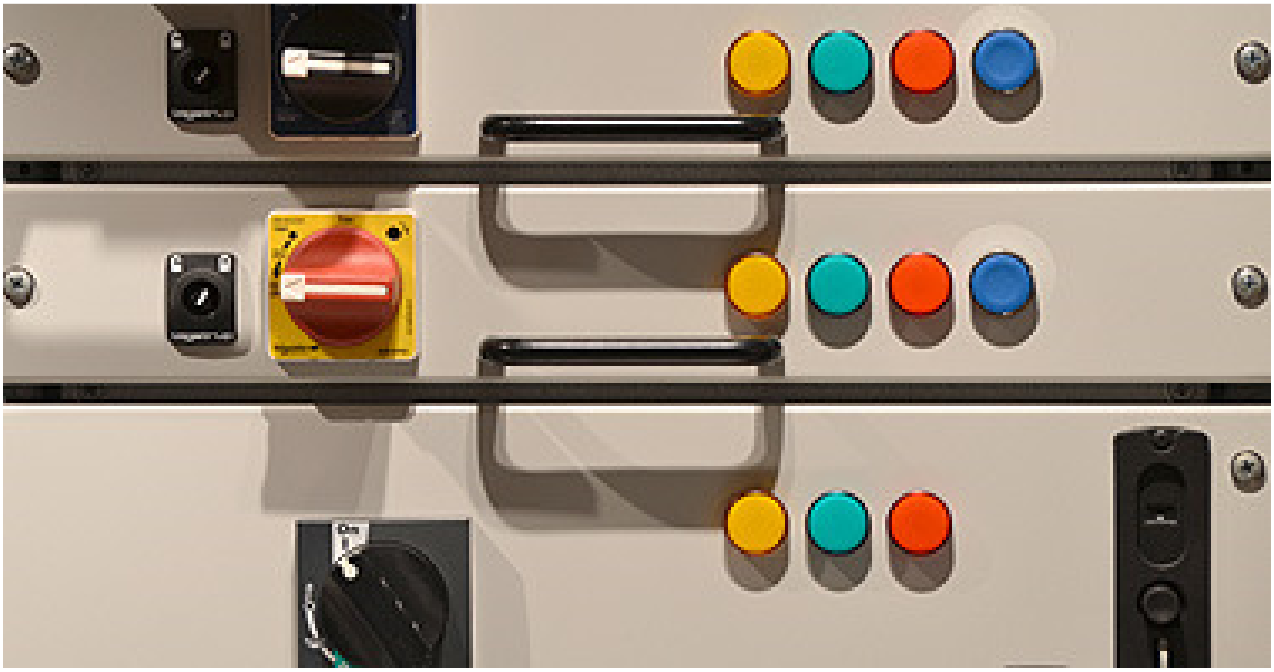
Logstrup Modular System

Pls contact logstrup@unitconcept.com for more details and pricing

logstrup

Logstrup Modular System



The Logstrup Modular System incorporates fixed, removable, withdrawable and inline technology for switchboards and motor control centres.

Major benefits include:

Minimum downtime
Re-configuration of units while panel is live
Ability to interchange different unit types
Fully Type Tested
Internal Arc Protection

Dimensions & Layout

The Logstrup enclosure system has complete modularity in all 3 axes with a base module of 190mm. This provides the most flexible solution possible. Width, height and depth as well as sizing and placement of any sub-sections are infinitely variable. Many space restrictions can be overcome by making angled or back-to-back arrangements.

The unique corner joint and framework system constructed of 2mm steel profiles, incorporating 5 bends ensures a maximum strength. This makes the system particularly suited for heavy-duty equipment, large busbar systems and demanding operating conditions.

- Standard AKA framework
- 3 x 4 x 5 x 6 module deep panels

- Standard sections for shipping which are easy to join on site
- Busbar X-Y or Z plane
- Cableway in front of busbar running throughout the whole length of the panel, top and bottom
- Easy to extend and upgrade
- Front access and rear access

Sizes: X - 5 + 6 Y - 10, 11, 12 Z - 3, 4, 5, 6

Double section of 10m X 12m can be assembled from one framework for shipping as one piece

Partly Built Options

The Logstrup Modular System can be shipped as a flat pack/loose part kits, to build up by the customer.

An other option is to receive the product partly built. This means that structural parts and main busbar is built up before departing from Logstrup. Cladding will follow as loose part kit as usual.

Structural Parts

A complete frame bar construction consists of 8 corners (AHC6) and 12 frame bars (AKA). The framework may be fitted onto baseframes for floor mounting or wall mounting.

A cabinet casing consists of 8 corners (AHC2), 4 corner pieces (AHS) and 4 cabinet panels (ACA). This provides casing on the top, bottom and sides. Cabinet panels may be combined with AKA frame bars.

Base Frame

The base frame is U-shaped and manufactured from 2.5mm high strength, hot-dip galvanised (zinc-coated) steel sheets, available painted or unpainted depending on required anti-corrosion

properties. The profile bend aligns with the framework profiles to ensure maximum stability and support for heavy switchgear.

The U-shape faces the external of enclosure, making all fasteners accessible from the outside and improving ease and speed of assembly. The geometry of the base profiles offer a wide range of options in combination with other modular system parts.

For increased safety in handling and lifting additional options have been added:

• Lifting holes from X:4 modules and all Z for forklift or lifting bars
• Removable and reusable lifting-eye brackets
• Workshop transportation wheels
• For ground fixation on site, the base profiles have easy access Ø15mm holes or fixation brackets
A cosmetic front cover of 1mm sheet steel painted black RAL 9005 can be fitted. For extreme weight or demanding site conditions the front cover can be in 2.5mm Dogal steel to increase base frame strength even further.

Frame Bar Structures (AKA)

AKA frame bar structures consist of 2mm steel profiles, each with 5 bending points and coupled together through unique corner joints of aluminium alloy.

This basic construction provides the markets strongest and most reliable structures, which are exceptionally well suited for heavy equipment and demanding environments.

The same type of profiles are used for X, Y and Z axis and are available from 1 to 14 modules, allowing enclosure sizes in steps of 190mm in all 3 dimensions.

AKA profiles are made of mild steel aluzinc coated (aluminium and zinc) and available as standard with or without powder paint coating depending on client requests.

A multiple of threaded and non-threaded holes on the AKA’s allows for maximum flexibility when it comes to fixing internal parts and configurations.

Cabinet Structures (ACA)

Cabinet structures are made of 1.5mm steel sheets, which integrate the structures corner profiles with a non-removable side, top and bottom cover.

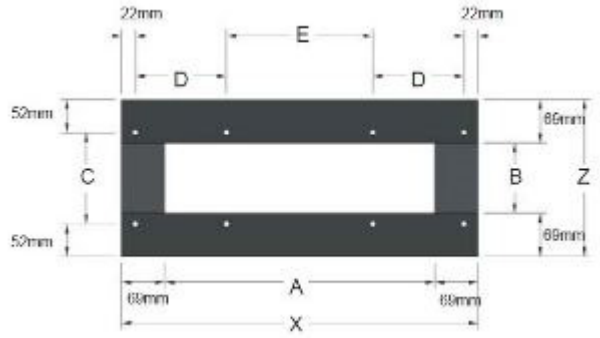
The ACA structures may be used in combination with the AKA structures, or as smaller stand-alone enclosures.

The ACA cabinets are available from 1 to 12 modules in width and height and from 1 to 3 modules in depth.

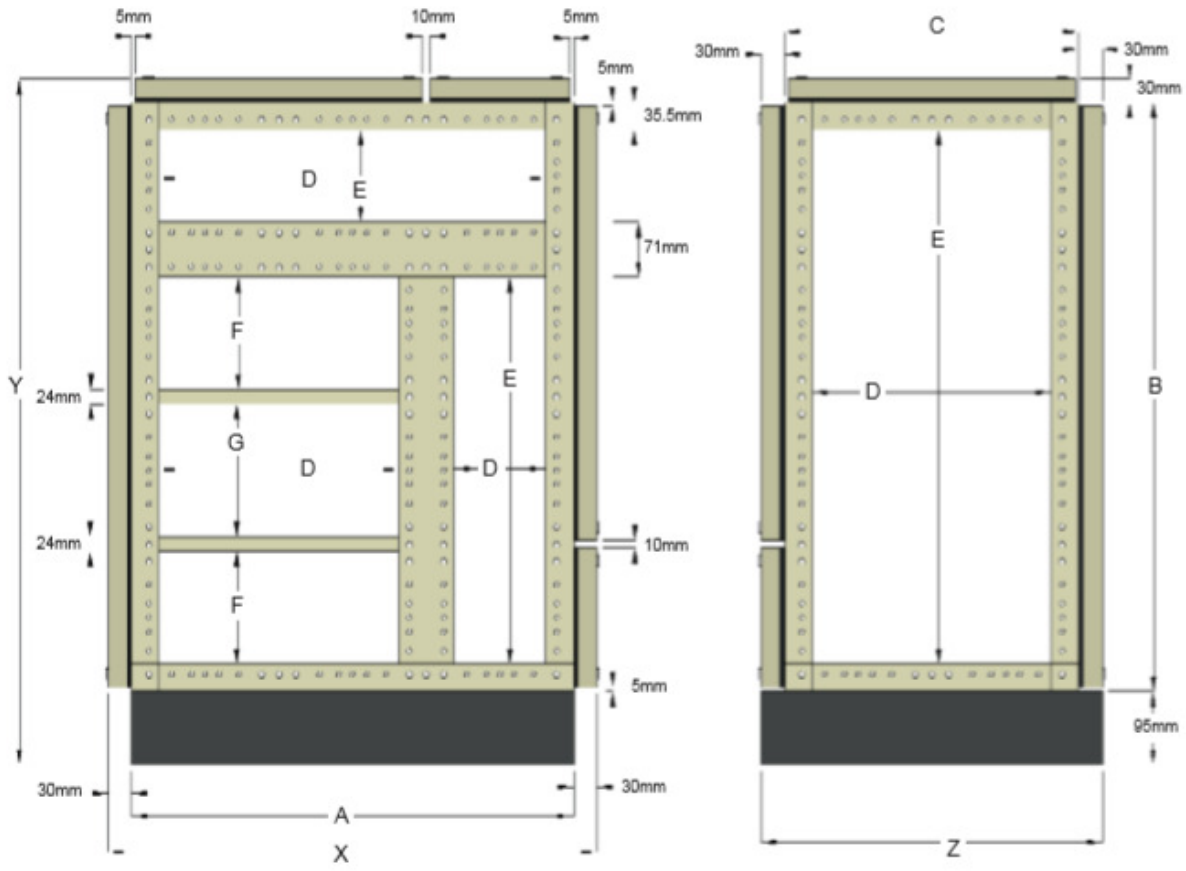
ACA cabinets are made of as standard with or without powder paint coating depending on client requests.

