ANT Switch board - Your Reliable Partner

Type tested busbar systems rating up to 6300 Amps

Forms of internal separation up to Form 4b

Short circuit rating up to 130 / 286 kA peak current rating

Comply with lastest standard IEC 61439-1&2 (Ed 2.0 2011)

Highest certificable degree of protection: IP54

ANT switchboard

QA TECHNIC

INTERNATIONAL REGISTER QA TECHNIC

APPLICATION

Industrial Process Plants

ANT-S17: Reliable, safety switchgear

Hundreds of ANT's Switchboards have been supplied to industrial factories. ANT-S17 switchboards are designed, fabricated and quality controlled to ensure that a continued and reliable supply of electricity meets industrial needs at all time.

Residential & Commercial Buildings

ANT-S17: Ready-to-install switchgears

Commercial and residential high-rise buildings require specialized switchgears for power and distribution to meet business and household needs respectively. ANT-S17 switchboards are built as compact switchboards, ready to install, quick response installation and commissioning time, easy application, maintenance, safety as well as saving space.

Roads & Tunnels

ANT-S17: Corrosion resistant switchgear

The verification of type tests and certifications by ASTA, is a strong testament of quality of the ANT-S17 switchboards. Rigid structures of module sections, up to type 4b form of insulation to prevent accidental short-circuit. The option to use stainless steel frames deter corrosion attacks on the structures.

Airports & Seaports

ANT-S17: for all conditions and environments

The new standard IEC 61439 requires additional tests which were not included in the previous IEC 60439 standard. They include corrosion resistance, properties of insulation material, heat resistance, resistance to UV radiation, lifting, mechanical impact and marking. ANT's switchboards have been verified and certified in accordance with the new IEC 61439 to ensure that the ANT-S17 be able to operate in all conditions and environments

TYPE TEST

ANT's switchboards have been verified and tested at Ausgrid Testing& Certification's ASTA accredited Lane Cove Testing Station in Australia, according to the following IEC Requirements:

LV Switchgear & Control gear	IEC 61439-1& 2 (Ed 2.0 2011)
Degree of Protection	IEC 60529
Resistance to Salt mist	IEC 60068-2-11
Resistance to Damp heat	IEC 60068-2-30

These tests are applied for the ANT Switchgear 2500A with a short circuit rating 50kA/1s and 105kA peak current. Vertical busbar 1600A is tested to 50kA/1s. Highest degree of protection: IP43. Form of internal Separation: Form 4b. In 2017, we developed the new model ANT-S17 which are type-tested and certified by ASTA at the highest level up to 6300A, 130kA/1s and 220kA peak current, IP 54 to satisfy high demands on special industrial projects.

Type test

1. Strength of material and parts (clause 10.2)

1.1 Resistance to corrosion (clause 10.2.2)

Test is applicable to metallic enclosures and metallic supports of the Assemblies, consists of : 6 cycles of 24h each to damp heat cycling test according to IEC 60068-2-30 at (40 ±3)^{o}C and relative humidity of 95% and 2 cycles of 24h each to salt mist test according to IEC 60068-2-11, at temperature of (35±2)^{o}C. ANT-S17 has passed the test to ensure that the products can be used in any treated environments.

1.2 Resistance of insulating materials to abnormal heat and fire according to internal electric effects (clause 10.2.3.3)

The busbar supports and insulation parts are glow wire tested IEC 60695-2-10 to verify the suitability of materials. The temperature of tip of glow-wire will be 960^{o}C for parts necessary to retain current-carrying parts in position and 650^{o}C for other parts, including parts necessary to retain to protective conductor.

1.3 Lifting test (clause 10.2.5)

The test with 1.25 times of maximum shipping weight of the switchboards to verify the panels shall be no deflections and show no cracks or permanent distortions visible to normal or corrected vision without additional magnification, which could impair any of its characteristics.

1.4 Marking test (clause 10.2.7)

The test is made by rubbing the marking by hand for 15 s with a piece of cloth soaked in water and then for 15 s with a piece of cloth soaked with petroleum spirit.

