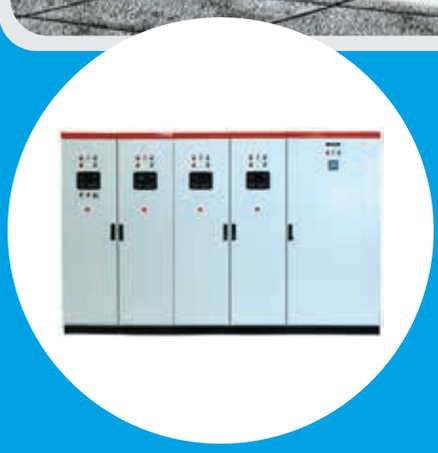
شركة العصري الكهربائية المحدودة

مفتاح فصل التيارولوحاتتوزيع الكهرباء

AL-ASRY ELECTRIC CO.LTD.

Switchgear & Panel Board Manufacturer



INTERNATIONAL

UKAS MANAGEMENT SYSTEMS Registration Number 014

POWERGUARD

TECHNICAL INFORMATION

AL-ASRY ELECTRIC CO.LTD.

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POWERGUARD

CONTENTS

INTRODUCTION

AL-ASRY ELECTRIC CO. LTD., (Switchgear & Panel Board Manufacturing Division) was established in the Kingdom of Saudi Arabia in the year 2005 with an objective to provide Customer Satisfactory Service in the Construction Industry. We manufacture our products under the brand name of Power Guard. The factory is located in Dammam Second Industrial City, Phase-1, Street No. 39 and fully equipped with the latest machineries and highly qualified experienced engineers and skilled Technicians.

The Plant is equipped with comprehensive modern technology machineries of punching, shearing bending machineries and automatic powder coating paint booth with 160-200/deg C Curing Oven. All the machines are controlled with CNC Controller and Computerized aided design techniques ensuring an innovative and compact product with an aesthetic finish.

Our products are manufactured in variable sizes with different innovative designs in order to compete with the challengeable market. The Company believes in the integrating activities of continuous upgradation with advanced technologies to satisfy our esteemed customers.

We have highly qualified capable and flexible workforce who continuously strive for improvement of quality and perfection in every aspect. Well known branded materials and components are used in our panels to maintain international quality standards.

AUTHORIZED PANEL MANUFACTURER OF

MITSUBISHI

ABB

Power and productivity
for a better world™

imagination at work

Schneider Electric

POWERGUARD

LOW VOLTAGE SWITCH GEAR - PGSG

APPLICATION

Power Guard low voltage switch gear generally installed downstream of LV transformers and generators. These are feeding to distribution panel board and motor control center.

It is manufactured as per IEC-60439-2 and 61439-2 the Power Guard switch gear are designed modular form with standardized section easy to fit customer requirement

It can be facilitate to communicate with SCADA and BMS

The ratings are up to 6300A in form 1 to form-4b

DIMENSION

DEPTH	WIDTH	HEIGHT
600		2000
800	600	
	800	
	1000	2200
	1200	
1000		

FEATURES

Construction

- The frames are manufactured from high quality galvanized steel 2mm to 3mm thickness
- The doors are manufactured same as above material 1.5 to 2mm thickness
- Paint finish polyester powder coated RAL 7035 as standard other colors on request
- Bus bar is 99.9% tinplated copper. silver plating on request
- Current density of bus bar are 1.6A/mm^2 neutral bus bar 50% of phase 100% on request and ground bus bar 50% of neutral 100% on request
- Designed for Ambient temperature 50 degrees Celsius
- Modular designed switchgears are extensible by standard modules. Any other features can be added on request

DESIGN STANDARDS

- IEC-61439-2
- IEC-60439-2
- NEC-VL891
- NEMA-PB2

DEGREE OF PROTECTION

- IP-41
- IP-54
- IP-55
- NEMA-1
- NEMA-12
- NEMA-3
- NEMA-3R
- NEMA-4
- NEMA-4X

POWERGUARD

LOW VOLTAGE SWITCH GEAR - PGSG

MAIN DISTRIBUTION PANEL

APPLICATION

Power Guard Main distribution panel generally installed down-stream of Switch gear, LV trans-former and generator. These are feeding to Submain distribution panel board motor control centers, Load centers and light-ing panel

It is manufactured as per IEC-60439-2 and 61439-2 the Power Guard MDP designed modular form with standardized section easy to fit customer requirement

It can be facilitate to communi-cate with SCADA and BMS

The rating are up to 6300A in form 1 to form-4b

DIMENSION

DEPTH	WIDTH	HEIGHT
400 600		
800	600	1600
	800	1800
	1000	2000
	1200	2200
1000		

FEATURES

Construction

- The frames are manufactured from high quality galvanized steel 2mm thickness
- The doors are manufactured same as above material 1.5 to 2mm thickness
- Paint finish polyester powder coated RAL 7035 as standard other color on request
- Bus bar is 99.9% tinplated copper. Silver plating on request
- Current density of bus bar 1.6A/mm^2, neutral bus bar 50% of phase 100% on request and ground bus bar 50% of neutral 100% on request
- Designed for Ambient temper-ature 50°C degrees Celsius
- Modular designed switchgears are extensible by standard modules. Any other features can be added on request
- Incoming and outgoing breaker are air circuit breaker or molded case circuit breaker

DESIGN STANDARDS

- IEC-61439-2
- IEC-60439-2
- NEC-VL891
- NEMA-PB2

DEGREE OF PROTECTION

- IP-41
- IP-54
- IP-55

NEMA STANDARD

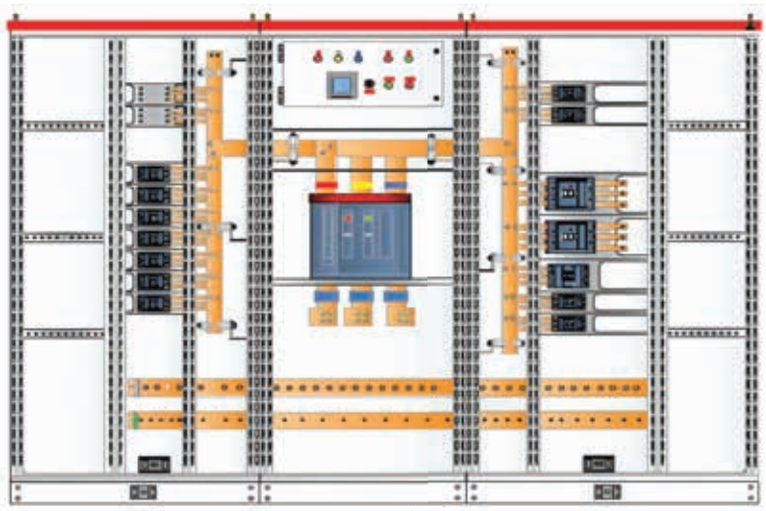
- NEMA-1
- NEMA-12
- NEMA-3
- NEMA-3R
- NEMA-4
- NEMA-4X

POWERGUARD

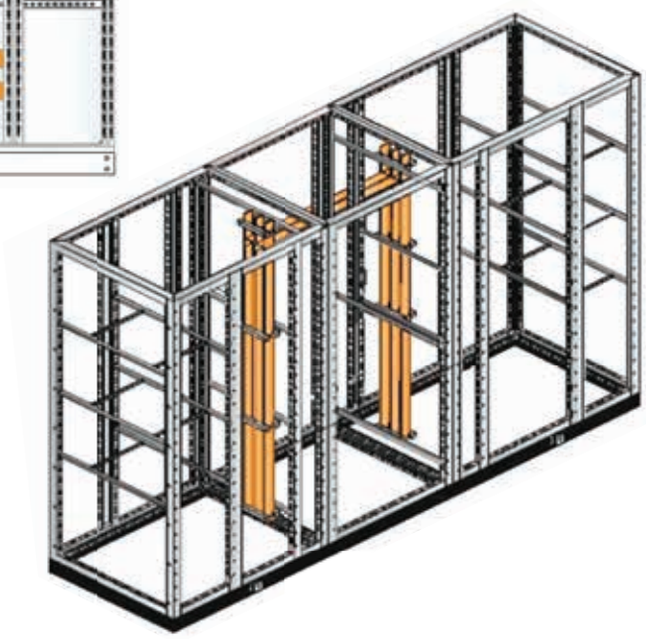
MAIN DISTRIBUTION PANEL

Front View

Side View



Inner Front View



3200A MAIN DISTRIBUTION PANEL

MAIN DISTRIBUTION PANEL

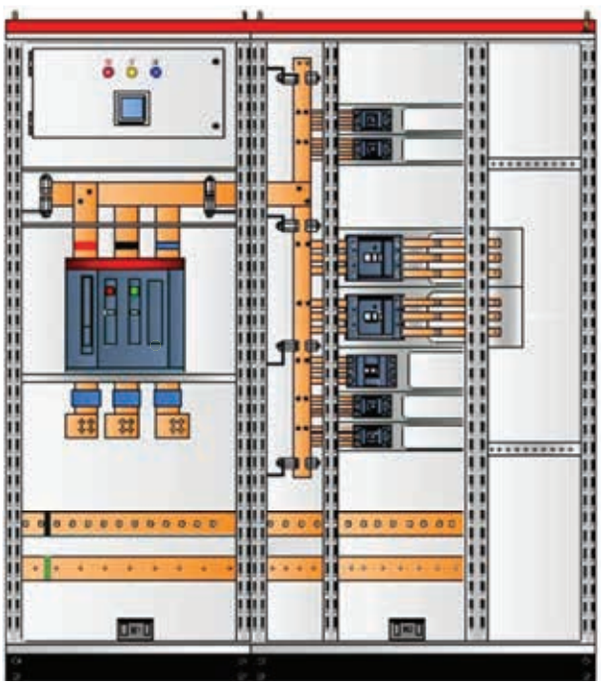
2500A MAIN DISTRIBUTION PANEL

POWERGUARD

FORM 4 PANEL

Front View

Side View



Inner Front View

3200A MAIN DISTRIBUTION PANEL

SUB MAIN DISTRIBUTION PANEL

APPLICATION

Power Guard MCCB distribution boards are used as sub-main Distribution panel in residential, Commercial & industrial premises. These Panels are suitable for current ratings upto 1250A with Form 1 & Form 2 designs.

FEATURES

Construction

- Made out of high quality galvanized Steel of 1.6mm - 2.0 mm Thickness.
- Textured finish polyester powder coated RAL-7035-light grey (Other Colors on request).
- Bus bars made of tin plated ETP grade copper (Silver plating On request).
- Bus bars designed for current density of 1.6A/mm^2.
- Both incoming & outgoing breakers MCCBs.
- Designed for ambient temperature 50°C.
- Removable top & bottom gland plates

Options

- Indoor & outdoor application.
- Wall mounting and free standing Designs.
- Available in 4-12 outgoing triple pole MCCBs (More than 12 outgoing Breakers on request).
- With or without metering

630 A WALL MOUNTED PANELS

NO. OF WAYS	HEIGHT IN MM	WIDTH IN MM	DEPTH IN MM**
4 way	1200	800	200
6 way	1200	800	200
8 way	1200	800	200
10 way	1400	800	200
12 way	1400	800	200

1250 A FREE STANDING PANELS

NO. OF WAYS	HEIGHT IN MM	WIDTH IN MM	DEPTH IN MM**
6 way	1600	800	400
8 way	1600	800	400
10 way	1800	800	400
12 way	1800	800	400
14 way	2000	1000	600
14 way	2000	1000	600

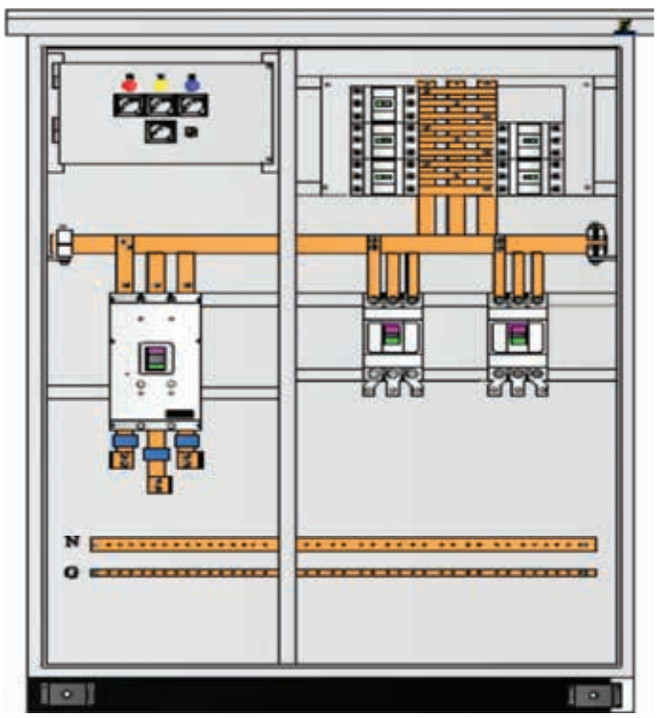
*Size will be revised for outdoor purpose

POWERGUARD

SUB MAIN DISTRIBUTION PANEL

Front View

Side View



Inner Front View

1250A SUBMAIN DISTRIBUTION PANEL

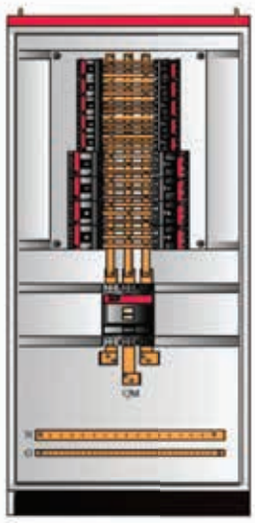
POWERGUARD

SUB MAIN DISTRIBUTION PANEL

FREE STANDING

ISOMETRIC VIEW

FRONT VIEW



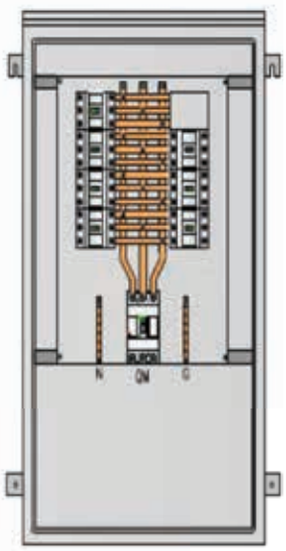
INNER FRONT VIEW

SIDE VIEW

1000A SUBMAIN DISTRIBUTION PANEL

FRONT VIEW

SIDE VIEW



INNER FRONT VIEW

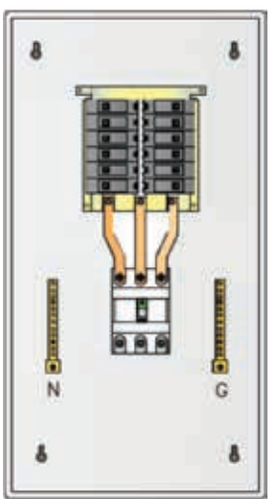
250A SUBMAIN DISTRIBUTION PANEL

LOAD CENTER

Load Center is an industry term that applies to the types of Panel Boards used in residential and light commercial applications. The National Electrical Code® makes no distinction between a panel board and a load center; therefore, rules and definitions that apply to panel boards also apply to load centers.

Application

- Used to control light, heat, or power circuits, in Residential and Commercial application



FRONT VIEW | SIDE VIEW | FRONT VIEW (Outer Door Removed) | INNER FRONT VIEW

250A/125A FLUSH MOUNTED LOAD CENTER (INDOOR TYPE)

POWERGUARD

LOAD CENTER

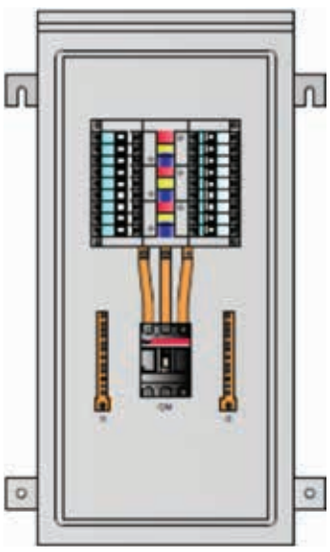
WALL MOUNTED

ISOMETRIC VIEW

FRONT VIEW

SIDE VIEW

INNER FRONT VIEW
(With Dead Front Cover)

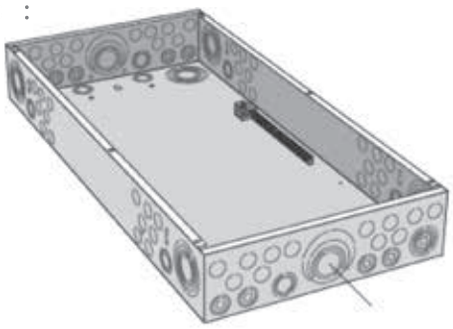


INNER FRONT VIEW
(Without Dead Front Cover)

250A/125A SURFACE MOUNTED LOAD CENTER (OUTDOOR) SURFACE

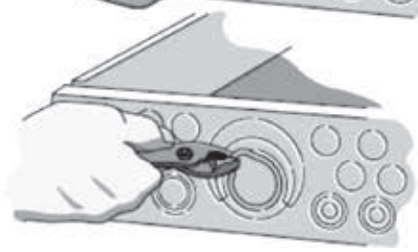
LOAD CENTER CONSTRUCTION

Load centers are constructed from the following three parts : enclosure, interior and trim.