A multiple of threaded and non-threaded holes on the ACA’s allows for maximum flexibility when it comes to fixing internal parts and configurations.

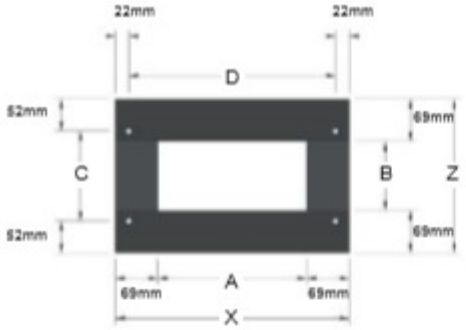
Dimensions

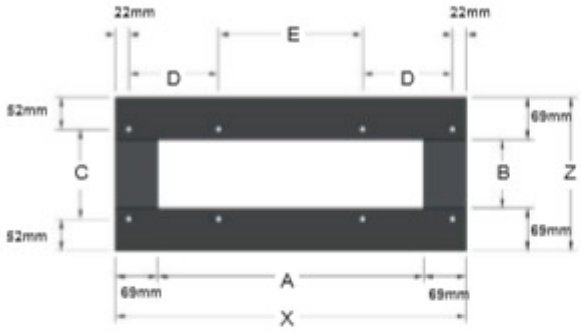


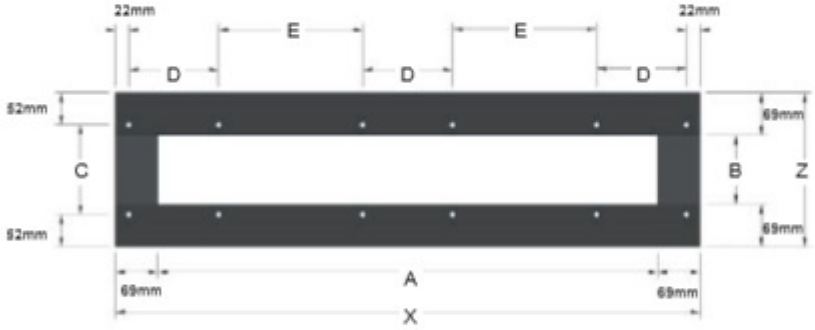
The dimensions for framework and baseframe are provided below.



Module	A mm	B mm	C mm	D mm	E mm	F mm	G mm	X mm	Y mm	Z mm
1	190	190	190	119	119	142.5	166	250	315	250
2	380	380	380	309	309	332.5	356	440	505	440
3	570	570	570	499	499	522.5	546	630	695	630
4	760	760	760	689	689	712.5	736	820	885	820
5	950	950	950	879	879	902.5	926	1010	1075	1010
6	1140	1140	1140	1069	1069	1092.5	1116	1200	1265	1200
7	1330	1330	1330	1259	1259	1282.5	1306	1390	1455	1390
8	1520	1520	1520	1449	1449	1472.5	1496	1580	1645	1580
9	1710	1710	1710	1639	1639	1662.5	1686	1770	1835	1770
10	1900	1900	1900	1829	1829	1852.5	1876	1960	2025	1960
11	2090	2090	2090	2019	2019	2042.5		2150	2215	2150
12	2280	2280	2280	2209	2209			2340	2405	2340







Module X, Z	X mm	Z mm	A mm	B mm	C mm	D mm	E mm	G mm
1	-	250	-	112	146	-	-	-
2	380	440	242	302	336	336	-	-
3	570	630	432	492	526	146	234	-
4	760	820	622	682	716	336	44	-
5	950	1010	812	872	906	146	146	234
6	1140	-	1002	-	-	336	336	44
7	1330	-	1192	-	-	380	234	146
8	1520	-	1382	-	-	380	44	336
9	1710	-	1572	-	-	380	146	380
10	1900	-	1762	-	-	380	336	380
11	2090	-	1952	-	-	380	526	380
12	2280	-	2142	-	-	380	716	380

External Cladding

Panels (APA/ALA/AGP) are used to clad the exterior of the framework.

Hinged Doors

Type ALA doors are folded hinged covers made from 1.5 or 2 mm sheet steel coated with 60-80 µ Polyester powder paint.

Standard (stocked) colour is RAL 7035, fine structure.

Other colours according to RAL scheme are available on request.

All doors are fitted with an internal sealing gasket which will provide degree of protection of IP44.

The doors can be hinged right or left hand side or also top or bottom.

Large doors may be fitted with a door stabilizer, and optional transparent windows are available for all sizes.

The available sizes are from 1 to 5 modules and in height from 1 to 11 modules
.
For flexibility and optimal design configurations the smaller height of doors are also available in half modules.

Panels (ALA/APA)

Type APA panels are folded fixed covers made from 1.5 or 2 mm sheet steel coated with 60-80 µ Polyester powder paint.

Standard (stocked) colour is RAL 7035, fine structure.

Other colours according to RAL scheme are available on request.

All APA panels are fitted with an internal sealing gasket which will provide degree of protection of IP44.

The APA panels are can be fitted horizontally and vertically and range in size from 1.1 module to 5.11.

The panels can optionally be delivered with louvers IP22 or IP42 for natural ventilation of the enclosures.

Flat Panels (AGP)

Type AGP plates are flat covers intended to be fitted on the top or rear of enclosures.

AGP plates are made of mild steel aluzinc coated (aluminium and zinc) and available as standard with or without powder paint coating depending on client requests.

The AGP plates may be fitted with an optional rubber gasket for IP44 protection, and can optionally be delivered with louvers IP22 for natural ventilation of the enclosures.

Accessories

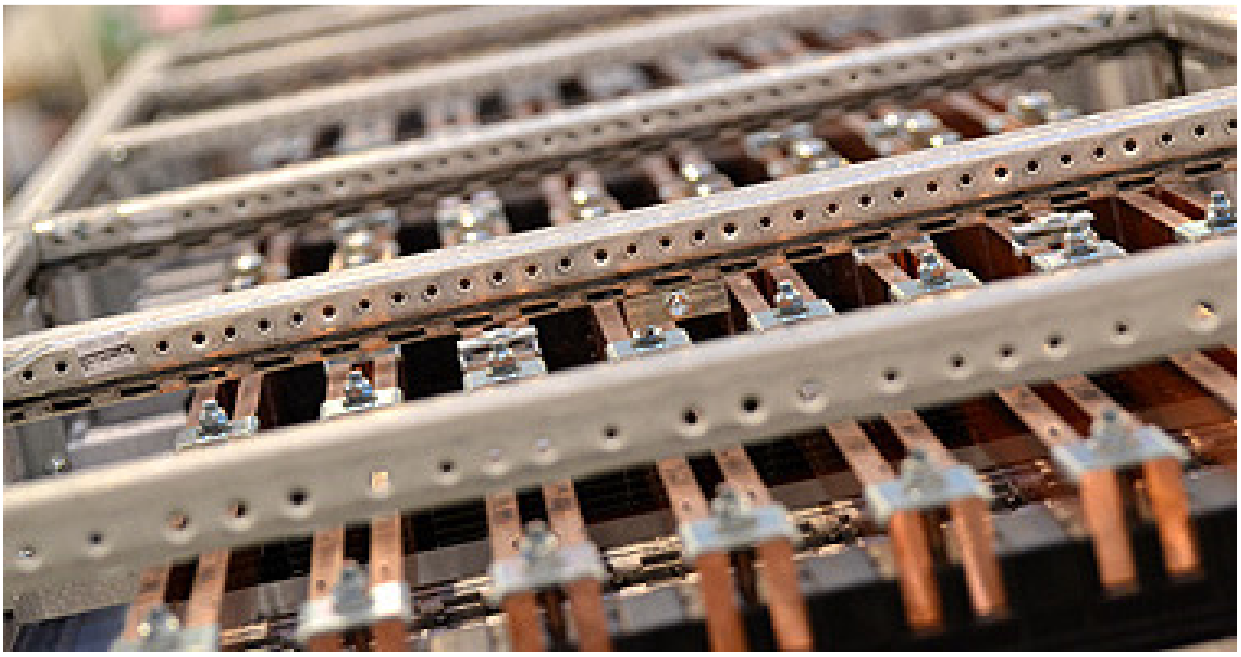
A wide range of locking devices are available, such as single or 3-point point locks, multiple key systems or tooling to meet access control requirements.

Busbar Section

The busbar system is the heart of any Low Voltage Panel, and it provides the electrical connections between the incoming Air Circuit Breaker and the outgoing units.

It is thus essential that the busbar system is a reliable tested system meeting the requirements of temperature rise, short circuit and other conditions as described in the International Standards.

Logstrup Busbar System



The Logstrup Busbar System consists of modular components, which allows unlimited variations and ratings. Three, four and five wire systems can be designed with ease, and ratings up to 8500A are standard, and tested for both temperature rise and short circuit level.

The Busbar System is based on a two bar per phase system, both horizontal and vertical, eliminating time consuming drilling and bending of copper bars. The Busbar joints are by means of bolts and nuts of 8.8 quality in connection with special spring washers type DIN 6796. When tightened with the recommended torque this ensures an highly efficient and reliable connection throughout the complete lifetime of the assembly, even during variations in operational and thermal conditions.

The connections between the horizontal and vertical bars are made by a special busbar connector system and it secures a good and stable connection. The spacer BXC 11649, has been tested to 2000A.
When joining two panel sections special fishplate connections are used. They are easy to mount and secure a good and reliable connection, see the second image above.

The fishplate connections range from 800A up to 8500A.

The busbar holder components are manufactured from a high grade polymer which provides a high insulation for the copper bar, good mechanical and thermal strength to meet the stress during a short circuit and ability to withstand variations in temperature during service conditions.

Resistance

The contact interface between two faces of a busbar joint consists of a large number of separate point contacts, the area of which increases as more contact pressure is applied and the peaks are crushed.

There are two main factors which therefore affect the actual interface resistance of the contact surfaces.

1. The condition of the surfaces.
2. The total applied pressure.

Condition of Copper Surface

The condition of the contact surface of a joint has an important bearing on its efficiency.

The surface of the copper should be flat and clean but needs not to be polished. Machining is not usually required. Perfectly flat joint faces are not necessary since very good results can be obtained merely by ensuring that the joint is tight and clean. This is particularly true where extruded copper is used.

Copper like all other common metals, readily develops a very thin surface oxide film even at ordinary temperatures and when exposed to air. Therefore it is important to clean the surface to ensure that the oxide layer is thin enough to be broken as the contact surface peaks deform when the contact pressure is applied.

