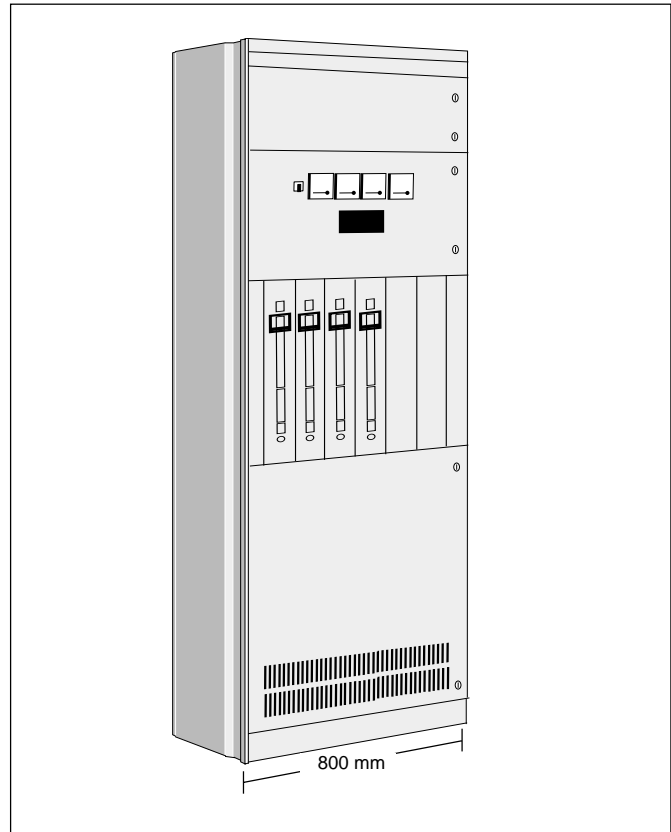
Supply fuses are changed when the unit is dead. The door for each incoming unit is interlocked with the switch and can only be opened with the switch in the closed position.



*Switch-fuse in the supply cubicle. Due to breaking on both sides fuse replacement always takes place when the unit is dead. The door is interlocked and can only be opened when the switch is in the closed position.*



*The supply cubicle has plenty of space for incoming cables.*



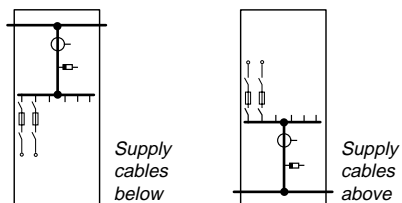
*Sealed areas for the electricity supplier's measurement transformers and voltage fuses. Withdrawable busbars mean the transformers can be retrofitted or changes.*

*Space for the main switch and instruments.*

*Space for up to six parallel incoming units with switch fuses.*

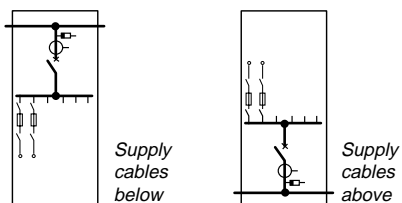
*Free space at the bottom for the connection of incoming supply and distribution cables.*

**Supply cubicle without main circuit-breaker**



Rated current A	Supply cables below Type name	Supply cables above Type name
1000	VML 412-V3-D8A	VML 412-V3-D8B
1600	VML 412-V5-D8A	VML 412-V5-D8B

**Supply cubicle with main circuit-breaker**



Rated current A	Supply cables below Type name	Supply cables above Type name
<b>Fixed main circuit-breaker</b>		
800 (320-800)	VML 412-M2-D8A	VML 412-M2-D8B
1250 (500-1250)	VML 412-M4-D8A	VML 412-M4-D8B
1600 (640-1600)	VML 412-M5-D8A	VML 412-M5-D8B
<b>Withdrawable circuit-breaker</b>		
800 (320-800)	VML 412-M2W-D8A	VML 412-M2W-D8B
1250 (500-1250)	VML 412-M4W-D8A	VML 412-M4W-D8B
1600 (640-1600)	VML 412-M5W-D8A	VML 412-M5W-D8B

**Horizontal busbar system including PEN**

Rated current A	Supply cables below Type name	Supply cables above Type name
1000	-H4	-H04
1250	-H4A	-H04A
1600	-H5	-H05
1900	-H6	-H06

**Double horizontal busbar system for connection of measured and unmeasured cubicles, including PEN**

Rated current A	Supply cables below and above Type name
2x1000	-H44
2x1250	-H44A
2x1600	-H55
2x1900	-H66

**Incoming units for separate supply**

Rated current A	Type name
250	VMLL 250-SR

**Plates for unused spaces in incoming units**

Type name
Screwed cover plate VML-TLS

**Options**

Short-circuit strength 50 kA ..... +M50	5-wire system with incoming PEN ..... +N	Parallel coupled door lock (for doors > 6M) ..... +L3
1 x incoming unit + 5 cover plates ..... +SR	5-wire system with incoming PE+N ..... +N5	Wall bracket (for assembling against wall) ..... +Z1
2 x incoming units + 4 cover plates ..... +2SR	Current and volt. measurement, instantaneous (MCB as protect., instr. 72 x 72) ..... +P2K	Lifting eyes ..... +Z2
3 x incoming units + 3 cover plates ..... +3SR	Current and volt. measurement, instant and max. reading (MCB as protect., instr. 72 x 72) ..... +P2KM	End panel, left ..... +UV
4 x incoming units + 2 cover plates ..... +4SR		End panel, right ..... +UH
5 x incoming units + 1 cover plate ..... +5SR		Extra rear panel (painted IP21) ..... +Z3
6 x incoming units ..... +6SR		Switchgear colour (Center) ..... +Beige
		Switchgear colour, (Standard) ..... +Grey

# Busbar trunking system

## Design

The busbar trunking system is used for incoming or outgoing supplies to/from the switchgear or for connecting two rows of switchgear cubicles.

The terminal unit in the switchgear is adapted to the busbar trunking system from Klöckner & Möller type LD with protection class IP30 or IP54.

The terminal unit occupies 6 M at the top of the cubicle. This area therefore cannot be equipped with distribution units.

The terminal units always have four conductors and can be used for 3 and 4-pole busbar trunking.

## PE and N conductors

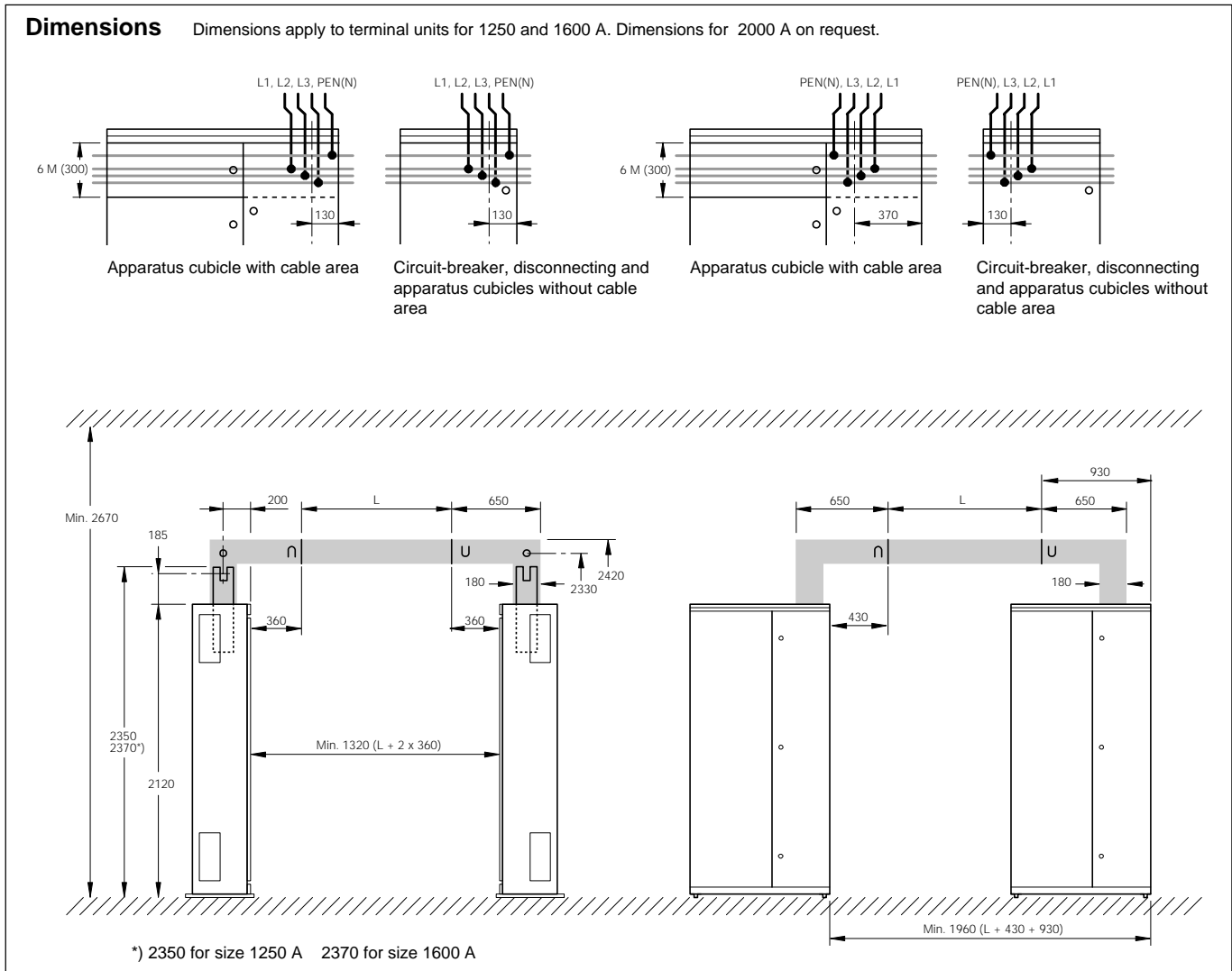
Switchgear with a common protective earth and neutral conductor (PEN) are connected via the terminal unit busbar.

In switchgear with separate N and PE busbars, the N connection is made via the terminal unit busbar while the PE conductor is made by the terminal unit and cubicle enclosures.

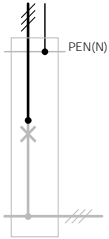
## Two types of terminal units

There are two types of terminal unit with different phase order:

- 461 with phase order from left to right.
- 462 with phase order from right to left.

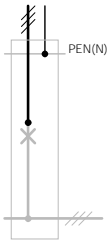


## Terminal unit for circuit-breaker cubicle (ACB)



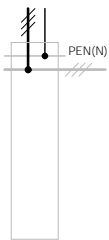
Size A	Type 461 Type name	Type 462 Type name
1250 (900 for IP54)	VML 461-G4-D6	VML 462-G4-D6
1600 (1250 for IP54)	VML 461-G5-D6	VML 462-G5-D6
2000 (1600 for IP54)	VML 461-G6-D6	VML 462-G6-D6

## Terminal unit for disconnector cubicle



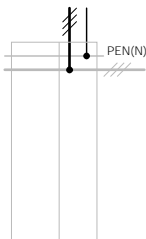
Size A	Type 461 Type name	Type 462 Type name
2000 (1600 for IP54)	VML 461-F6-D6	VML 462-F6-D6

## Terminal unit for non-equipped cubicle



Size A	Type 461 Type name	Type 462 Type name
2000 (1600 for IP54)	VML 461-H6-D5	VML 462-H6-D5

## Terminal unit for apparatus cubicle 600 + 600 mm



Size A	Type 461 Type name	Type 462 Type name
1250	VML 461-H4-D66	VML 462-H4-D66
1600	VML 461-H5-D66	VML 462-H5-D66

# Circuit-breaker cubicle ACB with circuit-breaker Megamax

## Design

The cubicles are designed for withdrawable air circuit-breakers (ACB) in sizes from 1250 to 2000 A, 3 and 4-pole versions.

## Connection options

The following connection options are available:

*Cable from below (A) or above (E).* The cubicle is equipped with cable connector and anchor rail.

*Busbar from above (B).* The cubicle has busbar terminals above the roof panel.

*Sectioning (C).* Available for supply from the right and left.

*Busbar trunking system (D).* The cubicle must be supplemented with terminal unit connector. Busbars above the circuit-breaker supplied with the terminal unit.

## Circuit-breaker

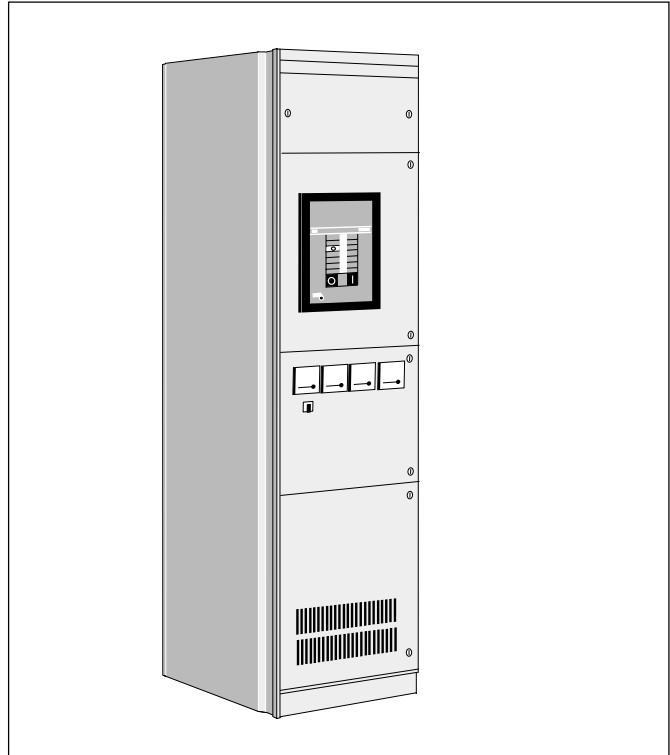
The circuit-breaker is of type ABB SACE Megamax and has a microprocessor based protection unit with the following functions:

- overload protection (L)
- selective protection against short-circuiting (S)
- instantaneous protection against short-circuiting (I)
- earth fault protection (G).

The circuit-breakers also have auxiliary contacts, shunt releases and protection from accidental contact on the auxiliary and main current circuits.

## Earth switch (option)

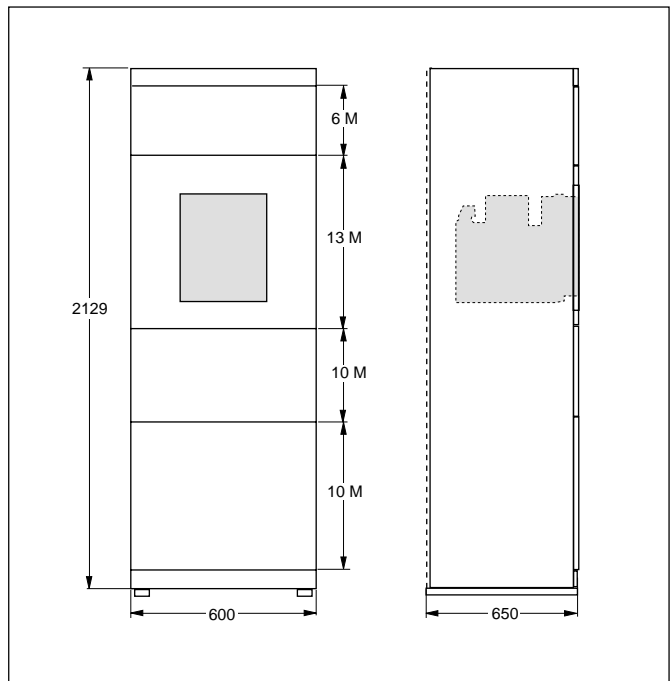
Protective earthing can be made to both the upper and lower part of the circuit-breaker using an integrated earthing switch type Strömberg OETL.



## Data for circuit-breaker cubicle ACB at 35 °C ambient temperature

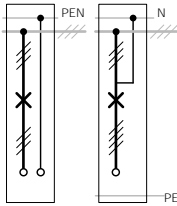
Standard	SS EN 60 947-2		
Size	1250	1600	2000
Rated current			
IP21, IP31, IP41	1250 A	1600 A	1900 A
IP43, IP54	1000 A	1250 A	1600 A

## Dimensions



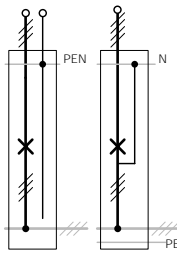
# Circuit-breaker cubicle ACB with circuit-breaker Megamax

## Circuit-breaker cubicle for cable connections from below (A), including Megamax



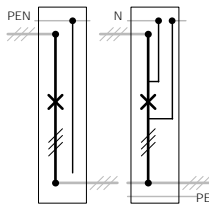
Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML422-G4A	VML422-4G4A
1600 (1250 for IP43/54)	VML422-G5A	VML422-4G5A
2000 (1600 for IP43/54)	VML422-G6A	VML422-4G6A

## Circuit-breaker for busbar connection from above (B), including Megamax



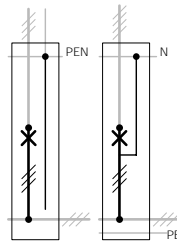
Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML422-G4B	VML422-4G4B
1600 (1250 for IP43/54)	VML422-G5B	VML422-4G5B
2000 (1600 for IP43/54)	VML422-G6B	VML422-4G6B

## Circuit-breaker for sectioning (C), including Megamax



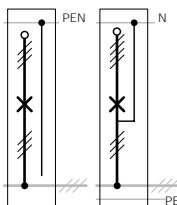
Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML422-G4C	VML422-4G4C
1600 (1250 for IP43/54)	VML422-G5C	VML422-4G5C
2000 (1600 for IP43/54)	VML422-G6C	VML422-4G6C

## Circuit-breaker for busbar trunking system connection from above (D), including Megamax



Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML422-G4D	VML422-4G4D
1600 (1250 for IP43/54)	VML422-G5D	VML422-4G5D
2000 (1600 for IP43/54)	VML422-G6D	VML422-4G6D

## Circuit-breaker for cable connection from top (E), including Megamax



Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML422-G4E	VML422-4G4E
1600 (1250 for IP43/54)	VML422-G5E	VML422-4G5E
2000 (1600 for IP43/54)	VML422-G6E	VML422-4G6E

## Horizontal busbar system including PEN

Size A	Connection from below (A) Type name	Connection from the top (B, D, E) Type name	Section- ing (C) Type name
1000 (900 for IP43/54)	-H4	-H04	-H44
1250 (1000 for IP43/54)	-H4A	-H04A	-H44A
1600 (1250 for IP43/54)	-H5	-H05	-H55
1900 (1600 for IP43/54)	-H6	-H06	-H66

# Circuit-breaker cubicle ACB with circuit-breaker Megamax

## Option

Short-circuit strength 50 kA .....	+M50
Isolated neutral conductor for 3-pole breaker .....	+N
Earth switch under breaker .....	+E2
Earth switch above breaker .....	+E3
Earth switch under and over breaker .....	+E23
Auxiliary contacts for earth switch .....	always included
Interlocking magnet for earth switch .....	+A3F
Pushbutton and status lamp for tripping of high voltage circuit-breaker .....	+S3

### Current measurement

With 1 current transformer .....	+P2A
With 3 current transformers .....	+P2B
With 1 instantaneous A-meter .....	+P2D
With 1 instant. and max. reading A-meter .....	+P2DM
With 3 instantaneous A-meters .....	+P2E
With 3 instant. and max. reading A-meters .....	+P2EM
Multi-operation instrument .....	+P2V
Measurement converter for 1 phase .....	+P3A
Measurement converter for 3 phase .....	+P3B
Extra current transformer phase L1 .....	+P4A
Kwh-meter symmetrical read .....	+P20A
Kwh-meter unsymmetrical read .....	+P20B

### Voltage measurement for 3-wire system

#### without neutral

3 fuses .....	+P5A
3 fuses, V-meter and phase to phase switch .....	+P5D
3-pole MCB <sup>1)</sup> .....	+P5E
3-pole MCB, V-meter and phase to phase switch <sup>1)</sup> .....	+P5F
3 extra fuses .....	+P6A
Extra 3-pole MCB <sup>1)</sup> .....	+P6E
3 fuses, V-meter and phase to phase switch under breaker .....	+P6D
3-pole MCB, V-meter and phase to phase switch under breaker <sup>1)</sup> .....	+P6F
3 fuses, 2-pole V-meter without phase to phase switch .....	+P6G
3-pole MCB, 2-pole V-meter without switch .....	+P6H

### Voltage measurement for 4-wire and 3-wire system

#### with neutral

3 fuses .....	+P5AN
3 fuses, V-meter and phase to phase switch .....	+P5DN
3-pole MCB <sup>1)</sup> .....	+P5EN
3-pole MCB, V-meter and phase to phase switch <sup>1)</sup> .....	+P5FN
3 extra fuses .....	+P6AN
Extra 3-pole MCB <sup>1)</sup> .....	+P6EN
3 fuses, V-meter and phase to phase switch under breaker .....	+P6DN
3-pole MCB, V-meter and phase to phase switch under breaker <sup>1)</sup> .....	+P6FN

<sup>1)</sup> Specify voltage 400 or 500 V

### Options for cubicle

Parallel coupled locks .....	+L3
Protection class IP 31 .....	+IP31
Protection class IP 41 .....	+IP41
Protection class IP 43 .....	+IP43
Protection class IP 54 .....	+IP54
Wall mounting .....	+Z1
Lifting eyes .....	+Z2
Extra rear panel for IP 21, enamelled .....	+Z3
(always included with IP31, IP41, IP43 and IP54)	
End panels left .....	+UV
End panels right .....	+UH
Cubicle heater 100 W with thermostat .....	+B2
Switchgear colour, standard .....	+Grey
Switchgear colour, Center .....	+Beige

### Options for circuit-breaker

Control unit .....	+E2A
Dialogue unit .....	+E2B
Undervoltage protection instantaneous release (110 V DC/110 V AC/220 V AC) .....	+F2A
Undervoltage protection with fixed time delay of 0.5 s (110 V DC/110 V AC/220 V AC) .....	+F2B
Motor actuator and starter (110 V DC/110 V AC/220 V AC) .....	+G2
Release indicator, electrical + mechanical (electrical always included in +E2A) .....	+I4
Counter (always included in +E2A) .....	+I5
Lock for pushbuttons .....	+L4



# Circuit-breaker cubicle ACB for circuit-breaker Emax

## Design

The cubicles are designed for withdrawable air circuit-breakers (ACB) in sizes from 1250 to 2000 A, 3 and 4-pole versions.

## Connection options

The following connection options are available:

*Cable from below (A) or above (E).* The cubicle is equipped with cable connector and anchor rail.

*Busbar from above (B).* The cubicle has busbar terminals above the roof panel.

*Sectioning (C).* Available for supply from the right and left.

*Busbar trunking system (D).* The cubicle must be supplemented with terminal unit connector. Busbars above the circuit-breaker supplied with the terminal unit.

## Circuit-breaker

The circuit-breaker is of type ABB SACE Emax and has a microprocessor based protection unit with the following functions:

- overload protection (L)
- selective protection against short-circuiting (S)
- instantaneous protection against short-circuiting (I)
- earth fault protection (G).

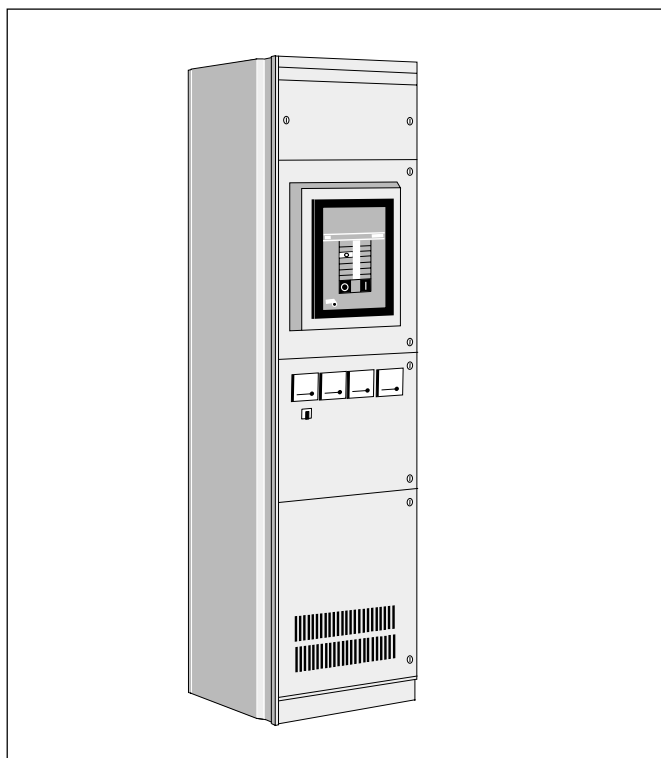
The circuit-breakers also have auxiliary contacts, shunt releases and protection from accidental contact on the auxiliary and main current circuits.