ENCLOSURE

It is typically constructed of galvanized steel Together with the trim, the enclosure is designed to provide component and personnel protection



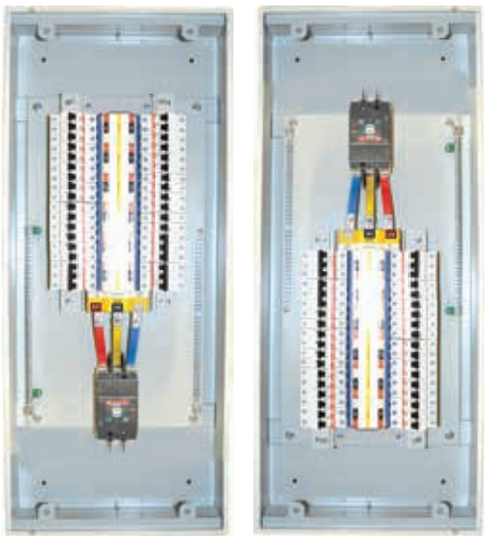
Knockouts are stamped into the enclosure to provide a convenient means of creating holes for use in routing electrical wiring. Approved cable clamps or conduit hubs are used in the holes to secure and protect the cable and conductors.

Removing Knockouts

Knockouts may be removed prior to mounting the enclosure. When there are multiple ring knockouts, remove the center section by striking at the point furthest from the tie. Then, bend the knockout back and forth to break the tie. If a larger opening is required, remove each additional ring, one at a time, by prying with a screwdriver and bending the ring back and forth with pliers as shown in the following figure.

INTERIOR

The load center interior mounts inside the enclosure and includes bus bars and related hardware.



Bus Bars

A bus bar serves as a common connection for two or more circuits. In a load center, bus bars are used to make it easy to connect circuit breakers to service conductors and load wiring. Load center bus bars are made of copper.

Branch Circuit Breakers

Branch circuit breakers fixed directly onto the load center's supply bus bars as shown in the following illustration.

LOAD CENTER CONSTRUCTION

Label

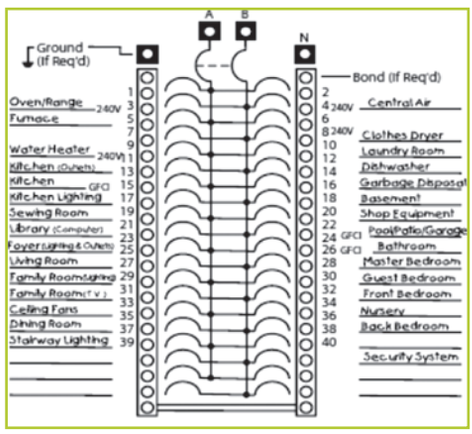
The label identifies the load center's enclosure type, Service voltage and ampere rating. Additional information on the label identifies circuit breaker types that can be used with the load center, short circuit current ratings, and wiring diagrams.

TRIM ASSEMBLY

The trim assembly, sometimes called a dead front, attaches to the front of the load center and covers the interior. The trim assembly includes an access door and an adjustable upper pan. The trim assembly provides access to the circuit breakers while sealing off live parts and internal wiring.

Circuit Directory

A Circuit Directory on the door, similar to one shown below, provides space for listing the services protected by each branch circuit breaker.



Load Center Installation

The enclosure, with the interior, is mounted to a wall. All incoming and outgoing conductors are connected to the load center.

Power Guard load centers can be surface or flush mounted. For flush mounting, the load center is positioned so that the front edge of the enclosure is flush with the finished wall. The trim assembly is installed after the wall is finished.

Load center installation requires careful planning to ensure a safe environment for personnel and equipment.

LOAD CENTER DIMENSION DETAILS

FLUSH MOUNTED 100/250A	
No: of Ways	Dimension (mm) HxWxD
12	750 x 430 x 130
18	800 x 430 x 130
24	850 x 430 x 130
30	900 x 430 x 130
36	950 x 430 x 130
42	1000 x 430 x 130
48	1050 x 430 x 130

SURFACE MOUNTED 100/250A	
No: of Ways	Dimension (mm) HxWxD
12	750 x 410 x 130
18	800 x 410 x 130
24	850 x 410 x 130
30	900 x 410 x 130
36	950 x 410 x 130
42	1000 x 410 x 130
48	1050 x 410 x 130

PACKAGE SUBSTATION

APPLICATION

Power Guard substations are combination of transformers, Ring Main Units & L.V Switchgear used for effective electrical Power distribution. These are used in the Medium voltage secondary distribution System

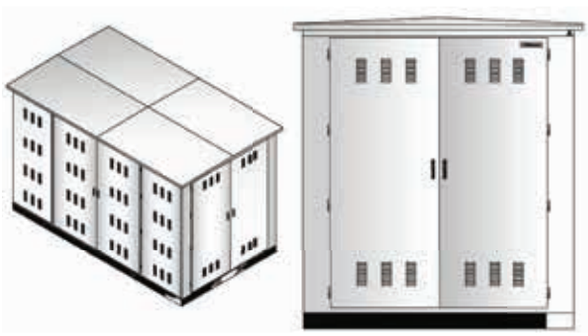
FEATURES

- Transformer connection direct or through cable to RMU
- LVconnection through bus duct
- Segregated compartments.
- Common skid for all equipment separate doors for access to Individual compartments for easy operation & maintenance
- Housing fabricated from high quality Electro-galvanized steel with sloping double roof canopy.
- Polyester powder coated paint finish - RAL 7033 as per SEC Specifications. Other colors available on request.
- Indoor &outdoor applications.
- Customized to all site conditions

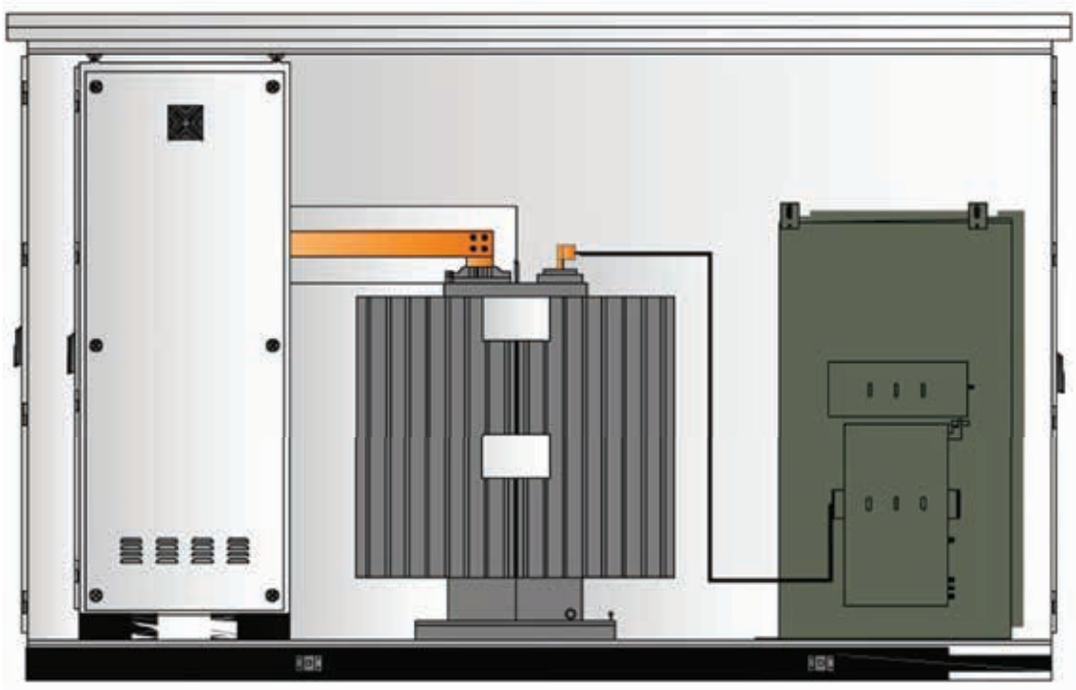
SPECIFICATIONS

- Transformers (Oil immersed or Dry Type) up to 2500KVA at any voltage Class.
- LV switchgear up to 6300A
- SF6 Insulated Ring Main Units.

PACKAGE SUBSTATION



1600KVA PACKAGE SUBSTATION



INNER SIDE VIEW

1600KVA PACKAGE SUBSTATION

UNIT SUBSTATION

OVERVIEW

Power Guard offers a wide variety of unit substation designs to meet customer requirements. A unit substation consists of one transformer electrically connected to and coordinated in design with one or more switchgear or switchboard assemblies. A secondary unit substation is defined as a unit substation whose outgoing section is rated below 1000 volts

A typical secondary unit substation Consists of three sections:

- Primary: an incoming section that accepts incoming high voltage (2400 to 13,800 volts) line
- Transformer: section that transforms incoming voltage down to utilization voltage (600 volts or less)
- Secondary: An outgoing section that distributes power to outgoing feeders and provides protection for these feeders (600 volts and less)

100KVA UNIT SUBSTATION

Standard secondary unit substations Consist of

- Medium Voltage Primary
- Transformer
- Low Voltage Secondary

We also offer low voltage unit Substations with

- Low Voltage Primary
- Transformer
- Low Voltage Secondary

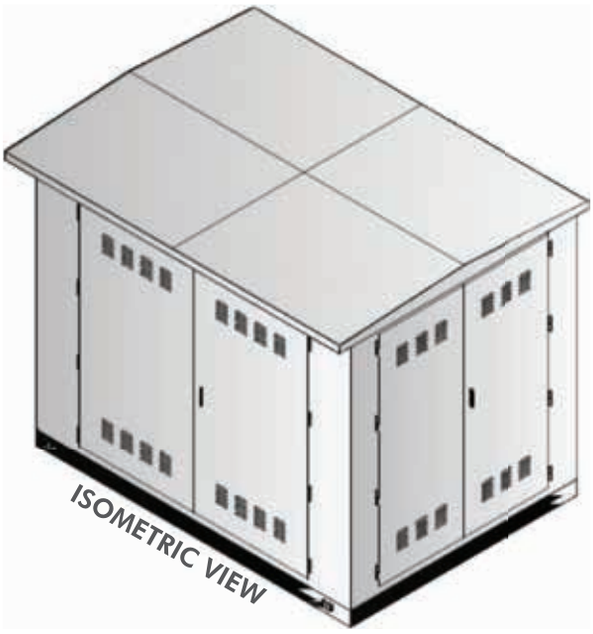
100KVA UNIT SUBSTATION

UNIT SUBSTATION

The primary reason for using a secondary unit substation is to bring power as close as possible to the center of the loads. Another reason is that it provides a system design concept incorporating a wide variety of components that permits tailoring the equipment to the needs of the application. A secondary unit substation provides

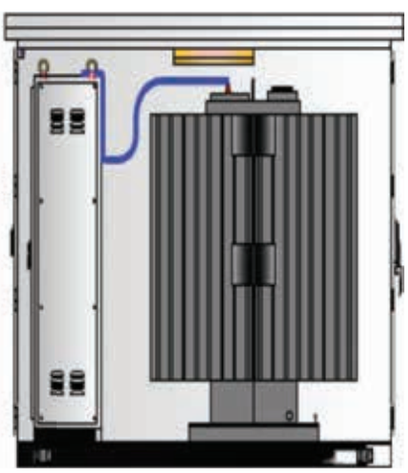
- Reduced power losses
- Better voltage regulation
- Improved service continuity
- Increased functional flexibility
- Lower installation cost
- Efficient space utilization

Every component and assembly of Secondary unit substations are designed and engineered as an integral part of a complete system



FRONT VIEW

SIDE VIEW



INNER SIDE VIEW

100KVA UNIT SUBSTATION

POWERGUARD

UNIT SUBSTATION LIGHTING PANEL

FRONT VIEW | INNER FRONT VIEW | SIDE VIEW

100A/160/200/250A LIGHTING PANEL

Lighting control systems are widely used on both indoor and outdoor lighting of commercial, industrial and residential spaces. Lighting control system serve to provide the right amount of light where and when it is needed. Lighting control systems are employed to maximize the energy saving form of the lighting system. This may include digital timers and photocell that are hardwired to control fixed group of lights independently

ATS WITH BY PASS

FEATURES

- Conventional two-position transfer configuration, plus open and delayed transition modes of operation. All configurations available with either automatic or non-automatic control.
- Available in bypass-isolation configuration. The bypass and isolation features allow power transfer switches to be inspected, tested, and maintained without any interruption of power to the load. .
- Rated up to 600 VAC, 30 to 4000 amperes.
- High withstand and close-on ratings including 30 cycle withstand current rating for optimum flexibility in circuit breaker coordination (600-4000 amperes).
- Solid, switched, or overlapping neutral conductor options.
- Front replaceable main and arcing contacts (800-4000 amperes).
- Programmable microprocessor controller with keypad and LCD display.
- Centrally located terminal block for customer control connections (260-4000 amperes).
- 16mm, industrial grade control switches and indicating lights.
- Switch position indicators and true source acceptability lights.
- Standard ground conductor connections.
- Four auxiliary contacts, two contacts closed when switch is in normal position and two contacts closed when switch is in emergency position.

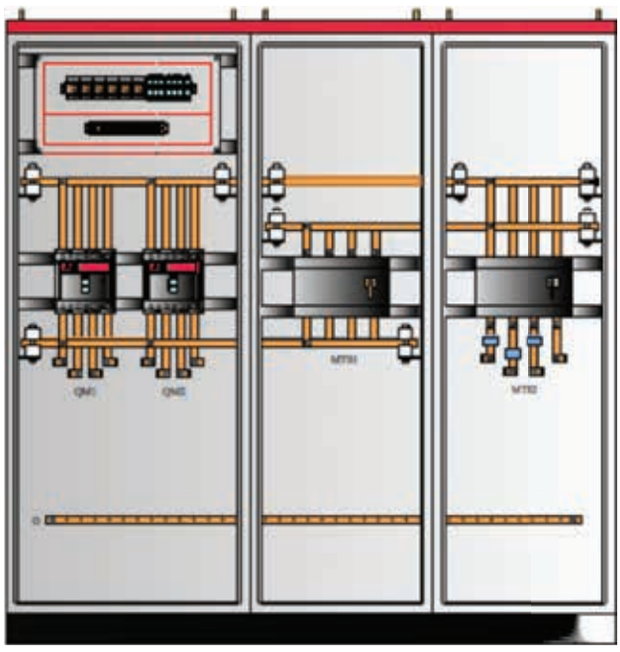
BENEFITS

- Reliable and field-proven solenoid operating mechanism ensures maximum performance
- High withstand and close-on ratings including 30 cycle withstand current rating provides optimum flexibility in circuit breaker coordination (600-4000 amperes).
- Local or Remote serial communication options (as per customer request)

ATS WITH BY PASS

SIDE VIEW

FRONT VIEW



INNER FRONT VIEW

400A ATS WITH BYPASS

SYNCHRONISING PANEL

OPERATING METHOD

The Synchronizing panel is suitable for both prime power and stand by application. In prime power application initially all the generators start up together, after an initial warm up period (adjustable) the generators will synchronize with each other by mean's of motorized circuit breakers on to a common busbar. After a time delay certain no of generators will be shut down and minimum number of generators keeps on running depending upon the load demand. As demand rises again the second and third generators will be restarted, synchronized and reconnected to load.

In standby power application (automatic mains failure system), when the main supply is interrupted on one or all phases (after an adjustable delay period) the generator sets will start-up together. After an initial warm-up period (adjustable) the generators will synchronize with each other by means of motorized circuit breakers on to a common buss bar. Next, the motorized change-over switch will be closed and the load connected to the main distribution box.