Tinning of the contact surfaces is normally unnecessary, although advantages can be gained in certain circumstances.

If the joint faces are very rough tinning may result in some improvement in efficiency.

Pressure

It has been proved that contact pressure resistance is dependent more on the total applied pressure than on the area of contact. If the total applied pressure remains constant and the contact area is varied, as is the case of a switch blade moving between spring loaded contacts, the total contact resistance is practically constant.

The greater the applied pressure the lower will be the joint resistance and therefore for high efficiency joints high pressure is usually necessary. This has the advantage that the high pressure helps to prevent deterioration of the joint.

Joint resistance falls rapidly with increasing pressure, but above a pressure of 15 N/mm2 there is little further improvement. Certain precautions must be observed to ensure that the contact pressure is not unduly high, since it is important that the proof stress of the conductor material or its bolts and clamps is not exceeded.

As a bar heats up under load the contact pressure in a joint with steel bolts tends to increase because of the difference in expansion coefficients between copper and steel. It is therefore essential that the initial contact pressure is kept to such a level so that it is not excessive when at operating temperature. If the elastic limit of the bar is exceeded the joint will have a reduced contact pressure when it returns to its cold state due to the joint material having deformed or stretched.

To avoid this A/S Løgstrup - Steel prescribes the use of disc spring washers, (according to DIN Standard 6796), whose spring rating is chosen to maintain a substantial contact pressure under cold and hot working conditions.

The torque settings recommended by A/S Løgstrup - Steel, are applicable to high-tensile steel bolts and nuts with unlubricated threads for normal surface finish.

Configuration

The system consists of modular components which allow unlimited variations. 3, 4, & 5 wire systems can be created with ease, while the space between phases can be increased to ease connection to large breakers and facilitate connections of multiple cables.

The busbar support insulators are manufactured from a high grade polymer, which can withstand all the mechanical and thermal stresses involved. All polymers used in the system are CFC and halogen free.

Systems up to 8000A can be assembled as standard. A 2 bar, 2x2 bar or 3x2 bar per phase arrangement is used. This allows connections and extensions to be made without drilling or bending of the copper.

The high short circuit level of the busbar system and the mechanical robustness of the enclosures, guarantees a reliable, safe and long lasting system suitable for even the most demanding environments.

Busbar Ratings

The rating is based on the DIN Standard 43671 and the conditiond as described below.

Rating table for Copper Busbars according to DIN 43671

Copper Specification according to standard EN ISO 10720 / ASTM B272

Rating at 40℃ ambient temperature (average temperature over 24 hours : 35℃) and maximum busbar temperature 120℃.

The ratings are tested values and the tests are performed in a Form 4 type panel with a degree of protection IP 3X - 4X.

Ratings X/Y & Z Plane:

Rating at 40℃ ambient temperature (average temperature over 24 hours : 35℃)
and maximum busbar temperature 120℃.

The ratings are tested values and the tests are performed in a Form 4 type panel with a degree of protection IP 3X - 4X.

Busbars top or bottom with bars lying on long section of the bar. Named X/Y plane in all Logstrup documents.

Busbar top or bottom with bars standing on short section of the bar. Named Z plane in all Logstrup documents.

The LØGSTRUP modular busbar system is rated as listed in the Rating Table on this page.

The rating is based on the DIN Standard 43671 and the conditions as described in the Rating Table.

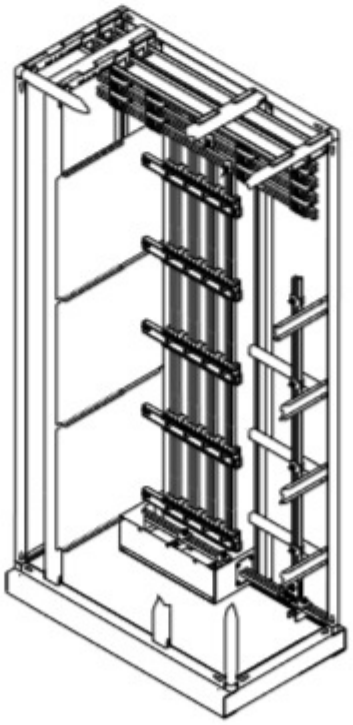
RATING TABLE FOR COPPER BUSBARS ACCORDING TO DIN 43671

COPPER SPECIFICATION according to standard EN ISO 10720 / ASTM B272

Product	Normal Composition % Cu	Oxygen	En Symbol	EN-Number	BS Standard	Edge Radius
Main busbar 12mm ½ hard	99,95	Oxygen free	Cu-OF	CW 008A		0,4mm
Main busbar 12mm ½ hard	99,90 min	Oxidized	Cu-ETP	CW 004A	C101	0,4mm
Main busbar 10mm ½ hard	99,95	Oxygen free	Cu-OF	CW 008A		0,4mm
Main busbar 10mm ½ hard	99,90 min	Oxidized	Cu-ETP	CW 004A	C101	0,4mm

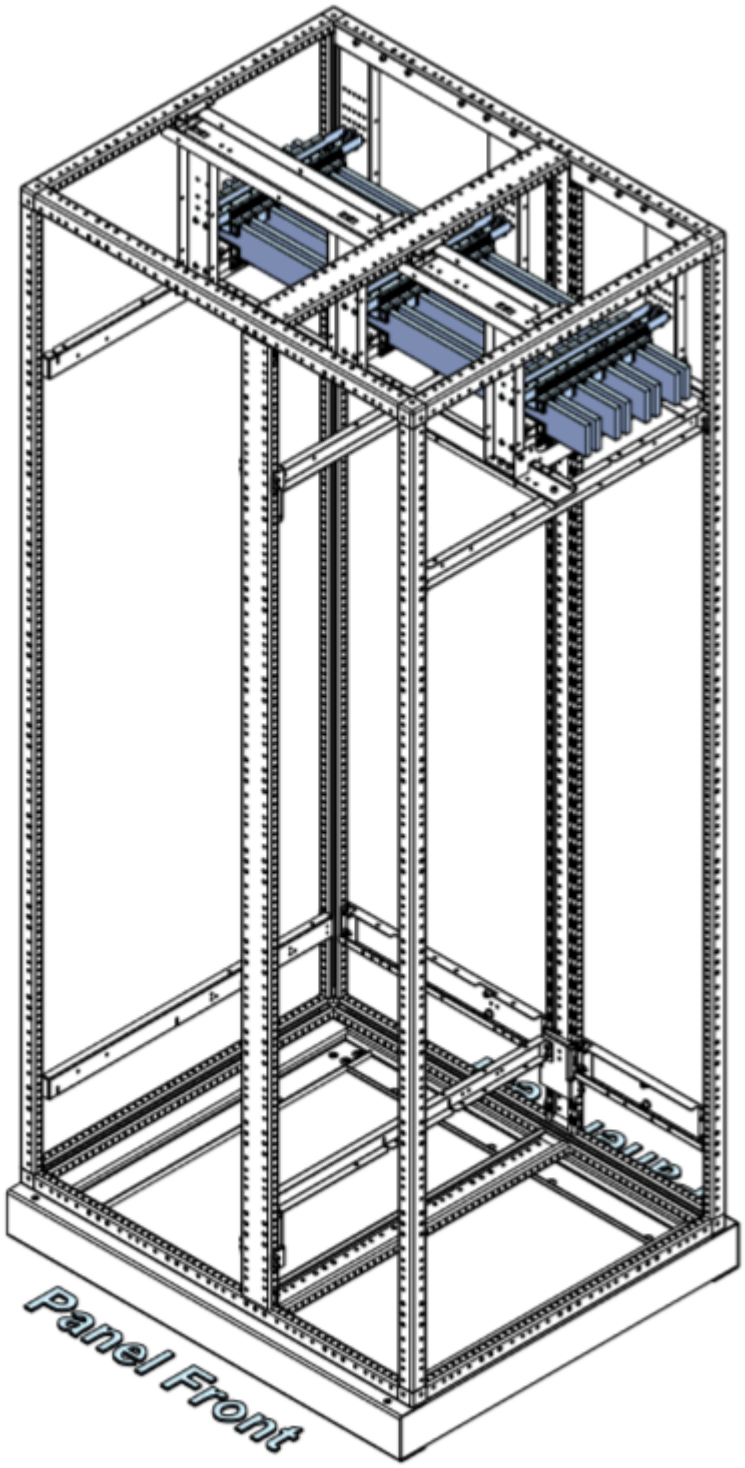
Rating at 40°C ambient temperature (average temperature over 24 hours : 35°C) and maximum busbar temperature 120°C.
The ratings are tested values and the tests are performed in a Form 4 type panel with a degree of protection IP 3X - 4X.

Busbars top or bottom with bars lying on long section of the bar. Named X/Y plane in all Logstrup documents.



Ratings [A] IP3x-43	Ratings [A] IP2x	Cross Section [mm]	Area [mm^2]	Rated short-time withstand current [Icw]	Rated peak withstand current [Ipk]	Distance between supports	Configuration with support rail type BSR
250	275	2//6x6	72	12.5/1 sec	25	380mm	Single Support
400	440	2//6x12	114	20/1 sec	40	380mm	Single Support
630	700	2//12x12	288	50/1 sec	110	380mm	Single Support
800	880	2//12x18	432	50/1 sec	110	380mm	Single Support
1000	1100	2//12x24	576	50/1 sec	110	380mm	Single Support
1250	1370	2//12x30	720	50/1 sec	110	380mm	Single Support
1600	1760	2//12x42	1008	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support
				50/3 sec	110		+BSR Insert type 11015/16
2000	2200	2//12x66	1584	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support +BSR Insert type 11015/16
				100/1 sec	220	380mm	Double Support
				50/3 sec	110		
2500	2750	2//12x90	2160	100/1 sec	220	380mm	Double Support
				50/3 sec	110		
3000	3300	2//12x114	2736	100/1 sec	220	380mm	Double Support
3200	3520	2//12x150	3600	65/3 sec	143	380mm	Double Support
				100/1 sec	220	380mm	Double Support
1180	1290	2x2//12x12	576	50/1 sec	110	380mm	Single Support
1460	1610	2x2//12x18	864	50/1 sec	110	380mm	Single Support
1830	2010	2x2//12x24	1152	50/1 sec	110	380mm	Single Support
2288	2510	2x2//12x30	1440	50/1 sec	110	380mm	Single Support
2920	3220	2x2//12x42	2016	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support
				50/3 sec	110		+BSR Insert type 11015/16
3660	4020	2x2//12x66	3168	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support +BSR Insert type 11015/16
				100/1 sec	220	380mm	Double Support
				50/3 sec	110		
4400	4840	2x2//12x90	4320	100/1 sec	220	380mm	Double Support
				116/0.5 sec	275	380mm	Double Support
				50/3 sec	110		
5040	5540	2x2//12x114	5472	65/3 sec	143	380mm	Double Support
				100/1 sec	220	380mm	Double Support
				107/0.5 sec	275	380mm	Double Support
5850	6440	2x2//12x150	7200	65/3 sec	143	380mm	Double Support
				100/1 sec	220	380mm	Double Support
6800	7480	2x3//12x114	8208	130/1 sec	300	380mm	Double Support

Busbar top or bottom with bars standing on short section of the bar. Named Z plane in all Logstrup documents.