## Earth switch (option)

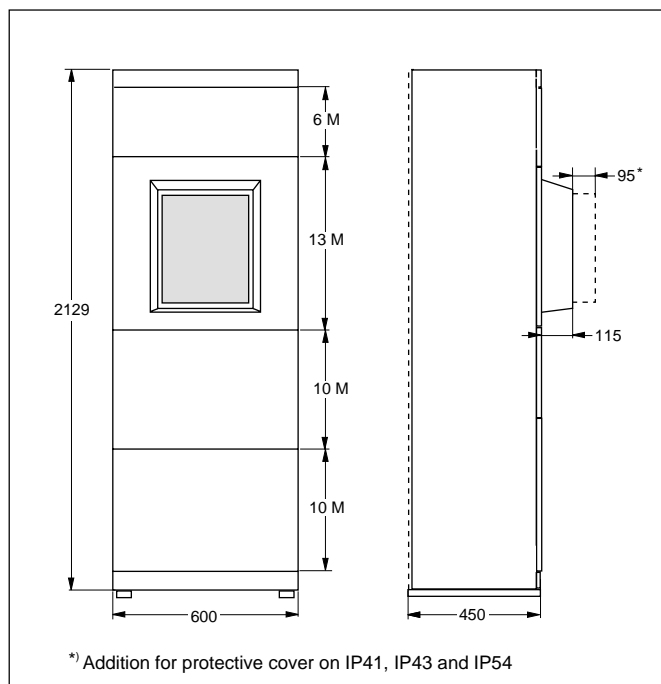
Protective earthing can be made to both the upper and lower part of the circuit-breaker using an integrated earthing switch type Strömberg OETL.

## Data for circuit-breaker cubicle ACB at 35 °C ambient temperature

Standard	SS EN 60 947-2		
Circuit-breaker type	E1B12 E2N12	E2B16 E2N16	E2B20 E2N20
Rated current			
IP21, IP31, IP41	1250 A	1600 A	1900 A
IP43, IP54	1000 A	1250 A	1600 A

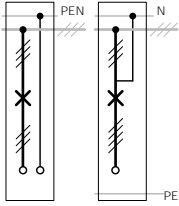


## Dimensions



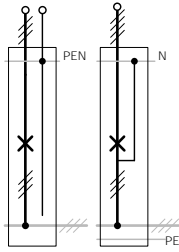
# Circuit-breaker cubicle ACB for circuit-breaker Emax

## Circuit-breaker cubicle for cable connection from below (A)



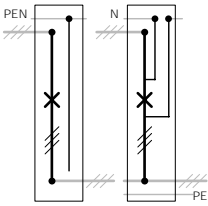
For circuit-breaker		3-pole	4-pole
Type	Rated current, A	Type name	Type name
E1	1250 (1000 for IP43/IP54)	VML422-E3A	VML422-4E3A
E2	1250 (1000 for IP43/IP54)	VML422-E4A	VML422-4E4A
E2	1600 (1250 for IP43/IP54)	VML422-E5A	VML422-4E5A
E2	1900 (1600 for IP43/IP54)	VML422-E6A	VML422-4E6A

## Circuit-breaker cubicle for busbar connection from above (B)



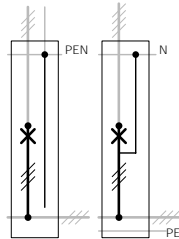
For circuit-breaker		3-pole	4-pole
Type	Rated current, A	Type name	Type name
E1	1250 (1000 for IP43/IP54)	VML422-E3B	VML422-4E3B
E2	1250 (1000 for IP43/IP54)	VML422-E4B	VML422-4E4B
E2	1600 (1250 for IP43/IP54)	VML422-E5B	VML422-4E5B
E2	1900 (1600 for IP43/IP54)	VML422-E6B	VML422-4E6B

## Circuit-breaker cubicle for sectioning (C)



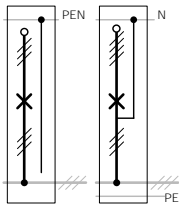
For circuit-breaker		3-pole	4-pole
Type	Rated current, A	Type name	Type name
E1	1250 (1000 for IP43/IP54)	VML422-E3C	VML422-4E3C
E2	1250 (1000 for IP43/IP54)	VML422-E4C	VML422-4E4C
E2	1600 (1250 for IP43/IP54)	VML422-E5C	VML422-4E5C
E2	1900 (1600 for IP43/IP54)	VML422-E6C	VML422-4E6C

## Circuit-breaker cubicle for busbar trunking system from above (D)



For circuit-breaker		3-pole	4-pole
Type	Rated current, A	Type name	Type name
E1	1250 (1000 for IP43/IP54)	VML422-E3D	VML422-4E3D
E2	1250 (1000 for IP43/IP54)	VML422-E4D	VML422-4E4D
E2	1600 (1250 for IP43/IP54)	VML422-E5D	VML422-4E5D
E2	1900 (1600 for IP43/IP54)	VML422-E6D	VML422-4E6D

## Circuit-breaker cubicle for cable connection from above (E)



For circuit-breaker		3-pole	4-pole
Type	Rated current, A	Type name	Type name
E1	1250 (1000 for IP43/IP54)	VML422-E3E	VML422-4E3E
E2	1250 (1000 for IP43/IP54)	VML422-E4E	VML422-4E4E
E2	1600 (1250 for IP43/IP54)	VML422-E5E	VML422-4E5E
E2	1900 (1600 for IP43/IP54)	VML422-E6E	VML422-4E6E

## Horizontal busbar system including PEN

Size	Connection from below (A) Type name	Connection from above (B, D, E) Type name	Sectioning (C) Type name
A			
1000 (900 for IP43/54)	-H4	-H04	-H44
1250 (1000 for IP43/54)	-H4A	-H04A	-H44A
1600 (1250 for IP43/54)	-H5	-H05	-H55
1900 (1600 for IP43/54)	-H6	-H06	-H66

# Circuit-breaker cubicle ACB for circuit-breaker Emax

## Circuit breaker type Emax, 3-pole

Breaker type	Protection	Breaking capacity 415/500/690 V [kA]	Rated current [A]	Type name
E1B12	PR111/P	36/36/36	1250	+E1B12PR111LSIG
		36/36/36	1250	+E1B12PR111LSI
		36/36/36	1250	+E1B12PR111LI
E1B12	PR112/P	36/36/36	1250	+E1B12PR112LSIG
		36/36/36	1250	+E1B12PR112LSI
E2N12	PR111/P	65/55/55	1250	+E2N12PR111LSIG
		65/55/55	1250	+E2N12PR111LSI
		65/55/55	1250	+E2N12PR111LI
E2N12	PR112/P	65/55/55	1250	+E2N12PR112LSIG
		65/55/55	1250	+E2N12PR112LSI
E2B16	PR111/P	40/36/36	1600	+E2B16PR111LSIG
		40/36/36	1600	+E2B16PR111LSI
		40/36/36	1600	+E2B16PR111LI
E2B16	PR112/P	40/36/36	1600	+E2B16PR112LSIG
		40/36/36	1600	+E2B16PR112LSI
E2N16	PR111/P	65/55/55	1600	+E2N16PR111LSIG
		65/55/55	1600	+E2N16PR111LSI
		65/55/55	1600	+E2N16PR111LI
E2N16	PR112/P	65/55/55	1600	+E2N16PR112LSIG
		65/55/55	1600	+E2N16PR112LSI
E2B20	PR111/P	40/36/36	2000	+E2B20PR111LSIG
		40/36/36	2000	+E2B20PR111LSI
		40/36/36	2000	+E2B20PR111LI
E2B20	PR112/P	40/36/36	2000	+E2B20PR112LSIG
		40/36/36	2000	+E2B20PR112LSI
E2N20	PR111/P	65/55/55	2000	+E2N20PR111LSIG
		65/55/55	1600	+E2N20PR111LSI
		65/55/55	1600	+E2N20PR111LI
E2N20	PR112/P	65/55/55	1600	+E2N20PR112LSIG
		65/55/55	1600	+E2N20PR112LSI

## Circuit-breaker type Emax, 4-pole

Breaker type	Protection	Breaking capacity 415/500/690 V [kA]	Rated current [A]	Type name
E1B12	PR111/P	40/36/36	1250	+E1B12PR111LSIG
		40/36/36	1250	+E1B12PR111LSI
		40/36/36	1250	+E1B12PR111LI
E1B12	PR112/P	40/36/36	1250	+E1B12PR112LSIG
		40/36/36	1250	+E1B12PR112LSI
E2N12	PR111/P	65/55/55	1250	+E2N12PR111LSIG
		65/55/55	1250	+E2N12PR111LSI
		65/55/55	1250	+E2N12PR111LI
E2N12	PR112/P	65/55/55	1250	+E2N12PR112LSIG
		65/55/55	1250	+E2N12PR112LSI
E2B16	PR111/P	40/36/36	1600	+E2B16PR111LSIG
		40/36/36	1600	+E2B16PR111LSI
		40/36/36	1600	+E2B16PR111LI
E2B16	PR112/P	40/36/36	1600	+E2B16PR112LSIG
		40/36/36	1600	+E2B16PR112LSI
E2N16	PR111/P	65/55/55	1600	+E2N16PR111LSIG
		65/55/55	1600	+E2N16PR111LSI
		65/55/55	1600	+E2N16PR111LI
E2N16	PR112/P	65/55/55	1600	+E2N16PR112LSIG
		65/55/55	1600	+E2N16PR112LSI
E2B20	PR111/P	40/36/36	2000	+E2B20PR111LSIG
		40/36/36	2000	+E2B20PR111LSI
		40/36/36	2000	+E2B20PR111LI
E2B20	PR112/P	40/36/36	2000	+E2B20PR112LSIG
		40/36/36	2000	+E2B20PR112LSI
E2N20	PR111/P	65/55/55	2000	+E2N20PR111LSIG
		65/55/55	1600	+E2N20PR111LSI
		65/55/55	1600	+E2N20PR111LI
E2N20	PR112/P	65/55/55	1600	+E2N20PR112LSIG
		65/55/55	1600	+E2N20PR112LSI

# Circuit-breaker cubicle ACB for circuit-breaker Emax

## Options

Short-circuit strength 50 kA .....	+M50
5-wire system with incoming PEN .....	+N
5-wire system with incoming PE+N .....	+N5
Earth switch under breaker .....	+E2
Earth switch above breaker .....	+E3
Earth switch under and above breaker .....	+E23
Auxiliary contacts for earth switch .....	always included
Interlocking magnet for earth switch .....	+A3F
Pushbutton and status lamp for tripping of high voltage circuit-breaker .....	+S3

### Current measurement

With 1 current transformer .....	+P2A
With 3 current transformers .....	+P2B
With 1 instantaneous A-meter .....	+P2D
With 1 instant. and max. reading A-meter .....	+P2DM
With 3 instantaneous A-meters .....	+P2E
With 3 instant. and max. reading A-meters .....	+P2EM
Multi-operation instrument .....	+P2V
Measurement converter for 1 phase .....	+P3A
Measurement converter for 3 phase .....	+P3B
Extra current transformer phase L1 .....	+P4A
Kwh-meter symmetrical read .....	+P20A
Kwh-meter unsymmetrical read .....	+P20B

### Voltage measurement for 3-wire system without neutral

3 fuses .....	+P5A
3 fuses, V-meter and phase to phase switch .....	+P5D
3-pole MCB <sup>1)</sup> .....	+P5E
3-pole MCB, V-meter and phase to phase switch <sup>1)</sup> .....	+P5F
3 extra fuses .....	+P6A
Extra 3-pole MCB <sup>1)</sup> .....	+P6E
3 fuses, V-meter and phase to phase switch under breaker .....	+P6D
3-pole MCB, V-meter and phase to phase switch under breaker <sup>1)</sup> .....	+P6F
3 fuses, 2-pole V-meter without phase to phase switch .....	+P6G
3-pole MCB, 2-pole V-meter without switch .....	+P6H

### Voltage measurement for 4-wire and 3-wire system with neutral

3 fuses .....	+P5AN
3 fuses, V-meter and phase to phase switch .....	+P5DN
3-pole MCB <sup>1)</sup> .....	+P5EN
3-pole MCB, V-meter and phase to phase switch <sup>1)</sup> .....	+P5FN
3 extra fuses .....	+P6AN
Extra 3-pole MCB <sup>1)</sup> .....	+P6EN
3 fuses, V-meter and phase to phase switch under breaker .....	+P6DN
3-pole MCB, V-meter and phase to phase switch under breaker <sup>1)</sup> .....	+P6FN

<sup>1)</sup> Specify voltage 400 or 500 V

### Options for cubicle

Parallel coupled locks .....	+L3
Protection class IP 31 .....	+IP31
Protection class IP 41 .....	+IP41
Protection class IP 43 .....	+IP43
Protection class IP 54 .....	+IP54
Wall mounting .....	+Z1
Lifting eyes .....	+Z2
Extra rear panel for IP 21, enamelled .....	+Z3
(always included with IP31, IP41, IP43 and IP54)	
End panels left .....	+UV
End panels right .....	+UH
Cubicle heater 100 W with thermostat .....	+B2
Switchgear colour, standard .....	+Grey
Switchgear colour, Center .....	+Beige

### Options for circuit-breaker

Undervoltage protection instantaneous release (110 - 115 V AC/DC, 220 - 230 V AC/DC) .....	+F2A
Undervoltage protection with fixed time delay of 0.5 - 3 s (110 - 115 V AC/DC, 220 - 230 V AC/DC) .....	+F2B
Shunt release 110 - 115 V AC/DC, 220 - 230 V AC/DC .....	+F5
Motor actuator and closing coil (110 - 115 V AC/DC, 220 - 230 V AC/DC) .....	+G2
Release indicator, electric + mechanical .....	+I4
Counter (always included in PR112) .....	+I5
Lock for pushbuttons .....	+L4
Key lock and padlock fittings, cassette mode .....	+L5
10 auxiliary contacts (not with PR112) .....	+I7A
15 auxiliary contacts (outside breaker) .....	+I7B
Cassette mode contact .....	+I6

# Circuit-breaker cubicle MCCB

## Design

The cubicle is designed for withdrawable or fixed mounted circuit-breakers (MCCB) in sizes from 630 to 1600 A, 3 and 4-pole versions.

The cubicle has three doors:

- the upper door has space for measurement instruments that are available as an option.
- the middle door covers the circuit-breaker and terminal blocks.
- the lower door covers the cable connections for the cubicle with cables from below.

## Connection options

The following connection options are available:

*Cable from below (A) or above (E).* The cubicle is equipped with cable connector and anchor rail.

*Busbar from above (B).* The cubicle has busbar terminals above the roof panel.

*Sectioning (C).* Available for supply from the right and left.

*Busbar trunking system (D).* The cubicle must be supplemented with terminal unit connector. Busbars above the circuit-breaker supplied with the terminal unit.

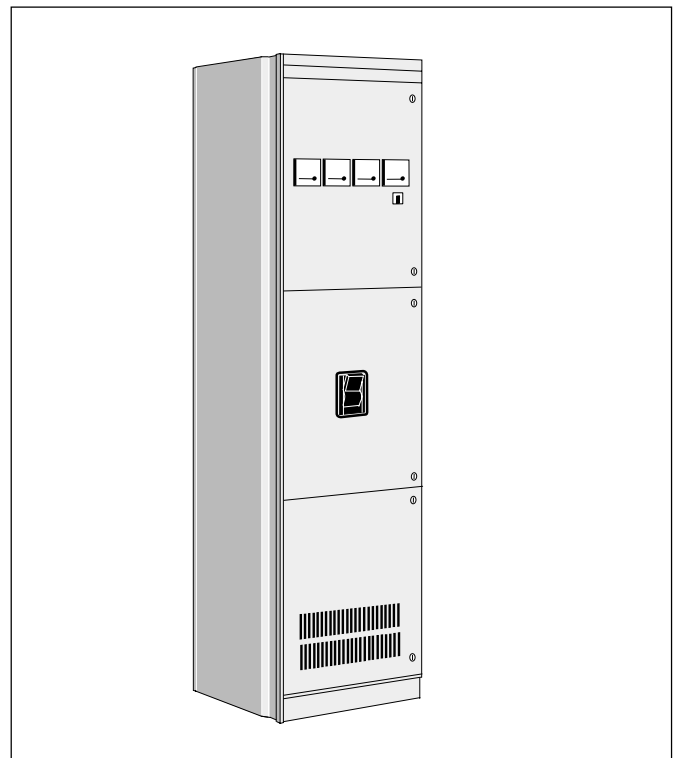
## Circuit-breaker

The circuit-breaker is a MCCB of type ABB SACE Isomax and has the following functions:

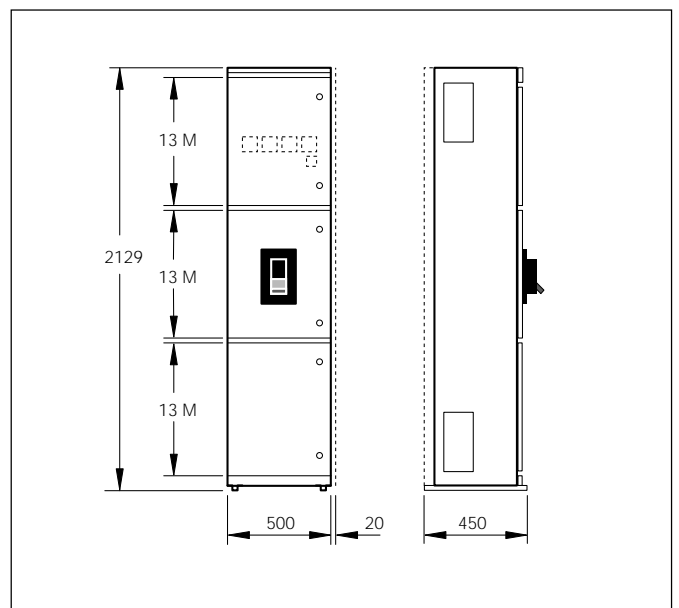
- short-circuit protection in the form of a direct magnetic overcurrent release, individually settable on each phase
- adjustable thermal overload release
- two change-over auxiliary contacts
- a shunt release
- a signal contact

## Earth switch (option)

Protective earthing can be made to both the upper and lower part of the circuit-breaker using an integrated earthing switch type Strömberg OETL.



## Dimensions

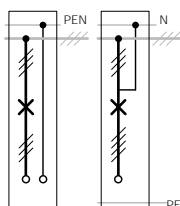


## Data for circuit-breaker cubicle MCCB at 35 °C ambient temperature

Standard	SS EN 60 947-2			
Size	630	800	1250	1600
Rated current				
IP 21, IP31, IP 41	630 A	800 A	1250 A	1600 A
IP 43, IP54	500 A	630 A	1000 A	1250 A

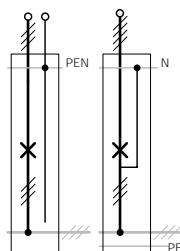
# Circuit-breaker cubicle MCCB

## Circuit-breaker cubicle MCCB for cable connections from below (A), including circuit-breaker Isomax



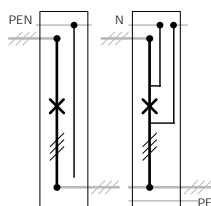
Size	Fixed breaker 3-pole Type name	Fixed breaker 4-pole Type name	Withdraw. breaker 3-pole Type name	Withdraw. breaker 4-pole Type name
A				
630 (500 for IP43/54)	VML441-M2A	VML441-4M3A	VML442-M2A	VML442-4M2A
800 (630 for IP43/54)	VML441-M3A	VML441-4M3A	VML442-M3A	VML442-4M3A
1250 (1000 for IP43/54)	VML441-M4A	VML441-4M4A	VML442-M4A	VML442-4M4A
1600 (1250 for IP43/54)	VML441-M5A	VML441-4M5A	VML442-M5A	VML442-4M5A

## Circuit-breaker cubicle MCCB for busbar connection from above (B), including circuit-breaker Isomax



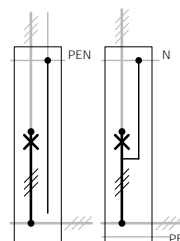
Size	Fixed breaker 3-pole Type name	Fixed breaker 4-pole Type name	Withdraw. breaker 3-pole Type name	Withdraw. breaker 4-pole Type name
A				
630 (500 for IP43/54)	VML441-M2B	VML441-4M3B	VML442-M2B	VML442-4M2B
800 (630 for IP43/54)	VML441-M3B	VML441-4M3B	VML442-M3B	VML442-4M3B
1250 (1000 for IP43/54)	VML441-M4B	VML441-4M4B	VML442-M4B	VML442-4M4B
1600 (1250 for IP43/54)	VML441-M5B	VML441-4M5B	VML442-M5B	VML442-4M5B

## Circuit-breaker cubicle MCCB for sectioning (C), including circuit-breaker Isomax



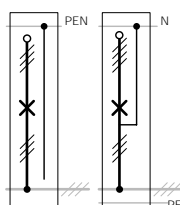
Size	Fixed breaker 3-pole Type name	Fixed breaker 4-pole Type name	Withdraw. breaker 3-pole Type name	Withdraw. breaker 4-pole Type name
A				
1250 (1000 for IP43/54)	VML441-M4C	VML441-4M4C	VML442-M4C	VML442-4M4C
1600 (1250 for IP43/54)	VML441-M5C	VML441-4M5C	VML442-M5C	VML442-4M5C

## Circuit-breaker cubicle MCCB for busbar trunking from above (D)



Size	Fixed breaker 3-pole Type name	Fixed breaker 4-pole Type name	Withdraw. breaker 3-pole Type name	Withdraw. breaker 4-pole Type name
A				
1250 (1000 for IP43/54)	VML441-M4D	VML441-4M4D	VML442-M4D	VML442-4M4D
1600 (1250 for IP43/54)	VML441-M5D	VML441-4M5D	VML442-M5D	VML442-4M5D

## Circuit-breaker cubicle ACB for cable connections from above (E)



Size	Fixed breaker 3-pole Type name	Fixed breaker 4-pole Type name	Withdraw. breaker 3-pole Type name	Withdraw. breaker 4-pole Type name
A				
630 (500 for IP43/54)	VML441-M2E	VML441-4M3E	VML442-M2E	VML442-4M2E
800 (630 for IP43/54)	VML441-M3E	VML441-4M3E	VML442-M3E	VML442-4M3E
1250 (1000 for IP43/54)	VML441-M4E	VML441-4M4E	VML442-M4E	VML442-4M4E
1600 (1250 for IP43/54)	VML441-M5E	VML441-4M5E	VML442-M5E	VML442-4M5E

## Horizontal busbar system including PEN

Size	Busbar system above (A) Type name	Busbar system below (B, D, E) Type name	Busbar system above and below (C) Type name
A			
1000 (900 for IP43/54)	-H4	-H04	-H44
1250 (1000 for IP43/54)	-H4A	-H04A	-H44A
1600 (1250 for IP43/54)	-H5	-H05	-H55
1900 (1600 for IP43/54)	-H6	-H06	-H66

## Options

Short-circuit strength 50 kA .....	+M50
5-wire system with incoming PEN .....	+N
5-wire system with incoming PE+N .....	+N5
Earth switch under breaker .....	+E2
Earth switch above breaker .....	+E3
Earth switch under and above breaker .....	+E23
Auxiliary contacts for earth switch .....	always included
Interlocking magnet for earth switch .....	+A3F
Pushbutton and status lamp for tripping of high voltage circuit-breaker .....	+S3
Multi-operation instrument VIPD .....	+P2V
Current and voltage measurement with instantaneous A-meter with MCB <sup>1)</sup> .....	+P2K
Current and voltage measurement with instantaneous and max. reading A-meter with MCB <sup>1)</sup> .....	+P2KM
Parallel coupled locks .....	+L3
Protection class IP 31 .....	+IP31
Protection class IP 41 .....	+IP41
Protection class IP 43 .....	+IP43
Protection class IP 54 .....	+IP54
Wall mounting .....	+Z1
Lifting eyes .....	+Z2
Extra rear panel for IP 21, enamelled .....	+Z3
(always included with IP31, IP41, IP43 and IP54)	
End panels left .....	+UV
End panels right .....	+UH
Cubicle heater 100 W with thermostat .....	+B2
Switchgear colour, standard .....	+Grey
Switchgear colour, Center .....	+Beige
<b>Options for circuit-breaker</b>	
Motor actuator .....	+G2
Shunt release .....	+SH
Undervoltage release .....	+U

<sup>1)</sup> Specify the voltage 400 or 500 V

# Disconnecter cubicle

## Design

The cubicle is available in two sizes from 1250 to 2000 A in 3 and 4-pole versions.