2. Degree of protection (clause 10.3)

Test carried out to prove that the assembly achieves its specified degree of protection. ANT-S17 switchboards have achieved an external rating up to IP 43 and form 4b internal separation.

3. Clearance and creepage distances (clause 10.4)

Clearance and creepage distance have been verified for 1000V, 50Hz in ANT-S17 switchboards.

4. Protection against electric shock and integrity of protective circuits (clause 10.5)

The exposed conductive parts of the ANT-S17 switchboards were tested by a number of measurements for the effectiveness of the connection to the protective circuits. The framework and all the panels, doors are effectively connected to the frame. A continuous protective copper bar conductor is bolted to the bottom of the assembly. The short circuit withstand strength of the protective circuit has been tested to levels corresponding to those of the busbar systems

5. Dielectric properties (clause 10.9)

ANT-S17 switchboards are passed both two tests which are an impulse withstand voltage test and a power frequency withstand voltage test, following clause 10.9.2 and 10.9.3 with conformance without puncture or flash-over.

6. Temperature-rise limits (clause 10.10)

ASTA has carried out tests on completed ANT's switchboards to prove that the temperature rise inside the switchboard did not exceed the values specified in the standard.

7. Short-circuit withstand strength (clause 10.11)

The ANT-S17 Switchboards have been tested. The following short-circuit levels have been obtained at the laboratories of ASTA.

- Rated short-time withstand current Icw: up to 130kA in 1s and 65kA in 3s..
- Rated peak withstand current Ipk: up to 220kA.

8. Electromagnetic compatibility (clause 10.12)

The ANT-S17 Switchboards have been verified in accordance with IEC 61439, clause 10.12 to be free from EMC emission and immune to EMC disturbance.

9. Mechanical operation (clause 10.13)

Each circuit breaker was operated 200 times. And each withdrawable air circuit breaker withstood 200 cycles of mechanical operation form connected to disconnected position and back to the connected position. The breakers used in the Type tested Switchboards are verified by the above tests and had not impaired and had practically the same effort for operation as before the test.

TECHNICAL SPECIFICATION

ANT's switchboards are designed, fabricated, tested and quality controlled to satisfy all various needs from our valued customers

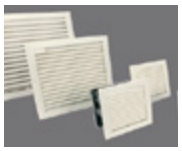
Electrical technical data

- Supply systems: TN-C, TN-S, TN-C-S, TT and IT
- Rated voltage/insulation (Un/Ui): 1000 VAC
- Rated operation voltage (Ue):
  Up to 1000 V, 50Hz
- Dielectric properties: 3.5 kV
- Rated impulse withstand voltage (Uimp):
  8 kV, 12 kV
- Over-voltage category: Category IV
- Electro-magnetic compatibility:
  EMC environment 1, 2 and #1 and 2
- Rated current: Up to 6300 Amps.
- Rated short-time withstand current (Icw):
  Up to 130 kA/1s
- Rated peak withstand current (Ipk): Up to 286 kA
- Internal separation FORM 1, 2a, 2b, 3a, 3b, 4a, 4b and FORM 4, type 1 - 7.
- Degree of protection Up to IP54
- Type tests: According to IEC/EN 61439-1 & 2 (2009)
- Resistance to Salt mist test:
  According to IEC 60068-2-11
- Resistance to Damp heat test:
  According to IEC 60068-2-30

Material specification

- Material: Electro-galvanized steel plate.
- Base frame/Plinth: 5mm mild steel powder coated in black (RAL 9005), including four corner pieces with front removable covers.
- Structural frame: 2.0 - 2.3mm steel, seam weld with a reticule of round (5.5mm) and square (9x9mm) holes pattern.
- Doors: 1.5 - 3.0 mm steel plate, right hand hinged, surfaced mounted. Door stabilizer is equipped with 20x20x1.5 square pipe.
- Rear panels: 2.0mm sheet steel, fitted by M6 pan-head screws. Standard facilities for rear door mounting.
- Side panels: 1.5mm sheet steel, fitted by M6 pan-head screws. Additional ventilation louver as option.
- Roof panels: 1.5mm sheet steel, removable, cut out as per customer's request
- Bottom plates: 1.5mm sheet steel, consists of 3 or 4 pieces. Available on request
- Locks: DIN 3mm locking system. Available on request
- Hinges: Prominent hinge, zinc plating steel
- Lifting eyes: Threaded M12, M16 cast steel, zinc plated, maximum load 210 kg per eye for slinging at 60o
- Earthing: All panels are earthed through their fittings and are equipped with a separated earthing stud at doors and exposed cover plates