Z Plane

Ratings [A] IP3x-43	Ratings [A] IP2x	Cross Section [mm]	Area [mm²]	Rated short-time withstand current [Icw]	Rated peak withstand current [Ipk]	Distance between supports	Configuration with support rail type BSR
312	343	2//6x6	72	12.5/1 sec	25	380mm	Single Support
500	550	2//6x12	114	20/1 sec	40	380mm	Single Support
800	880	2//12x12	288	50/1 sec	110	380mm	Single Support
1000	1100	2//12x18	432	50/1 sec	110	380mm	Single Support
1250	1370	2//12x24	576	50/1 sec	110	380mm	Single Support
1562	1720	2//12x30	720	50/1 sec	110	380mm	Single Support
2000	2200	2//12x42	1008	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support
				50/3 sec	110		+BSR Insert type 11015/16
2500	2750	2//12x66	1584	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support +BSR Insert type 11015/16
				100/1 sec	220	380mm	Double Support
				50/3 sec	110		
3125	3440	2//12x90	2160	100/1 sec	220	380mm	Double Support
				50/3 sec	110		
3750	4125	2//12x114	2736	100/1 sec	220	380mm	Double Support
4000	4400	2//12x150	3600	65/3 sec	143	380mm	Double Support
				100/1 sec	220	380mm	Double Support
1465	1610	2x2//12x12	576	50/1 sec	110	380mm	Single Support
1830	2010	2x2//12x18	864	50/1 sec	110	380mm	Single Support
2290	2510	2x2//12x24	1152	50/1 sec	110	380mm	Single Support
2860	3150	2x2//12x30	1440	50/1 sec	110	380mm	Single Support
3660	4020	2x2//12x42	2016	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support
				50/3 sec	110		+BSR Insert type 11015/16
4575	5030	2x2//12x66	3168	50/1 sec	110	380mm	Single Support
				65/1 sec	143	380mm	Single support +BSR Insert type 11015/16
				100/1 sec	220	380mm	Double Support
				50/3 sec	110		
5500	6050	2x2//12x90	4320	100/1 sec	220	380mm	Double Support
				116/0.5 sec	275	380mm	Double Support
				50/3 sec	110		
6300	7000	2x2//12x114	5472	65/3 sec	143	380mm	Double Support
				100/1 sec	220	380mm	Double Support
				107/0.5 sec	275	380mm	Double Support
7320	8050	2x2//12x150	7200	65/3 sec	143	380mm	Double Support
				100/1 sec	220	380mm	Double Support
8500	9350	2x3//12x114	8208	130/1 sec	300	380mm	Double Support

Functional Units

Functional units are classified by their level of compartmentation and type of electrical connection.

An extensive range of standard parts offers complete freedom in design:

Internal separation from Form 1 to Form 4B, IEC 61439-2&1
Fixed units (FFF)
Removable units (WFD)
Withdrawable units (WWW)

Different types of functional units can be mixed within the same assembly or section, in order to efficiently meet requirements regarding continuity of supply, service conditions or budgetary constraints.

Due to the complete modularity of the system, the physical dimensions of the functional units can be varied in all 3 axes. This allows complete optimisation of design with respect to the overall dimensions of the assembly, heat dissipation, service and maintenance.

Electrical equipment from most manufacturers may be fitted in accordance with the manufacturer's preferences.

To secure the overall safety level of the assembly all components are manufactured from steel or high grade polymer to resist the spread of fire.

Functional Units Fixed

A fixed type panel is characterised as a panel mounted with components assembled and wired on mounting plates, and connected to the main-circuit by cable or copper connections. The panels can be designed with internal form of separation, Form 1-4 acc. to IEC 61439-2&1.

The panels can be designed with internal form of separation by steel compartmentation according to IEC 61439-2&1, Form 1-4 and according to BS 61439-1&2.

In the case of fixed parts, the connections of main-circuits can only be established or broken when the panel not live. In general, removal and installation of fixed parts requires the use of a tool.

The connection or disconnection of a fixed part normally requires the disconnection of the complete panel or part of it.

In order to prevent unauthorised operation, the switching device may be provided with means to secure it in one or more of its positions.

- Adjustable depth mounting plates
- Non ferrous gland plates
- Metal or plastic cable box
- Sizes: 4 widths, 16 heights, 6 depths

Functional Units Draw-Out

All standard sections are equipped to fit - Removable units (RMU), Withdrawable units (WDU), Mini withdrawable unit (MDU), Inline units (ILU)

All units fully interchangeable and upgradeable (except ILU's)

A removable type panel is characterised as a panel where a part may be removed entirely from the panel and replaced even though the circuit to which it is connected may be live.

The removable parts shall be so designed that their electrical equipment can be safely disconnected from or connected to the main-circuit whilst this circuit is live. Minimum clearances and creepage distances as described in IEC 61439-2&1.

Removable parts shall have a connected position and a removed position.

A withdrawable type panel is characterised as a panel where the removable parts can be moved to a position where an isolating distance is established, whilst remaining mechanically attached to the panel. The isolation distance shall comply with IEC 61439-2&1 clause 7.1.2.2. The withdrawable parts shall be so designed that their electrical equipment can be safely disconnected or connected to the main-circuit whilst this circuit is live.

Removable Units Type

- High protection against contact
- Rating up to 630 A, 500 kW, 690 V
- Fixed or hinged front panel
- Coding system
- Front or rear access
- Unique safety locking mechanism
- Fully re-configurable while live
- Accommodates components from many manufacturers
- DeviceNet & Profibus connection
- Sizes: X = 3, 4 Y= 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4.
- Up to 20 units per section

Withdrawable

- High operational safety
- Rating up to 630 A, 500 kW, 690 V
- Auxiliary controls up to 46 control pins
- Fully re-configurable while live
- Coding system
- Safe operation...IP20 protection in all positions
- Front or rear access
- Fixed or hinged front panel
- Unique safety locking mechanism
- Accommodates components from many manufacturers
- DeviceNet & Profibus connection
- Sizes: X = 3, 4 Y = 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4
- Up to 20 units per section

Mini-Withdrawable

- High personal protection
- Rating up to 80 A, 55 kW, 690 V
- Auxiliary controls up to 46 control pins
- Front or rear access
- Removable interface box
- Interface box can be prewired
- Fully re-configurable while live
- Unique safety locking mechanism
- Accommodates components from many manufacturers
- Coding system
- DeviceNet & Profibus connection
- Sizes: X = 1, 1.5, 2, 3 Y = 1
- Up to 40 units per stack

Cable Sections

Economising on space in a switchboard or motor control centre can be detrimental for the personnel involved in the installation of the equipment.

The provision of narrow cableways leads to higher installation costs, dangerous working conditions and may inadvertently lead to bad workmanship due to lack of proper space.

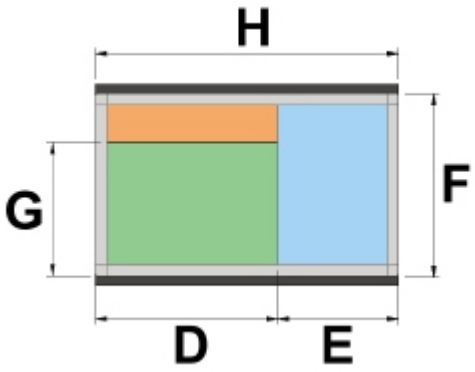
The long term consequences may be higher service time and more downtime.

In designing a Logstrup type tested assembly, various widths of cableways may be incorporated depending on the number of cables and their respective size.

Standard widths are 450mm, 640mm and 830mm. This is especially important where large cables have to be installed or a cableway is shared with 2 functional unit sections.

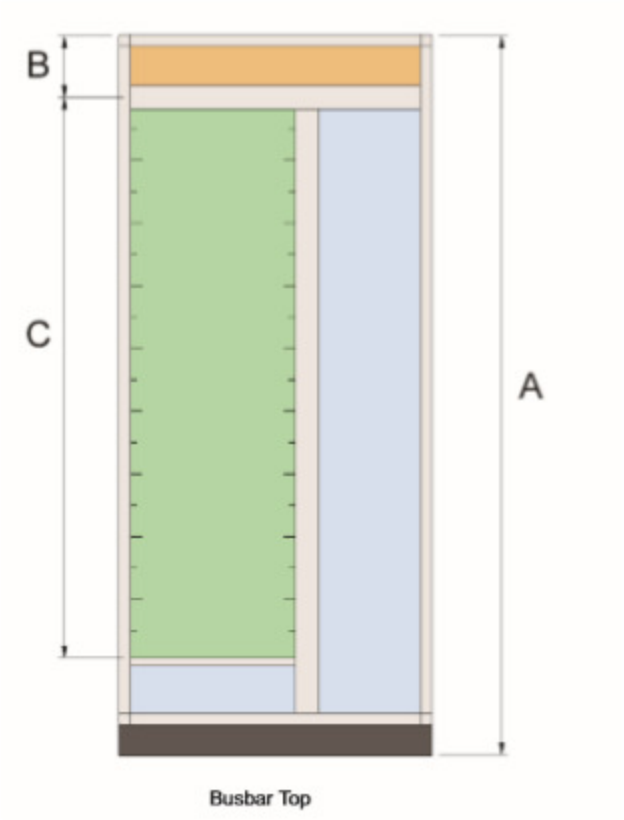
A cableway can run horizontally throughout the whole length of the board, at the top and bottom as well as vertically beside each functional unit section. This provides a complete island around each functional unit section and allows inter-wiring between various units and back to PLC sections with ease.