The cubicle has three doors:

- the upper door has space for measurement instruments that are available as an option.
- the middle door covers the disconnector and terminal blocks.
- the lowest door covers the cable connections for the cubicle with cable connection from below.

## Connection options

The following connection options are available:

*Cable from below (A) or above (E).* The cubicle is equipped with cable connector and anchor rail.

*Busbar from above (B).* The cubicle has busbar terminals above the roof panel.

*Sectioning (C).* Available for supply from the right and left.

*Busbar trunking system (D).* The cubicle must be supplemented with terminal unit connector. Busbars above the circuit-breaker supplied with the terminal unit.

## Disconnecter

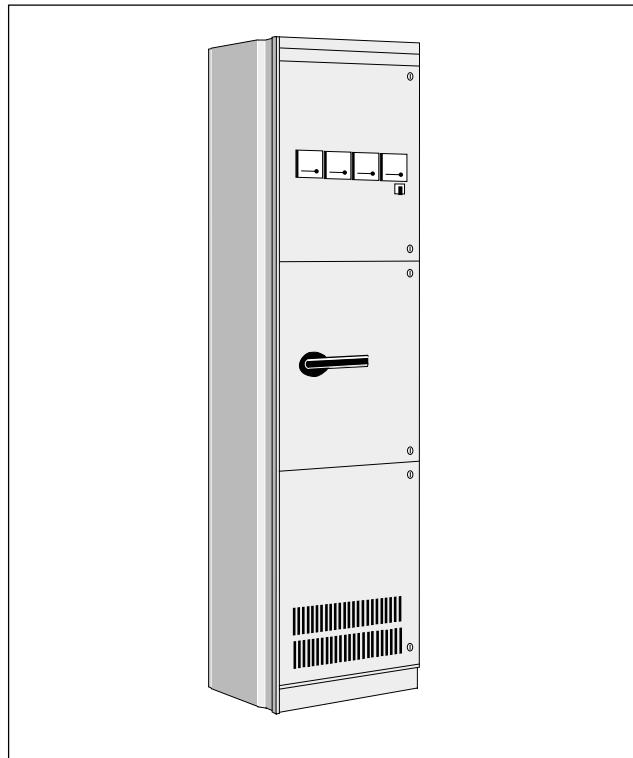
Fixed mounted disconnector type ABB Strömberg OETL.

The disconnector has one opening and one closing auxiliary contact.

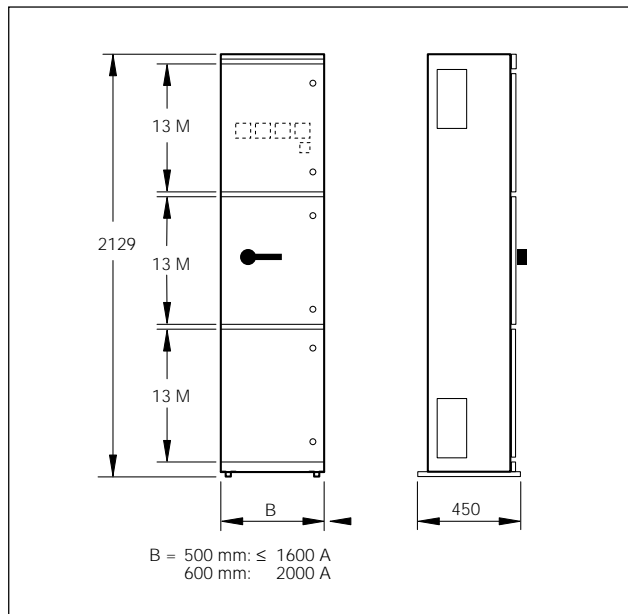
The cubicle is interlocked so that the door cannot be opened when the disconnector is closed. Consequently, the door must be closed to operate the disconnector.

## Earth switch (option)

Protective earthing can be made to both the upper and lower part of the circuit-breaker using an integrated earthing switch type Strömberg OETL.



## Dimensions

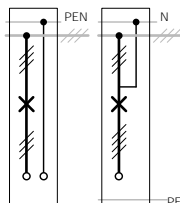


## Data for disconnector cabinet at 35 °C ambient temperature

Standard	SS EN 60 947-2		
Size	1250	1600	2000
Rated current			
IP 21, IP 31, IP 41	1250 A	1600 A	1900 A
IP 43, IP54	900 A	1250 A	1600 A
Making capacity	105 kA	105 kA	105 kA
Short-circuit strength, 1 s	50 kA	50 kA	50 kA
Breaking capacity of auxiliary contact			
AC 220 V: 6 A			
DC 220 V: 0.7 A			

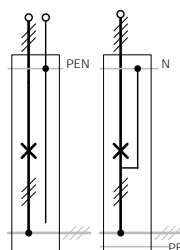


## Disconnecter cubicle for cable connections from below (A)



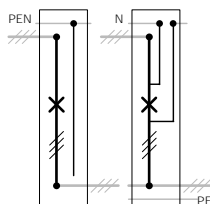
Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML431-F4A	VML431-4F4A
1600 (1250 for IP43/54)	VML431-F5A	VML431-4F5A
2000 (1600 for IP43/54)	VML431-F6A	VML431-4F6A

## Disconnecter cubicle for busbar connections from above (B)



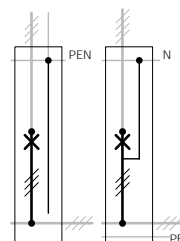
Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML431-F4B	VML431-4F4B
1600 (1250 for IP43/54)	VML431-F5B	VML431-4F5B
2000 (1600 for IP43/54)	VML431-F6B	VML431-4F6B

## Disconnecter cubicle for sectioning (C)



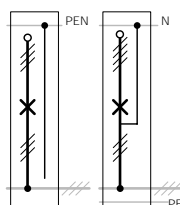
Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML431-F4C	VML431-4F4C
1600 (1250 for IP43/54)	VML431-F5C	VML431-4F5C
2000 (1600 for IP43/54)	VML431-F6C	VML431-4F6C

## Disconnecter cubicle for cable connections from above (D)



Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML431-F4D	VML431-4F4D
1600 (1250 for IP43/54)	VML431-F5D	VML431-4F5D
2000 (1600 for IP43/54)	VML431-F6D	VML431-4F6D

## Disconnecter cubicle for for cable connections from above (E)



Size A	3-pole Type name	4-pole Type name
1250 (1000 for IP43/54)	VML431-F4E	VML431-4F4E
1600 (1250 for IP43/54)	VML431-F5E	VML431-4F5E
2000 (1600 for IP43/54)	VML431-F6E	VML431-4F6E

## Horizontal busbar system including PEN

Size	Busbar system above (A) Type name	Busbar system below (B, D, E) Type name	Busbar system above and below (C) Type name A
1000	-H4	-H04	-H44
1250	-H4A	-H04A	-H44A
1600	-H5	-H05	-H55
1900	-H6	-H06	-H66

# Disconnecter cubicle

---

## Options

Short-circuit strength 50 kA .....	+M50
5-wire system with incoming PEN .....	+N
5-wire system with incoming PE+N .....	+N5
Earth switch under breaker .....	+E2
Earth switch above breaker .....	+E3
Earth switch under and above breaker .....	+E23
Auxiliary contacts for earth switch .....	always included
Interlocking magnet for earth switch .....	+A3F
Current and voltage measurement with instantaneous A-meter with MCB <sup>1)</sup> .....	+P2K
Current and voltage measurement with instantaneous and max. reading A-meter with MCB <sup>1)</sup> .....	+P2KM
Isolated neutral conductor for 4-wire system (only for 3 pole disconnectors) .....	+N
Protection class IP 31 .....	+IP31
Protection class IP 41 .....	+IP41
Protection class IP 43 .....	+IP43
Protection class IP 54 .....	+IP54
Wall mounting .....	+Z1
Lifting eyes .....	+Z2
Extra rear panel for IP 21, enamelled .....	+Z3
(always included with IP31, IP41, IP43 and IP54)	
End panels left .....	+UV
End panels right .....	+UH
Cubicle heater 100 W with thermostat .....	+B2
Switchgear colour, standard .....	+Grey
Switchgear colour, Center .....	+Beige

<sup>1)</sup> Specify voltage 400 or 500 V

# Apparatus cubicle for F-units

## Design

The cubicle consists of a 600 mm wide compartment for distribution units and a 400 mm or 600 mm wide compartment for cables to the right.

The distribution and cable compartments are separated by screens. The cubicle can be supplied with fixed mounted distribution units. The cable compartment has a full height door.

The distribution compartment has:

- **separate doors** for each distribution unit (blank doors must be ordered for unused spaces).
- there is a version with **full height doors** when fitting with MCB-boards. The door is available either in sheet metal or glass fronted versions.

## Cable compartment

The cable compartment is fitted with four fixing points for main power and auxiliary circuit cables.

## Module space

The cubicle has space for 36 modules.  $1M = 50\text{ mm}$ .

The operating handle on the distribution units should not be placed lower than 400 mm above floor level (in accordance with Swedish safety provisions). This reduces the number of modules to 34.

## Modular measurement for distribution units

The modular measurements for distribution units is evident from the unit's type name.

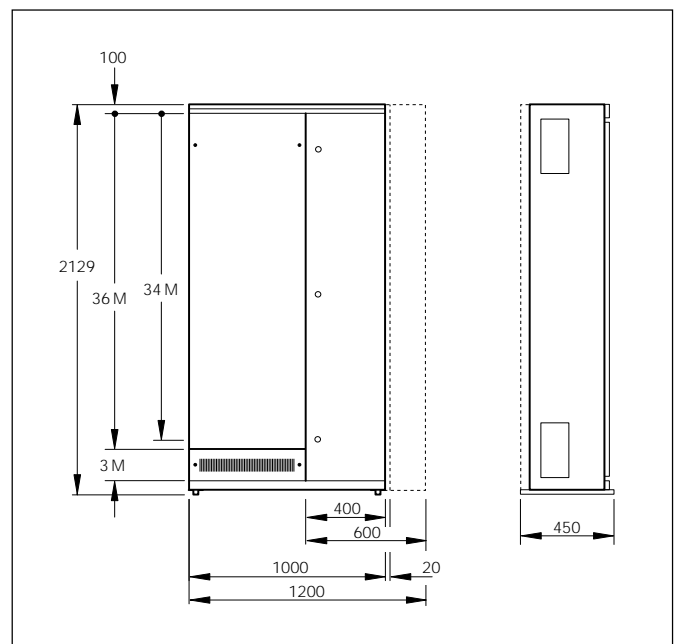
Example:

Type name VMLMI3-N250-FA6B uses 6 M

Type name VMLMI6-4HW800-FA10B uses 10 M.



## Dimensions

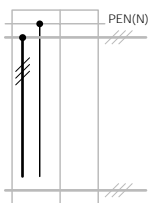


# Apparatus cubicle for F-units

## Cubicle

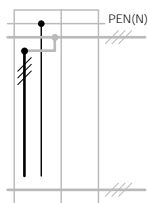
Cubicle width mm	Type name
600+400	VML 401-D64
600+400	VML 401-D66

## Vertical busbar system including PEN



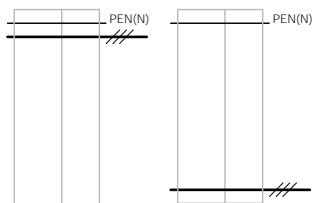
Size A	Type name
1000 (900 for IP54) Exconal	-V4F
1250 (1100 for IP54) Copper	-V4AF
1600 (1250 for IP54) Exconal	-V5F
1900 (1600 for IP54) Copper	-V6F

## Vertical secondary busbar system for cubicle main switch, including PEN



Size A	Type name
1000 Exconal	-W4F
1250 Copper	-W4AF

## Horizontal busbar system including PEN



Size A	Busbar system above Type name	Busbar system below Type name	Busbar system above and below Type name
1000	-H4	-H04	-H44
1250	-H4A	-H04A	-H44A
1600	-H5	-H05	-H55
1900	-H6	-H06	-H66

## Options

Short-circuit strength 50 kA ..... +M50

Isolated neutral conductor ..... +N  
The cubicle must have an isolated neutral conductor if it is to be fed with a 5-wire system. Neutral conductor is placed in the cable compartment.

Isolated neutral conductor for 4-pole distribution units ..... +N4  
Placed in the vertical busbar system.

Isolated neutral conductor for 3 and 4-pole distribution units ..... +N4N

Protection class IP 31 ..... +IP31

Protection class IP 41 ..... +IP41

Protection class IP 43 ..... +IP43

Protection class IP 54 ..... +IP54

Cover plate for cable connections from above. +K3  
The cover plate has three flange openings F21 with 400 mm wide cable compartments and five FL21 with 600 mm wide cable compartments.

Full door ..... +T539

Glass fronted door ..... +T539 Glass

Cable duct for auxiliary circuits ..... +C2  
Placed in the cable compartment's left-hand side, close to the auxiliary circuit's terminal blocks.

Connection bar for neutral leads ..... +C4  
Bar with 15 clamps for maximum 10 mm<sup>2</sup> conductors and fitted to the isolated neutral conductor (+N).

Parallel coupled lock ..... +L2  
Each door may be opened and locked use just one of the locking devices.

Wall bracket ..... +Z1

Lifting eyes ..... +Z2

Extra rear panel, painted with IP21 ..... +Z3  
(always included with IP31, IP41, IP43 and IP54)

End panel, left ..... +UV

End panel, right ..... +UH

Cubicle heater 100 W with thermostat ..... +B2

Switchgear colour, standard ..... +Grey

Switchgear colour, Center ..... +Beige

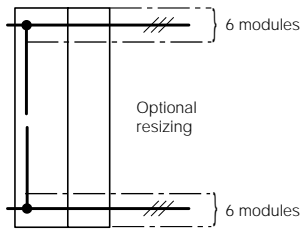
## Earthing switch

	Type name
Placed at bottom (under the normal equipping level)	VMLJ50-FA8B

### Earthing switch options

Interlocking magnet ..... +A3F

## Resizing the vertical busbar



	Type name
Resized as required, except in the upper and lower 6 modules	VMLVF-FA1B

## Overview of distribution units

### Incoming units

Incoming units can be used for single incoming supply to the apparatus cubicle.

#### **Incoming units with MCCB** ..... page 32

The MCCB is of the type ABB Sace Isomax N (normal breaking capacity) or Isomax H (high breaking capacity).

The circuit-breaker is available in fixed, plug-in and withdrawable versions.

Operating methods type A and type B. For type A there is also a motor actuator.

#### **Incoming groups with switch-fuse** ..... page 35

The switch-fuse is of the make ABB Strömberg, type OESA.

### Main cubicle switch

A main cubicle switch can be placed in the top of cubicle for sectioning of the vertical busbar system in an apparatus cubicle.

#### **Main cubicle switch with MCCB** ..... page 36

The MCCB is of the type ABB Sace Isomax N (normal breaking capacity) or Isomax H (high breaking capacity).

The circuit-breaker is available in fixed, plug-in and withdrawable versions.

Operating methods type A and type B. For type A there is also a motor actuator.

#### **Main cubicle switch with switch-fuse** ..... page 38

Switch-fuse is of the make ABB Strömberg, type OESA.

#### **Main cubicle switch with switch-disconnector** ..... page 39

For sectioning the busbar system. The switch-disconnector is of the make ABB Strömberg, type OETL.

### Distribution units with MCCB

The MCCB is of the type ABB Sace Isomax N (normal breaking capacity) or Isomax H or S (high breaking capacity).

The circuit-breaker is available in fixed, plug-in and withdrawable versions.

Operating methods type A and type B. For type A there is also a motor actuator.

#### **Distribution units with fixed circuit-breaker** ..... page 40

#### **Distribution units with plug-in circuit-breaker** ..... page 43

#### **Distribution units with withdrawable circuit-breaker** ..... page 46

### Distribution units with switch-fuse

Switch-fuse is of the make ABB Strömberg, type OESA.

#### **Distribution units with switch-fuse** ..... page 47

#### **Distribution units with switch-fuse for kWh-measuring** ..... page 48

### Distribution boards

Distribution boards with miniature circuit-breakers (MCB) and with threaded fuses.

#### **Distribution boards with miniature circuit-breakers (MCB)** ..... page 49

#### **Distribution boards with fuses** ..... page 51

### Motor starters, pole-changing starters, contactor groups

Units are available in switch-fuse or fuse-less versions. Auxiliary voltage 220 V, 50 Hz.

For correct select refer to the projecting software CenterPro.

#### **Motor starter, pole-changing starters** ..... page 52

#### **Contactor groups** ..... page 54

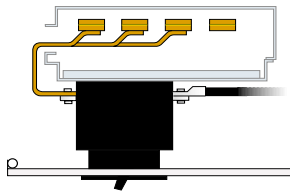
### Cubicle accessories

#### **Cover plates for unused cubicle compartments** ..... page 55

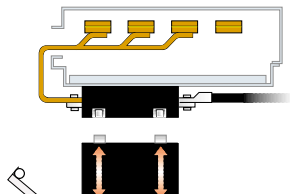
#### **Doors and assembly plates for extra equipment** ..... page 55

Overview distribution units

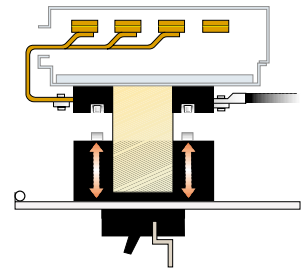
Types of circuit-breakers in distribution units



Fixed circuit-breaker.

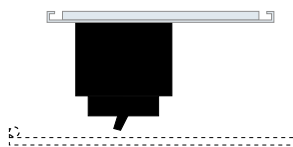


Plug-in circuit-breaker.  
Interlock prevents the door from opening and the circuit-breaker from being dismantled and removed when closed.



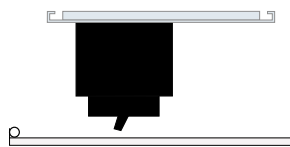
Withdrawable circuit-breaker.  
The circuit-breaker is cranked out with the door in the closed position. Interlock prevents cranking and opening when the circuit-breaker is closed.

Operating methods for distribution units



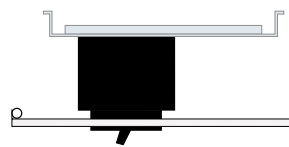
Unit mounted behind full height door. (Several groups behind the same door.)  

- operated with door open
- no interlock with door



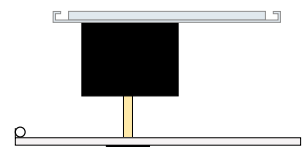
Operation type C. (Unit has own door.)  

- operated with door open
- no interlock with door
- max. IP54



Operation type A. (Unit has own door.)  

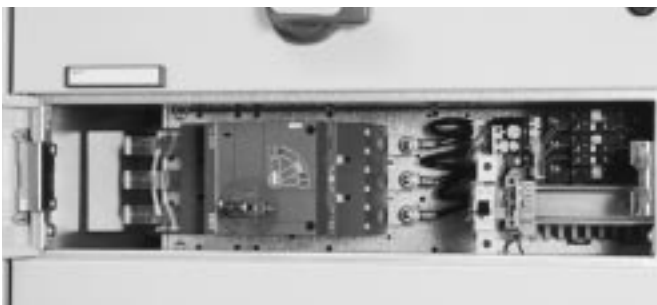
- operated with door closed
- interlock with door \*
- max. IP31



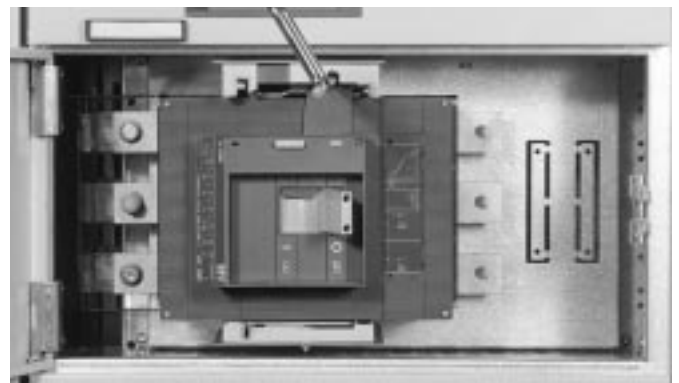
Operation type B. (Unit has own door.)  

- operating device fitted in door
- operated with door closed
- interlock with door \*
- max IP54

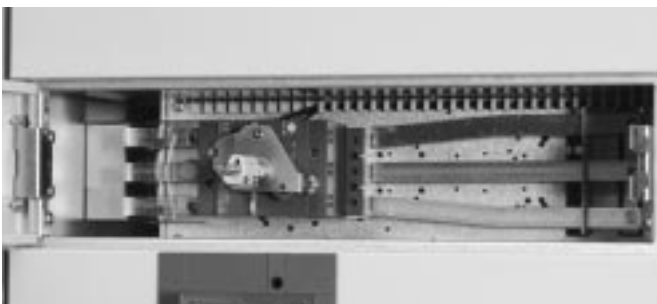
\* Interlock with door means the door normally cannot be opened when the distribution unit is closed.



Starter with MCCB. Size 3 M.



Distribution unit with withdrawable MCCB. Size 6 M.



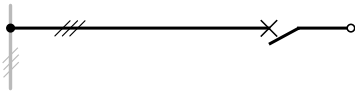
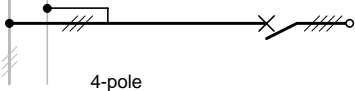
Distribution unit with plug-in MCCB. Size 3 M.



Distribution unit with switch-fuse. Size 4 M.