MAIN SWITCHBOARDS

1 

Ventilation

With louvers at top & bottom of panel sides, heat dissipation is ensured by free flow of air passage. Optional with force ventilation fans, filters or removable grilles in case inverters, power units are installed inside panels.

2 

Frame Structures

Seam welded profiles with 25mm holes pattern to DIN 43660. High turn frequency, great strength and toughness withstand.

3 

Hinges

Door captive pin hinges which allows the door to open 180 degree. Material: die-cast zinc alloy

4 

Locks/Key-Locks

Swing handle locks, Profile half cylinder locks, T-handles locks, small rod locks. Material: Handle: plastic, lock: zinc alloy

5 

Lifting eyes bolts

M12 thread. Mounts directly to frame corner pieces of enclosure. Complies with DIN 580 lifting requirements.

6 

Door stoppers

Locks at door limit stop. Opening angle 130o. Direct attachment to reinforce frame of doors. Material: treated steel

7 

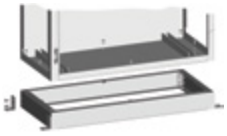
Earth leads

Yellow/green PVC insulation. Section: 6mm2, 10mm2 and 25mm2. Optional copper/brass earthing straps 16 & 25mm2

8 

Polyurethane gaskets

Doors are sealed with polyurethane gasket foam to prevent penetration by moisture or dust to ensure good IP rating

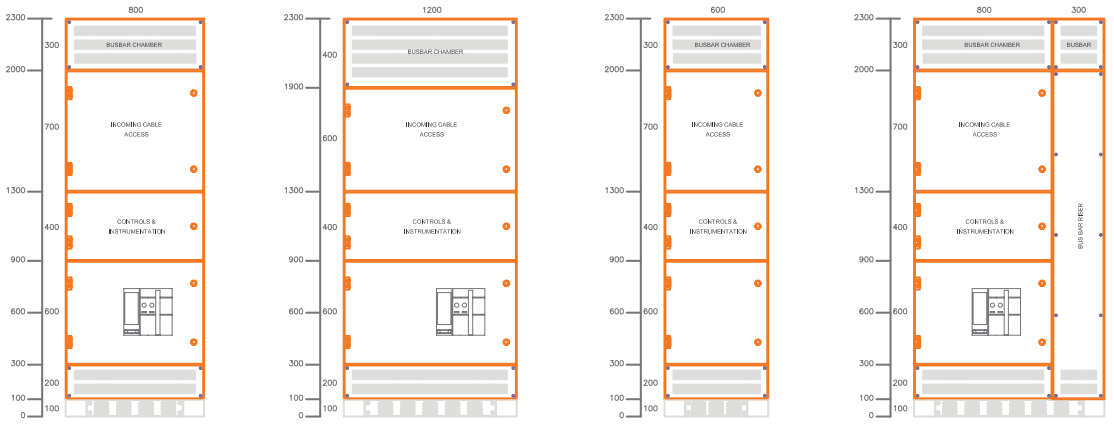
9 

Base frames/Plinths

Including 4 corner pieces and front & rear removable plinth covers. Optional covers have ventilation louvers. Material: corner pieces: 2.0 steel, covers: 1.5 steel