Layout



You are provided with layout sheets showing a wide range of Logstrup Modular Enclosure units and configurations:

Front Access Layout



Busbar Top

Module Sizes

A	B	C	A (mm)
10	1	8	1995
11	1	9*	2185
12	1	10	2375
10	2	7	1995
11	2	8*	2185
12	2	9	2375

Functional Unit Section

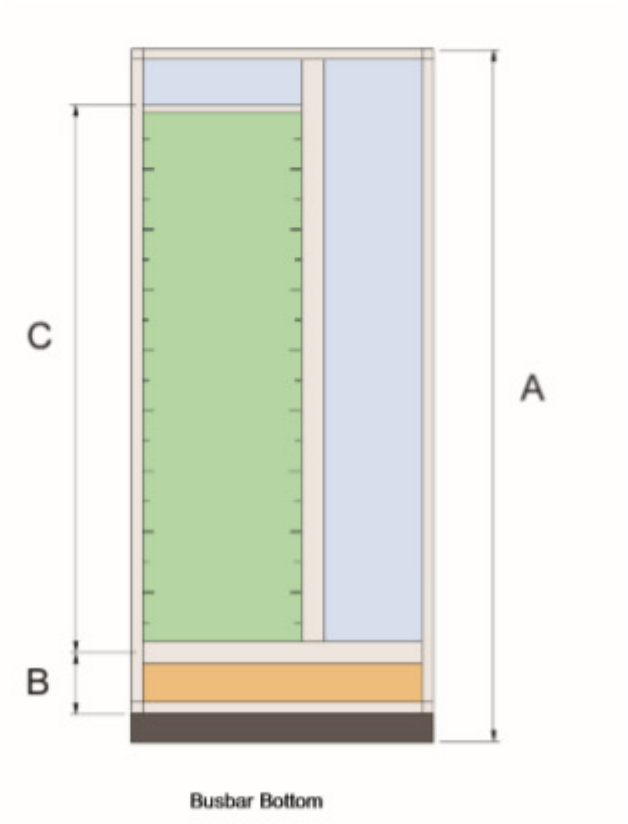
Cable Section

Busbar Section

Note:
Busbar 600A - 1600A = 1 Module Height
Busbar 2000A - 6300A = 2 Module Height

* = Ex Stock

Front Access Layout



Busbar Bottom

Module Sizes

A	B	C	A (mm)
10	1	8	1995
11	1	9*	2185
12	1	10	2375
10	2	7	1995
11	2	8*	2185
12	2	9	2375

Functional Unit Section

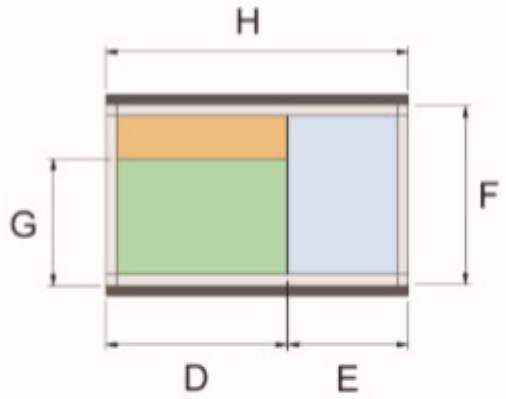
Cable Section

Busbar Section

Note:
Busbar 600A - 1600A = 1 Module Height
Busbar 2000A - 6300A = 2 Module Height

* = Ex Stock

Front Access Layout



Plan View

Module Sizes

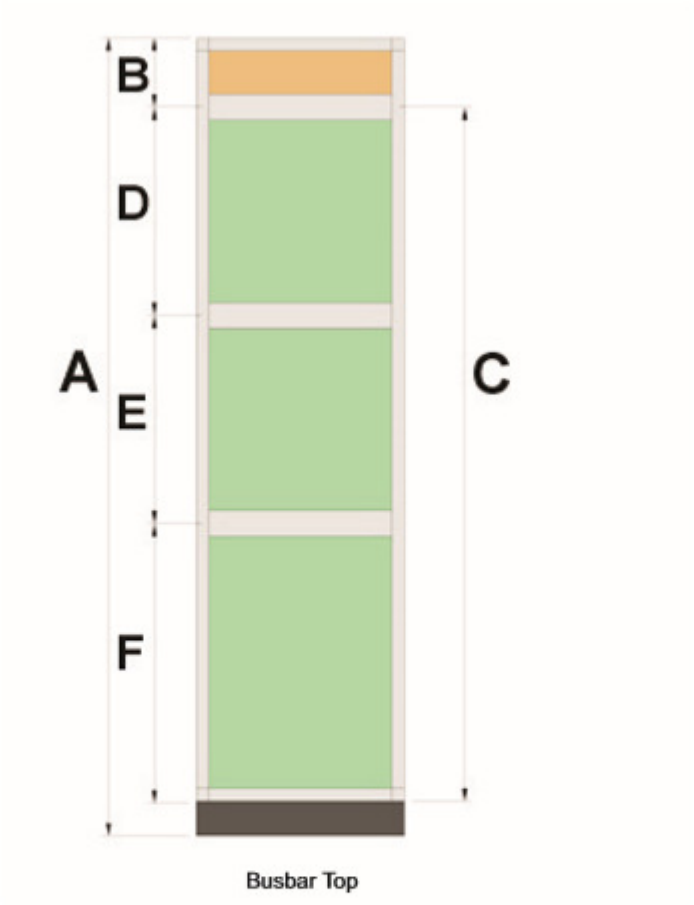
D	E	F	F (mm)	G (mm)	H	H (mm)
3	1	3	570	410	4	760
3	2	3	570	410	5	950
3	3	3	570	410	6	1140
3	2	4	760	600	5	950
3	3	4	760	600	6	1140
2	2	3	570	410	6	1140
3	3	3	570	410	7	1330
2	2	4	760	600	6	1140
3	3	4	760	600	7	1330

Functional Unit Section

Cable Section

Busbar Section

Incomming Unit Layout



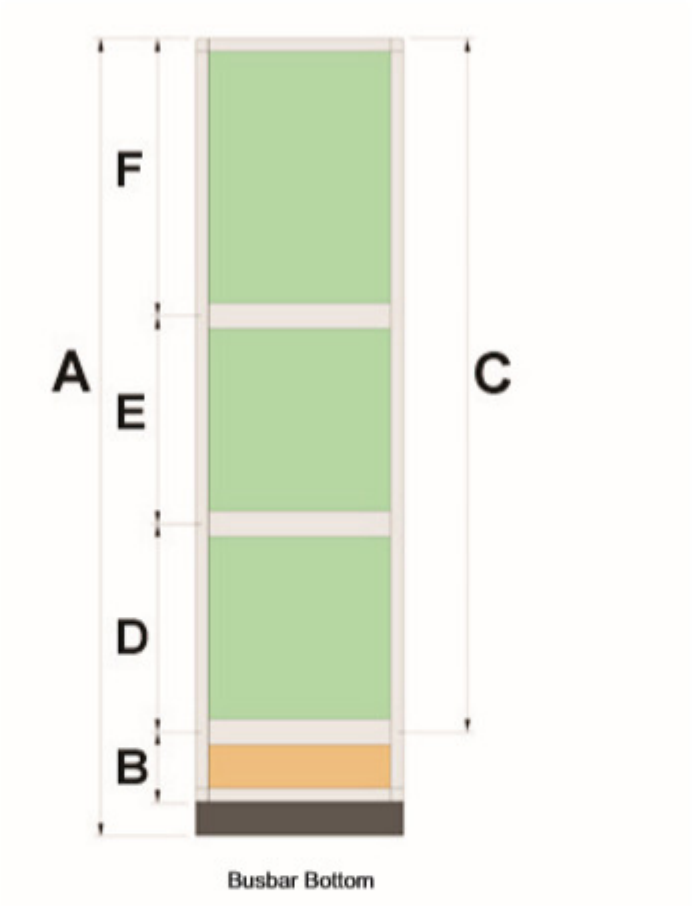
Module Sizes

A	B	C	A (mm)
10	1	9	1995
11	1	10	2185
12	1	11	2375
10	2	9	1995
11	2	10	2185
12	2	11	2375

Functional Unit Section

Busbar Section

Incomming Unit Layout



Module Sizes

D	E	F
*	2	**
*	3	**
*	4	**
*	5	**

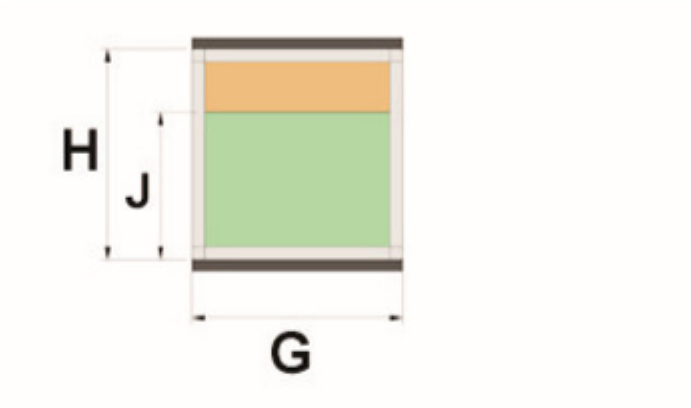
Functional Unit Section

Busbar Section

Note:
* = This area can be omitted or sub divided as required for metering, switching etc.

** = This area is a min. of 1 mod., with the remaining area divided as required

Incomming Unit Layout



Plan View

Module Sizes

G	H	J (mm)	G (mm)	H (mm)
2	3	245*	380	570
3	4	357*	570	760
4			760	
5			950	
6			1140	

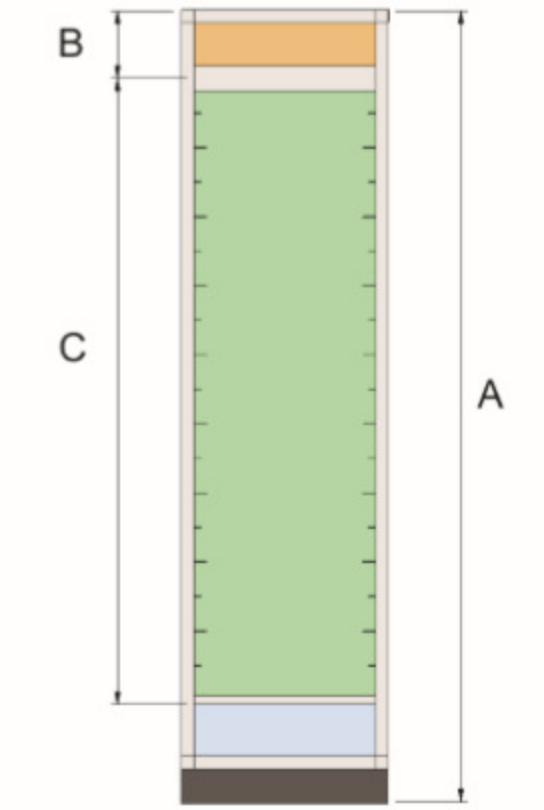
Functional Unit Section

Busbar Section

Note:
* = Fixed ABB Depth

** = Withdrawable ACB Depth

Rear Access Layout



Busbar Top

Module Sizes

A	B	C	A (mm)
10	1	8	1995
11	1	9*	2185
12	1	10	2375
10	2	7	1995
11	2	8*	2185
12	2	9	2375