# Apparatus cubicle for F-units

## Incoming group with MCCB, fixed circuit-breaker

	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
 <p>3-pole</p>	<b>MCCB type Isomax N, operation type A</b>			
	175 – 250	35, 25, 14	VMLMI3-N250-FA6A	VMLMI3-4N250-FA7A
	100 – 250	35, 25, 18	VMLMI4-N250-FA6A	VMLMI4-4N250-FA7A
	130 – 320	35, 25, 20	VMLMI5-N320-FA7A	VMLMI5-4N320-FA8A
	160 – 400	35, 25, 20	VMLMI5-N400-FA7A	VMLMI5-4N400-FA8A
	250 – 630	35, 25, 20	VMLMI6-N630-FA8A	VMLMI6-4N630-FA10A
 <p>4-pole</p>	<b>MCCB type Isomax N, operation type A + motor actuator</b>			
	175 – 250	35, 25, 14	VMLMI3-N250-FA6A+M	VMLMI3-4N250-FA7A+M
	100 – 250	35, 25, 18	VMLMI4-N250-FA6A+M	VMLMI4-4N250-FA7A+M
	130 – 320	35, 25, 20	VMLMI5-N320-FA7A+M	VMLMI5-4N320-FA8A+M
	160 – 400	35, 25, 20	VMLMI5-N400-FA7A+M	VMLMI5-4N400-FA8A+M
	250 – 630	35, 25, 20	VMLMI6-N630-FA8A+M	VMLMI6-4N630-FA10A+M
<b>MCCB type Isomax N, operation type B</b>				
175 – 250	35, 25, 14	VMLMI3-N250-FA6B	VMLMI3-4N250-FA7B	
100 – 250	35, 25, 18	VMLMI4-N250-FA6B	VMLMI4-4N250-FA7B	
130 – 320	35, 25, 20	VMLMI5-N320-FA7B	VMLMI5-4N320-FA8B	
160 – 400	35, 25, 20	VMLMI5-N400-FA7B	VMLMI5-4N400-FA8B	
250 – 630	35, 25, 20	VMLMI6-N630-FA8B	VMLMI6-4N630-FA10B	
320 – 800	35, 25, 20	VMLMI6-N800-FA9B	VMLMI6-4N800-FA10B	
<b>MCCB type Isomax H, operation type A</b>				
175 – 250	35, 25, 14	VMLMI3-H250-FA6A	VMLMI3-4H250-FA7A	
100 – 250	35, 25, 18	VMLMI4-H250-FA6A	VMLMI4-4H250-FA7A	
130 – 320	35, 25, 20	VMLMI5-H320-FA7A	VMLMI5-4H320-FA8A	
160 – 400	35, 25, 20	VMLMI5-H400-FA7A	VMLMI5-4H400-FA8A	
250 – 630	35, 25, 20	VMLMI6-H630-FA8A	VMLMI6-4H630-FA10A	
320 – 800	35, 25, 20	VMLMI6-H800-FA9A	VMLMI6-4H800-FA10A	
<b>MCCB type Isomax H, operation type A + motor actuator</b>				
175 – 250	35, 25, 14	VMLMI3-H250-FA6A+M	VMLMI3-4H250-FA7A+M	
100 – 250	35, 25, 18	VMLMI4-H250-FA6A+M	VMLMI4-4H250-FA7A+M	
130 – 320	35, 25, 20	VMLMI5-H320-FA7A+M	VMLMI5-4H320-FA8A+M	
160 – 400	35, 25, 20	VMLMI5-H400-FA7A+M	VMLMI5-4H400-FA8A+M	
250 – 630	35, 25, 20	VMLMI6-H630-FA8A+M	VMLMI6-4H630-FA10A+M	
320 – 800	35, 25, 20	VMLMI6-H800-FA9A+M	VMLMI6-4H800-FA10A+M	
<b>MCCB type Isomax H, operation type B</b>				
175 – 250	35, 25, 14	VMLMI3-H250-FA6B	VMLMI3-4H250-FA7B	
100 – 250	35, 25, 18	VMLMI4-H250-FA6B	VMLMI4-4H250-FA7B	
130 – 320	35, 25, 20	VMLMI5-H320-FA7B	VMLMI5-4H320-FA8B	
160 – 400	35, 25, 20	VMLMI5-H400-FA7B	VMLMI5-4H400-FA8B	
250 – 630	35, 25, 20	VMLMI6-H630-FA8B	VMLMI6-4H630-FA10B	
320 – 800	35, 25, 20	VMLMI6-H800-FA9B	VMLMI6-4H800-FA10B	

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

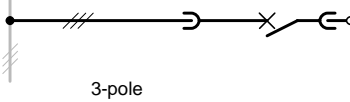
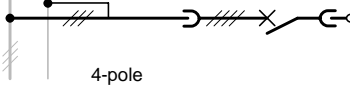
## Options

Current and voltage measurement with instantaneous A-meter with MCB (400 V), instrument 72x72 mm .....	+P2K
Current and voltage measurement with instant. and max. reading A-meter with MCB (400 V), instrument 72x72 mm .....	+P2KM
Cable connection device .....	+A4D
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 <sup>2)</sup> .....	IP 43
Protection class IP 54 <sup>2)</sup> .....	IP 54

<sup>2)</sup> Not for operation type A



## Incoming units with MCCB, plug-in circuit-breaker

	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
 <p>3-pole</p>	<b>MCCB type Isomax N, operation type A</b>			
	175 – 250	35, 25, 14	VMLMI3-NP250-FA6A	VMLMI3-4NP250-FA7A
	100 – 250	35, 25, 18	VMLMI4-NP250-FA6A	VMLMI4-4NP250-FA7A
	130 – 320	35, 25, 20	VMLMI5-NP320-FA7A	VMLMI5-4NP320-FA8A
	160 – 400	35, 25, 20	VMLMI5-NP400-FA7A	VMLMI5-4NP400-FA8A
 <p>4-pole</p>	<b>MCCB type Isomax N, operation type A + motor actuator</b>			
	175 – 250	35, 25, 14	VMLMI3-NP250-FA6A+M	VMLMI3-4NP250-FA7A+M
	100 – 250	35, 25, 18	VMLMI4-NP250-FA6A+M	VMLMI4-4NP250-FA7A+M
	130 – 320	35, 25, 20	VMLMI5-NP320-FA7A+M	VMLMI5-4NP320-FA8A+M
	160 – 400	35, 25, 20	VMLMI5-NP400-FA7A+M	VMLMI5-4NP400-FA8A+M
	250 – 630	35, 25, 20	VMLMI6-NP630-FA9A+M	VMLMI6-4NP630-FA10A+M
320 – 800	35, 25, 20	VMLMI6-NP800-FA9A+M	VMLMI6-4NP800-FA10A+M	
<b>MCCB type Isomax N, operation type B</b>				
	175 – 250	35, 25, 14	VMLMI3-NP250-FA6B	VMLMI3-4NP250-FA7B
	100 – 250	35, 25, 18	VMLMI4-NP250-FA6B	VMLMI4-4NP250-FA7B
	130 – 320	35, 25, 20	VMLMI5-NP320-FA7B	VMLMI5-4NP320-FA8B
	160 – 400	35, 25, 20	VMLMI5-NP400-FA7B	VMLMI5-4NP400-FA8B
	250 – 630	35, 25, 20	VMLMI6-NP630-FA9B	VMLMI6-4NP630-FA10B
	320 – 800	35, 25, 20	VMLMI6-NP800-FA9B	VMLMI6-4NP800-FA10B
<b>MCCB type Isomax H, operation type A</b>				
	175 – 250	35, 25, 14	VMLMI3-HP250-FA6A	VMLMI3-4HP250-FA7A
	100 – 250	35, 25, 18	VMLMI4-HP250-FA6A	VMLMI4-4HP250-FA7A
	130 – 320	35, 25, 20	VMLMI5-HP320-FA7A	VMLMI5-4HP320-FA8A
	160 – 400	35, 25, 20	VMLMI5-HP400-FA7A	VMLMI5-4HP400-FA8A
<b>MCCB type Isomax H, operation type A + motor actuator</b>				
	175 – 250	35, 25, 14	VMLMI3-HP250-FA6A+M	VMLMI3-4HP250-FA7A+M
	100 – 250	35, 25, 18	VMLMI4-HP250-FA6A+M	VMLMI4-4HP250-FA7A+M
	130 – 320	35, 25, 20	VMLMI5-HP320-FA7A+M	VMLMI5-4HP320-FA8A+M
	160 – 400	35, 25, 20	VMLMI5-HP400-FA7A+M	VMLMI5-4HP400-FA8A+M
	250 – 630	35, 25, 20	VMLMI6-HP630-FA9A+M	VMLMI6-4HP630-FA10A+M
	320 – 800	35, 25, 20	VMLMI6-HP800-FA9A+M	VMLMI6-4HP800-FA10A+M
<b>MCCB type Isomax H, operation type B</b>				
	175 – 250	35, 25, 14	VMLMI3-HP250-FA6B	VMLMI3-4HP250-FA7B
	100 – 250	35, 25, 18	VMLMI4-HP250-FA6B	VMLMI4-4HP250-FA7B
	130 – 320	35, 25, 20	VMLMI5-HP320-FA7B	VMLMI5-4HP320-FA8B
	160 – 400	35, 25, 20	VMLMI5-HP400-FA7B	VMLMI5-4HP400-FA8B
	250 – 630	35, 25, 20	VMLMI6-HP630-FA9B	VMLMI6-4HP630-FA10B
	320 – 800	35, 25, 20	VMLMI6-HP800-FA9B	VMLMI6-4HP800-FA10B

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

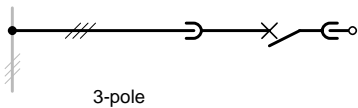
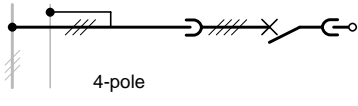
## Options

Current and voltage measurement with instantaneous A-meter with MCB (400 V), instrument 72x72 mm .....	+P2K
Current and voltage measurement with instant. and max. reading A-meter with MCB (400 V), instrument 72x72 mm .....	+P2KM
Cable connection device .....	+A4D
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 <sup>2)</sup> .....	IP 43
Protection class IP 54 <sup>2)</sup> .....	IP 54

<sup>2)</sup> Not for operation type A

# Apparatus cubicle for F-units

## Incoming units with MCCB, withdrawable circuit-breaker

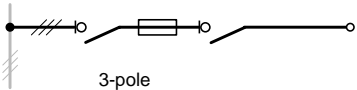
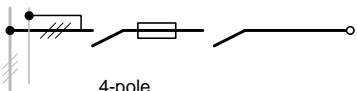
	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
 <p>3-pole</p>	<b>MCCB type Isomax N, operation type A</b>			
	175 – 250	35, 25, 14	VMLMI3-NW250-FA7A	VMLMI3-4NW250-FA8A
	100 – 250	35, 25, 18	VMLMI4-NW250-FA7A	VMLMI4-4NW250-FA8A
	130 – 320	35, 25, 20	VMLMI5-NW320-FA8A	VMLMI5-4NW320-FA9A
	160 – 400	35, 25, 20	VMLMI5-NW400-FA8A	VMLMI5-4NW400-FA9A
	250 – 630	35, 25, 20	VMLMI6-NW630-FA9A	VMLMI6-4NW630-FA10A
320 – 800	35, 25, 20	VMLMI6-NW800-FA9A	VMLMI6-4NW800-FA10A	
 <p>4-pole</p>	<b>MCCB type Isomax H, operation type A</b>			
	175 – 250	35, 25, 14	VMLMI3-HW250-FA7A	VMLMI3-4HW250-FA8A
	100 – 250	35, 25, 18	VMLMI4-HW250-FA7A	VMLMI4-4HW250-FA8A
	130 – 320	35, 25, 20	VMLMI5-HW320-FA8A	VMLMI5-4HW320-FA9A
	160 – 400	35, 25, 20	VMLMI5-HW400-FA8A	VMLMI5-4HW400-FA9A
	250 – 630	35, 25, 20	VMLMI6-HW630-FA9A	VMLMI6-4HW630-FA10A
320 – 800	35, 25, 20	VMLMI6-HW800-FA9A	VMLMI6-4HW800-FA10A	

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Options

Current and voltage measurement with instantaneous A-meter with MCB (400 V), instrument 72x72 mm ..... +P2K  
 Current and voltage measurement with instant. and max. reading A-meter with MCB (400 V), instrument 72x72 mm ..... +P2KM  
 Cable connection device ..... +A4D  
 Shunt release ..... +SH  
 Undervoltage release ..... +U  
 Auxiliary contacts ..... +HL6

## Incoming units with switch-fuse

	Rated current <sup>1)</sup> A	Fuses with max. power dissipation, W		3-pole Type name	4-pole Type name
		3-pole	4-pole		
<b>Operation type B</b>					
 <p>3-pole</p>	250	32	27	VMLLHI250-FA7B	VMLLHI250-4-FA11B
	400	45	38	VMLLHI400-FA7B	VMLLHI400-4-FA11B
	630	51	51	VMLLHI630-FA11B	VMLLHI630-4-FA13B
	800	55	55	VMLLHI800-FA11B	VMLLHI800-4-FA13B
 <p>4-pole</p>					


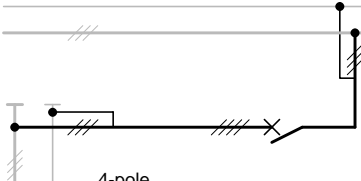



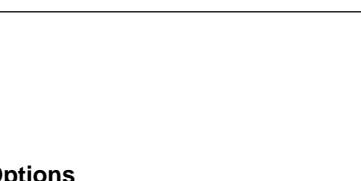
<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Options

Current and voltage measurement with instantaneous  
A-meter with MCB (400 V),  
instrument 72x72 mm ..... +P2K  
Current and voltage measurement with instant. and  
max. reading A-meter with MCB (400 V),  
instrument 72x72 mm ..... +P2KM  
Auxiliary contacts, 1 NO + 1 NC ..... +HL2  
Cable connection device ..... +A4D  
Protection class IP 43 ..... IP 43  
Protection class IP 54 ..... IP 54

# Apparatus cubicle for F-units

## Main cubicle switch with MCCB, fixed circuit-breaker

	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
 <p>3-pole</p>	<b>MCCB type Isomax N, operation type A</b>			
	175 – 250	35, 25, 14	VMLMS3-N250-FA3A	VMLMS3-4N250-FA4A
	100 – 250	35, 25, 18	VMLMS4-N250-FA3A	VMLMS4-4N250-FA4A
	130 – 320	35, 25, 20	VMLMS5-N320-FA4A	VMLMS5-4N320-FA5A
	160 – 400	35, 25, 20	VMLMS5-N400-FA4A	VMLMS5-4N400-FA5A
	250 – 630	35, 25, 20	VMLMS6-N630-FA5A	VMLMS6-4N630-FA7A
320 – 800	35, 25, 20	VMLMS6-N800-FA6A	VMLMS6-4N800-FA7A	
 <p>3-pole</p>	<b>MCCB type Isomax N, operation type A + motor actuator</b>			
	175 – 250	35, 25, 14	VMLMS3-N250-FA3A+M	VMLMS3-4N250-FA4A+M
	100 – 250	35, 25, 18	VMLMS4-N250-FA3A+M	VMLMS4-4N250-FA4A+M
	130 – 320	35, 25, 20	VMLMS5-N320-FA4A+M	VMLMS5-4N320-FA5A+M
	160 – 400	35, 25, 20	VMLMS5-N400-FA4A+M	VMLMS5-4N400-FA5A+M
	250 – 630	35, 25, 20	VMLMS6-N630-FA5A+M	VMLMS6-4N630-FA7A+M
320 – 800	35, 25, 20	VMLMS6-N800-FA6A+M	VMLMS6-4N800-FA7A+M	
 <p>4-pole</p>	<b>MCCB type Isomax N, operation type B</b>			
	175 – 250	35, 25, 14	VMLMS3-N250-FA3B	VMLMS3-4N250-FA4B
	100 – 250	35, 25, 18	VMLMS4-N250-FA3B	VMLMS4-4N250-FA4B
	130 – 320	35, 25, 20	VMLMS5-N320-FA4B	VMLMS5-4N320-FA5B
	160 – 400	35, 25, 20	VMLMS5-N400-FA4B	VMLMS5-4N400-FA5B
	250 – 630	35, 25, 20	VMLMS6-N630-FA5B	VMLMS6-4N630-FA7B
320 – 800	35, 25, 20	VMLMS6-N800-FA6B	VMLMS6-4N800-FA7B	
 <p>4-pole</p>	<b>MCCB type Isomax H, operation type A</b>			
	175 – 250	35, 25, 14	VMLMS3-H250-FA3A	VMLMS3-4H250-FA4A
	100 – 250	35, 25, 18	VMLMS4-H250-FA3A	VMLMS4-4H250-FA4A
	130 – 320	35, 25, 20	VMLMS5-H320-FA4A	VMLMS5-4H320-FA5A
	160 – 400	35, 25, 20	VMLMS5-H400-FA4A	VMLMS5-4H400-FA5A
	250 – 630	35, 25, 20	VMLMS6-H630-FA5A	VMLMS6-4H630-FA7A
320 – 800	35, 25, 20	VMLMS6-H800-FA6A	VMLMS6-4H800-FA7A	
 <p>4-pole</p>	<b>MCCB type Isomax H, operation type A + motor actuator</b>			
	175 – 250	35, 25, 14	VMLMS3-H250-FA3A+M	VMLMS3-4H250-FA4A+M
	100 – 250	35, 25, 18	VMLMS4-H250-FA3A+M	VMLMS4-4H250-FA4A+M
	130 – 320	35, 25, 20	VMLMS5-H320-FA4A+M	VMLMS5-4H320-FA5A+M
	160 – 400	35, 25, 20	VMLMS5-H400-FA4A+M	VMLMS5-4H400-FA5A+M
	250 – 630	35, 25, 20	VMLMS6-H630-FA5A+M	VMLMS6-4H630-FA7A+M
320 – 800	35, 25, 20	VMLMS6-H800-FA6A+M	VMLMS6-4H800-FA7A+M	
 <p>4-pole</p>	<b>MCCB type Isomax H, operation type B</b>			
	175 – 250	35, 25, 14	VMLMS3-H250-FA3B	VMLMS3-4H250-FA4B
	100 – 250	35, 25, 18	VMLMS4-H250-FA3B	VMLMS4-4H250-FA4B
	130 – 320	35, 25, 20	VMLMS5-H320-FA4B	VMLMS5-4H320-FA5B
	160 – 400	35, 25, 20	VMLMS5-H400-FA4B	VMLMS5-4H400-FA5B
	250 – 630	35, 25, 20	VMLMS6-H630-FA5B	VMLMS6-4H630-FA7B
320 – 800	35, 25, 20	VMLMS6-H800-FA6B	VMLMS6-4H800-FA7B	

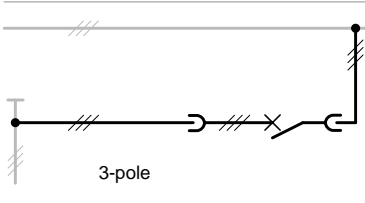
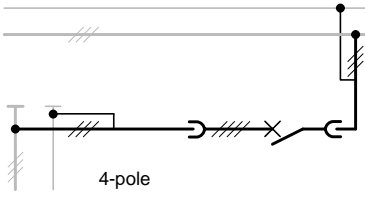

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Options

Current measurement with instantaneous A-meter x/5A .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A .....	+P2B
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 <sup>2)</sup> .....	IP 43
Protection class IP 54 <sup>2)</sup> .....	IP 54

<sup>2)</sup> Not for operation type A

## Main cubicle switch with MCCB, plug-in circuit-breaker

	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
 <p>3-pole</p>	<b>MCCB type Isomax N, operation type A</b>			
	175 – 250	35, 25, 14	VMLMS3-NP250-FA3A	VMLMS3-4NP250-FA4A
	100 – 250	35, 25, 18	VMLMS4-NP250-FA3A	VMLMS4-4NP250-FA4A
	130 – 320	35, 25, 20	VMLMS5-NP320-FA4A	VMLMS5-4NP320-FA5A
 <p>4-pole</p>	<b>MCCB type Isomax N, operation type A + motor actuator</b>			
	175 – 250	35, 25, 14	VMLMS3-NP250-FA3A+M	VMLMS3-4NP250-FA4A+M
	100 – 250	35, 25, 18	VMLMS4-NP250-FA3A+M	VMLMS4-4NP250-FA4A+M
	130 – 320	35, 25, 20	VMLMS5-NP320-FA4A+M	VMLMS5-4NP320-FA5A+M
	160 – 400	35, 25, 20	VMLMS5-NP400-FA4A+M	VMLMS5-4NP400-FA5A+M
	250 – 630	35, 25, 20	VMLMS6-NP630-FA6A+M	VMLMS6-4NP630-FA7A+M
 <p>4-pole</p>	<b>MCCB type Isomax N, operation type B</b>			
	175 – 250	35, 25, 14	VMLMS3-NP250-FA3B	VMLMS3-4NP250-FA4B
	100 – 250	35, 25, 18	VMLMS4-NP250-FA3B	VMLMS4-4NP250-FA4B
	130 – 320	35, 25, 20	VMLMS5-NP320-FA4B	VMLMS5-4NP320-FA5B
	160 – 400	35, 25, 20	VMLMS5-NP400-FA4B	VMLMS5-4NP400-FA5B
	250 – 630	35, 25, 20	VMLMS6-NP630-FA6B	VMLMS6-4NP630-FA7B
<td colspan="4"><b>MCCB type Isomax H, operation type A</b></td>	<b>MCCB type Isomax H, operation type A</b>			
	175 – 250	35, 25, 14	VMLMS3-HP250-FA3A	VMLMS3-4HP250-FA4A
	100 – 250	35, 25, 18	VMLMS4-HP250-FA3A	VMLMS4-4HP250-FA4A
	130 – 320	35, 25, 20	VMLMS5-HP320-FA4A	VMLMS5-4HP320-FA5A
<td colspan="4"><b>MCCB type Isomax H, operation type A + motor actuator</b></td>	<b>MCCB type Isomax H, operation type A + motor actuator</b>			
	175 – 250	35, 25, 14	VMLMS3-HP250-FA3A+M	VMLMS3-4HP250-FA4A+M
	100 – 250	35, 25, 18	VMLMS4-HP250-FA3A+M	VMLMS4-4HP250-FA4A+M
	130 – 320	35, 25, 20	VMLMS5-HP320-FA4A+M	VMLMS5-4HP320-FA5A+M
	160 – 400	35, 25, 20	VMLMS5-HP400-FA4A+M	VMLMS5-4HP400-FA5A+M
	250 – 630	35, 25, 20	VMLMS6-HP630-FA6A+M	VMLMS6-4HP630-FA7A+M
<td colspan="4"><b>MCCB type Isomax H, operation type B</b></td>	<b>MCCB type Isomax H, operation type B</b>			
	175 – 250	35, 25, 14	VMLMS3-HP250-FA3B	VMLMS3-4HP250-FA4B
	100 – 250	35, 25, 18	VMLMS4-HP250-FA3B	VMLMS4-4HP250-FA4B
	130 – 320	35, 25, 20	VMLMS5-HP320-FA4B	VMLMS5-4HP320-FA5B
	160 – 400	35, 25, 20	VMLMS5-HP400-FA4B	VMLMS5-4HP400-FA5B
	250 – 630	35, 25, 20	VMLMS6-HP630-FA6B	VMLMS6-4HP630-FA7B
320 – 800	35, 25, 20	VMLMS6-HP800-FA6B	VMLMS6-4HP800-FA7B	

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

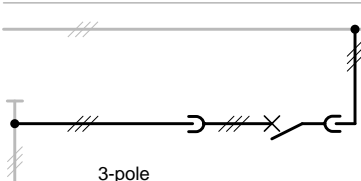
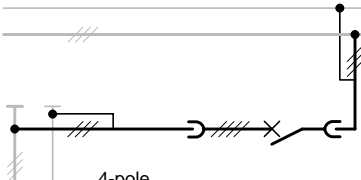
## Options

Current measurement with instantaneous	
A-meter x/5A .....	+P2D
Current measurement with instant. and max.	
reading A-meter x/5A .....	+P2DM
Current measurement with 3 transformers	
x/1A or x/5A .....	+P2B
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 <sup>2)</sup> .....	IP 43
Protection class IP 54 <sup>2)</sup> .....	IP 54

<sup>2)</sup> Not for operation type A



# Apparatus cubicle for F-units

## Main cubicle switch with MCCB, withdrawable circuit-breaker

	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax N, operation type A</b>				
	175 – 250	35, 25, 14	VMLMS3-NW250-FA4A	VMLMS3-4NW250-FA5A
	100 – 250	35, 25, 18	VMLMS4-NW250-FA4A	VMLMS4-4NW250-FA5A
	130 – 320	35, 25, 20	VMLMS5-NW320-FA5A	VMLMS5-4NW320-FA6A
	160 – 400	35, 25, 20	VMLMS5-NW400-FA5A	VMLMS5-4NW400-FA6A
	250 – 630	35, 25, 20	VMLMS6-NW630-FA6A	VMLMS6-4NW630-FA7A
	320 – 800	35, 25, 20	VMLMS6-NW800-FA6A	VMLMS6-4NW800-FA7A
<b>MCCB type Isomax H, operation type A</b>				
	175 – 250	35, 25, 14	VMLMS3-HW250-FA4A	VMLMS3-4HW250-FA5A
	100 – 250	35, 25, 18	VMLMS4-HW250-FA4A	VMLMS4-4HW250-FA5A
	130 – 320	35, 25, 20	VMLMS5-HW320-FA5A	VMLMS5-4HW320-FA6A
	160 – 400	35, 25, 20	VMLMS5-HW400-FA5A	VMLMS5-4HW400-FA6A
	250 – 630	35, 25, 20	VMLMS6-HW630-FA6A	VMLMS6-4HW630-FA7A
	320 – 800	35, 25, 20	VMLMS6-HW800-FA6A	VMLMS6-4HW800-FA7A

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Main cubicle switch with fuse-switch

	Rated current <sup>1)</sup> A	Fuses with max power dissipation W	3-pole Type name	4-pole Type name
<b>Operation type B</b>				
	250	23	VMLLHS250-FA4B	VMLLHS250-4-FA8B
	400	34	VMLLHS400-FA4B	VMLLHS400-4-FA8B
	630	45	VMLLHS630-FA8B	VMLLHS630-4-FA10B
	800	55	VMLLHS800-FA8B	VMLLHS800-4-FA10B
	250	23	VMLLHS250-FA4B	VMLLHS250-4-FA8B
	400	34	VMLLHS400-FA4B	VMLLHS400-4-FA8B
	630	45	VMLLHS630-FA8B	VMLLHS630-4-FA10B
	800	55	VMLLHS800-FA8B	VMLLHS800-4-FA10B

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

### Options main cubicle switch with MCCB

Current measurement with instantaneous A-meter x/5A .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A .....	+P2B
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6

### Options main cubicle switch with fuse-switch

Current measurement with instantaneous A-meter x/5A .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A .....	+P2B
Auxiliary contacts, 1 NO + 1 NC .....	+HL2
Protection class IP 43 .....	IP 43
Protection class IP 54 .....	IP 54

## Main cubicle switch with switch-disconnector

	Rated current <sup>1)</sup>	3-pole Type name	4-pole Type name
	1250	VMLIS1250-FA8B	VMLIS1250-4-FA8B
	1600	VMLIS1600-FA8B	VMLIS1600-4-FA8B

The circuit-breaker is placed either at the top or bottom of the cubicle.