The load share units continuously monitor the load and during low demand periods one or two generators will be shut down to save on fuel consumption. As demand rises again the second and third generators will be restarted, synchronized and reconnected to load. When the AMF control unit detects that the main supply has been restored an adjustable observation period is activated before the main supply is reconnected. A cool down period will then follow, after which the generator sets will be shutdown.

The AMF Panel includes a Deep Sea / Comap / Deif (Synchronizing Unit):

GENERAL CHARACTERISTICS

- 3-phase mains-generator voltage control
- 3-phase current control
- 12 digital inputs
- 3 analog inputs for pressure, temperature and fuel level monitoring
- Retentive energy meters
- USB port for setup, remote control and GSM modem (optional)
- Context sensitive on-line help prompts
- Choice of text language
- Icon detail and alarm viewing
- Event log for alarms, status and events
- Operating data recording

SYNCHRONISING PANEL

Viewable Measurements

- Battery voltage
- Phase, line and system mains voltage values
- Phase, line and system generator voltage values
- Phase current
- Active, reactive and apparent power values
- Active-reactive energy meters
- Power factor per phase
- Mains and generator frequency
- Engine speed (rpm)
- Oil pressure
- Water temperature
- Fuel level
- Engine running hour counter
- Hours remaining before next maintenance
- Total number of starting attempts
- Percentage of successful starting attempts

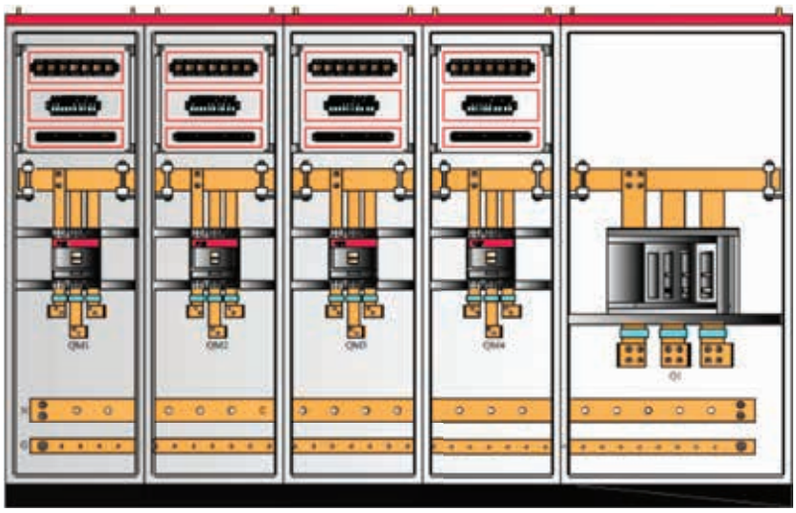
4 GENSET SYNCHRONIZING PANEL

SYNCHRONISING PANEL

FRONT VIEW

SIDE VIEW

ISOMETRIC VIEW



INNER FRONT VIEW

4 GENSET SYNCHRONIZING PANEL

MOTOR CONTROL CENTER

APPLICATION

Power Guard MCC is the combination of Motor starters, feeder units and interlocking relays in a multi section floor mounted enclosure.

- Power Generation
- Process Industries all types of starter can be accommodated within the MCCs as follows
- Direct on line (Reversing & Non - Reversing
- Star/Delta
- Variable speed Drive
- Softstarters

FEATURES

Construction

- Starters are protected by Fuse or MCB/MCCB.
- Each Individual starter & its outgoing terminals are compartmentalize. This ensures compliance to requirements of Form 4 separation & safety.
- Bus bars are made of tin plated ETP Grade copper with a current density of 1.6A/mm^2 (Silver plating upon request).
- Neutral &earth bus bars are rated at 50% of main bus bar (100% available on request).
- The unit starter contains rotary handle with door interlock (Door can't be opened when the unit is in ON condition). The interlock can be defeated with the use of tool in case of emergency.

Options

- Fixed & draw-out modules.
- Vertical and horizontal bus bar Systems are segregated in separate enclosed compartments.

Ease of Installation & Maintainance

- Enough space for outgoing cables in segregated com partments.
- Cable entry from top or bottom.

Conformance to Standards

Power Guard MCCs have been designed & built respecting the main international and national standards:

- EN 60439-1
- IEC 439-1
- UL891
- NEMA-PB2

CLASS I CONTROL CENTRE

These are essentially a mechanical grouping of combination motor control, feeder tap and/or other units arranged in a convenient assembly. These include connections from common horizontal bus to the units. They do not include inter wiring or interlocking between units or to remotely mounted devices.

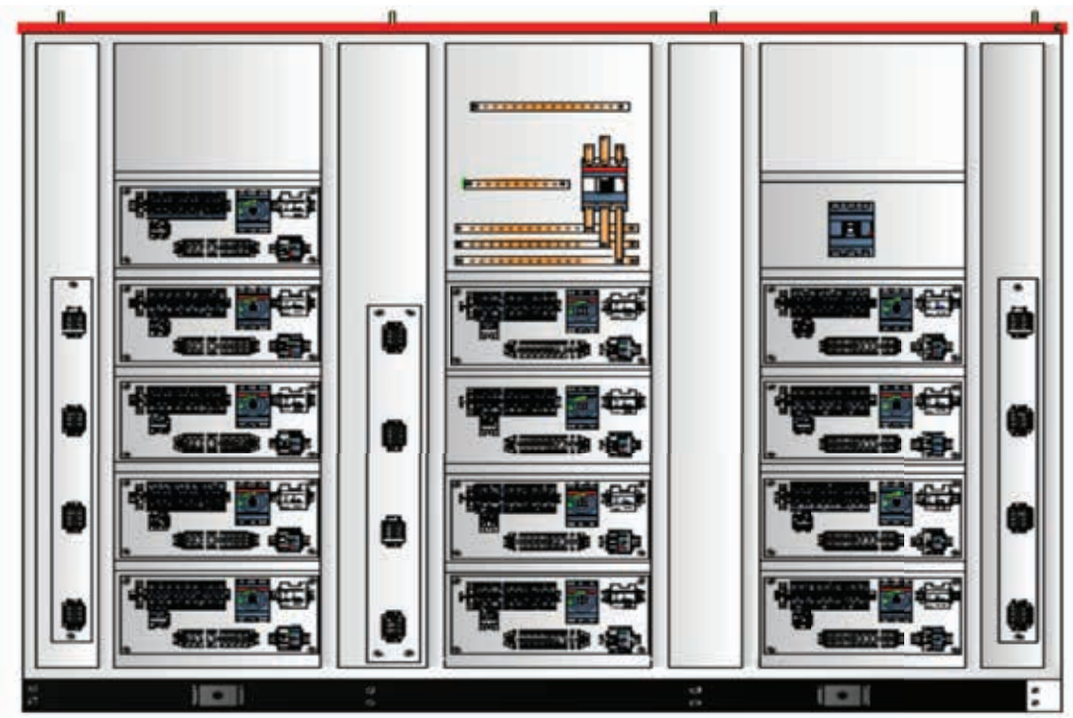
CLASS II CONTROL CENTRE

It is same as Class I, but designed to form a complete control system features.

MOTOR CONTROL CENTER

FRONT VIEW

SIDE VIEW



INNER FRONT VIEW

MOTOR CONTROL CENTER (FIXED TYPE)

MOTOR CONTROL CENTER WITHDRAWABLE

1250A 3P 400V 60Hz

PREMIUM-XW

Our solutions

PG MCC panel designed according to Low Voltage Switchgear System IEC 61439-2 has modular structure and mounting types are available for ABB, GE, Eaton, Schneider and Siemens switchgears. The system enables panel assembly by the vertical and horizontal mounting types of these 5 different switchgear brands. PG MCC cabinets are our withdrawable type system solutions. Structure consist of 600mm depth system solution with single module busbar compartment depth should be limited as 600mm for higher depths modules have different alternative such as 400,600mm width: 1400, 1600, 1800, 2000, 2200mm height. Module and busbar compartment should be 600mm and cable compartment should be 400mm provides different solution from IP31, IP43, up to IP55 protection degree

MOTOR CONTROL CENTER WITHDRAWABLE

STRUCTURE

PG MCC cabinet with specially designed profile structure which has several advantages to our customers about quality and easy installation. Even though it has a modular structure due to the gasket channels on the profile protection degree available up to IP 55 since it has modular structure, PG MCC cabinets are available in flat pack for shipments door hinges, panel combination, rear and side door fixations can be done with a single part in this profile system beside all these it provides an esthetical outlook

Standards	IEC 61439-2
Test of Ant seismic	IEC 60068-3-3
Test of Vibration	
Using Area	Indoor
Grid Type	TN-C, TN-S, TN C-S, TT, IT
Voltage, Un	400/480V
Related service voltage Ue	Up to 690V
Rated insulation voltage Ui	Up to 1000V
Rated impulse withstand voltage Uimp	12kv
Over voltage category	III/IV
Pollution degree	3
Rated current horizontal busbar	Up to 6300A
Vertical bus bar rated current In	Up to 1250A
Rated short time short circuit withstand current Icw	Up to 120kA
Vertical rated short time short circuit withstand current Icw	Up to 85kA
Rated peak short circuit current busbar Ipk	264kA
Vertical rated peak short circuit current Ipk	187kA
Rated frequency	50 / 60 Hz
Segregation	Up to form 4b
Degree of protection	Up to IP55
Mechanical resistance to impact	IK10
Ambient temperature	40°C
Frame	Galvanized steel
Door and covers	Steel polyster powder coated
Installation plates	Galvanized steel
Color	RAL 7035

MOTOR CONTROL CENTER WITHDRAWABLE

ADVANTAGES:

Fully withdrawable technology in Motor control Centers (MCC) offers many advantages, especially where malfunction must be rectified without interrupting operation. Area of application are for instance, processing industries e.g material handling chemical industry or water treatment plants

- Easy insertion and retraction of the fully withdrawable units unlike conventional plug in technology, there is no need to overcome the mechanical resistance of plug contact
- In case of any failure, the drawer can be disconnected by the contacting module and can be replaced without need of any tool
- Power transmission with wear free contact in the contact modules
- Individual withdrawable module can be quickly exchanged or added during operational without needing to switch off the system
- Inserted withdrawable module can be locked in the positions “operation”. “test” and “disconnected”
- Protection against incorrect operation by safe locking mechanism
- Fully withdrawable module available in standard configuration are, 3-pin or 4-pin with 125A, 250A, 315A, 400A, 630A rated current.
- Offer more cost effective solution due to compact contact modules.

SWITCHING

The technical principal of the contact module with respect to the power contacts is “switching” and not the conventional “plugging” as opposed to plug contacts material fatigue does not occur. This is the basis for significant system advantages. In the “operational” position, with the extended control plug the switching contact of the contact module can contact the field distribution bus bar and the cable connection module. In the “disconnected” position the switching contact and control contacts are retracted allowing the fully withdrawable module to be remove from the equipment compartment

When the control cabinet module is closed, the functions “operation” “test” and “disconnected” can only be initiated by the switch lock

CONTACTS

In the inserted position, the load free electrical connection of the main contact is established by activating the switch lock. All necessary operating position and locks are realized with this contact apparatus.

MOTOR CONTROL CENTER WITHDRAWABLE

The control plug can be extended individually, thus establishing on the connection to control to the control. The main contacts are open in this situation, corresponding to the “disconnected position”

Every full withdrawable module is equipped with a contact module. The fully withdrawable module is lead via the side guide rails of the contact modules. In its inserted position, the switching contacts can contact the field distribution bus bar and the cable terminal module. The main contacts are encapsulated and are designed without base points to prevent arc faults

PROTECTION

The system is protected against incorrect operation by safe locking mechanism. For instance the operating slider for the contact module can thus only be switched without load it is not possible to open the control cabinet module door when the contact module is engaged

SAFETY

Drawers are built in compliance with international standard IEC 60439-1 which regulates the drawer extraction and locking system

- Connection mechanism is designed to allow the drawer to be set to any of the four position presented below. The degree of protection of the switchboard is maintained in all positions (connected, test, disconnected and drawer removed). This is made possible by the door that can remain closed in these four positions

1. Connected position: power and auxiliary circuit are all connected. This position may be locked using up to three padlocks

- A safety system prevents door opening as long as the circuit breaker is closed (ON position). The interlocking mechanism connect the door handle and the operating shaft on the circuit breaker

2. Test position: power circuit are disconnected (upstream and downstream), auxiliary circuit remain connected. This position may be used to check the auxiliary circuits

3. Disconnected position: All circuits are disconnected this position may be locked using up to three padlocks

4. Removed position

INTELLIGENT DESIGN

Field distribution busbar is integrated into the system wall between equipment and cable compartments. Complete insulation and additional subdivision of the individual contact is ensured by a design without base point, providing, improved, arc fault protection. Shutter release the contact surfaces of the field distribution busbar and the cable terminal module only once the fully withdrawable module is inserted independent of the module configuration, IP20 level protection against accidental contact is ensured, according the project needs, the fully withdrawable module can be combine in any manner with regard to size and function it is also possible to make modification during operation without switching off the system

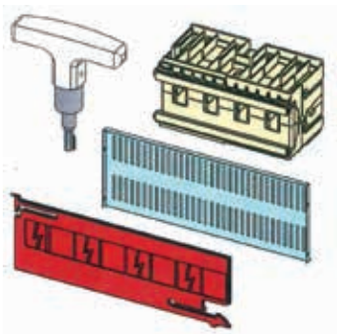
MOTOR CONTROL CENTER WITHDRAWABLE

TYPES OF WITHDRAWABLE UNITS				
AC-2, AC-3, 400/480 VAC, 50Hz/60Hz, TYPE 2				
Module height	**Direct starter**	**Reversing switch**	**Start delta**	**Fuse modules**
75 mm	0,37 kw -15 kw	0,37 kw-15kw	----------	----------
150 mm	15 kw - 45 kw	15 kw-45 kw	5,5 kw	Up to 3P 250A
225 mm	45 kw - 90 kw	15kw-45 kw	30 kw-55 kw	Up to 4P 250A
300 mm	90 kw -160 kw	90 kw-160 kw	55 kw-95 kw	Up to 3P-4P 600A
600 mm	160 kw-300 kw	160kw-300 kw	95 kw-125 kw	----------

TECHNICAL DETAILS

Field distribution bus bar is integrated into the system wall between equipment and cable compartment. Due to the internal subdivision of the field (up to form 4) a high level of safety is ensured for person and operation. Cable entry is possible from above and below into the terminal compartment. The field modules are designed on the basis of 25mm grid according to DIN 43660 (25mm=1unit) the standardized modules are available with height grouping of 75mm (3 units) in the height 3/6/9/12 unit the preferred width for the equipment compartment is 600mm

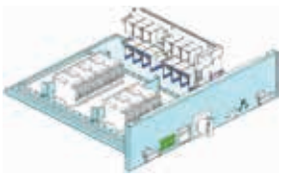
600mm DEPTH DRAWER VERTICAL BAR MODULE

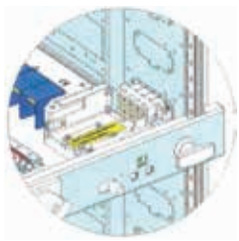


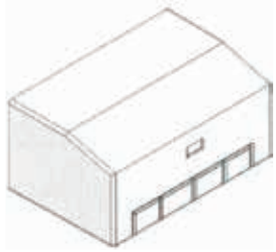
Pole	Type	Panel Depth	Panel Height	Installation Plate
3P / 4P	PG	600	1800	W102001
	1000A			WMVB20
3P / 4P	PG	600	2000	W102201
	1000A			WMVB22

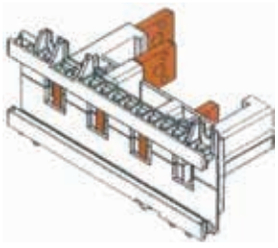
PARTS INCLUDE		
1.	Bus Bar Module	25 pcs
2.	Bus Bar 60 10 ECU	6 mtr
3.	Cover For Bus Bar	10 pcs
4.	Design of Energy and Signal Transfer Wall	1 pcs
5.	Lanes Left Side Form	1 pcs