Functional Unit Section

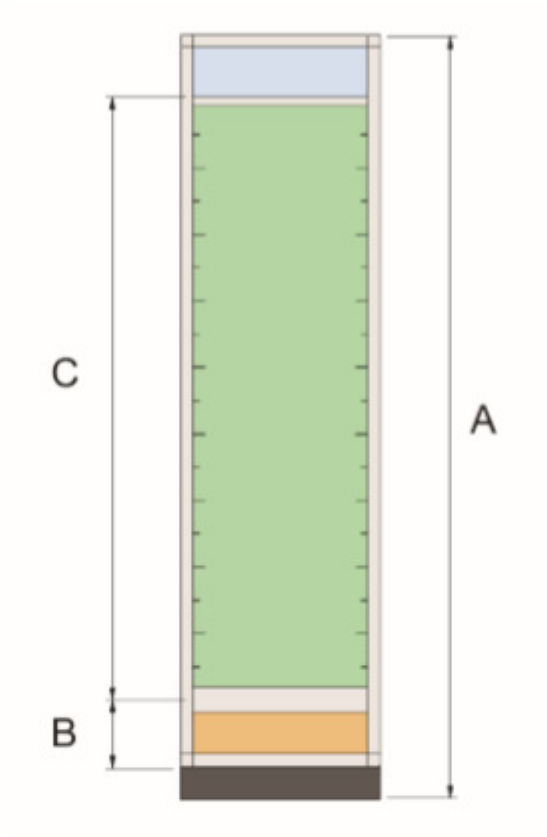
Cable Section

Busbar Section

Note:
Busbar 600A - 1600A = 1 Module Height
Busbar 2000A - 6300A = 2 Module Height

* = Ex Stock

Rear Access Layout



Busbar Bottom

Module Sizes

A	B	C	A (mm)
10	1	8	1995
11	1	9*	2185
12	1	10	2375
10	2	7	1995
11	2	8*	2185
12	2	9	2375

Functional Unit Section

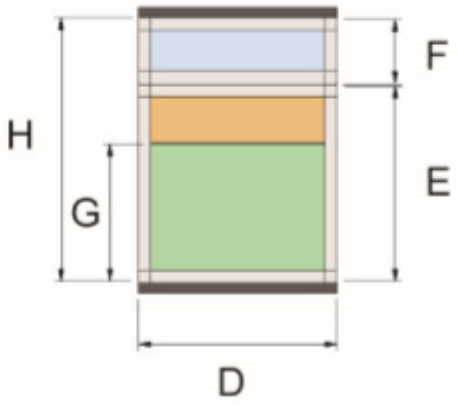
Cable Section

Busbar Section

Note:
Busbar 600A - 1600A = 1 Module Height
Busbar 2000A - 6300A = 2 Module Height

* = Ex Stock

Rear Access Layout



Plan View

Module Sizes

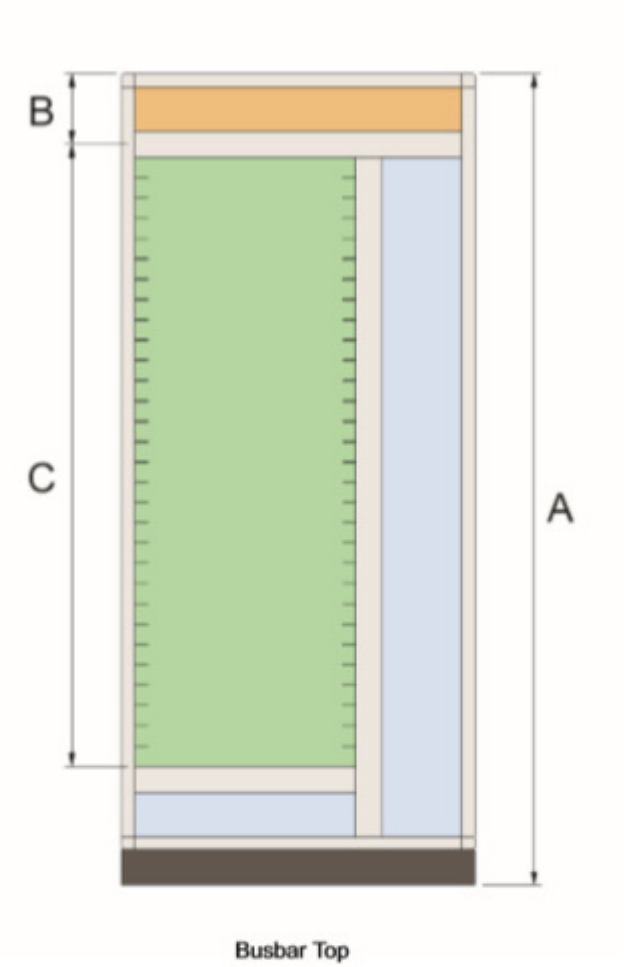
D	E	F	H	D (mm)	F (mm)	G (mm)	H (mm)
3	3	1	4	570	190	410	760
3	3	2	5	570	380	410	950
3	3	3	6	570	570	410	1140
3	4	1	5	570	190	600	950
3	4	2	6	570	380	600	1140
3	4	3	7	570	570	600	1330
4	3	1	4	760	190	400	760
4	3	2	5	760	380	400	950
4	3	3	6	760	570	400	1140
4	4	1	5	760	190	600	950
4	4	2	6	760	380	600	1140
4	4	3	7	760	570	600	1330

Functional Unit Section

Cable Section

Busbar Section

Inline Layout



Busbar Top

Module Sizes

A	B	C	C (mm)	C1 ABB	C2 J.M.	A (mm)
10	1	8	1423	28	27	1995
11	1	9*	1613	32	30	2185
12	1	10	1803	36	36	2375
10	2	7	1233	24	24	1995
11	2	8*	1423	28	27	2185
12	2	9	1613	32	30	2375

Functional Unit Section

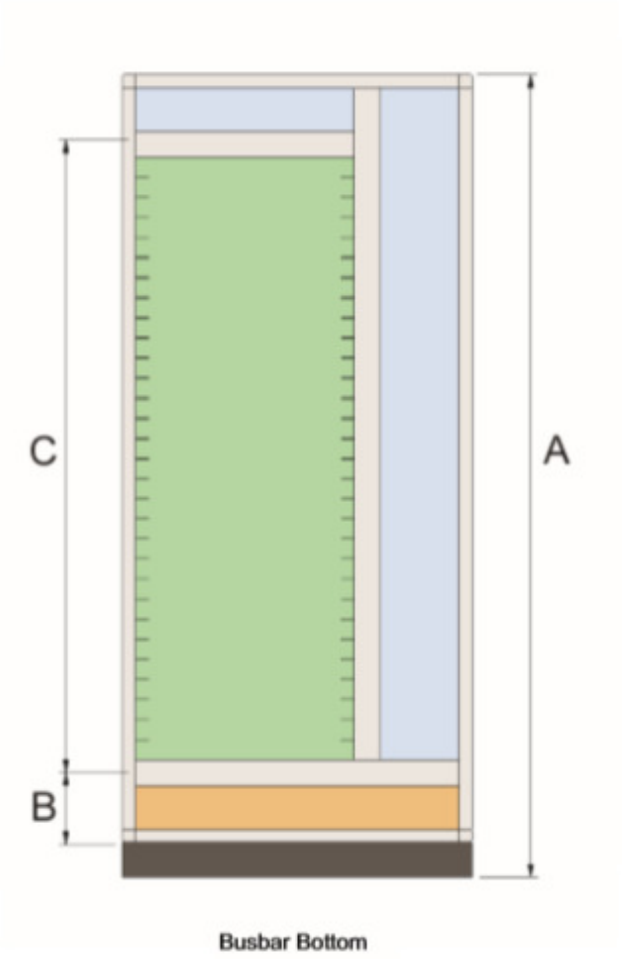
Cable Section

Busbar Section

Note:
C = No. of 50mm spacings for Inline units.
C1 = ABB C2 = J.M. (Jean Muller)
ABB IP20 Plate = 200mm J.M. IP20 Plate = 150mm

* = Ex Stock

Inline Layout



Busbar Bottom

Module Sizes

A	B	C	C (mm)	C1 ABB	C2 J.M.	A (mm)
10	1	8	1423	28	27	1995
11	1	9*	1613	32	30	2185
12	1	10	1803	36	36	2375
10	2	7	1233	24	24	1995
11	2	8*	1423	28	27	2185
12	2	9	1613	32	30	2375

Functional Unit Section

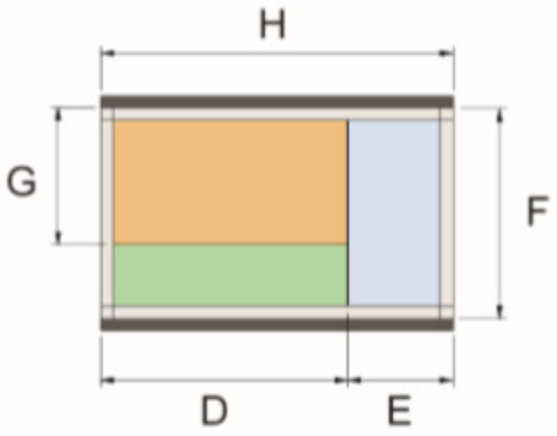
Cable Section

Busbar Section

Note:
C = No. of 50mm spacings for Inline units.
C1 = ABB C2 = J.M. (Jean Muller)
ABB IP20 Plate = 200mm J.M. IP20 Plate = 150mm