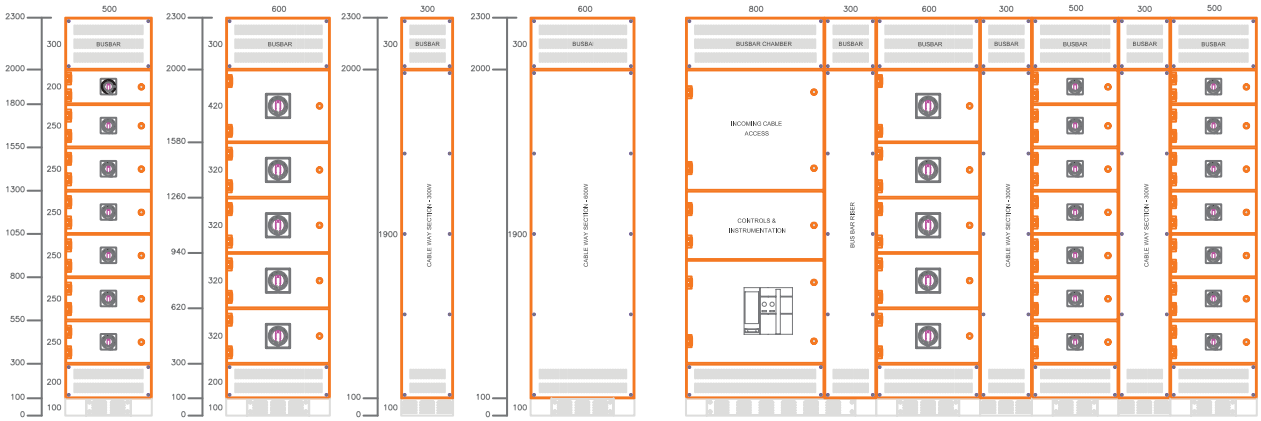
SPACE PLANNER

INCOMERS & BUS SECTIONS



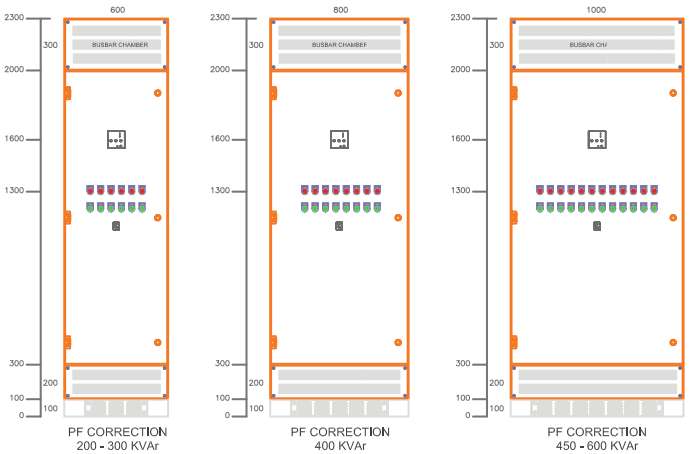
ACB INCOMER UP TO 3200A | ACB INCOMER 4000A - 5000A - 6300A | MCCB INCOMER UP TO 1600A | BUS SECTION UP TO 3200A

OUTGOING SECTIONS



OUTGOING UP TO 250A | OUTGOING UP TO 630A | CABLE WAY SECTION 300 WIDE | CABLE WAY SECTION 600 WIDE | TYPICAL PANEL ARRANGEMENT

POWER FACTOR CORRECTION SECTIONS



PF CORRECTION 200 - 300 KVAr | PF CORRECTION 400 KVAr | PF CORRECTION 450 - 600 KVAr

FEATURES

- Top and/or cable entry is available as customer's request.
- Busbar position: Top/bottom: up to 6300A. Rear: up to 7400A
- Outgoing sections accept circuit breakers or fuseswitches.
- Special arrangements and non standard dimensions available.
- Standard depths are 600, 800, 1000 and 1200mm.
- Optional forced ventilation by fan & removable filter is available.
- Cubicle weights: vary with busbar rating between 300-600 kg per meter.

DISTRIBUTION BOARDS - TECHNICAL FEATURES

1 Ventilation

With louvers at top & bottom of panel sides, heat dissipation is ensured by free flow of air passage. Optional with force ventilation fans, filters or removable grilles in case inverters, power units are installed inside panels.

2 Customized engineering design

Allows flexibility in modifications of standard components to match customer preference. All measurements, instruments, controls will be applied to customer's inquiries.