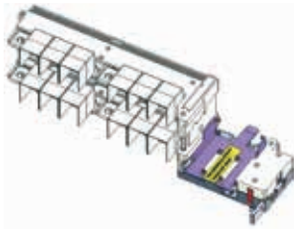
MOTOR CONTROL CENTER WITHDRAWABLE









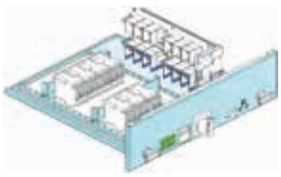


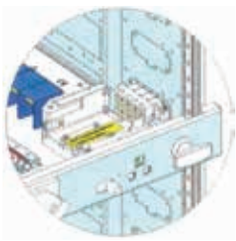
125A				
Pole	**Type**	**Module Depth**	**Module Height**	**Installation Plate**
3P	PGD 125A	600	75	W312500 75
				WM3P125D 75
			150	W312500 150
				WM3P125D 150
			225	W312500 225
				WM3P125D 225
			300	W312500 300
				WM3P125D 300
			375	WM3P1250 375
				WM3P125D 375

250A				
Pole	**Type**	**Module Depth**	**Module Height**	**Installation Plate**
3P	PGD 250A	600	150	W312500 150
				WM3P125D 150
			225	W312500 225
				WM3P125D 225
			300	W312500 300
				WM3P125D 300
			375	WM3P1250 375
				WM3P125D 375

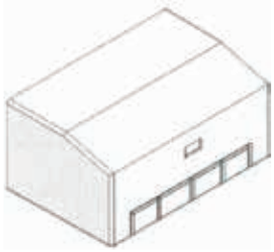
315A				
Pole	**Type**	**Module Depth**	**Module Height**	**Installation Plate**
3P	PGD 315A	600	150	W331500 150
				WM3P315D 150
			225	W331500 225
				WM3P315D 225
			300	W331500 300
				WM3P315D 300
			375	W331500 375
				WM3P315D 375

MOTOR CONTROL CENTER WITHDRAWABLE

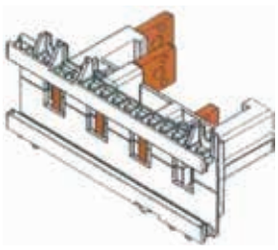


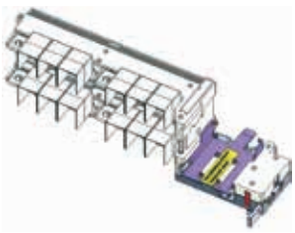


400A				
Pole	**Type**	**Module Depth**	**Module Height**	**Installation Plate**
3P	PGD 400A	600	225	W340000 225
				WM3P4000D 225
			300	W340000 300
				WM3P400D 300
			375	W340000 375
				WM3P400D 375



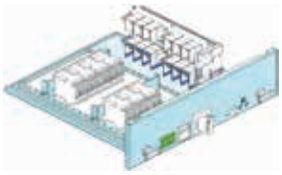
630A				
Pole	**Type**	**Module Depth**	**Module Height**	**Installation Plate**
3P	PGD 630A	600	225	W363000 225
				WM3P630D 225
			300	W363000 300
				WM3P630D 300
			375	W363000 375
				WM3P630D 375

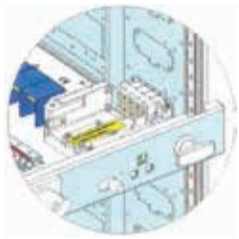


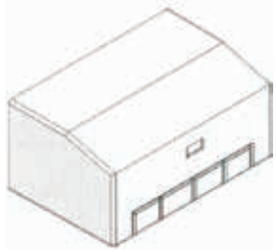


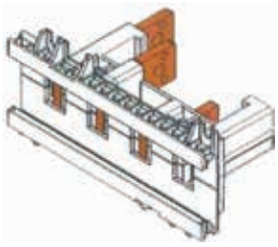
PART INCLUDED		
1	Shutter 2x4 pole	1 pcs
2	KA125A3P / 125A	1 pcs
3	Cable module 3P 315A	1 pcs
4	Cover for cable module HA 75/1	1 pcs
5	ELD 6/21 6mm	1 pcs
6	Han modular frame 16 hood 4 module male	pcs
7	Han modular frame 16 hood 4 module female	1 pcs
8	Han 8 mod male-c 16A	4 pcs
9	Han 8 mod female-c 16A	4 pcs
10	Han e m crimp contact ag 0.75mm 18 A WG	32 pcs
11	Han e f crimp contact ag 0.75mm 18 A WG	32 pcs
12	DOL withdrawable module	1 pcs

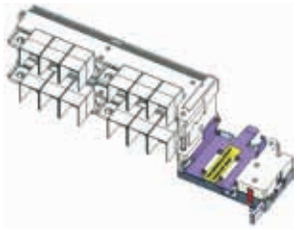
MOTOR CONTROL CENTER WITHDRAWABLE











3P STAR / DELTA MODLE

125A

Pole	Type	Module Depth	Module Height	Installation Plate
3P	PGYU 125A	600	150	W312501 150
				WM3P125YU 150
			225	W312501 225
				WM3P125YU 225
			300	W312501 300
				WM3P125YU 300
			375	W312501 375
				WM3P125YU 375

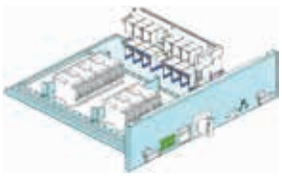
250A

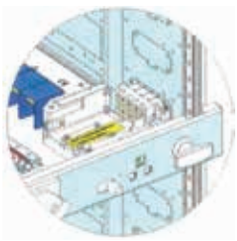
Pole	Type	Module Depth	Module Height	Installation Plate
3P	PGYU 250A	600	150	W325001 150
				WM3P250YU 150
			225	W325001 225
				WM3P250YU 225
			300	W325001 300
				WM3P250YU 300
			375	W325001 375
				WM3P250YU 375

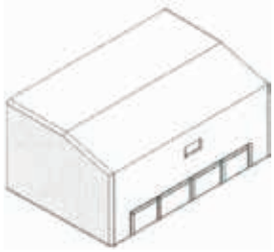
315A

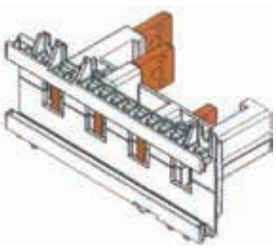
Pole	Type	Module Depth	Module Height	Installation Plate
3P	PGYU 315A	600	150	W312501 150
				WM3P125YU 150
			225	W312501 225
				WM3P125YU 225
			300	W312501 300
				WM3P125YU 300
			375	W312501 375
				WM3P125YU 375

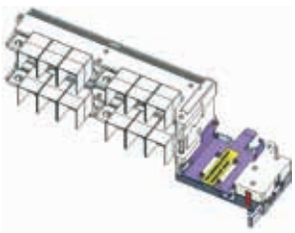
MOTOR CONTROL CENTER WITHDRAWABLE











630A				
Pole	**Type**	**Module Depth**	**Module Height**	**Installation Plate**
3P	PGYU 400A	600	225	W340001 225
				WM3P400YU 225
			300	W340001 300
				WM3P400YU 300
			375	W340001 375
				WM3P400YU 375

PART INCLUDED		
1	Shutter 2x4 pole	1 pcs
2	KA125ADSD / 125A	1 pcs
3	Cable module 3P 315A	2 pcs
4	Cover for cable module HA 75/1	2 pcs
5	ELD 6/21 6mm	1 pcs
6	Han modular frame 16 hood 4 module male	1 pcs
7	Han modular frame 16 hood 4 module female	1 pcs
8	Han 8 mod male-c 16A	4 pcs
9	Han 8 mod female-c 16A	4 pcs
10	Han e m crimp contact ag 0.75mm 18 A WG	32 pcs
11	Han e f crimp contact ag 0.75mm 18 A WG	32 pcs
12	Star delta withdrawable module	1 pcs

STAINLESS STEEL ENCLOSURE

- Sheet steel
  - Enclosure: 1.2 – 2mm Stainless Steel
  - Door: 1.2 - 2mm Stainless Steel
- Foamed door sealing gasket
- Bottom removable gland plate
- Concealed hinges
- 135° door opening
- IP-65 protection
- Stainless steel mounting plate

WALL MOUNTED ENCLOSURE DETAILS

Width (mm)	Height (mm)	Depth (mm)
300	300 400 500 600	150 200 250
400	500 600 700 800	150 200 250
600	600 700 800 1000	150 200 250
800	800 1000 1200	150 200 250

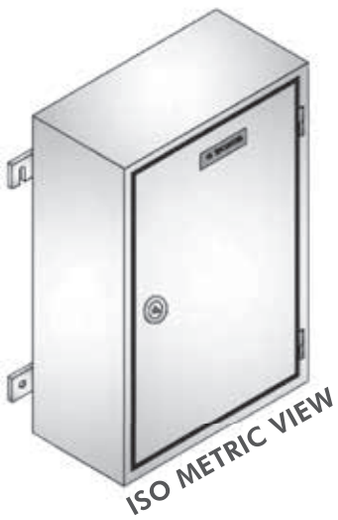
Other size upon request

FREE STANDING ENCLOSURE DETAILS

Width (mm)	Height (mm)	Depth (mm)
600	1500 1900 2000	400 600 800
800	1500 1900 2000	400 600 800
1000	1500 1900 2000	400 600 800

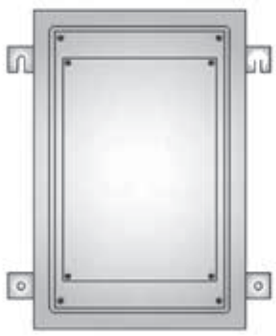
Optional:

Other Sizes / Key Lock / Drain & Breather



ISO METRIC VIEW

FRONT VIEW



INNER FRONT VIEW

SIDE VIEW

POWERGUARD

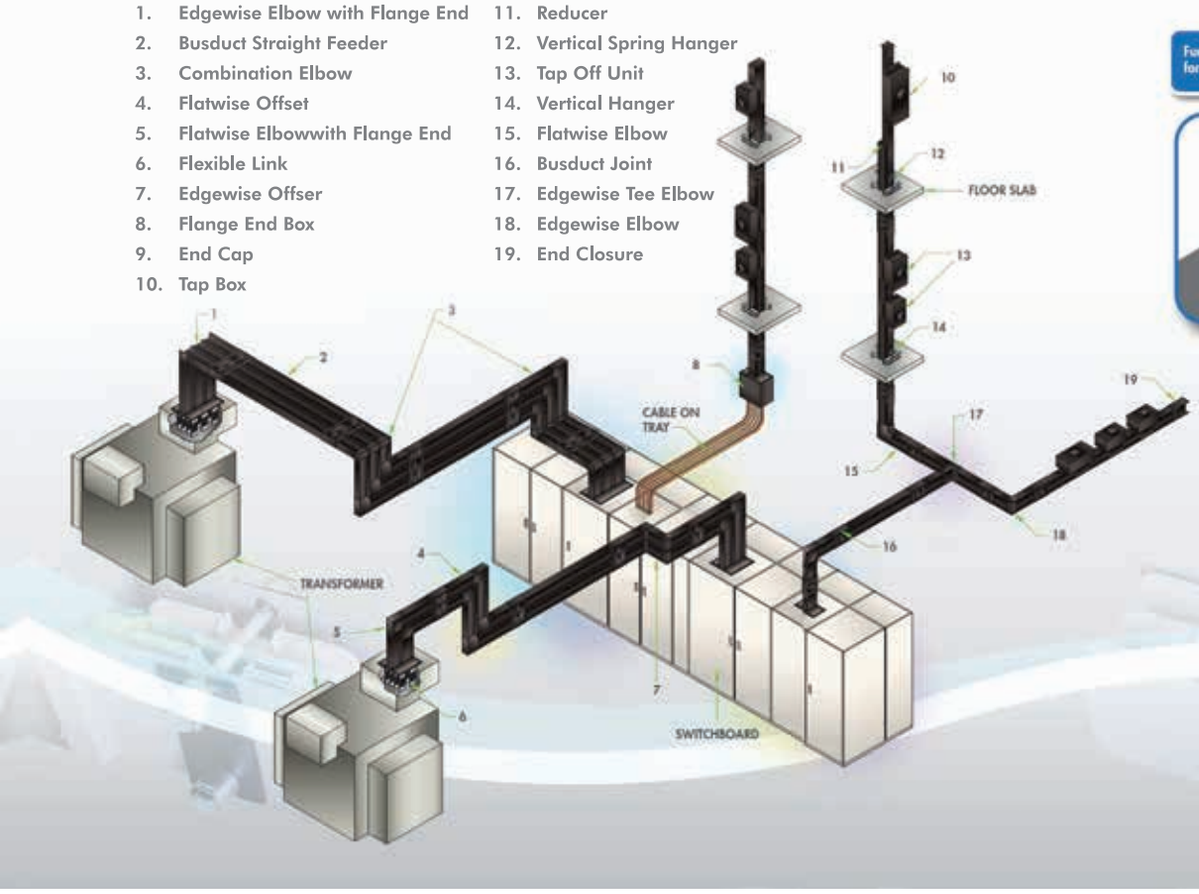
Furutec Electrical started to manufacture busduct system in Penang Malaysia Since 1995 under the license from Furukawa Electric, Japan in 2008, EITA Resources ventured info designing and manufacturing busduct system and future became a wholly-owned subsidiary of EITA Resources.

Having benefited from more than a decade long of technical collaboration with Furukawa, furutec is noted for its relentless and uncompromising commitment on quality and excellence as the Japanese manufacturing practice and culture have been firmly embedded into Futurec busduct system. Today Furutec has more than 15 years of experience in the manufacturing of busduct system that meets international standards. This product is of the finest quality and reliability, utilizing the stringent Japanese know-how and technology Moreover, Furutec is committed toward quality and services as stipulated in accordance to its ISO-9001:2008 certification for quality management system.

HP-ES product range (from 400A to 6300A) has been type tested and certified by a reputable independent testing authority which is KEMA or DEKRA complying to IEC 60469-2

BUSDUCT DESIGN LAYOUT

1. Edgewise Elbow with Flange End
2. Busduct Straight Feeder
3. Combination Elbow
4. Flatwise Offset
5. Flatwise Elbowwith Flange End
6. Flexible Link
7. Edgewise Offser
8. Flange End Box
9. End Cap
10. Tap Box
11. Reducer
12. Vertical Spring Hanger
13. Tap Off Unit
14. Vertical Hanger
15. Flatwise Elbow
16. Busduct Joint
17. Edgewise Tee Elbow
18. Edgewise Elbow
19. End Closure



Advantages of BIM:
- 3D visualization
- Change management
- Building simulation
- Data management
- Building operation
- Minimizing human error
- Lesser time consumption

SPECIFICATION & STANDARDS

GENERAL

Furutec HP-ES busduct system is designed to meet the requirement of commercial industrial and residential applications. It carries up to 6300A with reduced energy losses and heat as compared with the conventional cable system

Furutec busduct system is known for :

- Flexible and modular in design.
- Occupying lesser space.
- Fast installation and lower installation cost and easy maintenance.
- Lower voltage drop
- Low power frequency magnetic field.
- Fire resistance (optional) and non- flammable propagation
- Flexibility for future expansion
- Strong mechanical strength and higher short- circuit rating
- Higher degree of protection

DESIGN STANDARDS

Furutec busduct system is designed and manufactured in accordance to the following international standards :

IEC 61439-6 Low Voltage Switchgear and Controlgear Assemblies - Part 6 : Busbar Trunking systems (Busways)

IEC 61439–1 6 Low Voltage Switchgear and Controlgear Assemblies – Part 1 : General Rules

Optional standards for fire-rated busduct system :

BS 6387:1994

Performance Requirements for cables required to maintain circuit Integrity under fire conditions (Adoption)

JIS C 8364 & JIS A 1304

Japanese Industrial Standards for busway's method of fire Resistance test for Structural Parts of Buildings.