* = Ex Stock

Inline Layout



Plan View

Module Sizes

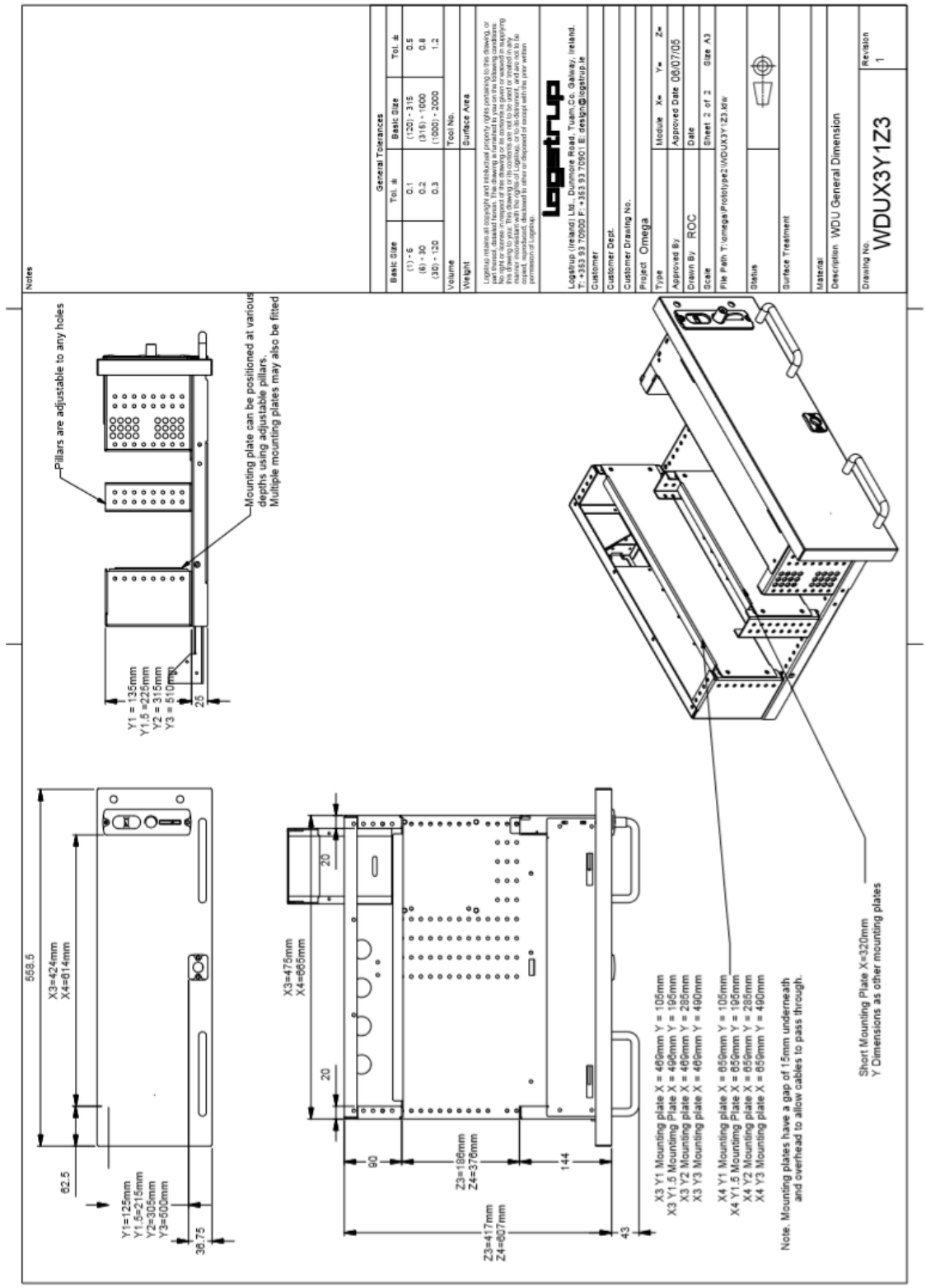
D	E	F	F (mm)	G (mm)	H	H (mm)
3.5	1.5	3	570	360	5	950
3.5	2.5	3	570	360	6	1140
3.5	1.5	4	760	550	5	950
3.5	2.5	4	760	550	6	1140

Functional Unit Section

Cable Section

Busbar Section

WDU Withdrawable Unit Layout

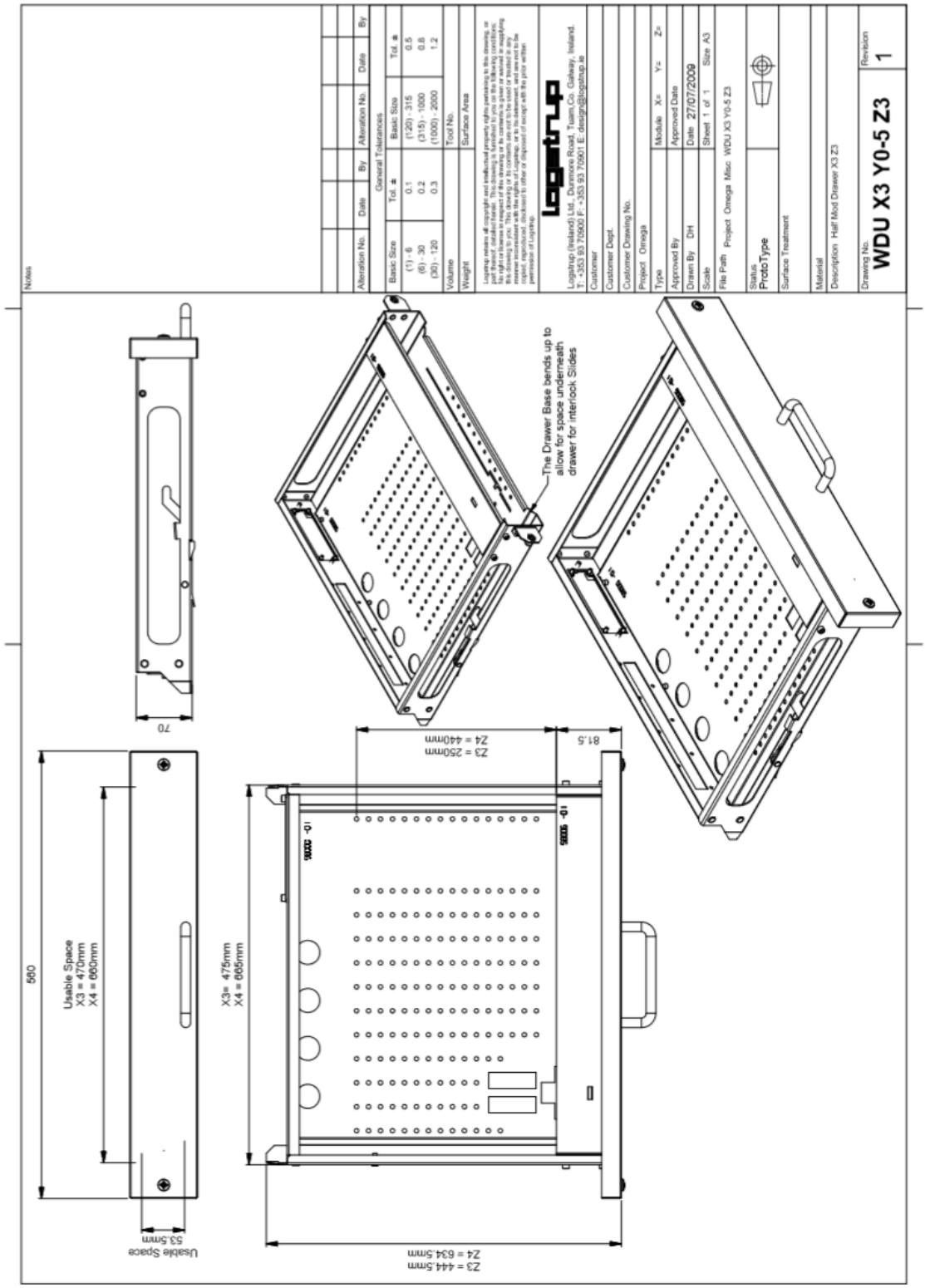


OMEGA

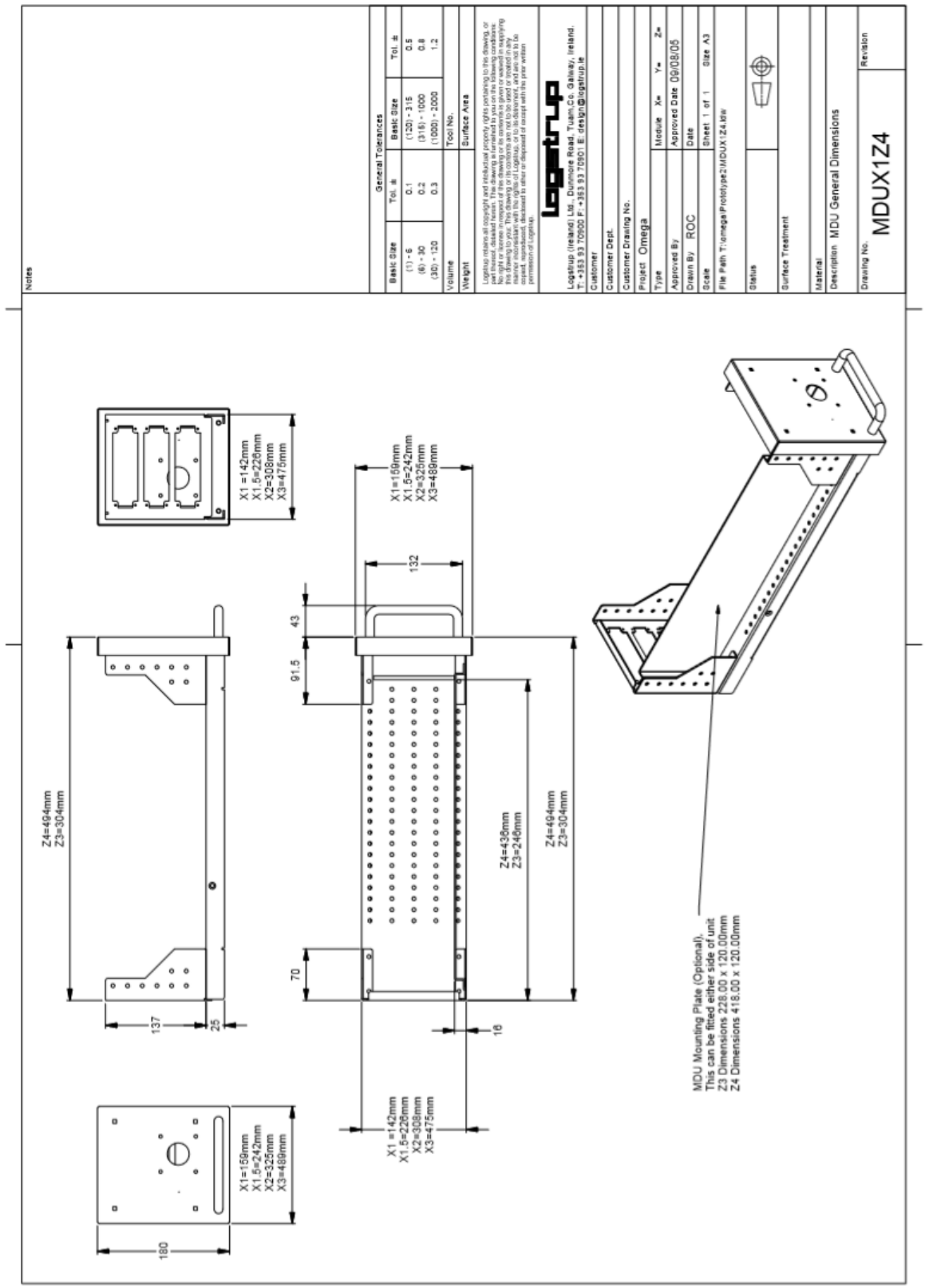
WDU - Withdrawable Unit

		Drawer	Mounting Plate	Door
Width X	3	475	429	424
	4	665	619	614
Height Y	1	125	105	125
	1.5	215	195	215
	2	305	285	305
	3	500	490	500
	4	690	680	690
Depth Z	3	260	-	-
	4	450	-	-