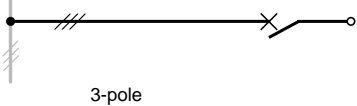
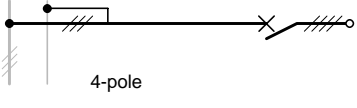


<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Options for main cubicle switch with switch-disconnector

Auxiliary contacts ..... +R2B  
 Protection class IP 43 ..... IP 43  
 Protection class IP 54 ..... IP 54

# Apparatus cubicle for F-units

## Distribution units with MCCB, fixed circuit-breaker


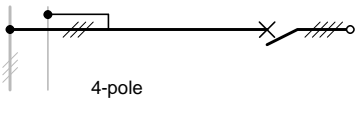
	MCCB size	Rated current 1) A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax N, operation type A</b>					
 <p>3-pole</p>	2	17.5 – 25	35, 12, 8	VMLM2-N25-FA2A	VMLM2-4N25-FA3A
		22.5 – 32	35, 12, 8	VMLM2-N32-FA2A	VMLM2-4N32-FA3A
 <p>4-pole</p>	2	28 – 40	35, 12, 8	VMLM2-N40-FA2A	VMLM2-4N40-FA3A
		35 – 50	35, 12, 8	VMLM2-N50-FA2A	VMLM2-4N50-FA3A
	2	44 – 63	35, 12, 8	VMLM2-N63-FA2A	VMLM2-4N53-FA3A
		56 – 80	35, 12, 8	VMLM2-N80-FA2A	VMLM2-4N80-FA3A
	2	17.5 – 25	35, 12, 8	VMLM2-N25-FA3A	VMLM2-4N25-FA4A
		22.5 – 32	35, 12, 8	VMLM2-N32-FA3A	VMLM2-4N32-FA4A
	2	28 – 40	35, 12, 8	VMLM2-N40-FA3A	VMLM2-4N40-FA4A
		35 – 50	35, 12, 8	VMLM2-N50-FA3A	VMLM2-4N50-FA4A
	2	44 – 63	35, 12, 8	VMLM2-N63-FA3A	VMLM2-4N53-FA4A
		56 – 80	35, 12, 8	VMLM2-N80-FA3A	VMLM2-4N80-FA4A
	2	70 – 100	35, 12, 8	VMLM2-N100-FA3A	VMLM2-4N100-FA4A
		87.5 – 125	35, 12, 8	VMLM2-N125-FA3A	VMLM2-4N125-FA4A
	3	19 – 32	35, 25, 14	VMLM3-N32-FA3A	VMLM3-4N32-FA4A
		30 – 50	35, 25, 14	VMLM3-N50-FA3A	VMLM3-4N50-FA4A
	3	48 – 80	35, 25, 14	VMLM3-N80-FA3A	VMLM3-4N80-FA4A
		70 – 100	35, 25, 14	VMLM3-N100-FA3A	VMLM3-4N100-FA4A
	3	87.5 – 125	35, 25, 14	VMLM3-N125-FA3A	VMLM3-4N125-FA4A
		112 – 160	35, 25, 14	VMLM3-N160-FA3A	VMLM3-4N160-FA4A
	3	140 – 200	35, 25, 14	VMLM3-N200-FA3A	VMLM3-4N200-FA4A
		175 – 250	35, 25, 14	VMLM3-N250-FA3A	VMLM3-4N250-FA4A
	4	40 – 100	35, 25, 18	VMLM4-N100-FA3A	VMLM4-4N100-FA4A
		64 – 160	35, 25, 18	VMLM4-N160-FA3A	VMLM4-4N160-FA4A
	4	100 – 250	35, 25, 18	VMLM4-N250-FA3A	VMLM4-4N250-FA4A
		130 – 320	35, 25, 20	VMLM5-N320-FA4A	VMLM5-4N320-FA5A
	5	160 – 400	35, 25, 20	VMLM5-N400-FA4A	VMLM5-4N400-FA5A
	6	250 – 630	35, 25, 20	VMLM6-N630-FA5A	VMLM6-4N630-FA7A
		320 – 800	35, 25, 20	VMLM6-N800-FA6A	VMLM6-4N800-FA7A
<b>MCCB type Isomax S and Isomax H, operation type A</b>					
	2	17.5 – 25	50, 15, 10	VMLM2-S25-FA2A	VMLM2-4S25-FA3A
		22.5 – 32	50, 15, 10	VMLM2-S32-FA2A	VMLM2-4S32-FA3A
	2	28 – 40	50, 15, 10	VMLM2-S40-FA2A	VMLM2-4S40-FA3A
		35 – 50	50, 15, 10	VMLM2-S50-FA2A	VMLM2-4S50-FA3A
	2	44 – 63	50, 15, 10	VMLM2-S63-FA2A	VMLM2-4S53-FA3A
		56 – 80	50, 15, 10	VMLM2-S80-FA2A	VMLM2-4S80-FA3A
	2	17.5 – 25	50, 15, 10	VMLM2-S25-FA3A	VMLM2-4S25-FA4A
		22.5 – 32	50, 15, 10	VMLM2-S32-FA3A	VMLM2-4S32-FA4A
	2	28 – 40	50, 15, 10	VMLM2-S40-FA3A	VMLM2-4S40-FA4A
		35 – 50	50, 15, 10	VMLM2-S50-FA3A	VMLM2-4S50-FA4A
	2	44 – 63	50, 15, 10	VMLM2-S63-FA3A	VMLM2-4S53-FA4A
		56 – 80	50, 15, 10	VMLM2-S80-FA3A	VMLM2-4S80-FA4A
	2	70 – 100	50, 15, 10	VMLM2-S100-FA3A	VMLM2-4S100-FA4A
		87.5 – 125	50, 15, 10	VMLM2-S125-FA3A	VMLM2-4S125-FA4A
	3	19 – 32	65, 40, 18	VMLM3-H32-FA3A	VMLM3-4H32-FA4A
		30 – 50	65, 40, 18	VMLM3-H50-FA3A	VMLM3-4H50-FA4A
	3	48 – 80	65, 40, 18	VMLM3-H80-FA3A	VMLM3-4H80-FA4A
		70 – 100	65, 40, 18	VMLM3-H100-FA3A	VMLM3-4H100-FA4A
	3	87.5 – 125	65, 40, 18	VMLM3-H125-FA3A	VMLM3-4H125-FA4A
		112 – 160	65, 40, 18	VMLM3-H160-FA3A	VMLM3-4H160-FA4A
	3	140 – 200	65, 40, 18	VMLM3-H200-FA3A	VMLM3-4H200-FA4A
		175 – 250	65, 40, 18	VMLM3-H250-FA3A	VMLM3-4H250-FA4A
	4	40 – 100	65, 40, 22	VMLM4-N100-FA3A	VMLM4-4N100-FA4A
		64 – 160	65, 40, 22	VMLM4-H160-FA3A	VMLM4-4H160-FA4A
	4	100 – 250	65, 40, 22	VMLM4-H250-FA3A	VMLM4-4H250-FA4A
		130 – 320	65, 40, 25	VMLM5-H320-FA4A	VMLM5-4H320-FA5A
	5	160 – 400	65, 40, 25	VMLM5-H400-FA4A	VMLM5-4H400-FA5A
	6	250 – 630	65, 40, 25	VMLM6-H630-FA5A	VMLM6-4H630-FA7A
		320 – 800	65, 40, 25	VMLM6-H800-FA6A	VMLM6-4H800-FA7A
<b>Options</b>					
Current measurement with instantaneous					
A-meter x/5A <sup>3)</sup> ..... +P2D					
Current measurement with instant. and max. reading A-meter x/5A <sup>3)</sup> ..... +P2DM					
Current measurement with 3 transformers x/1A or x/5A <sup>3)</sup> ..... +P2B					
Cable connection device <sup>3)</sup> ..... +A4D					
Shunt release ..... +SH					
Undervoltage release ..... +U					
Auxiliary contacts ..... +HL6					
Protection class IP 43 ..... IP 43					
Protection class IP 54 ..... IP 54					

1) The rated current is reduced by 10% with IP43 and IP54 2) Not available with power supply

<sup>3)</sup> Not for 3-pole units VMLM2-...-FA2B or 4-pole units VMLM2-...-FA3B



## Distribution units with MCCB, fixed circuit-breaker

	MCCB size	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax N, operation type A + motor actuator</b>					
 <p>3-pole</p>	<b>3</b>	19 – 32	35, 25, 14	VMLM3-N32-FA3A+M	VMLM3-4N32-FA4A+M
		30 – 50	35, 25, 14	VMLM3-N50-FA3A+M	VMLM3-4N50-FA4A+M
		48 – 80	35, 25, 14	VMLM3-N80-FA3A+M	VMLM3-4N80-FA4A+M
		70 – 100	35, 25, 14	VMLM3-N100-FA3A+M	VMLM3-4N100-FA4A+M
		87.5 – 125	35, 25, 14	VMLM3-N125-FA3A+M	VMLM3-4N125-FA4A+M
		112 – 160	35, 25, 14	VMLM3-N160-FA3A+M	VMLM3-4N160-FA4A+M
		140 – 200	35, 25, 14	VMLM3-N200-FA3A+M	VMLM3-4N200-FA4A+M
 <p>4-pole</p>	<b>4</b>	175 – 250	35, 25, 14	VMLM3-N250-FA3A+M	VMLM3-4N250-FA4A+M
		40 – 100	35, 25, 18	VMLM4-N100-FA3A+M	VMLM4-4N100-FA4A+M
		64 – 160	35, 25, 18	VMLM4-N160-FA3A+M	VMLM4-4N160-FA4A+M
<b>5</b>	100 – 250	35, 25, 18	VMLM4-N250-FA3A+M	VMLM4-4N250-FA4A+M	
	130 – 320	35, 25, 20	VMLM5-N320-FA4A+M	VMLM5-4N320-FA5A+M	
<b>6</b>	160 – 400	35, 25, 20	VMLM5-N400-FA4A+M	VMLM5-4N400-FA5A+M	
	250 – 630	35, 25, 20	VMLM6-N630-FA5A+M	VMLM6-4N630-FA7A+M	
		320 – 800	35, 25, 20	VMLM6-N800-FA6A+M	VMLM6-4N800-FA7A+M
<b>MCCB type Isomax H, operation type A + motor actuator</b>					
<b>3</b>	19 – 32	65, 40, 18	VMLM3-H32-FA3A+M	VMLM3-4H32-FA4A+M	
	30 – 50	65, 40, 18	VMLM3-H50-FA3A+M	VMLM3-4H50-FA4A+M	
	48 – 80	65, 40, 18	VMLM3-H80-FA3A+M	VMLM3-4H80-FA4A+M	
	70 – 100	65, 40, 18	VMLM3-H100-FA3A+M	VMLM3-4H100-FA4A+M	
	87.5 – 125	65, 40, 18	VMLM3-H125-FA3A+M	VMLM3-4H125-FA4A+M	
	112 – 160	65, 40, 18	VMLM3-H160-FA3A+M	VMLM3-4H160-FA4A+M	
	140 – 200	65, 40, 18	VMLM3-H200-FA3A+M	VMLM3-4H200-FA4A+M	
<b>4</b>	175 – 250	65, 40, 18	VMLM3-H250-FA3A+M	VMLM3-4H250-FA4A+M	
	40 – 100	65, 40, 22	VMLM4-N100-FA3A+M	VMLM4-4N100-FA4A+M	
	64 – 160	65, 40, 22	VMLM4-H160-FA3A+M	VMLM4-4H160-FA4A+M	
<b>5</b>	100 – 250	65, 40, 22	VMLM4-H250-FA3A+M	VMLM4-4H250-FA4A+M	
	130 – 320	65, 40, 25	VMLM5-H320-FA4A+M	VMLM5-4H320-FA5A+M	
<b>6</b>	160 – 400	65, 40, 25	VMLM5-H400-FA4A+M	VMLM5-4H400-FA5A+M	
	250 – 630	65, 40, 25	VMLM6-H630-FA5A+M	VMLM6-4H630-FA7A+M	
		320 – 800	65, 40, 25	VMLM6-H800-FA6A+M	VMLM6-4H800-FA7A+M

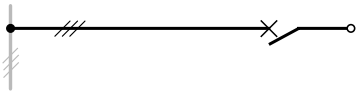
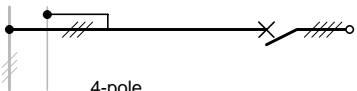
<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Options

Current measurement with instantaneous A-meter x/5A .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A .....	+P2B
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 .....	IP 43
Protection class IP 54 .....	IP 54

# Apparatus cubicle for F-units

## Distribution units with MCCB, fixed circuit-breakers

	MCCB size	Rated current 1) A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax N, operation type B</b>					
 3-pole	2	17.5 – 25	35, 12, 8	VMLM2-N25-FA2B	VMLM2-4N25-FA3B
		22.5 – 32	35, 12, 8	VMLM2-N32-FA2B	VMLM2-4N32-FA3B
 4-pole	2	28 – 40	35, 12, 8	VMLM2-N40-FA2B	VMLM2-4N40-FA3B
		35 – 50	35, 12, 8	VMLM2-N50-FA2B	VMLM2-4N50-FA3B
	2	44 – 63	35, 12, 8	VMLM2-N63-FA2B	VMLM2-4N53-FA3B
		56 – 80	35, 12, 8	VMLM2-N80-FA2B	VMLM2-4N80-FA3B
	2	17.5 – 25	35, 12, 8	VMLM2-N25-FA3B	VMLM2-4N25-FA4B
		22.5 – 32	35, 12, 8	VMLM2-N32-FA3B	VMLM2-4N32-FA4B
	2	28 – 40	35, 12, 8	VMLM2-N40-FA3B	VMLM2-4N40-FA4B
		35 – 50	35, 12, 8	VMLM2-N50-FA3B	VMLM2-4N50-FA4B
	2	44 – 63	35, 12, 8	VMLM2-N63-FA3B	VMLM2-4N53-FA4B
		56 – 80	35, 12, 8	VMLM2-N80-FA3B	VMLM2-4N80-FA4B
	2	70 – 100	35, 12, 8	VMLM2-N100-FA3B	VMLM2-4N100-FA4B
		87.5 – 125	35, 12, 8	VMLM2-N125-FA3B	VMLM2-4N125-FA4B
	3	19 – 32	35, 25, 14	VMLM3-N32-FA3B	VMLM3-4N32-FA4B
		30 – 50	35, 25, 14	VMLM3-N50-FA3B	VMLM3-4N50-FA4B
	3	48 – 80	35, 25, 14	VMLM3-N80-FA3B	VMLM3-4N80-FA4B
		70 – 100	35, 25, 14	VMLM3-N100-FA3B	VMLM3-4N100-FA4B
	3	87.5 – 125	35, 25, 14	VMLM3-N125-FA3B	VMLM3-4N125-FA4B
		112 – 160	35, 25, 14	VMLM3-N160-FA3B	VMLM3-4N160-FA4B
	3	140 – 200	35, 25, 14	VMLM3-N200-FA3B	VMLM3-4N200-FA4B
		175 – 250	35, 25, 14	VMLM3-N250-FA3B	VMLM3-4N250-FA4B
	4	40 – 100	35, 25, 18	VMLM4-N100-FA3B	VMLM4-4N100-FA4B
		64 – 160	35, 25, 18	VMLM4-N160-FA3B	VMLM4-4N160-FA4B
	4	100 – 250	35, 25, 18	VMLM4-N250-FA3B	VMLM4-4N250-FA4B
		130 – 320	35, 25, 20	VMLM5-N320-FA4B	VMLM5-4N320-FA5B
	5	160 – 400	35, 25, 20	VMLM5-N400-FA4B	VMLM5-4N400-FA5B
	6	250 – 630	35, 25, 20	VMLM6-N630-FA5B	VMLM6-4N630-FA7B
		320 – 800	35, 25, 20	VMLM6-N800-FA6B	VMLM6-4N800-FA7B
<b>MCCB type Isomax S and Isomax H, operation type B</b>					
2	2	17.5 – 25	50, 15, 10	VMLM2-S25-FA2B	VMLM2-4S25-FA3B
		22.5 – 32	50, 15, 10	VMLM2-S32-FA2B	VMLM2-4S32-FA3B
2	2	28 – 40	50, 15, 10	VMLM2-S40-FA2B	VMLM2-4S40-FA3B
		35 – 50	50, 15, 10	VMLM2-S50-FA2B	VMLM2-4S50-FA3B
2	2	44 – 63	50, 15, 10	VMLM2-S63-FA2B	VMLM2-4S53-FA3B
		56 – 80	50, 15, 10	VMLM2-S80-FA2B	VMLM2-4S80-FA3B
2	2	17.5 – 25	50, 15, 10	VMLM2-S25-FA3B	VMLM2-4S25-FA4B
		22.5 – 32	50, 15, 10	VMLM2-S32-FA3B	VMLM2-4S32-FA4B
2	2	28 – 40	50, 15, 10	VMLM2-S40-FA3B	VMLM2-4S40-FA4B
		35 – 50	50, 15, 10	VMLM2-S50-FA3B	VMLM2-4S50-FA4B
2	2	44 – 63	50, 15, 10	VMLM2-S63-FA3B	VMLM2-4S53-FA4B
		56 – 80	50, 15, 10	VMLM2-S80-FA3B	VMLM2-4S80-FA4B
2	2	70 – 100	50, 15, 10	VMLM2-S100-FA3B	VMLM2-4S100-FA4B
		87.5 – 125	50, 15, 10	VMLM2-S125-FA3B	VMLM2-4S125-FA4B
3	3	19 – 32	65, 40, 18	VMLM3-H32-FA3B	VMLM3-4H32-FA4B
		30 – 50	65, 40, 18	VMLM3-H50-FA3B	VMLM3-4H50-FA4B
3	3	48 – 80	65, 40, 18	VMLM3-H80-FA3B	VMLM3-4H80-FA4B
		70 – 100	65, 40, 18	VMLM3-H100-FA3B	VMLM3-4H100-FA4B
3	3	87.5 – 125	65, 40, 18	VMLM3-H125-FA3B	VMLM3-4H125-FA4B
		112 – 160	65, 40, 18	VMLM3-H160-FA3B	VMLM3-4H160-FA4B
3	3	140 – 200	65, 40, 18	VMLM3-H200-FA3B	VMLM3-4H200-FA4B
		175 – 250	65, 40, 18	VMLM3-H250-FA3B	VMLM3-4H250-FA4B
4	4	40 – 100	65, 40, 22	VMLM4-N100-FA3B	VMLM4-4N100-FA4B
		64 – 160	65, 40, 22	VMLM4-H160-FA3B	VMLM4-4H160-FA4B
4	4	100 – 250	65, 40, 22	VMLM4-H250-FA3B	VMLM4-4H250-FA4B
		130 – 320	65, 40, 25	VMLM5-H320-FA4B	VMLM5-4H320-FA5B
5	5	160 – 400	65, 40, 25	VMLM5-H400-FA4B	VMLM5-4H400-FA5B
		250 – 630	65, 40, 25	VMLM6-H630-FA5B	VMLM6-4H630-FA7B
6	6	320 – 800	65, 40, 25	VMLM6-H800-FA6B	VMLM6-4H800-FA7B

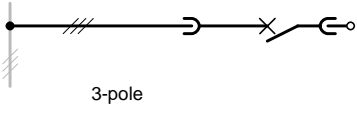
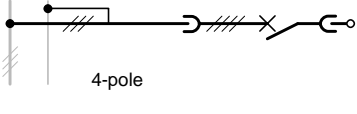

### Options

Current measurement with instantaneous A-meter x/5A <sup>3)</sup> .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A <sup>3)</sup> .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A <sup>3)</sup> .....	+P2B
Cable connection device <sup>3)</sup> .....	+A4D
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 .....	IP 43
Protection class IP 54 .....	IP 54

1) The rated current is reduced by 10% with IP43 and IP54 2) Not available with power supply

<sup>3)</sup> Not for 3-pole units VMLM2-...-FA2B or 4-pole units VMLM2-...-FA3B

## Distribution units with MCCB, plug-in circuit-breaker

	MCCB size	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name		
<b>MCCB type Isomax N, operation type A</b>							
	2	17.5 – 25	35, 12, 8	VMLM2-NP25-FA3A	VMLM2-4NP25-FA4A		
		22.5 – 32	35, 12, 8	VMLM2-NP32-FA3A	VMLM2-4NP32-FA4A		
	3	28 – 40	35, 12, 8	VMLM2-NP40-FA3A	VMLM2-4NP40-FA4A		
		35 – 50	35, 12, 8	VMLM2-NP50-FA3A	VMLM2-4NP50-FA4A		
		44 – 63	35, 12, 8	VMLM2-NP63-FA3A	VMLM2-4NP53-FA4A		
		56 – 80	35, 12, 8	VMLM2-NP80-FA3A	VMLM2-4NP80-FA4A		
		70 – 100	35, 12, 8	VMLM2-NP100-FA3A	VMLM2-4NP100-FA4A		
		87.5 – 125	35, 12, 8	VMLM2-NP125-FA3A	VMLM3-4NP125-FA4A		
		19 – 32	35, 25, 14	VMLM3-NP32-FA3A	VMLM3-4NP32-FA4A		
		30 – 50	35, 25, 14	VMLM3-NP50-FA3A	VMLM3-4NP50-FA4A		
		48 – 80	35, 25, 14	VMLM3-NP80-FA3A	VMLM3-4NP80-FA4A		
		70 – 100	35, 25, 14	VMLM3-NP100-FA3A	VMLM3-4NP100-FA4A		
4	5	87.5 – 125	35, 25, 14	VMLM3-NP125-FA3A	VMLM3-4NP125-FA4A		
		112 – 160	35, 25, 14	VMLM3-NP160-FA3A	VMLM3-4NP160-FA4A		
		140 – 200	35, 25, 14	VMLM3-NP200-FA3A	VMLM3-4NP200-FA4A		
		175 – 250	35, 25, 14	VMLM3-NP250-FA3A	VMLM3-4NP250-FA4A		
		40 – 100	35, 25, 18	VMLM4-NP100-FA3A	VMLM4-4NP100-FA4A		
64 – 160	35, 25, 18	VMLM4-NP160-FA3A	VMLM4-4NP160-FA4A				
100 – 250	35, 25, 18	VMLM4-NP250-FA3A	VMLM4-4NP250-FA4A				
		130 – 320	35, 25, 20	VMLM5-NP320-FA4A	VMLM5-4NP320-FA5A		
		160 – 400	35, 25, 20	VMLM5-NP400-FA4A	VMLM5-4NP400-FA5A		
<b>MCCB type Isomax S and Isomax H, operation type A</b>							
	2	17.5 – 25	50, 15, 10	VMLM2-SP25-FA3A	VMLM2-4SP25-FA4A		
		22.5 – 32	50, 15, 10	VMLM2-SP32-FA3A	VMLM2-4SP32-FA4A		
		28 – 40	50, 15, 10	VMLM2-SP40-FA3A	VMLM2-4SP40-FA4A		
		35 – 50	50, 15, 10	VMLM2-SP50-FA3A	VMLM2-4SP50-FA4A		
		44 – 63	50, 15, 10	VMLM2-SP63-FA3A	VMLM2-4SP53-FA4A		
		56 – 80	50, 15, 10	VMLM2-SP80-FA3A	VMLM2-4SP80-FA4A		
		70 – 100	50, 15, 10	VMLM2-SP100-FA3A	VMLM2-4SP100-FA4A		
		87.5 – 125	50, 15, 10	VMLM2-SP125-FA3A	VMLM3-4SP125-FA4A		
		3	4	19 – 32	65, 40, 18	VMLM3-HP32-FA3A	VMLM3-4HP32-FA4A
				30 – 50	65, 40, 18	VMLM3-HP50-FA3A	VMLM3-4HP50-FA4A
48 – 80	65, 40, 18			VMLM3-HP80-FA3A	VMLM3-4HP80-FA4A		
70 – 100	65, 40, 18			VMLM3-HP100-FA3A	VMLM3-4HP100-FA4A		
87.5 – 125	65, 40, 18			VMLM3-HP125-FA3A	VMLM3-4HP125-FA4A		
5	5	112 – 160	65, 40, 18	VMLM3-HP160-FA3A	VMLM3-4HP160-FA4A		
		140 – 200	65, 40, 18	VMLM3-HP200-FA3A	VMLM3-4HP200-FA4A		
		175 – 250	65, 40, 18	VMLM3-HP250-FA3A	VMLM3-4HP250-FA4A		
4	5	40 – 100	65, 40, 22	VMLM4-HP100-FA3A	VMLM4-4HP100-FA4A		
		64 – 160	65, 40, 22	VMLM4-HP160-FA3A	VMLM4-4HP160-FA4A		
		100 – 250	65, 40, 22	VMLM4-HP250-FA3A	VMLM4-4HP250-FA4A		
		130 – 320	65, 40, 25	VMLM5-HP320-FA4A	VMLM5-4HP320-FA5A		
		160 – 400	65, 40, 25	VMLM5-HP400-FA4A	VMLM5-4HP400-FA5A		