CNS 14286

Equivalent to JIS C 8364 & JIS A 1304
Fire Resistance Test

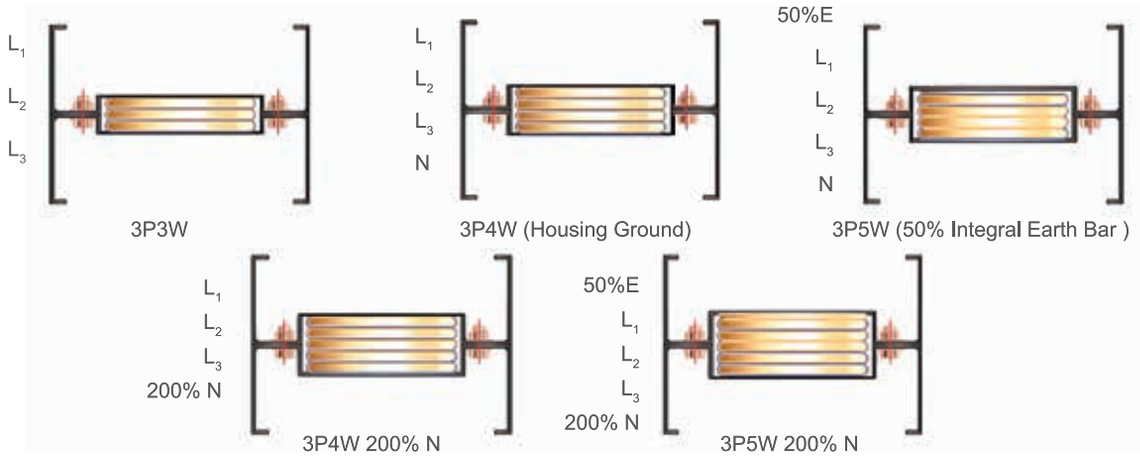
SYSTEM VOLTAGE & RATED CURRENT

Furutec busduct system provides a flexible and reliable distribution system with a wide range of current carrying capacity from 400 A to 6300 A with operating voltage up to 690V.

SYSTEM CONFIGURATION AND PHASE SEQUENCE

The compact sandwich design of Furutec busduct can be configured to 3-phase 3-wire (3P3W), 3 Phase 4-wire (3P4W) or 3-phase 5-wire (3P5W with integral earth bar).

Due to the existence of non-linear loads in today's modern building, high harmonic neutral current overheats the neutral conductor and deteriorate the performance and life span of equipment 200% neutral bar is offered to handle the overheating and increased neutral current coursed by the harmonic effect.



CONDUCTOR AND INSULATION MATERIAL

Copper and aluminium conductor are the conductivity 99.98% and 60% respectively/ if meets all electrical thermal and mechanical properties and comply to the relevant international standards, such as JIS H3140, ASTM B187M, BS EN 13601, etc..

Each copper and aluminium conductor (except at joint parts) is insulated with polyester films (-70oC to +150oC). The rated insulation voltage is up to 1000V at 50Hz or 60Hz of frequency. Each conductor is tin-plated to provide protection from corrosion and high conductivity.

BUSDUCT HOUSING

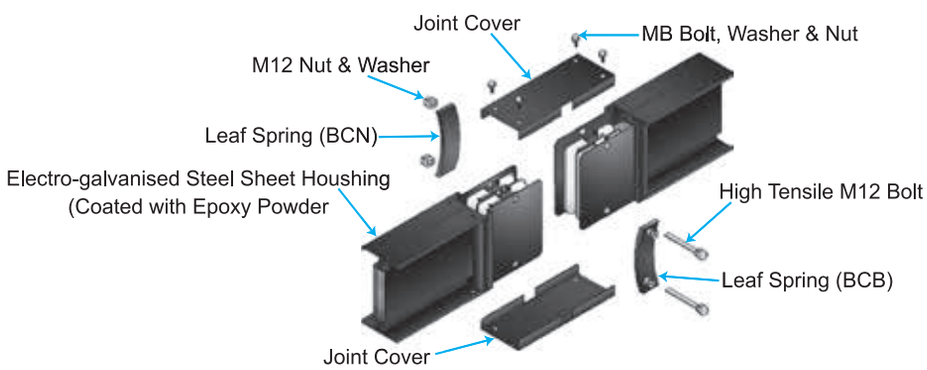
Furutec busduct system is of the low impedance type and totally enclosed for protection against mechanical damage and dust accumulation. The busduct housing is made of Electro-Galvanized sheet steel with epoxy powder coating.

Conductors are fully enclosed with the busduct housing, which provides on excellent heat dissipation, thus improving the power transmission efficiency and reducing voltage drop. The construction of busduct housing is compact and robust in design to meet the rated short-circuit ratings

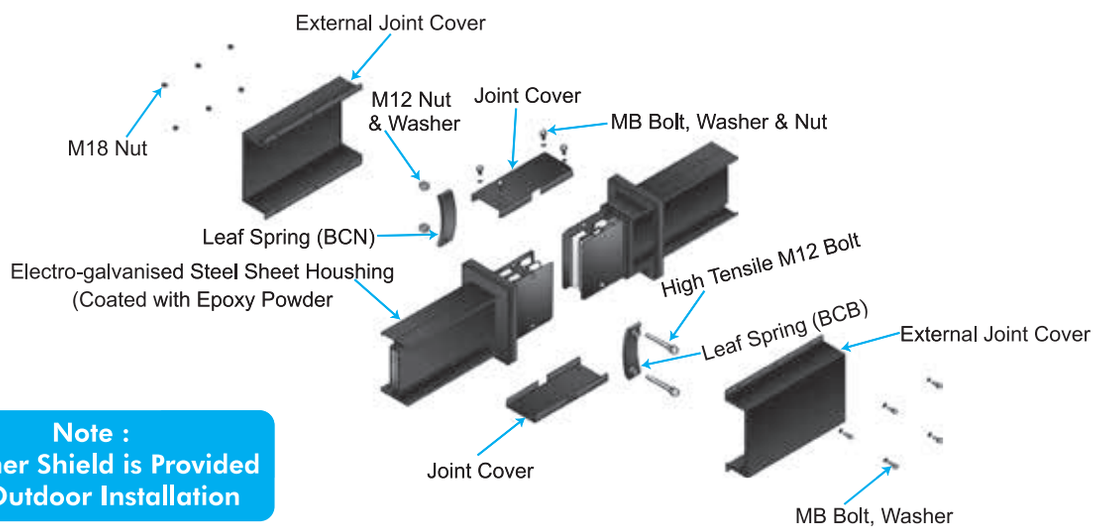
BUSDUCT JOINT SYSTEM

Furutec busduct joint features a maintenance free double-bolt joint system ensures a sufficient electrical contact area and good mechanical strength. Its tensile clamping bolts in duct-to-duct jointing do not penetrate through the conductor. A spring steel material named as leaf spring that is wider than the conductors is used to ensure a sufficient pressure on conductor contact area. This clamped joint having benefitted from a decade-long Japanese Technology generates less heat at busduct joint as compared to bolted joint system, which necessitate the drilling or punching of hole through the conductors with the bolt holes causing distortion to the lines of current flow. This clamped joint with leaf springs also has a more even contact pressure than the one using bolt-through joint.

Busdust Joint Installation (IP42 and IP65)



Busdust Joint Installation (IP66)



Note :
Weather Shield is Provided for Outdoor Installation

METHOD OF MOUNTING

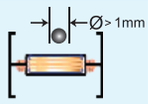
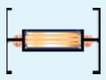
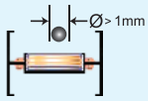
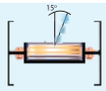
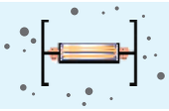
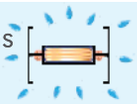
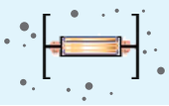
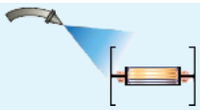
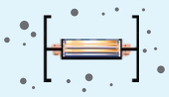
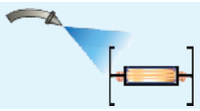
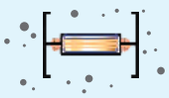
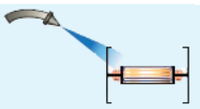
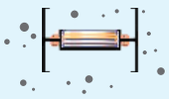
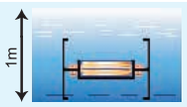
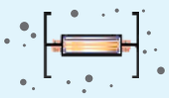
For horizontal busduct installation, the edgewise / Flatwise hanger or Flat hanging clamp shall be installed in every 1500mm interval.

Vertical Busduct system shall be supported adequately with vertical spring hanger / Vertical hanger on each floor Intermediate supports shall be provided if floor height exceeds 5000mm.

DEGREE OF PROTECTION

Furutec busduct housing is designed and constructed to meet the requirement of indoor and outdoor installation. The degree of protection of furutec busduct housing is verified and tested to meet the requirement of IP42, IP65 and IP66 in accordance to IEC 60529 by independent testing authority.

The IP classification is categorized into 2 parts; **The first digit denotes against ingress of solid objects and the second digit denotes protection against water.**

PROTECTION AGAINST INGRESS OF SOLID OBJECTS			PROTECTION AGAINST WATER		
4	Protected Against Foreign Objects greater than 1mm		0	No Protection	
4	Protected Against Foreign Objects greater than 1mm		2	Drops of water falling at up to 15° from the vertical	
5	Dust Protected		4	Protected water from all directions (limited Ingress Permitted)	
5	Dust Protected		5	Jets of Water (limited Ingress Permitted)	
6	Dust Tight		5	Jets of Water (limited Ingress Permitted)	
6	Dust Tight		6	Heavy jets of water (limited Ingress Permitted)	
6	Dust Tight		7	Effects of immersion (limited Ingress Permitted)	
6	Dust Tight		8	Long period od immersion (limited Ingress Permitted)	

POWERGUARD

SPECIFICATION & STANDARDS

TEMPERATURE RISE LIMIT

The temperature rise at any points of the external metal surface of busduct housing will not exceed 55°C above ambient temperature

The temperature rise at any point of external insulated conductors will not exceed 70°C above ambient temperature when operating at rated load current.

Both parameters are in line with IEC61439-6 and IEC61439-1

Furutec busduct system able to operate at full rated current of a maximum ambient air temperature of 40°C without any derating effects. When busduct system is installed in a higher ambient temperature. Its Current rating will be derated

TEMPERATURE RISE LIMIT

COPPER BUSDUCT		
Busduct Rating	Short Circuit Rating (kA/1Sec)	Short Circuit Rating (kA/3Sec)
400A	20	11
600A	20	11
700A	35	20
800A	45	25
1000A	55	31
1250A	65	50
1600A	65	50
1800A	65	50
2000A	85	50
2200A	85	50
2500A	85	50
3000A	120	70
3500A	120	70
4000A	120	70
4500A	120	70
5000A	120	70
6300A	150	87

COPPER BUSDUCT		
Busduct Rating	Short Circuit Rating (kA/1Sec)	Short Circuit Rating (kA/3Sec)
400A	15	8
600A	20	11
700A	20	11
800A	40	23
1000A	40	23
1300A	55	31
1500A	55	31
1600A	60	34
1800A	60	34
2200A	60	34
2500A	100	58
3000A	100	58
3200A	100	58
3500A	100	58
4000A	120	70
4500A	120	70
5000A	120	70
6300A	150	87

VOLTAGE DROP

Due to low impedance, the voltage drop of busduct system is lower compared with the conventional cable system. Therefore busduct system is a more efficient power transmission media as compared with the conventional cable system

Voltage Drop Calculation :

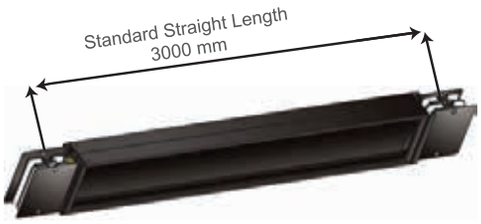
$$\frac{1+\alpha\left(55x\left(\frac{I}{I_0}\right)^2+20\right)}{1+75\alpha}$$

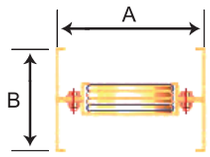
ΔV = Line-to-line Voltage Drop (V/m)
I = Load Current (A)
I_0 = Rated Current (A)
$COS\varnothing$ = Load Power Factor
$Sin\varnothing$ = $\sqrt{1-cos^2\varnothing}$
R = AC resistance at load current (Ω/m)
R_0 = AC resistance at rated current (I_0) (Ω/m)
$\square$ = Temperature Coefficient of conductor at 20°C
= 3.85×10^{-3} (Copper)
x = Reactance (Ω/m)

Note: Consult furutec Electrical for the voltage drop calculation of copper and aluminium busduct.

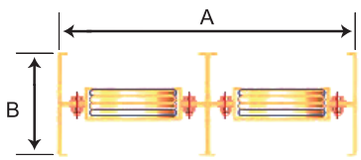
PHYSICAL DATA - HP ES BUSDUCT

CONDUCTOR SIZE

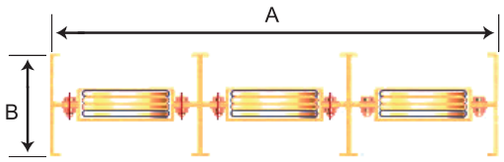




400A - 2500A (Copper)
400A - 2200A (Aluminium)
Figure -1



3000A - 5000A (Copper)
2500A - 4000A Aluminium)
Figure -2



6300A (Copper)
4500A - 6000A Aluminium)
Figure -3

COPPER BUSDUCT

Busduct Rating	Model No.	A(mm) 3P3W 3P4W 3P4W+E 3P5W	B. (MM) 3P3W	B. (MM) 3P4W 3P4W+E 3P5W	Figure	Conductor Size Perphase (mm)	Total Weight (kg) / meter) 3P3W	3P4W	3P5W 3P4W+E
400A	HP-ES400C	155				One - 6 x 20	10.26	11.44	11.98
600A	HP-ES600C	115				One - 6 x 30	11.94	13.67	14.49
700A	HP-ES700C	115				One - 6 x 40	13.62	15.92	17.01
800A	HP-ES800C	120				One - 6 x 45	14.56	17.14	18.35
1000A	HP-ES1000C	135				One - 6 x 60	17.43	20.84	22.46
1250A	HP-ES1250C	150			1	One - 6 x 75	20.49	24.75	26.78
1600A	HP-ES1600C	185				One - 6 x 110	27.25	33.46	36.44
1800A	HP-ES1800C	200				One - 6 x 125	30.39	37.45	40.84
2000A	HP-ES2000C	225	100	120		One - 6 x 150	35.26	43.71	47.77
2200A	HP-ES2200C	250				One - 6 x 175	40.41	50.27	55.00
2500A	HP-ES2500C	275				One - 6 x 200	45.34	56.61	62.02
3000A	HP-ES3000C	370				Two - 6 x 110	54.50	66.93	72.88
3500A	HP-ES3500C	400				Two - 6 x 125	60.79	74.91	81.88
4000A	HP-ES4000C	450			2	Two - 6 x 150	70.51	87.43	95.55
4500A	HP-ES4500C	500				Two - 6 x 175	80.81	100.53	110.01
5000A	HP-ES5000C	550				Two - 6 x 200	90.67	113.21	124.04
6300A	HP-ES6300C	750			3	Three - 6 x175	120.04	149.59	163.80

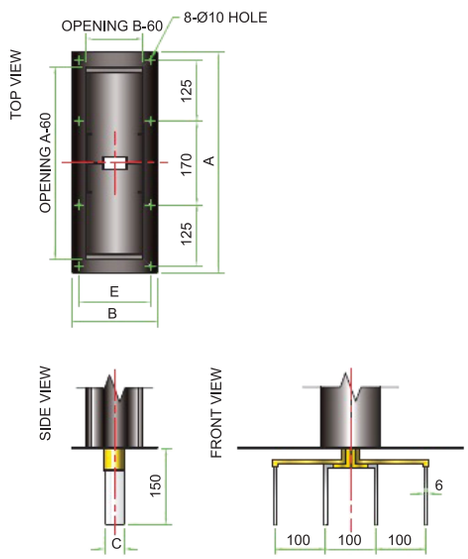
ALUMINIUM BUSDUCT

Busduct Rating	Model No.	A(mm) 3P3W 3P4W 3P4W+E 3P5W	B. (MM) 3P3W	B. (MM) 3P4W 3P4W+E 3P5W	Figure	Conductor Size Perphase (mm)	Total Weight (kg) / meter) 3P3W	3P4W	3P5W 3P4W+E
400A	HP-ES400A	115				One - 6 x 30	8.56	9.17	9.42
500A	HP-ES500A	115				One - 6 x 40	9.12	9.91	10.25
700A	HP-ES700A	125				One - 6 x 50	9.90	10.88	11.29
800A	HP-ES800A	150				One - 6 x 75	12.04	13.49	14.11
1000A	HP-ES1000A	175				One - 6 x 100	14.14	16.05	16.68
1300A	HP-ES1300A	200			1	One - 6 x 125	16.31	18.68	19.71
1500A	HP-ES1500A	225				One - 6 x 150	18.44	21.26	22.51
1600A	HP-ES1600A	250	100	120		One - 6 x 175	20.69	23.98	25.43
1800A	HP-ES1800A	275				One - 6 x 200	22.90	26.66	28.32
2200A	HP-ES2200A	315				One - 6 x 240	26.32	30.80	32.79
2500A	HP-ES2500A	400				Two - 6 x 125	32.62	37.36	39.43
3000A	HP-ES3000A	450				Two - 6 x 150	36.88	42.52	45.01
3200A	HP-ES3200A	500			2	Two - 6 x 175	41.38	47.96	50.86
3500A	HP-ES3500A	550				Two - 6 x 200	45.81	53.33	56.64
4000A	HP-ES4000A	630				Two - 6 x 240	52.43	61.59	65.57
4500A	HP-ES4500A	675				Three - 6 x 150	55.43	63.95	67.68
5000A	HP-ES5000A	780			3	Three - 6 x 185	64.82	75.22	79.83
6300A	HP-ES6300A	945				Three - 6 x240	78.95	92.39	98.36