WDU Half Module Layout



MDU Mini Withdrawable Unit



OMEGA

MDU - Mini Withdrawable Unit

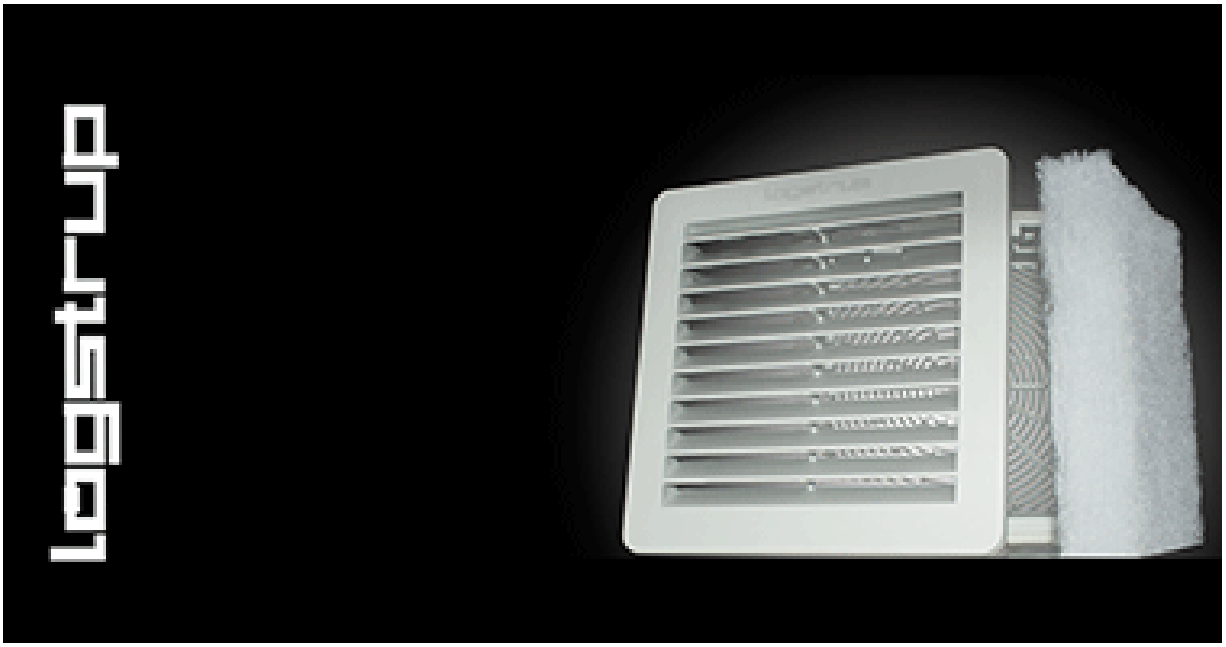
		Drawer	Mounting Plate	Door
Width X	1	142	-	105
	1.5	226	-	185
	2	308	-	270
	3	475	-	435
Height Y	1	135	120	130
Depth Z	3	228	228	-
	4	418	418	-

OMEGA

RMU - Removable Unit

Removable		
Width X	3	475
	4	665
Height Y	1	135
	1.5	230
	2	325
	3	515
	4	705
Depth Z	3	260
	4	450

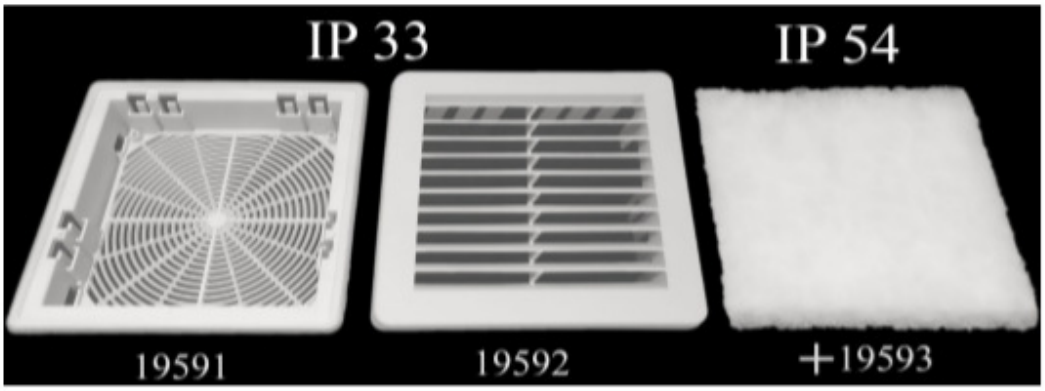
Louvres



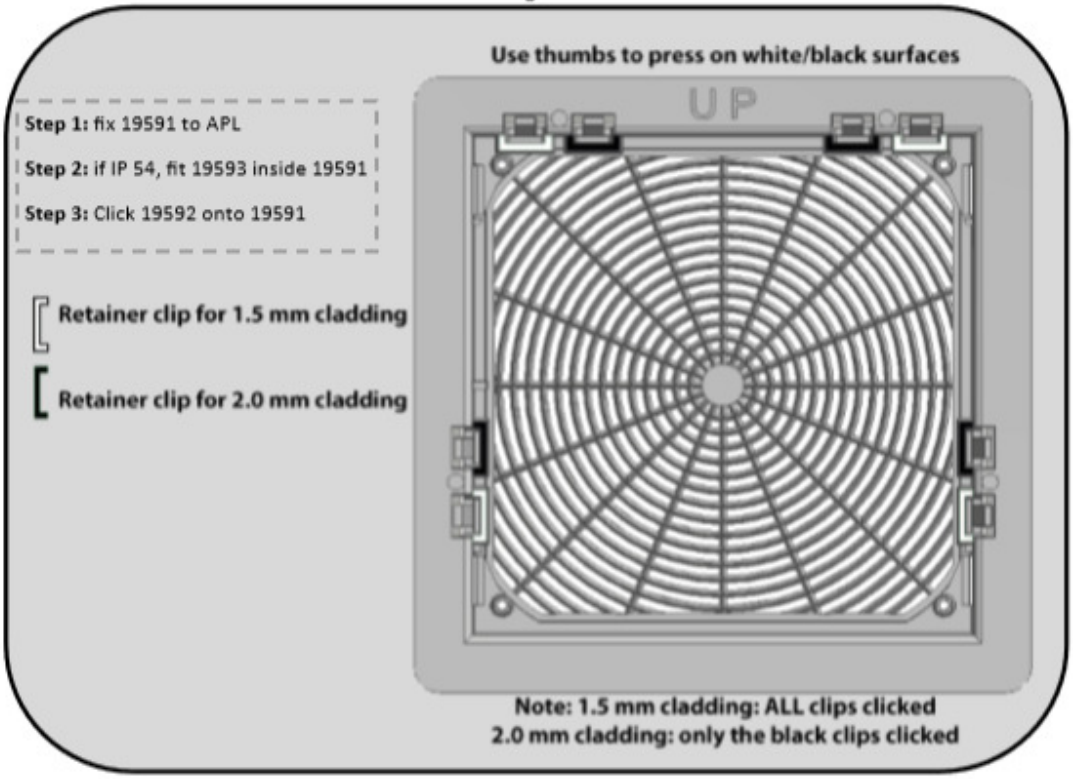
The advantage for the panel builder is significantly faster assembly with a two part click-on system for easy instalation.

Ventilation opening is increased for better airflow at a higher IP rating (IP 33 by default and IP 54 with the insert filter)

Fits both standard 1.5 mm and the 2 mm for mounting in the upper and lower section of the enclosure.



Assembly Instructions



Q&A

Q: How do I order the new louvres?

A: Use LogCad as usual – The new louvres are ready to be shipped. You will need to update the LogCad library; follow the link provided in the news-mail.

Q: Does the old metal louvers still fit the APLs?

A: The welded studs on the APLs become obsolete within 3-6 months from September 2017.

Q: Can I still order APLs compatible with the old metal louvres?

A: Yes, this is still possible if requested explicitly in the order.

Q: Which IP class options are available with the new Louvres?

A: The new louvres offer either IP 33 by default or IP 54 with the addition of an optional filter.

Associated Changes

- For flat plates with louvres we introduce a range of AGLs that follow the same modular sizes as APLs. The new AGLs will effectively replace the OHW naming. The OHW will eventually be removed.

The sizes are (for both APL and AGL):

- 1 to 7 modules in X-axis
- 1 to 3 modules in Y-axis, where
- Y3 can either be fitted with 1, 2, or 3 rows of louvres.

Additional Info

Copper vs. Aluminium

Logstrup uses copper for switchgear.

A study conducted among distribution utilities throughout the world as to the grounds for deciding to use copper or aluminium conductors in LV and MV cable networks has highlighted the technical advantages of copper against the price advantage of aluminium.

The study was conducted by DNV GL (previously DNV KEMA) among 100 distribution utilities in 25 countries. The context was the ongoing discussion as to the selection of copper or aluminium as common conductor materials in LV and MV power cables. Originally, copper was the only conductor material used; later, aluminium was introduced. Each material has positive and negative characteristics that affect their use. As a result, some utilities favour one material over the other.

From an investigation of the decision model it seems the one factor that plays the dominant role in selecting aluminium is its significantly lower price as a conductor. Factors that benefit the selection of copper conductors are:

- Easier installation of joints and accessories
- Easier maintenance
- Superior mechanical properties
- Smaller radial size
- Problems with connectors in aluminium conductor cables

The report also provides detailed background to the use of conductors in LV and MV power cable networks, covering topics such as available conductors for LV and MV cables; typical differences between copper and aluminium; and failure mechanisms related to conductors.

A number of failure mechanisms related to aluminium conductors were identified, which the authors consider important as they should influence the decision model:

Chemical reaction between aluminium and water, resulting in the development of high pressure hydrogen and related joint failures.

Chemical reaction between aluminium and oxygen, resulting in high transition resistances in joints and connectors, and related joint failure.

Thermo-mechanical behaviour of aluminium due to a significantly higher coefficient of expansion and related mechanical failure.

The authors of the report are Wim Boone and Christiaan Sonderen from global technical advisory agency DNV GL.

Impact of welding

For environmental reasons, Logstrup switchboards are made without the use of welding. This significantly reduces CO2 emissions, making Logstrup the greenest switchboard provider on the market.