### Options

Current measurement with instantaneous A-meter x/5A <sup>3)</sup> .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A <sup>3)</sup> .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A <sup>3)</sup> .....	+P2B
Cable connection device <sup>3)</sup> .....	+A4D
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 .....	IP 43
Protection class IP 54 .....	IP 54

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Only fixed section to MCCB type Isomax, plug-in circuit-breaker with operation type A

Fixed section for circuit-breaker size	3-pole Type name	4-pole Type name
2	VMLM2-SP-FA3A	VMLM2-4SP-FA4A
3	VMLM3-HP-FA3A	VMLM3-4HP-FA4A
4	VMLM4-HP-FA3A	VMLM4-4HP-FA4A
5	VMLM5-HP-FA4A	VMLM5-4HP-FA5A

# Apparatus cubicle for F-units

## Distribution units with MCCB, plug-in circuit-breaker

	MCCB size	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax N, operation type A + motor actuator</b>					
	3	19 – 32	35, 25, 14	VMLM3-NP32-FA3A+M	VMLM3-4NP32-FA4A+M
		30 – 50	35, 25, 14	VMLM3-NP50-FA3A+M	VMLM3-4NP50-FA4A+M
		48 – 80	35, 25, 14	VMLM3-NP80-FA3A+M	VMLM3-4NP80-FA4A+M
		70 – 100	35, 25, 14	VMLM3-NP100-FA3A+M	VMLM3-4NP100-FA4A+M
		87.5 – 125	35, 25, 14	VMLM3-NP125-FA3A+M	VMLM3-4NP125-FA4A+M
		112 – 160	35, 25, 14	VMLM3-NP160-FA3A+M	VMLM3-4NP160-FA4A+M
		140 – 200	35, 25, 14	VMLM3-NP200-FA3A+M	VMLM3-4NP200-FA4A+M
		175 – 250	35, 25, 14	VMLM3-NP250-FA3A+M	VMLM3-4NP250-FA4A+M
	4	40 – 100	35, 25, 18	VMLM4-NP100-FA3A+M	VMLM4-4NP100-FA4A+M
		64 – 160	35, 25, 18	VMLM4-NP160-FA3A+M	VMLM4-4NP160-FA4A+M
		100 – 250	35, 25, 18	VMLM4-NP250-FA3A+M	VMLM4-4NP250-FA4A+M
	5	130 – 320	35, 25, 20	VMLM5-NP320-FA4A+M	VMLM5-4NP320-FA5A+M
		160 – 400	35, 25, 20	VMLM5-NP400-FA4A+M	VMLM5-4NP400-FA5A+M
	6	250 – 630	35, 25, 20	VMLM6-NP630-FA6A+M	VMLM6-4NP630-FA7A+M
		320 – 800	35, 25, 20	VMLM6-NP800-FA6A+M	VMLM6-4NP800-FA7A+M
<b>MCCB type Isomax H, operation type A + motor actuator</b>					
3	19 – 32	65, 40, 18	VMLM3-HP32-FA3A+M	VMLM3-4HP32-FA4A+M	
	30 – 50	65, 40, 18	VMLM3-HP50-FA3A+M	VMLM3-4HP50-FA4A+M	
	48 – 80	65, 40, 18	VMLM3-HP80-FA3A+M	VMLM3-4HP80-FA4A+M	
	70 – 100	65, 40, 18	VMLM3-HP100-FA3A+M	VMLM3-4HP100-FA4A+M	
	87.5 – 125	65, 40, 18	VMLM3-HP125-FA3A+M	VMLM3-4HP125-FA4A+M	
	112 – 160	65, 40, 18	VMLM3-HP160-FA3A+M	VMLM3-4HP160-FA4A+M	
	140 – 200	65, 40, 18	VMLM3-HP200-FA3A+M	VMLM3-4HP200-FA4A+M	
	175 – 250	65, 40, 18	VMLM3-HP250-FA3A+M	VMLM3-4HP250-FA4A+M	
4	40 – 100	65, 40, 22	VMLM4-NP100-FA3A+M	VMLM4-4NP100-FA4A+M	
	64 – 160	65, 40, 22	VMLM4-HP160-FA3A+M	VMLM4-4HP160-FA4A+M	
	100 – 250	65, 40, 22	VMLM4-HP250-FA3A+M	VMLM4-4HP250-FA4A+M	
5	130 – 320	65, 40, 25	VMLM5-HP320-FA4A+M	VMLM5-4HP320-FA5A+M	
	160 – 400	65, 40, 25	VMLM5-HP400-FA4A+M	VMLM5-4HP400-FA5A+M	
6	250 – 630	65, 40, 25	VMLM6-HP630-FA6A+M	VMLM6-4HP630-FA7A+M	
	320 – 800	65, 40, 25	VMLM6-HP800-FA6A+M	VMLM6-4HP800-FA7A+M	

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

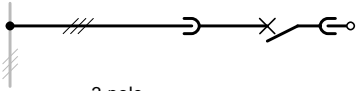
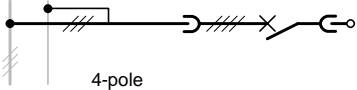
### Options

Current measurement with instantaneous A-meter x/5A <sup>3)</sup> .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A <sup>3)</sup> .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A <sup>3)</sup> .....	+P2B
Cable connection device <sup>3)</sup> .....	+A4D
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 .....	IP 43
Protection class IP 54 .....	IP 54

## Only fixed section to MCCB type Isomax, plug-in circuit-breaker with operation type A + motor actuator

Fixed section for circuit-breaker size	3-pole Type name	4-pole Type name
3	VMLM3-HP-FA3A+M	VMLM3-4HP-FA4A+M
4	VMLM4-HP-FA3A+M	VMLM4-4HP-FA4A+M
5	VMLM5-HP-FA4A+M	VMLM5-4HP-FA5A+M
6	VMLM6-HP-FA6A+M	VMLM6-4HP-FA7A+M

## Distribution units with MCCB, plug-in circuit-breaker

	MCCB size	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax N, operation type B</b>					
	2	17.5 – 25	35, 12, 8	VMLM2-NP25-FA3B	VMLM2-4NP25-FA4B
		22.5 – 32	35, 12, 8	VMLM2-NP32-FA3B	VMLM2-4NP32-FA4B
	3	28 – 40	35, 12, 8	VMLM2-NP40-FA3B	VMLM2-4NP40-FA4B
		35 – 50	35, 12, 8	VMLM2-NP50-FA3B	VMLM2-4NP50-FA4B
		44 – 63	35, 12, 8	VMLM2-NP63-FA3B	VMLM2-4NP63-FA4B
		56 – 80	35, 12, 8	VMLM2-NP80-FA3B	VMLM2-4NP80-FA4B
		70 – 100	35, 12, 8	VMLM2-NP100-FA3B	VMLM2-4NP100-FA4B
		87.5 – 125	35, 12, 8	VMLM2-NP125-FA3B	VMLM2-4NP125-FA4B
		19 – 32	35, 25, 14	VMLM3-NP32-FA3B	VMLM3-4NP32-FA4B
		30 – 50	35, 25, 14	VMLM3-NP50-FA3B	VMLM3-4NP50-FA4B
		48 – 80	35, 25, 14	VMLM3-NP80-FA3B	VMLM3-4NP80-FA4B
		70 – 100	35, 25, 14	VMLM3-NP100-FA3B	VMLM3-4NP100-FA4B
4	5	87.5 – 125	35, 25, 14	VMLM3-NP125-FA3B	VMLM3-4NP125-FA4B
		112 – 160	35, 25, 14	VMLM3-NP160-FA3B	VMLM3-4NP160-FA4B
		140 – 200	35, 25, 14	VMLM3-NP200-FA3B	VMLM3-4NP200-FA4B
		175 – 250	35, 25, 14	VMLM3-NP250-FA3B	VMLM3-4NP250-FA4B
		40 – 100	35, 25, 18	VMLM4-NP100-FA3B	VMLM4-4NP100-FA4B
		64 – 160	35, 25, 18	VMLM4-NP160-FA3B	VMLM4-4NP160-FA4B
5	6	100 – 250	35, 25, 18	VMLM4-NP250-FA3B	VMLM4-4NP250-FA4B
		130 – 320	35, 25, 20	VMLM5-NP320-FA4B	VMLM5-4NP320-FA5B
		160 – 400	35, 25, 20	VMLM5-NP400-FA4B	VMLM5-4NP400-FA5B
		250 – 630	35, 25, 20	VMLM6-NP630-FA6B	VMLM6-4NP630-FA7B
		320 – 800	35, 25, 20	VMLM6-NP800-FA6B	VMLM6-4NP800-FA7B
<b>MCCB type Isomax S and Isomax H, operation type B</b>					
Options	2	17.5 – 25	50, 15, 10	VMLM2-SP25-FA3B	VMLM2-4SP25-FA4B
		22.5 – 32	50, 15, 10	VMLM2-SP32-FA3B	VMLM2-4SP32-FA4B
		28 – 40	50, 15, 10	VMLM2-SP40-FA3B	VMLM2-4SP40-FA4B
		35 – 50	50, 15, 10	VMLM2-SP50-FA3B	VMLM2-4SP50-FA4B
		44 – 63	50, 15, 10	VMLM2-SP63-FA3B	VMLM2-4SP63-FA4B
		56 – 80	50, 15, 10	VMLM2-SP80-FA3B	VMLM2-4SP80-FA4B
		70 – 100	50, 15, 10	VMLM2-SP100-FA3B	VMLM2-4SP100-FA4B
		87.5 – 125	50, 15, 10	VMLM2-SP125-FA3B	VMLM2-4SP125-FA4B
3	4	19 – 32	65, 40, 18	VMLM3-HP32-FA3B	VMLM3-4HP32-FA4B
		30 – 50	65, 40, 18	VMLM3-HP50-FA3B	VMLM3-4HP50-FA4B
		48 – 80	65, 40, 18	VMLM3-HP80-FA3B	VMLM3-4HP80-FA4B
		70 – 100	65, 40, 18	VMLM3-HP100-FA3B	VMLM3-4HP100-FA4B
		87.5 – 125	65, 40, 18	VMLM3-HP125-FA3B	VMLM3-4HP125-FA4B
		112 – 160	65, 40, 18	VMLM3-HP160-FA3B	VMLM3-4HP160-FA4B
4	5	140 – 200	65, 40, 18	VMLM3-HP200-FA3B	VMLM3-4HP200-FA4B
		175 – 250	65, 40, 18	VMLM3-HP250-FA3B	VMLM3-4HP250-FA4B
5	6	40 – 100	65, 40, 22	VMLM4-HP100-FA3B	VMLM4-4HP100-FA4B
		64 – 160	65, 40, 22	VMLM4-HP160-FA3B	VMLM4-4HP160-FA4B
		100 – 250	65, 40, 22	VMLM4-HP250-FA3B	VMLM4-4HP250-FA4B
		130 – 320	65, 40, 25	VMLM5-HP320-FA4B	VMLM5-4HP320-FA5B
		160 – 400	65, 40, 25	VMLM5-HP400-FA4B	VMLM5-4HP400-FA5B
		250 – 630	65, 40, 25	VMLM6-HP630-FA6B	VMLM6-4HP630-FA7B
		320 – 800	65, 40, 25	VMLM6-HP800-FA6B	VMLM6-4HP800-FA7B
				<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54	

### Options

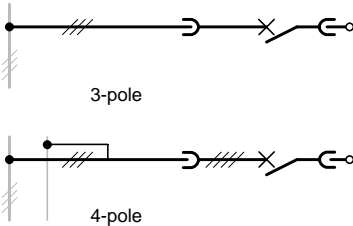
Current measurement with instantaneous A-meter x/5A <sup>3)</sup> .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A <sup>3)</sup> .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A <sup>3)</sup> .....	+P2B
Cable connection device <sup>3)</sup> .....	+A4D
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6
Protection class IP 43 .....	IP 43
Protection class IP 54 .....	IP 54

## Only fixed section to MCCB type Isomax, plug-in circuit-breaker with operation type B

Fixed section for circuit-breaker size	3-pole Type name	4-pole Type name
2	VMLM2-SP-FA3B	VMLM2-4SP-FA4B
3	VMLM3-HP-FA3B	VMLM3-4HP-FA4B
4	VMLM4-HP-FA3B	VMLM4-4HP-FA4B
5	VMLM5-HP-FA4B	VMLM5-4HP-FA5B
6	VMLM6-HP-FA6B	VMLM6-4HP-FA7B

# Apparatus cubicle for F-units

## Distribution units with MCCB, withdrawable circuit-breaker

	MCCB size	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax N, operation type A</b>					
 <p>3-pole</p> <p>4-pole</p>	<b>3</b>	19 – 32	35, 25, 14	VMLM3-NW32-FA4A	VMLM3-4NW32-FA5A
		30 – 50	35, 25, 14	VMLM3-NW50-FA4A	VMLM3-4NW50-FA5A
		48 – 80	35, 25, 14	VMLM3-NW80-FA4A	VMLM3-4NW80-FA5A
		70 – 100	35, 25, 14	VMLM3-NW100-FA4A	VMLM3-4NW100-FA5A
		87.5 – 125	35, 25, 14	VMLM3-NW125-FA4A	VMLM3-4NW125-FA5A
		112 – 160	35, 25, 14	VMLM3-NW160-FA4A	VMLM3-4NW160-FA5A
	<b>4</b>	140 – 200	35, 25, 14	VMLM3-NW200-FA4A	VMLM3-4NW200-FA5A
		175 – 250	35, 25, 14	VMLM3-NW250-FA4A	VMLM3-4NW250-FA5A
		40 – 100	35, 25, 18	VMLM4-NW100-FA4A	VMLM4-4NW100-FA5A
		64 – 160	35, 25, 18	VMLM4-NW160-FA4A	VMLM4-4NW160-FA5A
		100 – 250	35, 25, 18	VMLM4-NW250-FA4A	VMLM4-4NW250-FA5A
		<b>5</b>	130 – 320	35, 25, 20	VMLM5-NW320-FA5A
160 – 400	35, 25, 20		VMLM5-NW400-FA5A	VMLM5-4NW400-FA6A	
<b>6</b>	250 – 630	35, 25, 20	VMLM6-NW630-FA6A	VMLM6-4NW630-FA7A	
	320 – 800	35, 25, 20	VMLM6-NW800-FA6A	VMLM6-4NW800-FA7A	

### Options

Current measurement with instantaneous A-meter x/5A .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A .....	+P2B
Cable connection device .....	+A4D
Shunt release .....	+SH
Undervoltage release .....	+U
Auxiliary contacts .....	+HL6

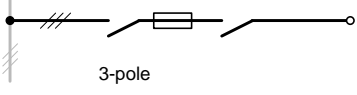
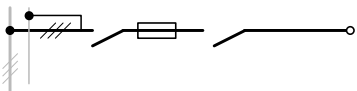
	MCCB size	Rated current <sup>1)</sup> A	Breaking capacity at 400, 500, 690 V kA	3-pole Type name	4-pole Type name
<b>MCCB type Isomax H, operation type A</b>					
<b>3</b>	19 – 32	65, 40, 18	65, 40, 18	VMLM3-HW32-FA4A	VMLM3-4HW32-FA5A
	30 – 50	65, 40, 18	65, 40, 18	VMLM3-HW50-FA4A	VMLM3-4HW50-FA5A
	48 – 80	65, 40, 18	65, 40, 18	VMLM3-HW80-FA4A	VMLM3-4HW80-FA5A
	70 – 100	65, 40, 18	65, 40, 18	VMLM3-HW100-FA4A	VMLM3-4HW100-FA5A
	87.5 – 125	65, 40, 18	65, 40, 18	VMLM3-HW125-FA4A	VMLM3-4HW125-FA5A
	112 – 160	65, 40, 18	65, 40, 18	VMLM3-HW160-FA4A	VMLM3-4HW160-FA5A
<b>4</b>	140 – 200	65, 40, 18	65, 40, 18	VMLM3-HW200-FA4A	VMLM3-4HW200-FA5A
	175 – 250	65, 40, 18	65, 40, 18	VMLM3-HW250-FA4A	VMLM3-4HW250-FA5A
	40 – 100	65, 40, 22	65, 40, 22	VMLM4-NW100-FA4A	VMLM4-4NW100-FA5A
<b>5</b>	64 – 160	65, 40, 22	65, 40, 22	VMLM4-HW160-FA4A	VMLM4-4HW160-FA5A
	100 – 250	65, 40, 22	65, 40, 22	VMLM4-HW250-FA4A	VMLM4-4HW250-FA5A
<b>6</b>	130 – 320	65, 40, 25	65, 40, 25	VMLM5-HW320-FA5A	VMLM5-4HW320-FA6A
	160 – 400	65, 40, 25	65, 40, 25	VMLM5-HW400-FA5A	VMLM5-4HW400-FA6A
<b>6</b>	250 – 630	65, 40, 25	65, 40, 25	VMLM6-HW630-FA6A	VMLM6-4HW630-FA7A
	320 – 800	65, 40, 25	65, 40, 25	VMLM6-HW800-FA6A	VMLM6-4HW800-FA7A

<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Only fixed section to MCCB type Isomax, withdrawable circuit-breaker with operation type A

Fixed section for circuit-breaker size	3-pole Type name	4-pole Type name
3	VMLM3-HW-FA4A	VMLM3-4HW-FA5A
4	VMLM4-HW-FA4A	VMLM4-4HW-FA5A
5	VMLM5-HW-FA5A	VMLM5-4HW-FA6A
6	VMLM6-HW-FA6A	VMLM6-4HW-FA7A

## Distribution units with switch-fuse

	Rated current <sup>1)</sup> A	Fuse with max. power dissipation W	3-pole Type name	4-pole Type name
 <p>3-pole</p>	<b>Operation type B</b>			
	160		VMLLH160-FA3B	VMLLH160-4-FA4B
	250	23	VMLLH250-FA4B	VMLLH250-4-FA8B
	400	34	VMLLH400-FA4B	VMLLH400-4-FA8B
	630	45	VMLLH630-FA8B	VMLLH630-4-FA10B
 <p>4-pole</p>	800	55	VMLLH800-FA8B	VMLLH800-4-FA10B

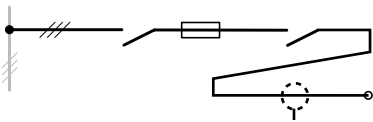
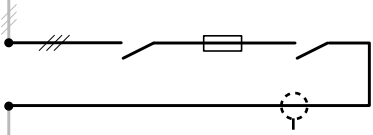
<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

## Options

Current measurement with instantaneous	
A-meter x/5A .....	+P2D
Current measurement with instant. and max. reading A-meter x/5A .....	+P2DM
Current measurement with 3 transformers x/1A or x/5A .....	+P2B
Auxiliary contacts, 1 NO + 1 NC .....	+HL2
Cable connection device .....	+A4D
Parallel actuator for two VMLLH250 or 400 placed underneath each other .....	+L6
Interlock for two VMLLH250 or 400 placed underneath each other .....	+L7
Possible close - open position for units:	
<b>Unit 1</b>	<b>Unit 2</b>
Open	Open
Open	Closed
Closed	Open
Protection class IP 43 .....	IP 43
Protection class IP 54 .....	IP 54

# Apparatus cubicle for F-units

## Distribution units with switch-fuse for kWh-measurement

	Rated current <sup>1)</sup> A	Fuses with max. power dissipation W	3-pole Type name	4-pole Type name
	<b>kWh-measurement group for outgoing measurement, operation type B</b>			
	160		VMLLH160C-FA7B	
	250	23	VMLLH250C-FA8B	
	400	34	VMLLH400C-FA8B	
	<b>kWh-measurement group for sectioning, operation type B</b>			
	250	23	VMLLHS250C-FA8B	
	250	23	VMLLHS250C-FA10B	for placement in top of cubicle
	400	34	VMLLHS400C-FA8B	
400	34	VMLLHS400C-FA10B	for placement in top of cubicle	
630	45	VMLLHS630C-FA14B		

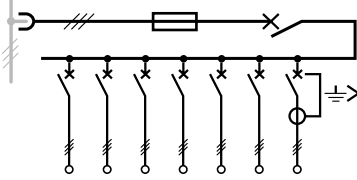
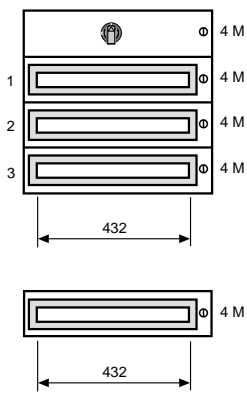
<sup>1)</sup> The rated current is reduced by 10% with IP43 and IP54

### Options

Auxiliary contacts, 1 NO + 1 NC ..... +HL2  
 Cable connection device to units for outgoing  
 measuring ..... +A4D  
 Protection class IP 43 ..... IP 43  
 Protection class IP 54 ..... IP 54



## Distribution boards with miniature circuit-breaker (MCB)

		Type name			
No. of rows		Full door	Sep door	Sep glass door	
					
<b>Fixed mounted backup MCCB, operation type C (backup MCCB operation type B)</b>					
100 - 125 A (90 - 115 A for IP 43/54), 170 kA, instantaneous release 1000 A					
<b>3-pole</b>					
1	VMLMA125-L125-	FA7	FA7C	FA7C+Glass	
2	VMLMA125-L125-	FA11	FA11C	FA11C+Glass	
3	VMLMA125-L125-	FA15	FA15C	FA15C+Glass	
<b>4-pole</b>					
1	VMLMA125-4L125-	FA8	FA8C	FA8C+Glass	
2	VMLMA125-4L125-	FA12	FA12C	FA12C+Glass	
3	VMLMA125-4L125-	FA16	FA16C	FA16C+Glass	
					
<b>Plug-in backup-MCCB, operation type C (backup MCCB operation type B)</b>					
100 - 125 A (90 - 115 A for IP 43/54), 170 kA, instantaneous release 1000 A					
<b>3-pole</b>					
1	VMLMA125-LP125-	FA7	FA7C	FA7C+Glass	
2	VMLMA125-LP125-	FA11	FA11C	FA11C+Glass	
3	VMLMA125-LP125-	FA15	FA15C	FA15C+Glass	
<b>4-pole</b>					
1	VMLMA125-4LP125-	FA8	FA8C	FA8C+Glass	
2	VMLMA125-4LP125-	FA12	FA12C	FA12C+Glass	
3	VMLMA125-4LP125-	FA16	FA16C	FA16C+Glass	
<b>Without backup MCCB, operation type C</b>					
Max load 180 A, 10 kA limit where type MCB series 270 is used, 15 kA for series 280					
<b>3-pole</b>					
1	VMLA180	FA4	FA4C	FA4C+Glass	
<b>4-pole</b>					
1	VMLA180-4-	FAA4	FAA4C	FAA4C+Glass	

## Options

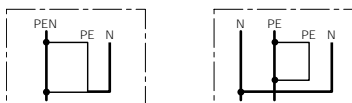
Protection class (only for units with separate doors)

IP 43 ..... +IP 43

IP 54 ..... +IP 54

Disconnector N conductor ..... +N

Not required when only MCB apparatus are connected with breaking of neutral. N connection then made directly in the MCB-apparatus.