3 Internal doors

Easy to check and control the panel with internal door, as well as ensures safety in operation to protect against direct contact to live parts inside panels. Escutcheon layout be processed follow customer inquiries.

4 Locks/Key-Locks

Concealed hinges or expose hinges are available which allows the door to open 180 degree. Material: die-cast zinc alloy

5 Hinges

Concealed hinges or expose hinges are available which allows the door to open 180 degree. Material: die-cast zinc alloy

6 Lifting eyes bolts

M12 thread. Mounts directly to frame corner pieces of enclosure. Complies with DIN 580 lifting requirements. Applied to floor standing panels

7 Door stoppers

Locks at door limit stop. Opening angle 130o. Direct attachment to reinforce frame of doors. Material: treated steel. Applied to self standing distribution panels

8 Earth leads

Yellow/green PVC insulation. Section: 6mm^2, 10 mm^2 and 25 mm^2. Optional copper/brass earthing straps 16 & 25 mm^2.

9 Polyurethane gaskets

Doors are sealed with polyurethane gasket foam to prevent penetration by moisture or dust to ensure good IP rating

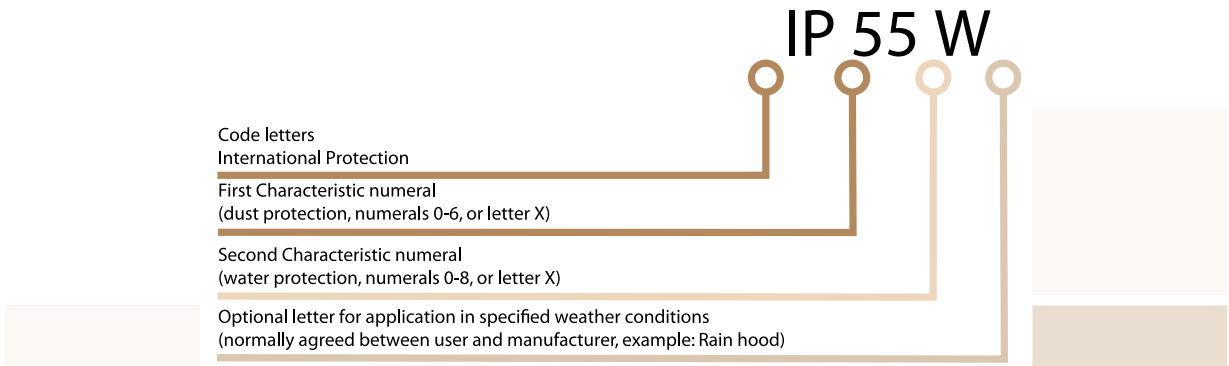
10 Copper Chassis

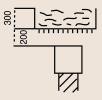
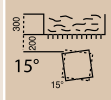
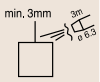
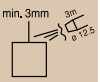
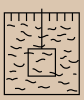
Type-tested 25kA/1s. Tinned, completed with heat shrinkable tube. Cover by clear acrylic sheet.

TECHNICAL FEATURES

Ingress Protection (IP)

All switchgears enclosures are bounded by ingress protection levels set by IEC/BS EN 60529. The standard classifies the extent to which an enclosure will resist the ingress of solid bodies and water under designated tests.

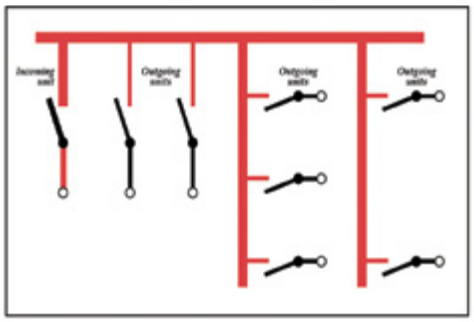


1st numeral: Degree of protection with respect to persons and solid objects.	2nd numeral: Degree of protection with respect to harmful ingress of water.								
	0	1	2	3	4	5	6	7	8
	Non protected	Protected against dripping water	Protected against dripping water of +/- 15° angle	Protected against dripping water of +/- 60° angle	Protected against splashing water	Protected against water jets	Protected against heavy seas	Protected against immersion	Protected against submersion
	Test time 10mins.	Test time 10mins.	Test time 10mins. max 200	Test time 10mins.	Test time 10mins.	Test time 1min/m² minimum 3 mins.	Test time 1min/m² minimum 3 mins.	Test time 30mins.	Test time 30mins.
									