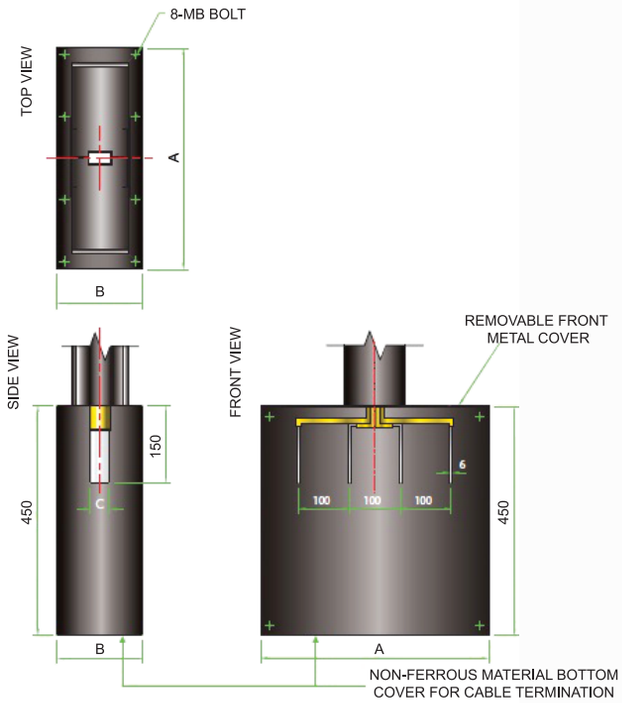
PHYSICAL DATA

Falnge End / Flangs End Box

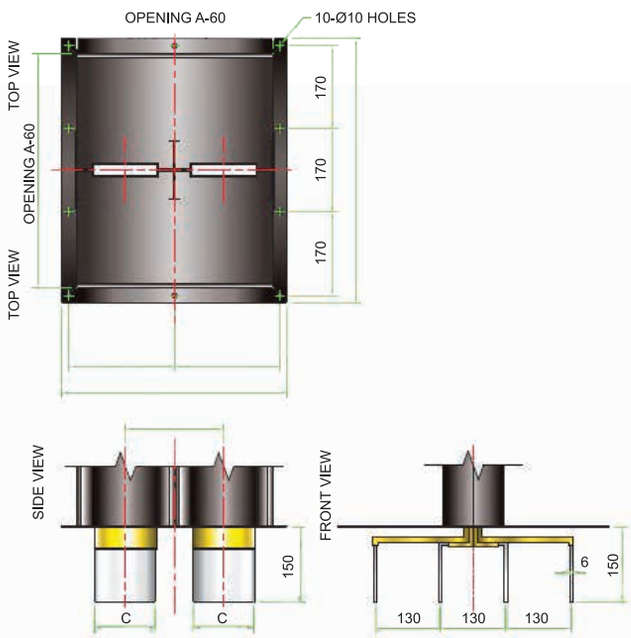
400A-2500A Flange End (Copper)
400A-2200A Flange End (Aluminium)



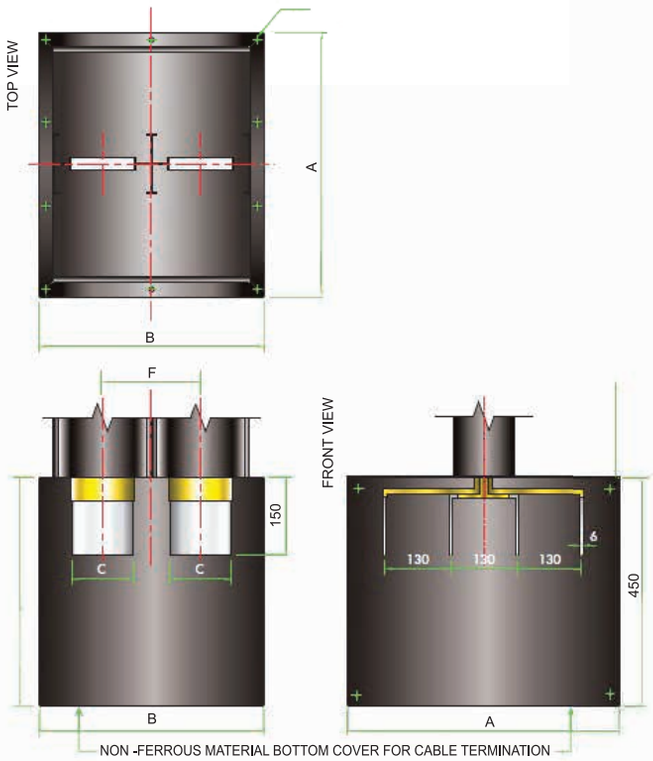
400A-2500A Flange End Box (Copper)
400A-2200A Flange End box (Aluminium)



3000A-5000A Flange End (Copper)
2500A-4000A Flange End (Aluminium)



3000A-5000A Flange End Box (Copper)
2500A-4000A Flange End Box (Aluminium)



Continuous Power, Uninterruptible Life

CRYSTAL SERIE

UNINTERRUPTIBLE POWER SUPPLY 1-10KVA

CL Crystal series HF online UPS Single-phase for Centralized server center, mainframe, network control center computing center

True On-line

1 Phase In

1 Phase Out

1-10 kVA

TECHNICAL SPECIFICATIONS

- High Frequency and dual conversion on line technology
- Wide input voltage range
- Advanced PFC technology
- True sine wave output with less than 3% THD
- Self-diagnosis at UPS startup
- Advanced battery management (ABM)
- Cold start feature (DC power on)
- Automatically charging batteries in UPS off mode
- Lightning and surge protection (surge energy rating 1050 Joues)
- Short circuit and overload protections
- Fan speed automatically changes as load varies
- Optional external battery pack
- RS232(SNMP optional)
- Shutdown and restart schedule

UPS AND VOLTAGE STABILIZERS

SPECIFICATIONS						
MODEL		CL 1000	CL 2000	CL 3000	CL 6000	CL10000
Capacity		1 KVA	2KVA	3KVA	6KVA	10 KVA
INPUT						
Rated Input Voltage		220VAC or 120 VAC			220 VAC	
Rated Input Frequency		50Hz/60Hz (self-adaption)				
Input Voltage Range		110 - 295 ± 5VAC-50% load : 140-295 ± 5VAC (100% load) or 50/60/70/80 - 150 ± 5VAC (60%/70%/80%100% load)			110-295 ± 5VAC (50% load) 140-295 ± 5VAC (100% load)	
Input Frequency Range		45-55Hz ± 0.5% 50Hz; 55-65Hz ± 0.5% 60HZ				
Phase		single Phase+N+GND				
Power Factor		≥ 0.98			≥ 0.99	
Input current (liner Full load)		4.0A or 10A	8.1A or 20A	12.1A or 30A	24.2A	40.4A
THD		<6%			<5%	
Bypass Voltage range		186VAC -252VAC or 90VAC -140VAC			186VAC - 252VAC	
OUT PUT						
Rated Voltage		208VAC/220VAC/230VAC/240VACor 100/110/115/120/127VAC can be set on LCD			208VAC/220VAC/230VAC/240VAC can be set on LCD	
Power Factor		0.8				
Voltage distortion		± 1%				
DC component Voltage		≤200mv				
Output Current Crest Factor		3:1				
RATED FREQUENCY						
AC Mode		same as input frequency				
Battery Mode		50/60±0.2Hz				
Phase lock speed		≤ 1Hz/s				
Wave distortion		100% linear load <3%; 100% nonlinear load <5%				
TRANSFER TIME						
From Mains mode to battery mode		0ms				
From battery mode to Maine mode		0ms				
From mains mode to bypass mode		<4ms			0ms	
From bypass mode to mains mode		<4ms			0ms	
From normal mode to Eco mode		<10ms			<10ms	
System Efficiency	Full Load	≥ 90%			≥ 92%	
	Eco mode		≥ 94%			
Inverter overload capacity		105%-150%30s transfer to bybass mode giving alarm >150%300ms transfer to bybass mode giving alarm			105%-125%10min transfer to bybass mode giving alarm 125%-150%30s transfer to bybass mode giving alarm >150%100ms transfer to bybass mode giving alarm	
BATTERY						
Battery type		Lead Acid Maintenance Free Battery				
DC Voltage		24VDC	48VDC	72VDC	168V DC	168V DC
Inbuilt battery		9AH/12V	9AH/12V	9AH/12V	9AH/12V	9AH/12V
Battery quantity		2	4	6	14	14
Charge						
Output Voltage		27.5±0.4V	55±0.6V	82.5±0.9V	193.7±0.9V	193.7±0.9V
CHARGE METHOD		Three Stage Charging				
Input Voltage range		80 VAC -300 VAC or 40 VAC - 150 VAC			150VAC-300VAC	
Charge current		Standard model : 1A: Long time model :6A (Optional 12A)			Standard model :1A Long time model:8	
Protection		Over-temp protection : Fan testing protection: AC L and N connect wrong protection : Output short circuit protection				
Control		Silence : cold start : AC restart : Auto restart				
Communication		RS 232,SNMP card USB Software function; statue analyze : Switch on/off UPS system Monitor UPS working state store histor				
Display		LCD/LED				
SYSTEM OPERATING ENVIRONMENT						
Operating Environment	Operation tem.	0 - 40°C				
	Store tem,	-25°C - 55°C				
	Humidity	20 - 90% (non -Condensing)				
	Altitude	0m <altitude<1500m, over 1500m used with power derated				
Noise			< 50db		<55db	
UPS Dimension (W*D*H) mm		144x357x215	191x252x341		262x514x455(long time mode)	
					262x514x735(Standard model)	
Packing Dimension (W*D*H) mm	Long time Mode	230x445x315	320x564x462		360x650x540	
	Standard Model				360x650x795	
Net/Gross Weight (kg)	Long time Mode	6.0/7.0	12.0/13.3	12.5/13.8	26.0/28.0	
	Standard Model	10.0/11.1	20.0/21.3	24.0/25.3	62.0/70.0	

- All Specifications Subject to change without Notice
- Custom-made specifications are acceptable

POWERGUARD

DLT 100 SERIE

Transformer Based Technology

UNINTERRUPTIBLE POWER SUPPLY 2-15KVA

Delta 100 Series UP'S Are, PWM (Plus Width Modulation) And IGBT Technology, Microcontroller Controlled, Sinus Waveform Output, ONLINE, Parallel Configurable UPS Group

True On-line

1 Phase Input

1 Phase Output

2 - 15 kVA

TECHNICAL SPECIFICATIONS

- Output Isolation Transformer
- 91% Efficiency
- Static By Pass
- LCD Front Panel
- 64 Events Memory
- RS232 Port Provides Remote Monitoring, Remote Shutdown
- Custom Input And Output Voltage Ranges
- International Quality Certificate
- 2 Years Warranty
- 10 Years Spare Parts Support
- CE, GOST, TUV, ISO9001, ISO 14001 Certificate

SPECIFICATIONS						
MODEL	**DLT102**	**DLT103**	**DLT105**	**DLT107**	**DLT110**	**DLT115**
Power	2 kVA	3kVA	5kVA	7 kVA	10kVA	15kVA
INPUT						
Voltage	220/230 Vac Phase+Neutral+Earth, ± 15%					
By-Pass Voltage	220/230Vax ± 10%					
Frequency	50Hz/60 Hz, ± 5%					
EMI	EN62040-2					
Current	13A	19A	30A	44A	58A	87A
Input Frequency	50Hz (60Hz special product), ± 5%					
Input Voltage Protection	electronic input voltage out of toleranr protection					
OUTPUT						
Power (kW)	1.6	2.4	4	5.6	8	12
Power Factor	0.8					
Voltage	220/230 Vac, Phase+Neutral					
Voltage Tolerance	± 1%					
Frequency	50Hz (60Hz special product)					
Frequency Tolerance	±2% (synchron) ±0.2% (free running)					
Efficiency 100% Load	85-87%				86-90%	
THD (Total Harmonic Distortion)	<3% (linear load) <5% (non linear load)					
Crest factor	3:1 100%125% load :10mins					
Overload Protection	126%150% load : 1min >150% load : by-pass					
Short Circuit Protection	electronic short circuit protection					
Output Voltage protection	electronic output voltage out of tolerant protection					
BATTERY						
Type	Maintenance free sealed lead acid					
Batteries	14	14	16	18	20	20
Charge Voltage	189VDC	189VDC	216VDC	243VDC	270VDC	270VDC
Discharge End Voltage	140VDC	140VDC	160VDC	180VDC	200VDC	200VDC
Battery Cabinet	Internal					External
Ambient Temperature	25 C					
Battery Protection	Battery fuse, battery voltage low and high protection (3 levels)					
Battery Test	Available as option					
Temperature Compansiation	Available as option					
GENERAL						
Operating Temperature	0 C - 40 C					
Noise Level		<42 dBA	<45dBA	<50 dBA		<55 dBA
Protection	IP20					
Operating Height	<2000 m					
Humidity (Non Condensed)	<90%					
Weight (Without Batteries) (kg)	50	55	60	75	85	112
Dimensions (mm) WxDxH		265x585x505	265x600x590	265x660x640	265x740x720	300x810x720
Interface	Alphanumeric LCD panel mimic lamps and control buttons					
Communication	RS232+dry contact					
Software	T-Mon UOS software (3clients)					
Overtemperature Protection	Electronic Overtemperature protection					

POWERGUARD

DSP + IGBT Rectifier

DLT CYCLONE 100D SERIE

UNINTERRUPTIBLE POWER SUPPLY 6-15KVA

Delta Cyclone DLT CL-100D Uninterruptible power supplies are single phase transformerless with IGBT rectifier advanced technology designed UPS

True On-line
1 Phase Input
1 Phase Output
6-15 kVA

TECHNICAL SPECIFICATIONS

- Rack and tower case options
- Power factor corrected input
- REPO input (NO or NC programmable)
- Static bypass system, VAT transfer system
- Output voltage regulation, low output THD
- Optional battery temperature compensation
- Online technology advanced self diagnostics
- Battery options for longer battery backup time
- Fully digital DSP controlled system PID control
- User selectable easy voltage, frequency and setting
- Cold start from batteries, Rock and tower case options
- 128 log event records (5000 alarms) with date and time
- LCD alphanumeric display, mimic lamps, 5 control buttons
- Output short circuit protection (isolated from bypass input)
- Output short circuit protection 150% overload capacity
- Automatic battery test, front panel lamp test system
- Deep battery discharge protection, boost charge
- Battery capacity and battery remaining time indicator
- Maintenance bypass switch. Cabinet inside temperature sensor
- RS232 communication interface, management software, SNMP, MODBUS
- Dry contact outputs (NO or NC programmable) 3 relays standard 2 option
- IPM power module output current limit operation mode selection (Online or Offline)

SPECIFICATIONS				
MODEL	**DLT-CL 106 D**	**DLT-CL 106 DR**	**DLT-CL-110 D**	**DLT-CL 110 DR**
Type	Tower	Rack-5U	Tower	Rack - 5U
INPUT				
Power Factor	>0.99 (full load)			
Input Voltage Range	220-230 volts AC (±25%) selectable (1phase+neutral)			
Input THD	<5% at full load			
Input Frequancy	50Hz (40-65Hz operation)			
RFI Level	EN62040			
Indicators	Voltage, Current, Frequency			
Protection	Input Fuse, Input high and line failure alarm			
Bypass Voltage	220 - 230 Voltc AC (± 10%) selectable			
Bypass Frequancy	50Hz (Adjustable from ±1 to 3 Hz)			
Manual Bypass	Standard			
Maintenance Bypass	Optional			
Split Bypass	Input Optional			
Transfer System	VAT Transfer (Voltage adaptive transfer) Built in			
OUTPUT				
Power	6 kVA / 4.8 KW	6 kVA / 4.8 KW	10 kVA / 8 KW	10 kVA / 8 KW
Power / Creat factor	0.8-3:1			
Voltage	220-230 Volts AC (±1%) Selectable (1phase+neutral)			
Curremt (100% load)	19 Amps	19 Amps	32 Amps	32 Amps
Frequency	50 Hz			
Frequency Tolerant	Free running:0.01%, synchron lock adjustable (±1 to 3Hz)			
Indicators	Voltage, Load, Current, Frequency			
Overload Protection	100%-125% 10 mins, 126%-150% 1 min			
Protections	Voltage, low, high, shot circuit, Waveform error, DC leakage			
THD	<3%(at100% Load)			
Output Connections	Hardwired +2xIEC sockets on the rear side			
BATTERY				
Type	Sealed Lead Acid			
Battery number	20x4.5Ah	20x4.5Ah	20x7Ah	20x7Ah
Cabinet	Internal	Internal	External	external
Battery test	Available (Automatic or manual)			
Boost charge	Available adjustable (288V for 20x12V batteries)			
Protections	Battery low shutdown, low Warning, high alarm Average battery high alarm, fuse protection			
Charge current	Limited (adjustable from 1 to 3 amps)			
End of discharge	Adjustable (192V for 20 batteries) Deep discharge protection			
Floot charge voltage	Adjustable (272V for 20x12 V batteries at 25^{O}C)			
GENERAL				
Communication	REPO input 3 relays and Rs232 standard, SNMP and MODBUS optional			
Options	2relay outputs, 1 automation input remote panel, Rs 232 port multiplexer			
Front Panal	2 x 16 LCD panel 3 Leds and 5 buttons			
Dimensions (WxDxN)	215x595x435	425x595x215	215x595x435	425x595x215
Weight	25kgs	25kgs	28kgs	25kgs
Nolse Level	<50dB			
Temperature Range	0^{O}C - 40^{O}C			
Relative Humidity	<90% (non condensed)			
Vantilation	Forced air cooling			
Altitude	2000 m, At nominal Power			
Protection degree	IP20			

POWERGUARD

DLT 300 LO SERIE

Transformer Based Technology

UNINTERRUPTIBLE POWER SUPPLY 10-80kVA

DELTA 300 Lo series UPS PWM controlled, IGBT Technology Microcontroller Controlled, sinusoidal waveform ONLINE topology and parallel configurable devices. Advanced communication system supports many communication protocols and brings remote control advantage of the UPS.