# Apparatus cubicle for F-units

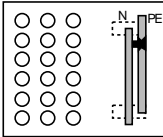
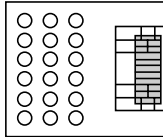
## Miniature circuit-breaker (MCB)

Rated current A	Type name			
	1-pole	2-pole	3-pole	4-pole
<b>270-series (10 kA)</b>				
	Width: 18 mm	36 mm	54 mm	72 mm
6	+1S6	+2S6	+3S6	+4S6
10	+1S10	+2S10	+3S10	+4S10
16	+1S16	+2S16	+3S16	+4S16
20	+1S20	+2S20	+3S20	+4S20
25	+1S25	+2S25	+3S25	+4S25
32	+1S32	+2S32	+3S32	+4S32
40	+1S40	+2S40	+3S40	+4S40
50	+1S50	+2S50	+3S50	+4S50
63	+1S63	+2S63	+3S63	+4S63
<b>270-series (10 kA) with earth fault protection 0.03 A</b>				
	Width:	72 mm		108 (144) mm
6		+2F6		+4F6
10		+2F10		+4F10
16		+2F16		+4F16
20		+2F20		+4F20
25		+2F25		+4F25
32		+2F32		+4F32
40		+2F40		+4F40 144 mm
50		+2F50		+4F50 144 mm
63		+2F63		+4F63 144 mm
<b>270-series (10 kA) with earth fault protection 0.3 A</b>				
	Width:	72 mm		108 (144) mm
6		+2F6B3		+4F6B3
10		+2F10B3		+4F10B3
16		+2F16B3		+4F16B3
20		+2F20B3		+4F20B3
25		+2F25B3		+4F25B3
32		+2F32B3		+4F32B3
40		+2F40B3		+4F40B3 144 mm
50		+2F50B3		+4F50B3 144 mm
63		+2F63B3		+4F63B3 144 mm
<b>280-series (15 kA)</b>				
	Width: 18 mm	36 mm	54 mm	72 mm
10	+1SH10	+2SH10	+3SH10	+4SH10
16	+1SH16	+2SH16	+3SH16	+4SH16
20	+1SH20	+2SH20	+3SH20	+4SH20
25	+1SH25	+2SH25	+3SH25	+4SH25
32	+1SH32	+2SH32	+3SH32	+4SH32
40	+1SH40	+2SH40	+3SH40	+4SH40
<b>280-series (15 kA) with earth fault protection 0.03 A</b>				
	Width:	72 mm		108 (144) mm
10		+2FH10		+4FH10
16		+2FH16		+4FH16
20		+2FH20		+4FH20
25		+2FH25		+4FH25
32		+2FH32		+4FH32
40		+2FH40		+4FH40 144 mm
<b>280-series (15 kA) with earth fault protection 0.3 A</b>				
	Width:	72 mm		108 (144) mm
10		+2FH10B3		+4FH10B3
16		+2FH16B3		+4FH16B3
20		+2FH20B3		+4FH20B3
25		+2FH25B3		+4FH25B3
32		+2FH32B3		+4FH32B3
40		+2FH40B3		+4FH40B3 144 mm

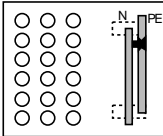
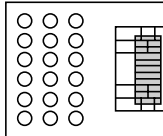
### Options for miniature circuit-breaker

Signal contact and auxiliary contact, 6 A,  
1 NO + 1 NC, width 9 mm ..... +SH

## Distribution boards with threaded fuses DII, 25 A

		No. of groups		Type name
		1-pole	3-pole	
<b>With N + PE busbars</b>				
N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 3-pole connection of outgoing groups.				
		18	6	VMLG18120-FA7C
		9	3	VMLG9120-FA4C
<b>With terminal block row</b>				
All groups are connected to a terminal block row, which also houses disconnectable neutral terminals for common and individual isolation groups. PE busbars with two-screw clamps and wiring to the main N terminal.				
		-	6	VMLGP6320-FA7C
		18	-	VMLGP18120-FA7C
		-	3	VMLGP3320-FA4C
		9	-	VMLGP9120-FA4C
<b>With group switch 40 A</b>				
Each group is equipped with a 3-pole group switch. N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 1-pole connection of outgoing groups.				
		-	6	VMLGL6320-FA7C
<b>With extra fuse row</b>				
Six fuse sockets, 25 A, mounted on a phase bar beside the ordinary three rows.				
		24/6	-/6	VMLG18120-612-FA7C

## Distribution boards with threaded fuses DIII, 63 A

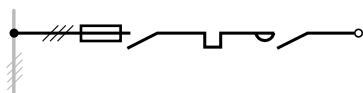
		No. of groups		Type name
		1-pole	3-pole	
<b>With N + PE busbars</b>				
N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 3-pole connection of outgoing groups.				
		-	5	VMLG5360-FA7C
		-	2	VMLG2360-FA4C
<b>With terminal block row</b>				
All groups are connected to a terminal block row, which also houses disconnectable neutral terminals for common and individual isolation groups. PE busbars with two-screw clamps and wiring to the main N terminal.				
		-	5	VMLGP5360-FA7C
		-	2	VMLGP2360-FA4C
<b>With group switch 80 A</b>				
Each group is equipped with a 3-pole group switch. N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 1-pole connection of outgoing groups.				
		-	5	VMLGL5360-FA7C
<b>With extra fuse row</b>				
		6	5	VMLGP5360-612-FA7C

### Options

Protection class IP 43 ..... IP 43  
 Protection class IP 54 ..... IP 54

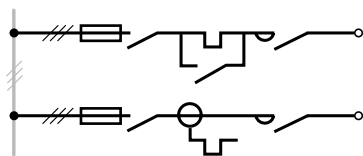
# Apparatus cubicle for F-units

## Direct-on-line starters with switch-fuse, normal start, 380/400 V, Type 2, 50 kA



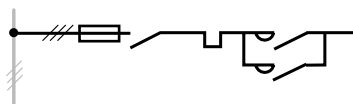
Max motor output at AC3, 400 V kW	Fuses type gG Type name	Fuses type aM Type name
<b>Operation type B</b>		
4	VMLD9-L63-FA3B	VMLD9-L63-FA3B
5.5	VMLD12-L63-FA3B	VMLD12-L63-FA3B
7.5	VMLD16-L63-FA3B	VMLD16-L63-FA3B
11	VMLD26-L63-FA4B	VMLD26-L63-FA4B
15	VMLD30-L63-FA4B	VMLD30-L63-FA4B
18.5	VMLD50-L125-FA4B	VMLD50-L125-FA4B
22	VMLD50-L125-FA4B	VMLD50-L125-FA4B
30	VMLD63-L125-FA4B	VMLD63-L125-FA4B
37	VMLD75-L160-FA4B	VMLD75-L160-FA4B
45	VMLD95-L160-FA7B	VMLD95-L160-FA7B
55	VMLD110-L250-FA8B	VMLD110-L160-FA7B
75	VMLD145-L250-FA9B	VMLD145-L250-FA9B
90	VMLD175-L400-FA10B	VMLD175-L250-FA10B
110	VMLD210-L400-FA10B	VMLD210-L250-FA10B
132	VMLD260-L400-FA11B	VMLD260-L400-FA11B

## Direct-on-line starters with switch-fuse, heavy start, 380/400 V, Type 2, 50 kA



Max motor output at AC3, 400 V kW	Fuses type gG Type name A	Fuses type aM Type name A
<b>Operation type B</b>		
37	VMLDH95-L250-FA8B	VMLDH95-L160-FA7B
45	VMLDH110-L250-FA8B	VMLDH110-L160-FA7B
55	VMLDH145-L250-FA9B	VMLDH145-L250-FA9B
75	VMLDH175-L400-FA10B	VMLDH175-L250-FA10B
90	VMLDH260-L400-FA11B	VMLDH260-L250-FA10B
110	VMLDH300-L400-FA11B	VMLDH260-L400-FA11B

## Two-direction starters with switch-fuse, normal start, 380/400 V, Type 2, 50 kA



Max motor output at AC3, 400 V kW	Fuses type gG Type name A	Fuses type aM Type name A
<b>Operation type B</b>		
4	VMLR9-L63-FA4B	VMLR9-L63-FA4B
5.5	VMLR12-L63-FA4B	VMLR12-L63-FA4B
7.5	VMLR16-L63-FA4B	VMLR16-L63-FA4B
11	VMLR26-L63-FA5B	VMLR26-L63-FA5B
15	VMLR30-L63-FA5B	VMLR30-L63-FA5B
18.5	VMLR50-L125-FA6B	VMLR50-L125-FA6B
22	VMLR50-L125-FA6B	VMLR50-L125-FA6B
30	VMLR63-L125-FA6B	VMLR63-L125-FA6B
37	VMLR75-L160-FA6B	VMLR75-L160-FA6B
45	VMLR95-L160-FA7B	VMLR95-L160-FA7B
55	VMLR110-L250-FA10B	VMLR110-L160-FA7B
75	VMLR145-L250-FA12B	VMLR145-L250-FA12B
90	VMLR175-L400-FA14B	VMLR175-L250-FA14B
110	VMLR210-L400-FA14B	VMLR210-L250-FA14B
132	VMLR260-L400-FA14B	VMLR260-L400-FA14B

## Options

Auxiliary voltage supply with 1-pole MCB + neutral, mounted behind the unit's door ..... +F5

For VML...260 a 2-pole MCB is also included

Auxiliary voltage supply with 2-pole MCB, mounted behind the unit's door ..... +F5

For VML...260 2 x 2-pole MCB

Remote indication ..... +H0A

Indication, fault ..... +H9A

Indication, on/off/fault ..... +H12A

Indication, fault ..... +H9A

Remote control on/off ..... +S10

Local and remote control on/off ..... +S11

Remote control on/off via relays ..... +S12

Local and remote control on/off via relays ..... +S13

Current measurement with one current transformer ..... +P2A

Current measurement with one current transformer and one A-meter ..... +P2B

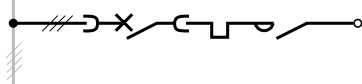
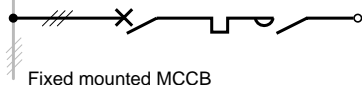
Protection class IP43 ..... +IP43

Protection class IP54 ..... +IP54

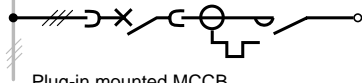
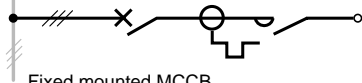
Switchgear colour, standard ..... +Grey

Switchgear colour, Center ..... +Beige

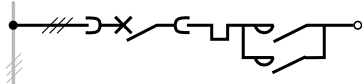
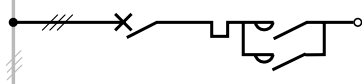
## Direct-on-line starter, fuse-less, normal start, 380/400 V, Type 2, 50 kA

 Plug-in mounted MCCB > 22 kW Fixed mounted MCCB + disconnector ≤ 22 kW	Max motor output at AC3, 400 V kW	Plug-in mounted MCCB > 22 kW Manuel motorstarter + disconnector ≤ 22 kW Type name	Fixed MCCB Type name
	 Fixed mounted MCCB	<b>Operation type C</b>	
0.55		VMLD9-M25S1D-FA2C	VMLD9-M25S1-FA2C
0.75		VMLD9-M25S2D-FA2C	VMLD9-M25S2-FA2C
1.5		VMLD26-M25S4D-FA2C	VMLD26-M25S4-FA2C
2.2		VMLD26-M25S6D-FA2C	VMLD26-M25S6-FA2C
4		VMLD30-M25S9D-FA2C	VMLD30-M25S9-FA2C
5.5		VMLD30-M25S12D-FA2C	VMLD30-M25S12-FA2C
7.5		VMLD30-M25S16D-FA2C	VMLD30-M25S16-FA2C
11		VMLD30-M25S25D-FA2C	VMLD30-M25S25-FA2C
15		VMLD30-M50K32D-FA3C	VMLD30-M50K32-FA3C
18.5		VMLD50-M50K41D-FA3C	VMLD50-M50K41-FA3C
22		VMLD50-M50K45D-FA3C	VMLD50-M50K45-FA3C
<b>Operation type B</b>			
30		VMLD75-M3HP-FA4B	VMLD75-M3H-FA4B
37		VMLD75B-M3HP-FA4B	VMLD75B-M3H-FA4B
45		VMLD95-M3HP-FA7B	VMLD95-M3H-FA7B
55		VMLD110-M3HP-FA7B	VMLD110-M3H-FA7B
75	VMLD145-M3HP-FA8B	VMLD145-M3H-FA8B	
90	VMLD175-M5HP-FA10B	VMLD175-M5H-FA10B	
110	VMLD210-M5HP-FA10B	VMLD210-M5H-FA10B	
132	VMLD260-M5HP-FA11B	VMLD260-M5H-FA11B	

## Direct-on-line starter, fuse-less, heavy start, 380/400 V, Type 2, 50 kA

 Plug-in mounted MCCB	Max motor output at AC3, 400 V kW	Plug-in mounted MCCB Type name	Fixed MCCB Type name
	 Fixed mounted MCCB	<b>Operation type B</b>	
37		VMLDH95-M3HP-FA7B	VMLDH95-M3H-FA7B
45		VMLDH110-M3HP-FA7B	VMLDH110-M3H-FA7B
55		VMLDH145-M3HP-FA8B	VMLDH145-M3H-FA8B
75		VMLDH175-M3HP-FA8B	VMLDH175-M3H-FA8B
90		VMLDH260-M5HP-FA11B	VMLDH260-M5H-FA11B

## Two-direction starters, fuse-less, 380/400 V, Type 2, 50 kA

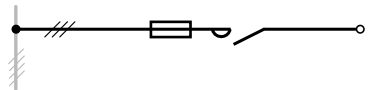
 Plug-in mounted MCCB > 22 kW Fixed mounted MCCB + disconnector ≤ 22 kW	Max motor output at AC3, 400 V kW	Plug-in mounted MCCB > 22 kW Manuel motorstarter + disconnector ≤ 22 kW Type name	Fixed MCCB Type name
	 Fixed mounted MCCB	<b>Operation type C</b>	
0.55		VMLR9-M25S1D-FA2C	VMLD9-M25S1-FA2C
0.75		VMLR9-M25S2D-FA2C	VMLD9-M25S2-FA2C
1.5		VMLR26-M25S4D-FA3C	VMLD26-M25S4-FA3C
2.2		VMLR26-M25S6D-FA3C	VMLD26-M25S6-FA3C
4		VMLR30-M25S9D-FA3C	VMLD30-M25S9-FA3C
5.5		VMLR30-M25S12D-FA3C	VMLD30-M25S12-FA3C
7.5		VMLR30-M25S16D-FA3C	VMLD30-M25S16-FA3C
11		VMLR30-M25S25D-FA3C	VMLD30-M25S25-FA3C
15		VMLR30-M50K32D-FA3C	VMLD30-M50K32-FA3C
18.5		VMLR50-M50K41D-FA4C	VMLD50-M50K41-FA4C
22		VMLR50-M50K45D-FA4C	VMLD50-M50K45-FA4C
<b>Operation type B</b>			
30		VMLR75-M3HP-FA6B	VMLD75-M3H-FA6B
37		VMLR75B-M3HP-FA6B	VMLD75B-M3H-FA6B
45		VMLR95-M3HP-FA7B	VMLD95-M3H-FA7B
55		VMLR110-M3HP-FA7B	VMLD110-M3H-FA7B
75	VMLR145-M3HP-FA8B	VMLD145-M3H-FA8B	
90	VMLR175-M5HP-FA12B	VMLD175-M5H-FA12B	
110	VMLR210-M5HP-FA14B	VMLD210-M5H-FA14B	
132	VMLR260-M5HP-FA14B	VMLD260-M5H-FA14B	

### Options

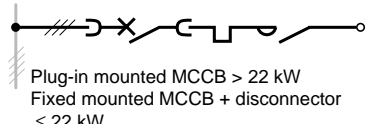
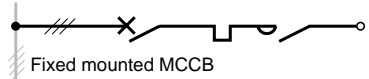
See page 52.

# Apparatus cubicle for F-units

## Contactor groups for distribution with switch-fuse, 380/400 V, AC1

	Max current at 80% AC1 A	Type name
	<b>Operation type B</b>	
	20	VMLC9-L63-FA3B
	40	VMLC30-L63-FA4B
	80	VMLC50-L160-FA4B
	100	VMLC95-L160-FA4B
	125	VMLC110-L160-FA4B
	160	VMLC175-L160-FA8B
	200	VMLC210-L250-FA10B
	250	VMLC260-L250-FA11B
	400	VMLC370-L400-FA14B
	500	VMLC550-L630-FA18B
	630	VMLC700-L630-FA18B

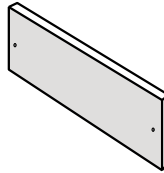
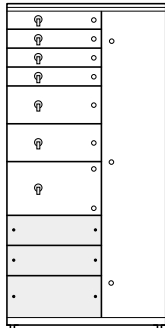
## Contactor groups for distribution, fuse-less, 380/400 V, AC1

	Max current at 80% AC1 kW	Plug-in mounted MCCB > 22 kW Manuel motorstarter + disconnector ≤ 22 kW Type name	Fixed MCCB Type name
 <p>Plug-in mounted MCCB &gt; 22 kW Fixed mounted MCCB + disconnector ≤ 22 kW</p>	<b>Operation type C</b>		
	1.6	VMLC9-M25S1D-FA2C	VMLC9-M25S1-FA2C
	2.5	VMLC9-M25S2D-FA2C	VMLC9-M25S2-FA2C
	4	VMLC26-M25S4D-FA2C	VMLC26-M25S4-FA2C
	6.3	VMLC26-M25S6D-FA2C	VMLC26-M25S6-FA2C
	9	VMLC30-M25S9D-FA2C	VMLC30-M25S9-FA2C
	12.5	VMLC30-M25S12D-FA2C	VMLC30-M25S12-FA2C
	16	VMLC30-M25S16D-FA2C	VMLC30-M25S16-FA2C
	20	VMLC30-M25S20D-FA2C	VMLC30-M25S20-FA2C
	25	VMLC30-M25S25D-FA2C	VMLC30-M25S25-FA2C
	32	VMLC30-M50K32D-FA3C	VMLC30-M50K32-FA3C
	37	VMLC50-M50K37D-FA3C	VMLC50-M50K37-FA3C
	41	VMLC50-M50K41D-FA3C	VMLC50-M50K41-FA3C
	45	VMLC50-M50K45D-FA3C	VMLC50-M50K45-FA3C
 <p>Fixed mounted MCCB</p>	<b>Operation type B</b>		
	50	VMLC63-M3HP-FA4B	VMLC63-M3H-FA4B
	75	VMLC75-M3HP-FA4B	VMLC75-M3H-FA4B
	100	VMLC95-M3HP-FA4B	VMLC95-M3H-FA4B
	125	VMLC110-M3HP-FA4B	VMLC110-M3H-FA4B
	145	VMLC145-M3HP-FA8B	VMLC145-M3H-FA8B
	185	VMLC175-M3HP-FA8B	VMLC175-M3H-FA8B
	256	VMLC260-M5HP-FA11B	VMLC260-M5H-FA11B
	400	VMLC370-M5HP-FA14B	VMLC370-M5H-FA14B
	567	VMLC550-M6HP-FA16B	VMLC550-M6H-FA16B
720	VMLC700-M6HP-FA16B	VMLC700-M6H-FA16B	

### Options

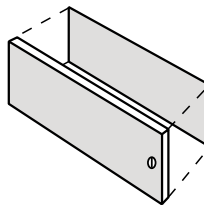
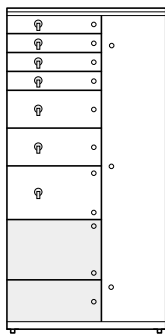
See page 52.

## Cover plates for unused cubicle compartments



No. of modules	Type name
1 M	VML-CP61
2 M	VML-CP62
3 M	VML-CP63
4 M	VML-CP64

## Doors and assembly plates for extra equipment



No. of modules	Type name
2 M	VML-TL62B
3 M	VML-TL63B
4 M	VML-TL64B
5 M	VML-TL65B
6 M	VML-TL66B
7 M	VML-TL67B
8 M	VML-TL68B
10 M	VML-TL610B

## Options

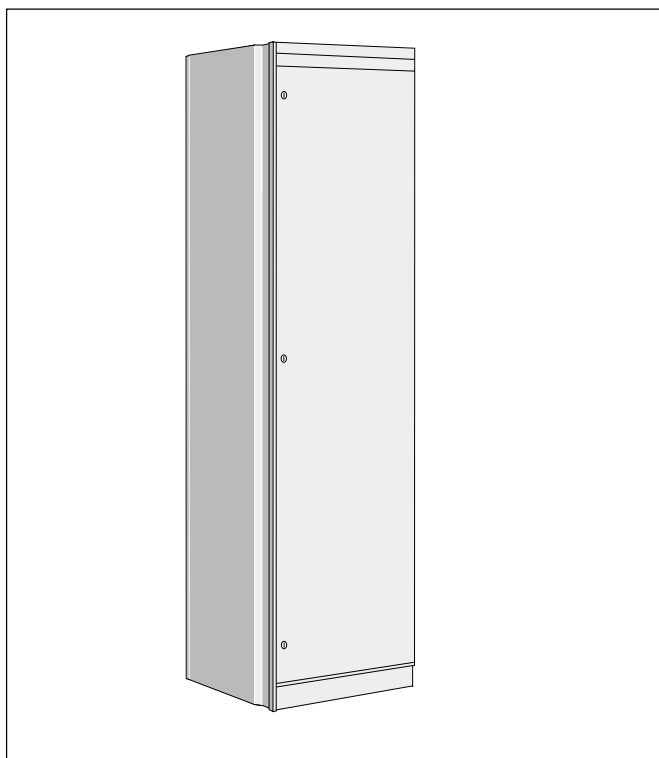
- Protection class IP43 ..... +IP43
- Protection class IP54 ..... +IP54

# Non-equipped cubicle

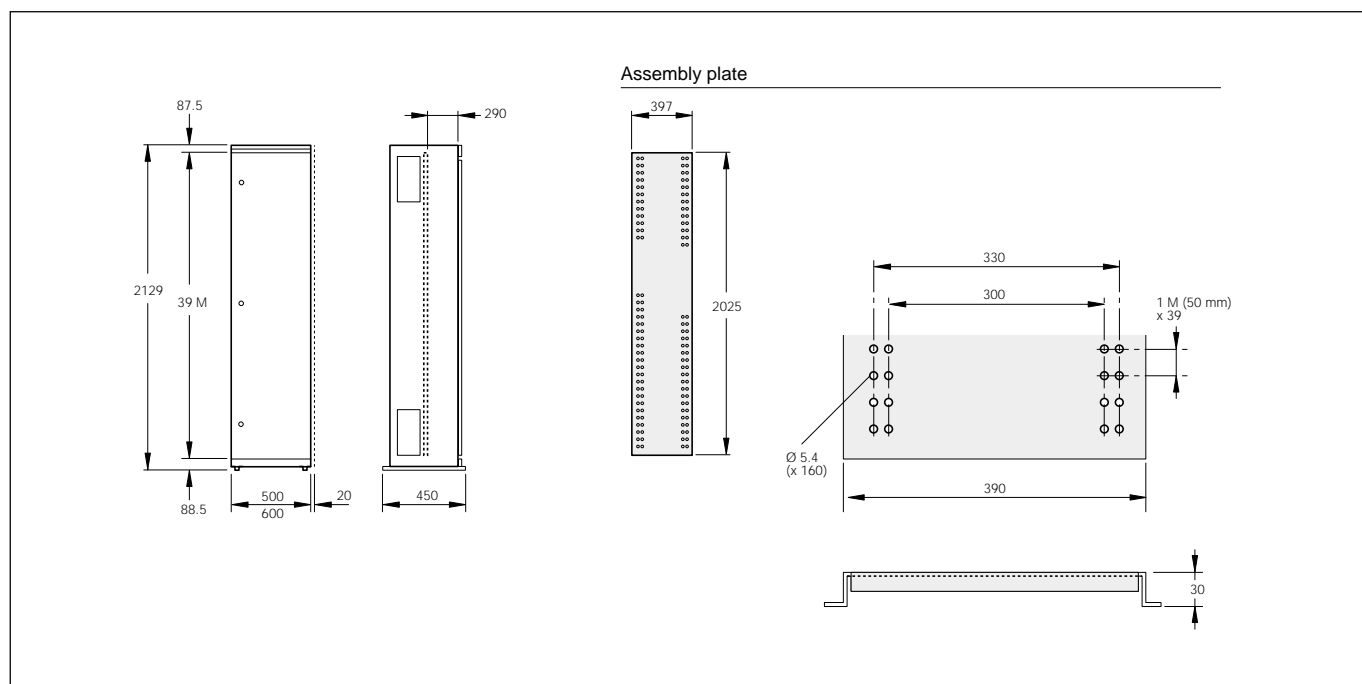
## Design

The cubicle can be equipped with assembly plates for fixed mounting units.