Non protect. 0	IP 00	IP 01	IP 02	10l/min 80kN:m²	10l/min 80kN:m²	12.5l/min 30kN:m²	100l/min 100kN:m²		
Protected against solid objects greater than Dia. 50 mm. 1	IP 10	IP 11	IP 12	IP 13					
Protected against solid objects greater than Dia. 12 mm. 2	IP 20	IP 21	IP 22	IP 23					
Protected against solid objects greater than Dia. 2.5 mm. 3	IP 30	IP 31	IP 32	IP 33	IP 34				
Protected against solid objects greater than Dia. 1.0 mm. 4	IP 40	IP 41	IP 42	IP 43	IP 44	IP 45	IP46		
Dust protected. 5					IP 54	IP 55	IP 56		
Dust-tight 6						IP 65	IP 66	IP 67	IP 68

Form of Internal Separation

IEC 61439-1 standard defines different means of separation, known as forms of dividing switchboards sections into separate compartments, essentially for the protection of life and property. This separation is achieved by barriers or partitions and distinguishable basically by 4 form of separation

Form 1



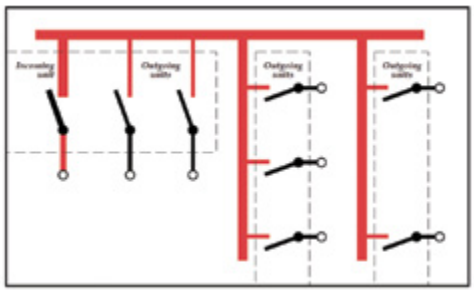
i. Busbars are not separated from the functional units
ii. Functional units are not separated from other functional units
iii. Functional units are not separated from any incoming or outgoing termination
iv. Busbars are not separated from any incoming or outgoing termination

Form 2

Form 2 defines Assemblies which are enclosed so as to provide protection against contact with any internal live parts or components, and where is internal separation of the busbars from functional units

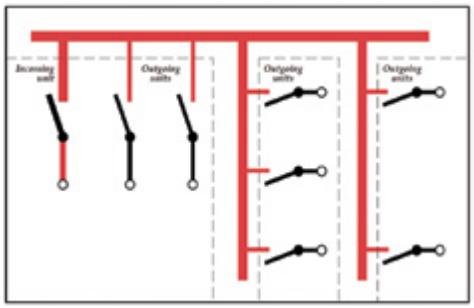
i. Busbars are separated from the functional units
ii. Functional units are not separated from other functional units

Form 2a



Basic form as above.However, with this method terminals are not separated from the busbars, or each other.

Form 2b



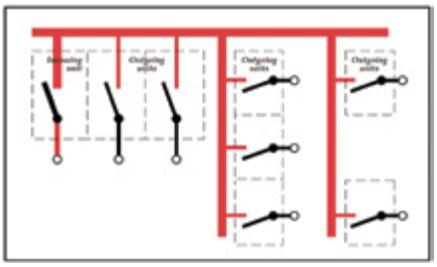
Main criteria as FORM 2. Busbars separation is achieved by insulation or metallic/non metallic rigid barriers or partitions. Terminals are therefore separated from the busbards, but not from functional units or each other.

Form 3

Form 3 defines Assemblies which are enclosed so as to provide protection against contact with internal live parts or components, and in which there is internal separation of the busbars from functional units and separation of all functional units from each other.