True On-line
3 Phase In
3 Phase Out
10-80 kVA

TECHNICAL SPECIFICATIONS

- 3 Phase in / 3 Phase out
- Output 10-80kVA
- Output isolation transformer
- Static bypass
- External REPO switch input
- 5 control button LCD alphanumeric display brings detailed monitoring of measured parameters
- 3 microcontrollers for rectifier, main control system, parallel management
- 128 event alarm memory (4000 alarms)
- Clock and calendar (battery supported)
- Advanced battery management controls charge system battery test
- High performance at nonlinear loads
- Dry contact simulation function
- Dial up modem connection and setup
- Custom input voltage and frequency ranges
- International standards compatibility
- SNMP (Simple Network Management Protocol) communication
- 2 Years warranty
- 10 Years spare parts support
- ISO9001, ISO14001, CE, GOST certification
- Optional Modbus adaptor

POWERGUARD

SPECIFICATIONS							
MODEL	**DLT310**	**DLT315**	**DLT320**	**DLT330**	**DLT340**	**DLT360**	**DLT380**
Power	10 kVA	15 kVA	20 kVA	30 kVA	40 kVA	60 kVA	80 kVA
INPUT							
Voltage	220/380 Vac (230 / 400 Vac) 3 Phase + neutral + earth±15%						
By-Pass Voltage	220/380 Vac (230/400 Vac) 3 phase + neutral ± 10%						
Frequency	50Hz (60Hz optional), ± %5						
MAX RFI	EN62040-2						
Input Voltage Protection	Electronic input out of toleranr protection						
OUTPUT							
Power (kW)	8	12	16	24	32	48	64
Power Factor	0.8						
Voltage	220/380 Vac (230/400 Vac) 3 phase + Neutral						
Voltage Tolerance	± 1%						
Voltage Tolerance Time	max 25 msec						
Frequency	50Hz 60Hz						
Frequency Tolerance	synchron ±2% free running ±0.2%						
Efficiency 100% Load	88-90%					90%	
THD (Total Harmonic Distortion)	<3% (linear load) <5% (non linear load)						
Crest factor	3:1						
Overload Protection	100%125% load :10mins 126%150% load : 1min >150% load : by-pass						
Short Circuit Protection	electronic protection						
THD (Total harmonic distortion)	Linear Load <3% Non Linear Load <5%						
Output Voltage protection	Electronic out of tolerant protection						
Model							
Type	Maintenance free sealed lead acid						
Batteries	30						
Charge Voltage	405 VDC						
Discharge End Voltage	300 VDC						
Ambient Temperature	25 C						
Battery Protection	Battery fuse, battery voltage low and high alarm (3 levels)						
Battery Test	Standard automatic every 72 hours or manual						
Temperature Compansiation	Available as option						
GENERAL							
Human Interface	Alphanumeric LCD panel, Mimic lamps and control buttons						
Communication	Dry contact and RS232						
Software	T-Mon UP software (3clients)						
Operating Temperature	0°C - 55°C						
Cooling	Air Cooling						
Humidity (Non Condensed)	<90%						
Protection	IP20						
Operating Height	<2000 m						
Noise Level	<56dBA					<60 dBA	
Weight (Without Batteries) (kg)	220	260	260	290	415	465	595
Dimensions (mm) WxDxH	505x655x1150				575x820x1390		720x820x1850
Overtemperature protection	Electronic Protection						

POWERGUARD

DLT 300 HI SERIE

Transformer Based Technology

UNINTERRUPTIBLE POWER SUPPLY 100-300kVA

DELTA 300 Hi Series UPS, PWM controlled, IGBT Technology, Microcontrolled Controlled, sinusoidal waveform, ONLINE topology and parallel configurable devices. Advanced communication system supports many communication protocols and brings remote control advantage of the UPS.

True On-line
3 Phase Input
3 Phase Output
100-300kVA

TECHNICAL SPECIFICATIONS

- 3 Phase in / 3 Phase out
- Output 100-300KVA
- Output isolation transformer
- Up to 91% efficiency
- Static by pass
- External REPO switch input
- 5 control buttons iLCD alphanumeric display brings detailed monitoring of measured parameters
- 3 microcontrollers for rectifier, main control system, parallel management
- 128 events alarm memory (4000 alarms)
- Clock and calendar (battery supported)
- Advanced battery management controls charge system battery test
- High performance at nonlinear loads
- Dry contact simulation function
- Dial-up modem connection and setup
- Custom input voltage and frequency ranges
- International standards compatibility
- SNMP(Simple Network Management Protocol) communication
- 2 years warranty
- 10 years spare parts support
- ISO9001, ISO14001, CE ,GOST certification
- Optional MODBUS adaptor.

POWERGUARD

SPECIFICATIONS						
MODEL	**DLT 3100**	**DLT 3120**	**DLT 3160**	**DLT 3200**	**DLT 3250**	**DLT 3300**
Power	100 kVA	120 kVA	160 kVA	200 kVA	250kVA	300 kVA
INPUT						
Voltage	220/400 Vac 3 Phase + N, ±%15					
By-Pass Voltage	220/400 Vac 3 Phase + N, ±%10					
Input Frequency	50Hz ± %5					
EMI	EN50091-2Class A					
Input out of Tolerant Protection	Electronic input out of toleranr protection					
OUTPUT						
Power (kW)	80	96	128	160	200	240
Power Factor	0.8					
Voltage	220/400 Vac 3 phase + N					
Frequency	50Hz, (60Hz On Request)					
Frequency Tolerance	±2% (Line synchronized) - ±0.2% (Free running)					
Efficiency 100% Load	%90-92					
Crest factor	3:1					
Overload Protection	100%125% load :10mins		126%150% load : 1min		>150% load : by-pass	
Short Circuit Protection	Electronic Short circuit protection					
Voltage out of Tolerant Protection	Electronic out of tolerant protection					
Total Harmonic Distortion	<3%					
THD	Non Linear Load <5%					
Model						
Battery Type	Sealed Lead Acid - Maintenance Free					
Number of Batteries	30				32	
Float Charging Voltage	405 VDC				432 VCD	
End of Discharge Voltage	300 VDC				320 VCD	
Ambient Temperature C	25°C					
Battery Voltage Protection	Electronic Battery out of tolerant protection					
Battery Protection	Automatic Circuit Breaker					
Battery Test	Automatic every 72 hours					
GENERAL						
Communication	RS232 + Dry Contacts					
Temperature Range	0°C - 40°C					
Humidity (Non Condensed)	90% (Non Condensed)					
Protection Degree	IP20					
Altitude	<1000 m, above sea level					
Noise Level	<65 dBA				<70 dBA	
Weight (Without Batteries) (kg)	770	810	960	1150	1285	1416
Dimensions (mm) WxDxH	1650x1100x800		1730x1195x870		1880x1565x925	
Ventilation	Forced air cooling					

OPTIONS		ACCESSORIES	
Input Transformers	Galvanic Isolation transformer at the input (in the extermal cabinet)	Monitoring and control Software	T- Mon 3 client standart
Input THD	<10% (with 18 Pulse Rectifier, according to UPS range 5% (with 18 Pulse rectifer, + filter) upto 80 kVA	Multiserver shutdown Unit SNMP Communication Adaptor	Available as option Available as option
Parallel Operation	1+3 Systems (N+1 Redundant, Reduntant, symetric parallel	Serial port Enchancer	Available as option
MBS	Mainternance by-pass switch for complete Isolation (For 206, 207 & 210)	Modbus communication Adaptor	Available as option (Over Rs 485 or Over TCP/IP)

DSP + IGBT Rectifier

DS-300 SERIE

UNINTERRUPTIBLE POWER SUPPLY 10-200kVA

Cold Start high Input Power Factor high efficiency up to 94% external REPO switch input 10 years spare parts support IGBT / Transformerless Technology DSP Control

Pf:0,9

True On-line

3:3 Phase UPS

10-200kVA

TECHNICAL SPECIFICATIONS

- Low input current total harmonic distortion (THD)
- Static and maintenance bypass switch
- Output and by-pass short circuit and overload protection
- 192 events memory (192 events 4500 alarms)
- Clock and calender (battery supported)
- Automatic battery test, remaining battery time indicator
- Temperature compansiated charge system
- Regenerative backfeed function
- 2 RS232 serial port and 12 dry contact outputs
- 3 DSP controlled modular structure
- Optional Graphical and touch panel
- CE ,ISO9001, ISO14001, GOST certification
- 2 years Warranty

SPECIFICATIONS										
MODEL	**DS310**	**DS315**	**DS320**	**DS330**	**DS340**	**DS360**	**DS380**	**DS3100**	**DS3120**	**DS3160**
Power (kVA)	10	15	20	30	40	60	80	100	120	160
INPUT										
Power factor	>0.98									
Voltage	380-400 VAC 3F, 4N+Earth, ±%20 (240/415 VAC +%15 -%25 Optional)									
Iput THD	<5%									
Input Frequency	50Hz / 60Hz ± 5% selectable									
Input Frequency Protection	2 Levels Protection (Minimum and Maximum)									
Regenerative Backfeed	Standard									
Input Power Limiting	Standard									
EMI	EN62040-2									
Input Voltage Protection	2 Levels Protection									
Power Walk in	Standard Adjustable									
Startup Delay	Standard Adjustable									
Control System	Seperate DSP controller For PFC rectifier Module									
Rectifer Input Fuses	Standard									
Rectifer Input Switch	Standard									
Rectifier Input CB	Standard									
OUTPUT										
Power (kVA)	9	13.5	18	27	36	54	72	90	108	144
Power Factor	0.9									
Voltage	380 - 400 VAC 3F, 4N+Earth, ± %1 (240/415 optional)									
Frequency	50Hz, (60Hz Selectable									
Frequency Tolerant	±2% (synchronized) ±0.2% (Free running)									
Frequency Stabillity (Free running)	0.005%									
Efficiency	Up to 94%									
Crest factor	3:1									
Overload Protection	100%125% load : 10mins 126%150% load : 1min >150% load : by-pass									
Output Current Limiting	Standard									
Short Circuit Protection	Direct IGBT saturation Protection and advanced short circuit protection									
Output Voltage Protection	2 levels electronic protection									
THD (%100 Linear load)	<3%									
Control System	Seperate DSP Controller for Inverter Module									
Battery										
Type	Maintenance Free - Sealed Lead Acid									
Batteries	2x30=60 Batteries									
Charging Voltage	2x405 VCD									
Discharge Voltage	2x300VCD									
Battery Cabinet	Internal					External				
Ambient Temperature C	25°C									
Battery Protection	Fuses, Charging Current limiting									
Battery Voltage Protection	Electronic 3 level alarms									
Battery Test System	Automatic every 72 hours									
Temperature Compansiation	Standard									
Battery remaining time Indicator	Standard									
Battery fuses	Standard									
Deep discharge protection	Standard									
Front Panel										
Front Panel Control	Seperate DSP Controller For Panel And Communtication Functions									
Human Interface	Alphanumeric LCD Panel, Mimic Lamps And Control Buttons Standard									
Alarm Log Memory	192 Events (4500 Alarms)									
Communication	Dry Contact And 2 Rs 232 Serial Ports									
Phase To Phase Measurements	Rectifier Input, By-pass Input Inverter Output And UPS Output Voltages									
Phase To Neutral Measurements	Rectifier Input, By-pass Input Inverter Output And UPS Output Voltages									
Power Measurements	Output Watts, Output Va, Load Creat Factor, Output Power Factor Load Percentages									
Current Measurements	Rectifier Input Currents. Battery Charge and Discharge Currents, Output Load Currents									
Frequency Measurements	Rectifier Input Frequency By-Pass Input Frequency Output Frequency									
Temperature Measurements	Cabinet Inside, Battery Ambient Temperature and Optional Sensors									
Maintenance Indicators	Seperate Operating, General, Battery, Fan Maintenance and Optional hourmeters and warnings									
Overtemperature Protection	2 Electronic Temperature Sensors and Thermel Contacts									
Failure Memory	Standard (records all measured parametres during failures)									
Factory Settings Memory	Standard (Stettings Backup Memory)									
Module Communication	CAN Interface									
Free Software	T-Mon UPS Software (3 Clients)									
Opertating Temperature	0C-40°C									
Protection	IP20									
Humidity (Non Condensed)	90% max									
Operating Height	<1000 m below sea level									
Noise Level	<50dBA									
Calibration Over Rs 232	Available (Device Celibrator software)									
Log download Over Rs 232	Available (DLOG Software)									
Weight (kgs) without batteries)	87	87	91	100	173	180	185	374	380	400
Dimensions (HxWxD)	1040 X 400 X 810				1440 X 515 X 850			1900 X 775 X 910		

POWERGUARD

PROJECT GALLERY

PROJECT GALLERY

Project Name :

CONSTRUCTION OF THE INFORMATION TECHNOLOGY CENTER,

King Fahd University of Petroleum & Minerals (KFUPM)

Scope of Work :

LV Main Distribution panels, Synchronizing Panels, LV switch gear etc.

Project Name :

AMO KIMBESKI TWIN TOWER

Al-Khobar (Near Khobar Driving School)

Scope of Work :

LV Main Distribution Panels, MCC Panels, LV Main switch gear busways etc.

Project Name :

JUBAIL INDUSTRIAL COLLEGE

Royal Commission, Jubail (Opposite to Royal Commission, H.Q. Building, Jubail)

Scope of Work :

LV Main Distribution Panels, MCC Panels etc.

PROJECT GALLERY

Project Name :

JUBAIL COMMERCIAL PORT,

Scope of Work :

LV switch gear etc.

Project Name :

ARAB PAPER MANUFACTURING PHASE - 3 (WARAQ)

Scope of Work :

LV Main Distribution Panels, MCC Panels etc.

Project Name :

TAMIMI MARKETS, DOHA, DAMMAM

Scope of Work :

LV Main Distribution Panels, ATS, MCC

PROJECT GALLERY

Project Name :

SIEMENS ENERGY HUB, DAMMAM

Scope of Work :

Socket Distribution Panels,
Crane Accessories Panels

Project Name :

ALI TAMIMI VILLA, DAMMAM

Scope of Work :

LV Main Distribution Panels, MCC Panels etc.