Cubicle front has a full height door fitted with a standard lock.



## Dimensions

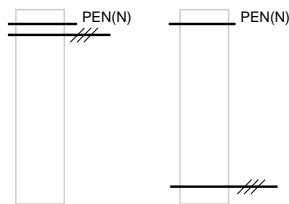




## Cubicle

Cubical width mm	Type name
500	VML 402-D5
600	VML 402-D6

## Horizontal busbar system including PEN



Size A	Busbar system above Type name	Busbar system below Type name	Busbar system above and below Type name
1000	-H4	-H04	-H44
1250	-H4A	-H04A	-H44A
1600	-H5	-H05	-H55
1900	-H6	-H06	-H66

## Options

Short-circuit strength 50 kA .....	+M50	Protection class IP 31 .....	+IP31
Vertical bridging bars for bridging between the upper and lower busbar system. Screens in front of the bars are included.		Protection class IP 41 .....	+IP41
NOTE: Not for connection of distribution units.		Protection class IP 43 .....	+IP43
1000 A .....	+H4V	Protection class IP 54 .....	+IP54
1250 A .....	+H4AV	Wall bracket .....	+Z1
1600 A .....	+H5V	Lifting eyes .....	+Z2
1900 A .....	+H6V	Extra rear panel, painted, IP21 .....	+Z3
Assembly plate .....	+TL39A	(always included with IP31, IP41, IP43 and IP54)	
Parallel coupled lock .....	+L2	End panels .....	+UV/UH
		Cubicle heater 100 W with thermostat .....	+B2
		Switchgear colour, standard .....	+Grey
		Switchgear, Center .....	+Beige

# Apparatus cubicles for threaded fuse distribution boards

## Design

The cubicle is supplied with main switch and max. 5 threaded fuse distribution boards,  $U_e = 400\text{ V}$ .

## Cable connection

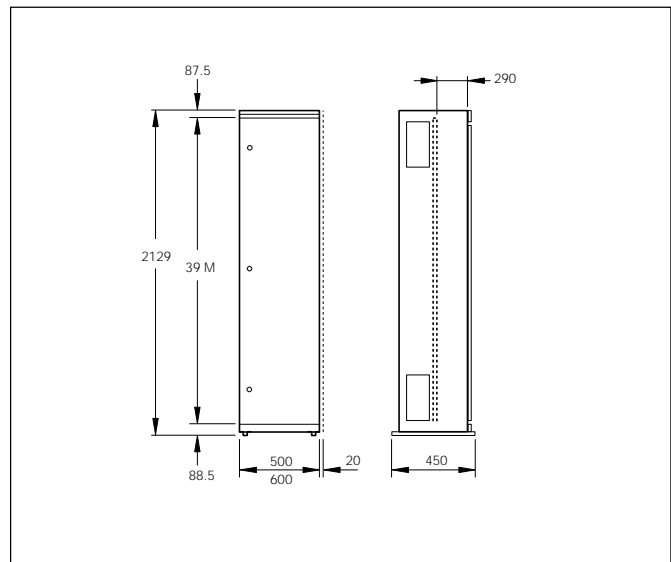
Cables are connected to terminal blocks.

## Space for units

The cubicle has space for 30 equippable modules.  
 $1M = 50\text{ mm}$ .



## Dimensions

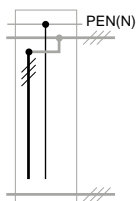


# Apparatus cubicles for threaded fuse distribution boards

## Cubicle

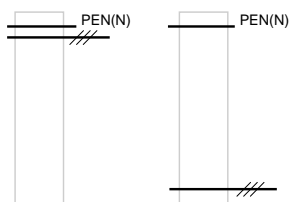
Cubicle width mm	Type name
600	VML 404-D6

## Vertical secondary busbar system with main cubicle switch, including PEN



Size A	Type name
250	-W1D
400	-W2D

## Horizontal busbar system, including PEN



Size A	Busbar system above	Busbar system above and below
	Type name	Type name
1000	-H4	-H44
1250	-H4A	-H44A
1600	-H5	-H55
1900	-H6	-H66

## Threaded fuse distribution boards

	Type name
With terminals and PE+N busbars with disconnectable N conductor 6x25 A	+VMLGP6320
4x63 A	+VMLGP4360
Cover plate for unused space	+CP

## Options

Short-circuit strength 50 kA .....	+M50
Isolated N conductor .....	+N
Connection from above .....	+K3
Parallel coupled lock .....	+L2
Protection class IP 31 .....	+IP31
Protection class IP 41 .....	+IP41
Protection class IP 43 .....	+IP43
Protection class IP 54 .....	+IP54
Wall bracket .....	+Z1
Lifting eye .....	+Z2
Extra rear panel, painted, IP21 .....	+Z3
(always included with IP31, IP41, IP43 and IP54)	
End panels .....	+UV/UH
Cubicle heater 100 W with thermostat .....	+B2
Switchgear, standard .....	+Grey
Switchgear, Center .....	+Beige

# Apparatus cubicles for SR-units (SlimLine)

## General

The SR-cubicle is supplied with removable SlimLine-units with switch fuses.

The cubicle consists of a 600 mm wide compartment for fitting SR-units and a 400 mm or 600 mm wide cable compartment to the right for outgoing cables.

## Cable compartment

The cable compartment is fitted with fixing points for both main power cables and auxiliary circuit cables.

The cable compartment and distribution unit compartment are separated by screens.

## Cable connection

The cables are connected using cable clamps. Sizes 160 and 250 A are fitted with clamps for one cable part per socket while Sizearna 400 and 630 A have clamps for two parallel cables.

Extra connector units for three parallel cables can be provided on request. The space requirement is 6 modules, but one unit per cubicle can be placed uppermost in the normally non-equipable compartment.

## Space for units

The cubicle has space for 27 equipable modules.  
1M = 50 mm.

## Distribution unit's modular measurements

The modular measurements of the distribution units are evident from the group's type name.

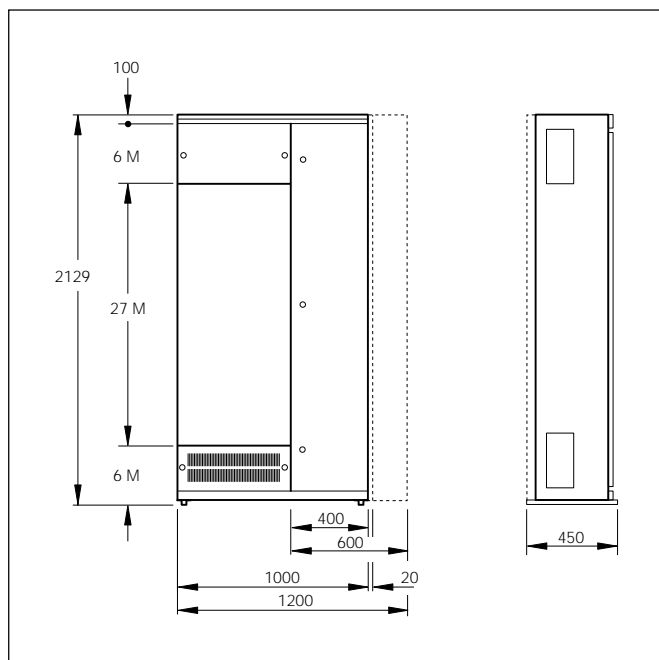
Example:

Type name VMLL160C-SR5B uses 5 M

Type name VMLLA160-SR9B uses 9 M.



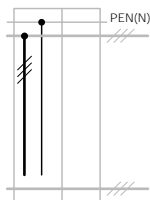
## Dimensions



## Cubicle

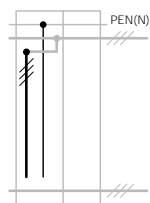
Cubicle width mm	Type name
600+400	VML 403-D64
600+600	VML 403-D66

## Vertical busbar system including PEN



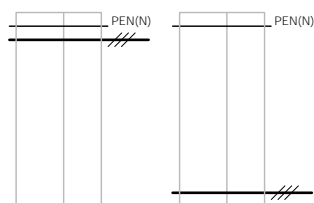
Size A	Type name
1200	-V4S
1450	-V5S

## Vertical secondary busbar system with main cubicle switch, including PEN



Size A	Type name
250	-W1S
400	-W2S
630	-W3S

## Horizontal busbar system including PEN



Size A	Busbar system above Type name	Busbar system below Type name	Busbar system above and below Type name
1000	-H4	-H04	-H44
1250	-H4A	-H04A	-H44A
1600	-H5	-H05	-H55
1900	-H6	-H06	-H66

## Options

Short-circuit strength 50 kA ..... +M50

Isolated N conductor ..... +N

The cubicle must have an isolated N conductor if it shall supply a 5-wire system. The N conductor is placed in the cable compartment.

Cover plate for cable connection from above .. +K3

Cover plate has three flange openings F21 on 400 mm wide cable compartment and five FL21 on 600 mm wide cable compartment.

Cable duct for auxiliary circuits ..... +C2

Placed in the left-hand section of the cable compartment, close to the auxiliary circuit's terminal blocks.

Connection bar for N conductor ..... +C4

Bar with 15 clamps for connection of max 10 mm<sup>2</sup> conductors. The bar is mounted on the isolated N conductor (+N).

Parallel coupled lock ..... +L2

Each door can be opened and locked using one of door's locking devices.

Wall bracket ..... +Z1

Lifting eyes ..... +Z2

Extra rear panel, enamelled, for IP21 ..... +Z3  
(Always included with IP31, IP43 and IP54.)

End panels left ..... +UV

End panels right ..... +UH

Switchgear colour, standard ..... +Grey

Switchgear colour, Center ..... +Beige

# Apparatus cubicles for SR-units (SlimLine)

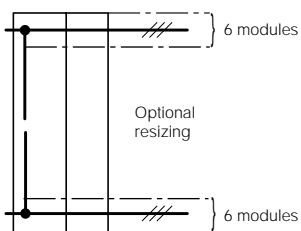
## Earthing switch

	Type name
Positioned at bottom (under normal equipping level)	VMLJ50-SR6B

## Earthing switch options

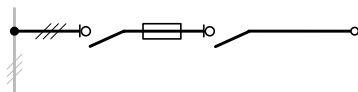
Interlocking magnet ..... +A3F

## Cutting of the vertical busbar system



	Type name
In optional position except the top resp. bottom 6 modules	VMLVF-SR1B

## Double breaking incoming units

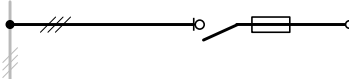
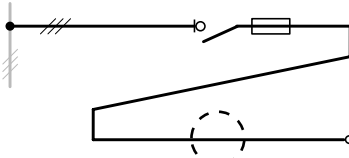
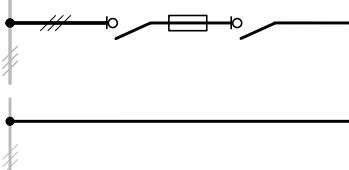
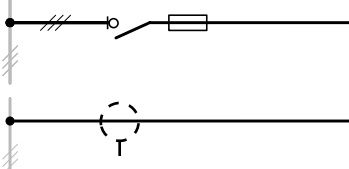


Rated current	3-pole Type name
A	
250	VMLLHI250-SR6B
400	VMLLHI400-SR8B
630	VMLLHI630-SR10B

## Incoming unit options

Current and voltage measuring with instantaneous A-meter with MCB (400 V), instrument 48x48 mm ..... +P2K  
 Current and voltage measuring with instantaneous and max reading A-meter with MCB (400 V), instrument 48x48 mm ..... +P2KM  
 Auxiliary contacts, 1 NO + 1 NC ..... +HL2  
 Isolating N terminal block ..... +A4N  
 Extra incoming unit for 3 cables ..... +A4D3  
 (Size 6M; placed in the top of the cubicle in the compartment not normally equipped with units.)

## Distribution units

	Rated current A	3-pole Type name
	<b>Single breaking distribution units</b>	
	160	VMLL160-SR1B
	250	VMLL250-SR2B
	400	VMLL400-SR4B
	630	VMLL630-SR4B
	<b>Single breaking distribution units for outgoing kWh-measuring</b>	
	160	VMLL160C-SR5B
	250	VMLL250C-SR6B
	400	VMLL400C-SR8B
	630	VMLL630C-SR10B
	<b>Double breaking sectioning breakers</b>	
	250	VMLLHS250B-SR6B
	400	VMLLHS400B-SR8B
	630	VMLLHS630B-SR10B
	<b>Single breaking sectioning breakers for kWh-measuring</b>	
	250	VMLLS250C-SR6B
	400	VMLLS400C-SR8B
	630	VMLLS630C-SR10B

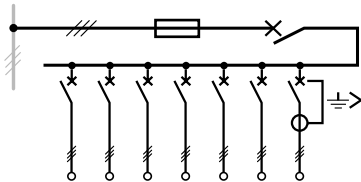
## Distribution unit options

- Current measuring with instantaneous A-meter  
x/5A, instrument 48x48 mm ..... +P2B
- Current measuring with instant. and max reading  
A-meter x/5A, instrument 48x48 mm ..... +P2BM
- Auxiliary contacts, 1 NO + 1 NC ..... +HL2

# Apparatus cubicles for SR-units (SlimLine)

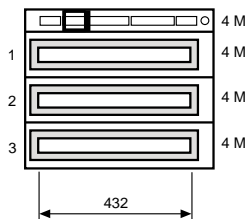
## Distribution boards with miniature circuit-breakers (MCB)

No. of rows	Type name		
	Sheet door	Glass door	
The distribution boards are supplied with backup fuses adapted for the selected MCB units.			
1	<b>3-pole</b> VMLMA160-	SR5C	SR5C+glass
2	VMLMA160-	SR9C	SR9C+glass
3	VMLMA160-	SR13C	SR13C+glass



### Distribution board options

Isolating N conductor ..... +N  
 Not needed when only equipping with MCB units connected with breaking of neutral. N connection is made directly in the MCB units.



## Miniature circuit-breakers (MCB)

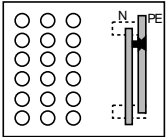
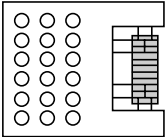
A	1-pole	2-pole	3-pole	4-pole
<b>270-series (10 kA)</b>				
	Width: 18 mm	36 mm	54 mm	72 mm
6	+1S6	+2S6	+3S6	+4S6
10	+1S10	+2S10	+3S10	+4S10
16	+1S16	+2S16	+3S16	+4S16
20	+1S20	+2S20	+3S20	+4S20
25	+1S25	+2S25	+3S25	+4S25
32	+1S32	+2S32	+3S32	+4S32
40	+1S40	+2S40	+3S40	+4S40
50	+1S50	+2S50	+3S50	+4S50
63	+1S63	+2S63	+3S63	+4S63
<b>270-series (10 kA) with earth fault protection 0.03 A</b>				
	Width:	72 mm		108 (144) mm
6		+2F6		+4F6
10		+2F10		+4F10
16		+2F16		+4F16
20		+2F20		+4F20
25		+2F25		+4F25
32		+2F32		+4F32
40		+2F40		+4F40 144 mm
50		+2F50		+4F50 144 mm
63		+2F63		+4F63 144 mm
<b>270-series (10 kA) with earth fault protection 0.3 A</b>				
	Width:	72 mm		108 (144) mm
6		+2F6B3		+4F6B3
10		+2F10B3		+4F10B3
16		+2F16B3		+4F16B3
20		+2F20B3		+4F20B3
25		+2F25B3		+4F25B3
32		+2F32B3		+4F32B3
40		+2F40B3		+4F40B3 144 mm
50		+2F50B3		+4F50B3 144 mm
63		+2F63B3		+4F63B3 144 mm

### Miniature circuit-breaker options

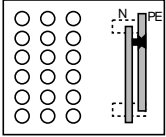
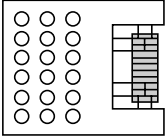
Signal contact and auxiliary contact, 6 A,  
 1 NO + 1 NC, width 9 mm ..... +SH



## Distribution boards with threaded fuses DII, 25 A

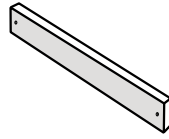
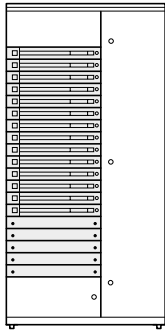
		No. of groups		Type name
		1-pole	3-pole	
<b>With N + PE busbars</b>				
N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 3-pole connection of outgoing groups.				
		18	6	VMLG18120-SR7C
		9	3	VMLG9120-SR4C
<b>With terminal block row</b>				
All groups are connected to a terminal block row, which also houses disconnectable neutral terminals for common and individual isolation groups. PE busbars with two-screw clamps and wiring to the main N terminal.				
		-	6	VMLGP6320-SR7C
		18	-	VMLGP18120-SR7C
		-	3	VMLGP3320-SR4C
		9	-	VMLGP9120-SR4C
<b>With group switch 40 A</b>				
Each group is equipped with a 3-pole group switch. N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 1-pole connection of outgoing groups.				
		-	6	VMLGL6320-SR7C
<b>With extra fuse row</b>				
Six fuse sockets, 25 A, mounted on a phase bar beside the ordinary three rows.				
		24/6	-/6	VMLG18120-612-SR7C

## Distribution boards with threaded fuses DIII, 63 A

		No. of groups		Type name
		1-pole	3-pole	
<b>With N + PE busbars</b>				
N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 3-pole connection of outgoing groups..				
		-	5	VMLG5360-SR7C
		-	2	VMLG2360-SR4C
<b>With terminal block row</b>				
All groups are connected to a terminal block row, which also houses disconnectable neutral terminals for common and individual isolation groups. PE busbars with two-screw clamps and wiring to the main N terminal.				
		-	5	VMLGP5360-SR7C
		-	2	VMLGP2360-SR4C
<b>With group switch 80 A</b>				
Each group is equipped with a 3-pole group switch. N and PE busbars are equipped with common neutral isolation and requisite two-screw clamps for 1-pole connection of outgoing groups.				
		-	5	VMLGL5360-SR7C
<b>With extra fuse row</b>				
		6	5	VMLGP5360-612-SR7C

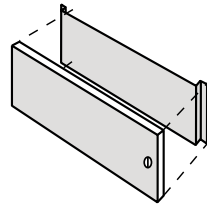
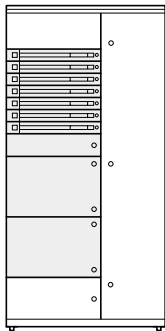
# Apparatus cubicles for SR-units (SlimLine)

## Cover plates for used cubicle space



No. of modules	Type name
1 M	VML-CP61
2 M	VML-CP62
3 M	VML-CP63
4 M	VML-CP64

## Doors and assembly plates for extra equipment

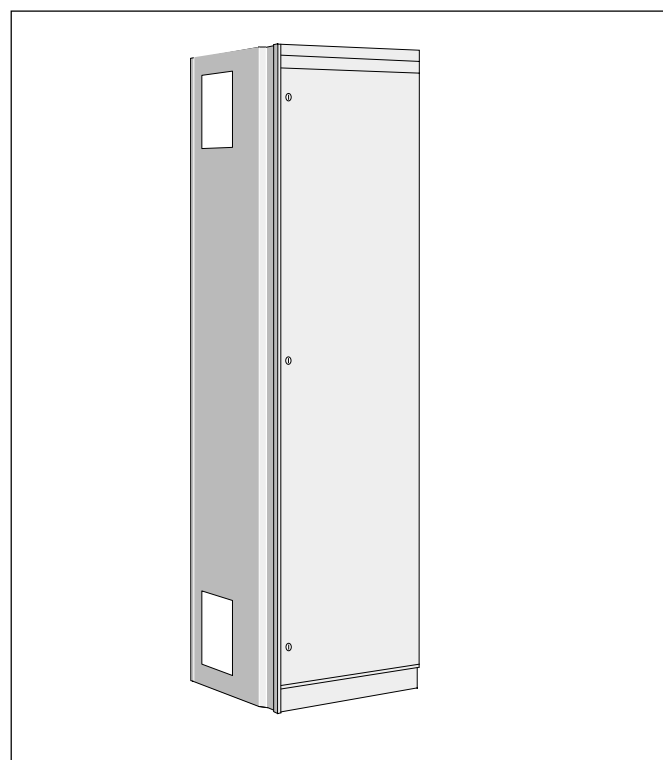
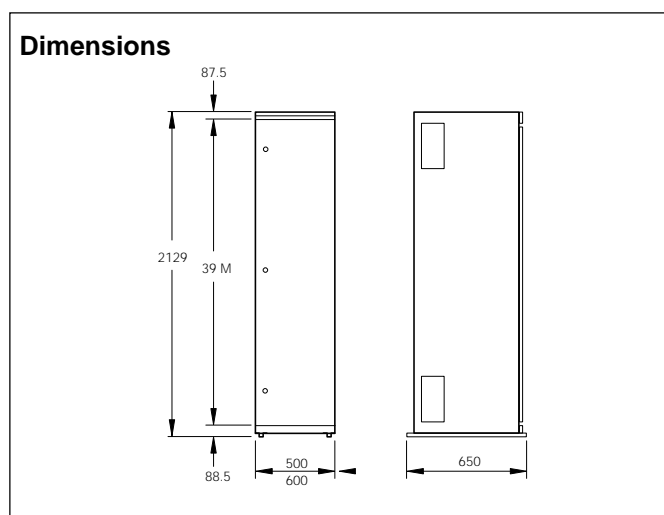
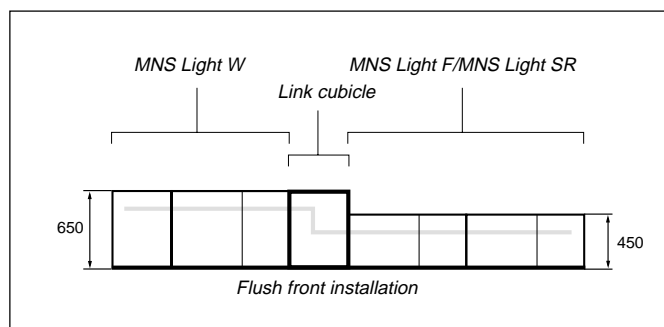


No. of modules	Type name
2 M	VML-TL62B
3 M	VML-TL63B
4 M	VML-TL64B
5 M	VML-TL65B
6 M	VML-TL66B
7 M	VML-TL67B
8 M	VML-TL68B
10 M	VML-TL610B

## Design

The link cubicle is used to join together MNS Light F and MNS Light SR with MNS Light W so that the fronts of the cubicles are flush.

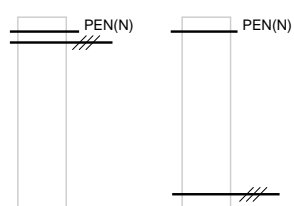
The cubicle front has a full height door with standard lock.



## Cubicle

Cubicle width mm	Type name
500	VML 402-D5

## Horizontal busbar system including PEN



Size A	Busbar system above Type name	Busbar system below Type name	Busbar system above and below Type name
1000	-H4	-H04	-H44
1250	-H4A	-H04A	-H44A
1600	-H5	-H05	-H55
1900	-H6	-H06	-H66

## Options

- Short-circuit strength 50 kA ..... +M9
- Parallel coupled lock ..... +L2
- Protection class IP 31 ..... +IP31
- Protection class IP 41 ..... +IP41
- Protection class IP 43 ..... +IP43
- Protection class IP 54 ..... +IP54
- Wall bracket ..... +Z1
- Lifting eyes ..... +Z2
- Extra rear panel, painted, IP21 ..... +Z3
- Switchgear colour, standard ..... +Grey
- Switchgear colour, Center ..... +Beige



1TSC2210-EN, ed. 2

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