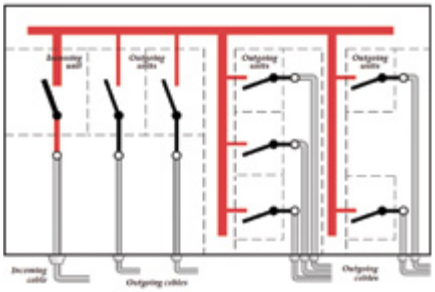
i. Busbars are separated from the functional units
ii. Functional units are separated from other functional units
iii. Functional units are separated from any incoming or outgoing termination
iv. Incoming and outgoing terminals are not separated from each other

Form 3a



Basic form as above. Terminals are not separated from the busbars, or each other.

Form 3b



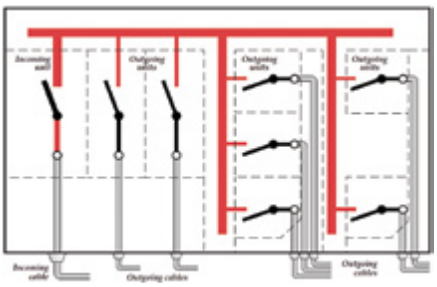
As basic FORM 3. Busbar separation is achieved by metallic or non-metallic rigid barrierr or partitions. Terminals are therefore separated from the busbars, but not from each other.

Form 4

Form 4 covers overall Assemblies which are enclosed so as to provide protection against contact with internal live parts or components, and in which there is internal separation of the busbar system from functional units and separation of all functional units from each other. Incoming and outgoing terminals are also required to be separated from the busbars and from each other.

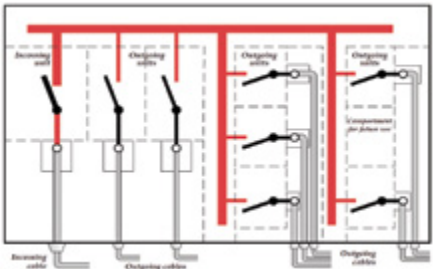
i. Busbars are separated from the functional units
ii. Functional units are separated from each other
iii. Terminations to functional units are separated from each other

Form 4a

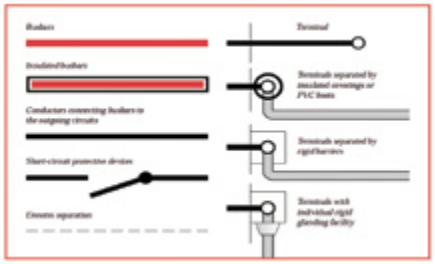


As basic Form 4. Busbars separation is achieved by insulation or metallic/non metallic rigid barriers or partitions. Cable are terminated within the same compartment as the functional unit. Cables may be glanded else, e.g. in a common cabling chamber.

Form 4b



As main critera for FORM 4. All separation is achieved by metallic or non-metallic rigid barriers or partitions. Terminal are external to the functional unit compartment and enclosed in their own compartment by means of rigid barriers or partitions. Cable may be glanded elsewhere, e.g. in a common cabling chamber.



Notes:
Key-throughout

FACILITIES




- 8,000sqm Factory includes four (04) production lines, one (01) powder coat painting shop, two (02) electrical assembly workshops, equipped with new modern CNC machines from Japan and Germany

PROCESS & CAPACITIES

Laser Cutting Capacity:
3050 x 1550 x 200 mm,
thickness up to 25 mm (mild steel)


Punching Machine Capacity:
2500 x 1250 mm, up to 6.4 mm
(mild steel)


Bending Machine Capacity:
1300kN, up to 3100 mm length


We have highly qualified TIG / MIG welders
We use 6-axis welding robot with flexible jigs / fixtures.

OUR STRENGTH - YOUR BENEFITS

- Highly skilled & experienced staff who is stable, closed and loyal to the company.
- Modern machines and new high technology
- High flexibility in production capacity (capable of working to 2 to 3 shifts) for fastest delivery time.
- We accept small orders as well as big orders.
- High quality materials accepted by all global customers.
- Strong relationships with suppliers and partners.
- Highly reliable products assured by our professional inspection and quality control process.
- Annual technical training in Japan for engineers and technicians for learning new technologies.

Best Quality
Best Services
Competitive Price

ANT Switch board - Your Reliable Partner

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