Project Name :

ABDULLAH FOUAD , DAMMAM

Scope of Work :

LV Main Distribution Panels, Load center

PROJECT GALLERY

Project Name :

GE DHAHRAN TECHNO VALLEY,

Scope of Work :

LV Main Distribution Panels, MCC Main

Project Name :

SCHLUMBERGER

Scope of Work :

LV Main Distribution Panels

Project Name :

BAKER HUGHES BOT EXTENSION

Scope of Work :

LV Main Distribution Panels, MCC

Project Name :

DOSSARY TOWER

Scope of Work :

LV Main Distribution Panels

Project Name :

ITCC RIYADH

Scope of Work :

LV Main distribution panel, SCECO meter panel, MCC

Project Name :

GRANEDA TOWER

Scope of Work :

LV Main Distribution Panels, ATS, MCC

PROJECT GALLERY

Project Name :

SABIC HQ BUILDING RIYADH

Scope of Work :

LV Main distribution panel, ATS Panel, MCC Panel

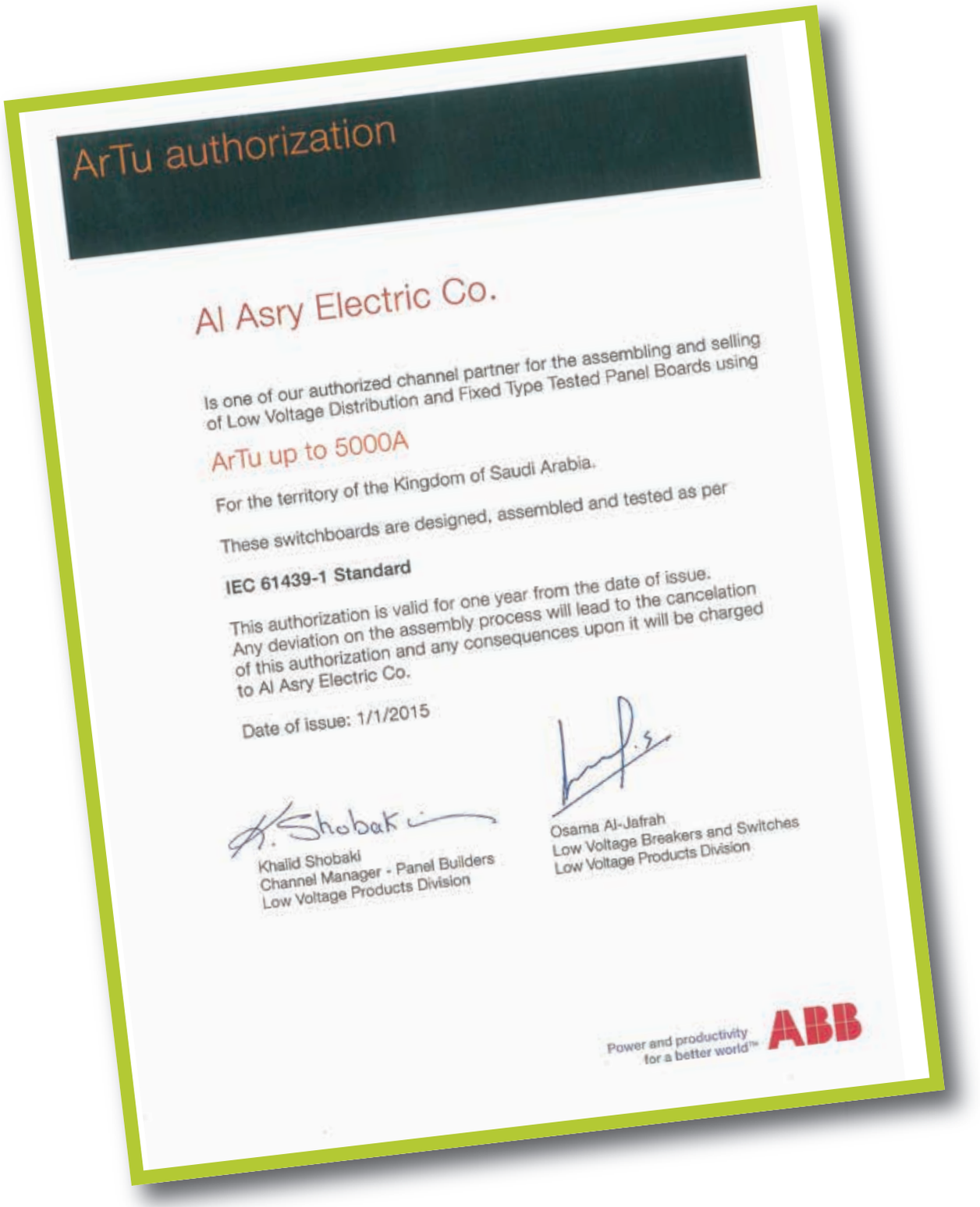
Project Name :

CAT BUILDING

Scope of Work :

LV Main distribution panel, Lighting control panel

PANEL BUILDER CERTIFICATES



ArTu authorization

Al Asry Electric Co.

Is one of our authorized channel partner for the assembling and selling of Low Voltage Distribution and Fixed Type Tested Panel Boards using

ArTu up to 5000A

For the territory of the Kingdom of Saudi Arabia.

These switchboards are designed, assembled and tested as per

IEC 61439-1 Standard

This authorization is valid for one year from the date of issue.
Any deviation on the assembly process will lead to the cancelation of this authorization and any consequences upon it will be charged to Al Asry Electric Co.

Date of issue: 1/1/2015

Khalid Shobaki
Channel Manager - Panel Builders
Low Voltage Products Division

Osama Al-Jafrah
Low Voltage Breakers and Switches
Low Voltage Products Division

Power and productivity for a better world™ ABB

PANEL BUILDER CERTIFICATES

Certificate

GE Industrial Solutions (GEIS) in Kingdom of Saudi Arabia certifies that:

M/S Al Asry Electric Co. Ltd.

(primary location, Riyadh- Saudi Arabia)

Are authorized to design, assemble, test and commission GEIS Quixtra 4000 (up to form 4b, 85KA I_{cw} & up to 4000A) and Quixtra 630 (up to Form 2, 36KA I_{cw} & up to 630) LV solutions that are fully type tested to IEC 61439 (new) standard.

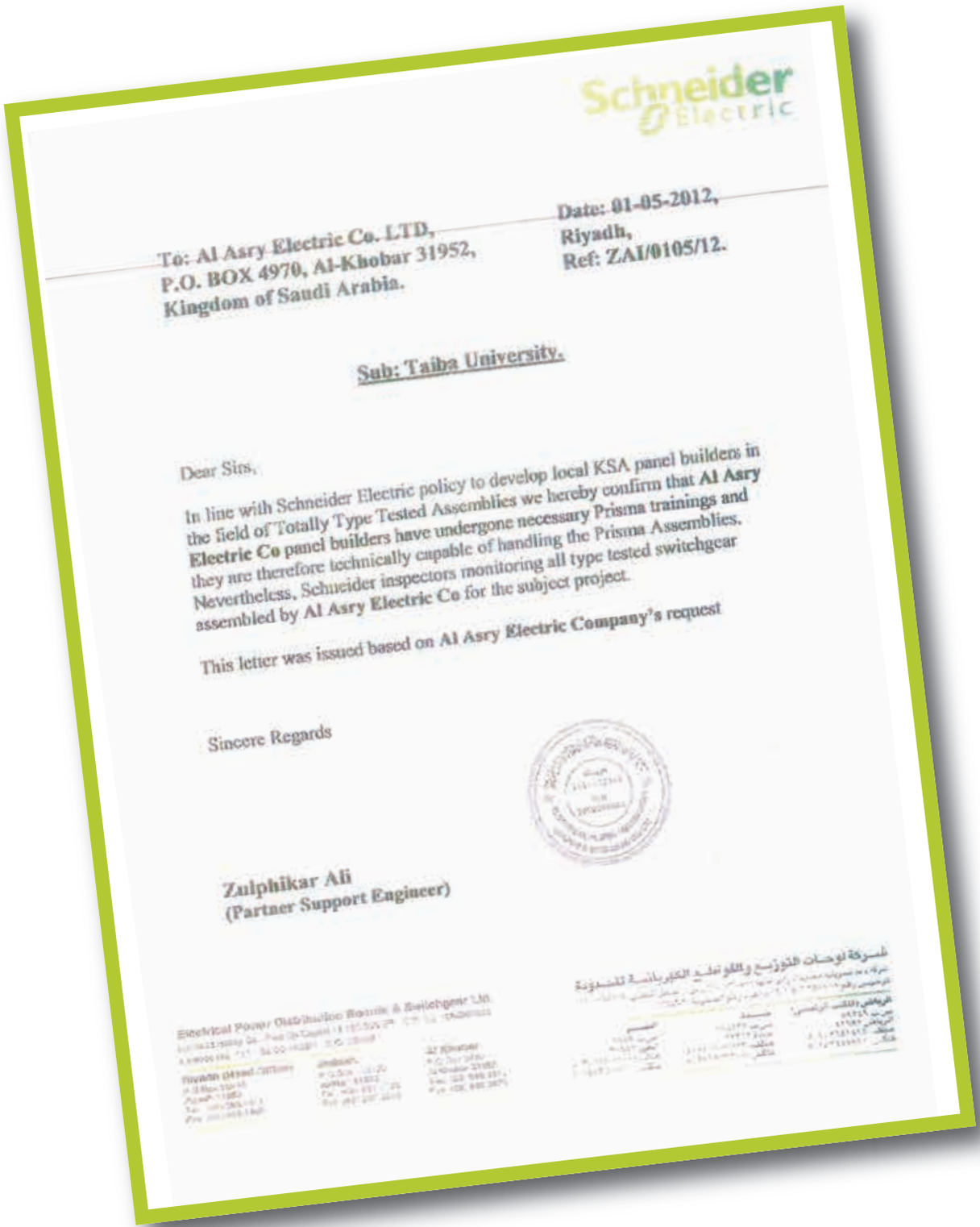
Ragheb Titi
Sales Director KSA, Bahrain & Yemen

Sofiane Allou
PB Program Manager MEAT

Issued on
10/06/2015
Valid for 1 year

imagination at work

PANEL BUILDER CERTIFICATES



Schneider Electric

To: Al Asry Electric Co. LTD,
P.O. BOX 4970, Al-Khobar 31952,
Kingdom of Saudi Arabia.

Date: 01-05-2012,
Riyadh,
Ref: ZAI/0105/12.

Sub: Taiba University.

Dear Sirs,

In line with Schneider Electric policy to develop local KSA panel builders in the field of Totally Type Tested Assemblies we hereby confirm that **Al Asry Electric Co** panel builders have undergone necessary Prisma trainings and they are therefore technically capable of handling the Prisma Assemblies. Nevertheless, Schneider inspectors monitoring all type tested switchgear assembled by **Al Asry Electric Co** for the subject project.

This letter was issued based on **Al Asry Electric Company's request**

Sincere Regards

Zulphikar Ali
(Partner Support Engineer)

ISO CERTIFICATE

Certificate of Registration

The Governing Board of
Q.A. International Certification Limited
hereby grants to:

AL ASRY ELECTRIC COMPANY LTD.

Registration No. : QAIC / SA / 3063 - A

(hereinafter called the Registered Company) the right to be listed in the Directory of Registered Companies in respect of the services listed below. These services shall be offered by the Registered Company at or from only the address given below in accordance with the quality management system in compliance with ***ISO 9001:2008.***

Address to which this Certificate refers :

Head Office: P.O. Box 4970, Al Khobar 31952, Kingdom of Saudi Arabia
Location: 39th Road at Dammam 2nd Industrial Area, Abqiq Road, Saudi Arabia

Approved Scope to which this Certificate refers.

Manufacturing of Electrical Switchgears and Panel Boards.

Signed for and on behalf of the Board

CHIEF EXECUTIVE

SCHEME MANAGER

Certificate Issue Date : *23rd September 2015* - **Certificate Expiry Date** : *1st October 2016*
Date of Initial Registration : *11th November 2014* - **Re-Certification Before** : *1st October 2017*

This Certificate of Registration is granted subject to the Regulations approved by the Board.

QA INTERNATIONAL

Q.A. International Certification Ltd
Dudley Court
Dudley Road
Darlington
United Kingdom
DL1 4GG

Tel: +44 (0)1325 384272
Fax: +44 (0)1325 480990
www.qai.co.uk

QA INTERNATIONAL CERTIFICATION LIMITED

QA INTERNATIONAL UKAS MANAGEMENT SYSTEMS

POWERGUARD

ARTU, QUIXTRA, PRISMA PANELS

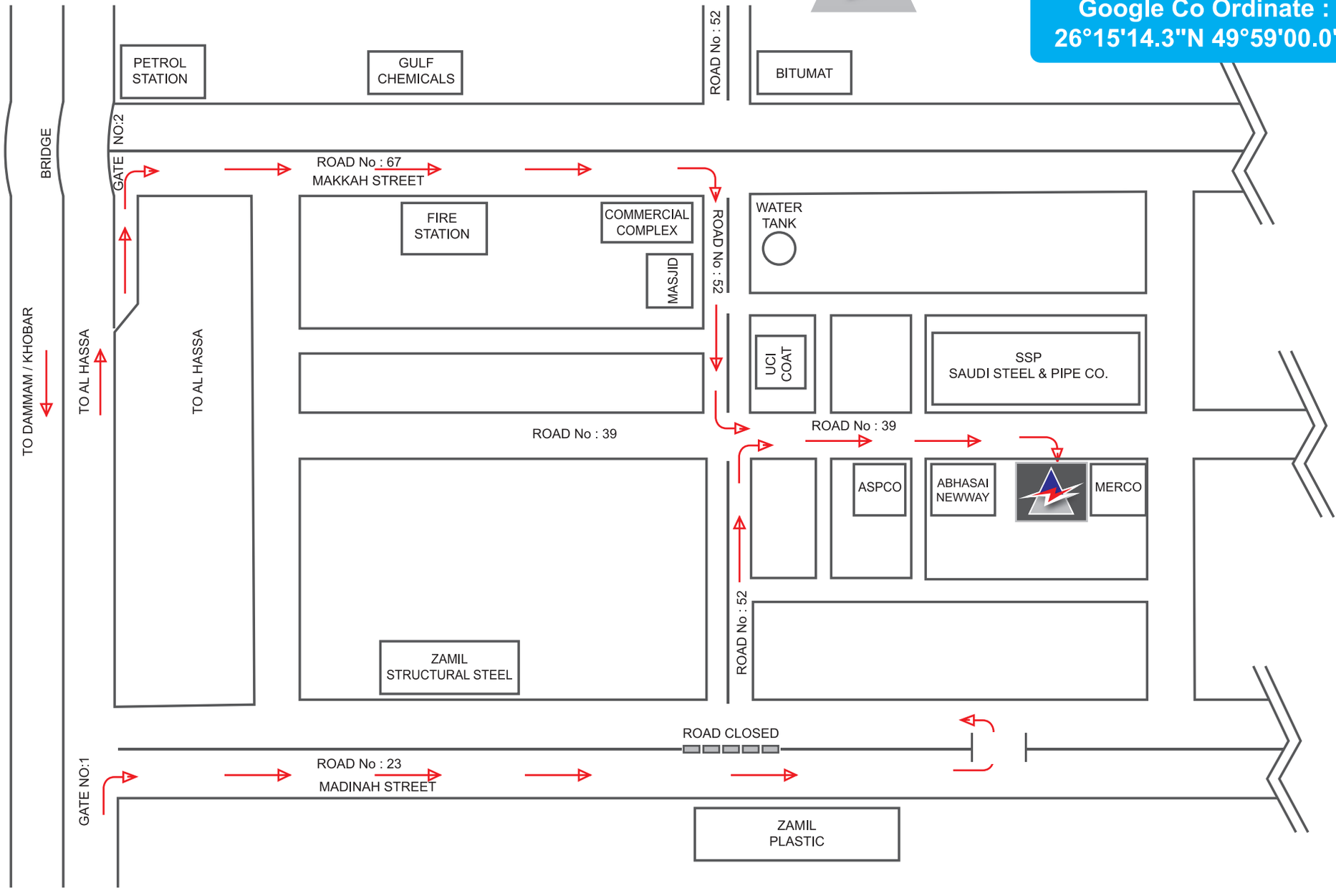
ARTU,QUIXTRA,PRISMA PANELS

LOCATION MAP

AL-ASRY ELECTRIC CO.LTD.

Switchgear & Panel Board Manufacturer

Google Co Ordinate :
26°15'14.3"N 49°59'00.0"E



AL-ASRY ELECTRIC CO.LTD.

Switchgear & Panel Board Manufacturer

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