ZENITH SWITCHGEAR (M) SDN BHD (1297154-T), AN INNOVATIVE GREEN MV SWITCHGEAR ONLY OF ITS KIND FOR SAFE & RELIABLE USAGE

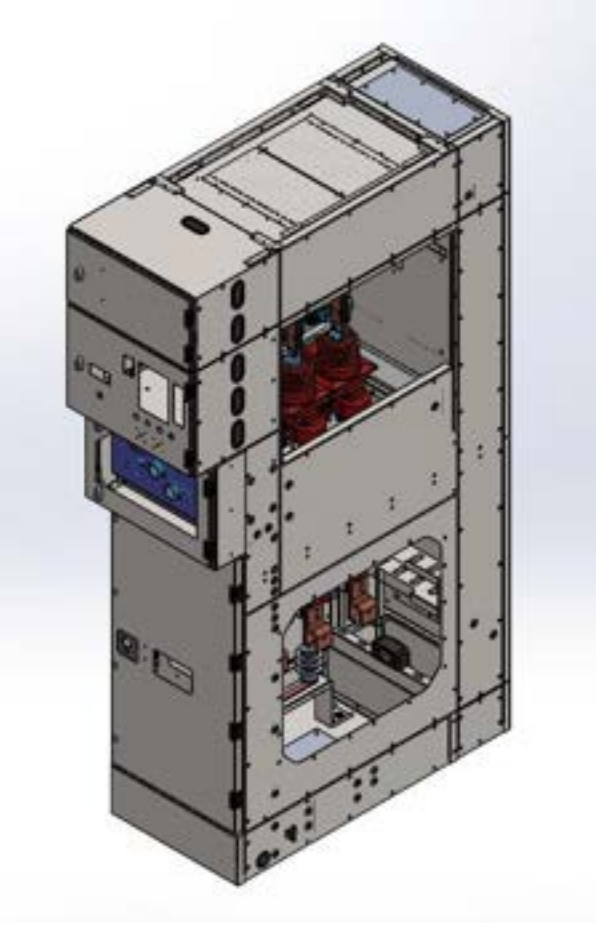
1. ZSD12-T300*/40kA FUSE SWITCH PANEL
2. ZSD12-630/1250A**-25kA-DS-VCB PANEL

APPLICATIONS: 3.6/7.2/12/17.5kV DISTRIBUTION SUBSTATIONS, SUPPLY FOR VFD CONTROLLED MOTOR STATIONS, WATER TREATMENT SUPPLY & PUMPING STATIONS, P.F. CAPACITOR SWITCHING STATIONS.

- *FULLY TYPE TESTED TO COMPLY WITH IEC STANDARDS*
- *www.zenithswitchgear.com.my*
- **RANGE OF MV DIN FUSES FROM 50~315A 40/50kA*
- *** SELECTION OF 630A 25kA OR 1250A 25kA VCBS.*

ZSD12 DRY AIR INSULATED GREEN SWITCHGEAR

INDEX OF ZSD12-DS-VCB/FS PANEL TECHNICAL BROCHURE



1. KEY COMPLYING STANDARDS OF ZSD12 PANELS

- IEC 62271-200 / IEEE/ANSI C37: AC Metal-enclosed Switchgear and Control Gear for rated voltage above 1kV and up to and including of 52kV
- IEC 60694-2002: Common Specification for HV Switchgear & Control Gear
- IEC 62271-100: HV AC Circuit Breakers
- IEC 62271-102: HV AC Disconnectors and Earthing Switches
- IEC 62271-103: Switches for rated voltage above 1kV up to and including 52kV
- IEC 62271-105: AC Switch-fuse combination
- IEC 62271-106: AC Contactors & Contactor based Motor Starters

2. NORMAL SERVICE CONDITIONS OF ZSD-FUSE PANEL

- Installation site： Indoor
- Installation Environment: No fire, no explosion, no serious pollution, no chemical corrosion, no severe vibration environment.
- Ambient temperature: -30℃～+55℃.
- Altitude：≤1000m
- Relative humidity: Daily average relative humidity ≤ 100%. Monthly average relative humidity≤100%
- Earthquake intensity: ≤ 5.5-7G Richter Scale

Note: When used in ambient above 40℃, a derating factor is required in accordance with IEC standards. Consult Zenith Switchgear.

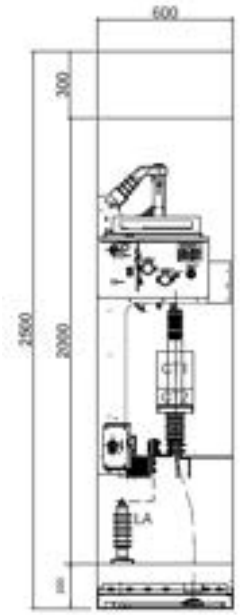
3.1. DESIGN FEATURES

ZSD12 Metal Enclosed Dry Air Insulated Green Switchgear

1. It is an integration of many years' knowledge and experience of leading switchgear technology.
2. It is a safe and ideal distribution power switchgear for the world.
3. It is a modular product integrating the mechanical and electrical designs, offering all the possible configuration models.
4. Other than IEC, ZSD12-FUSE PANEL also complies with DET NORSKE VERITAS and extended its service from onshore to offshore projects.
5. ZENITH SWITCHGEAR is capable of offering quality power distributing solutions and providing worldwide service support at any time.

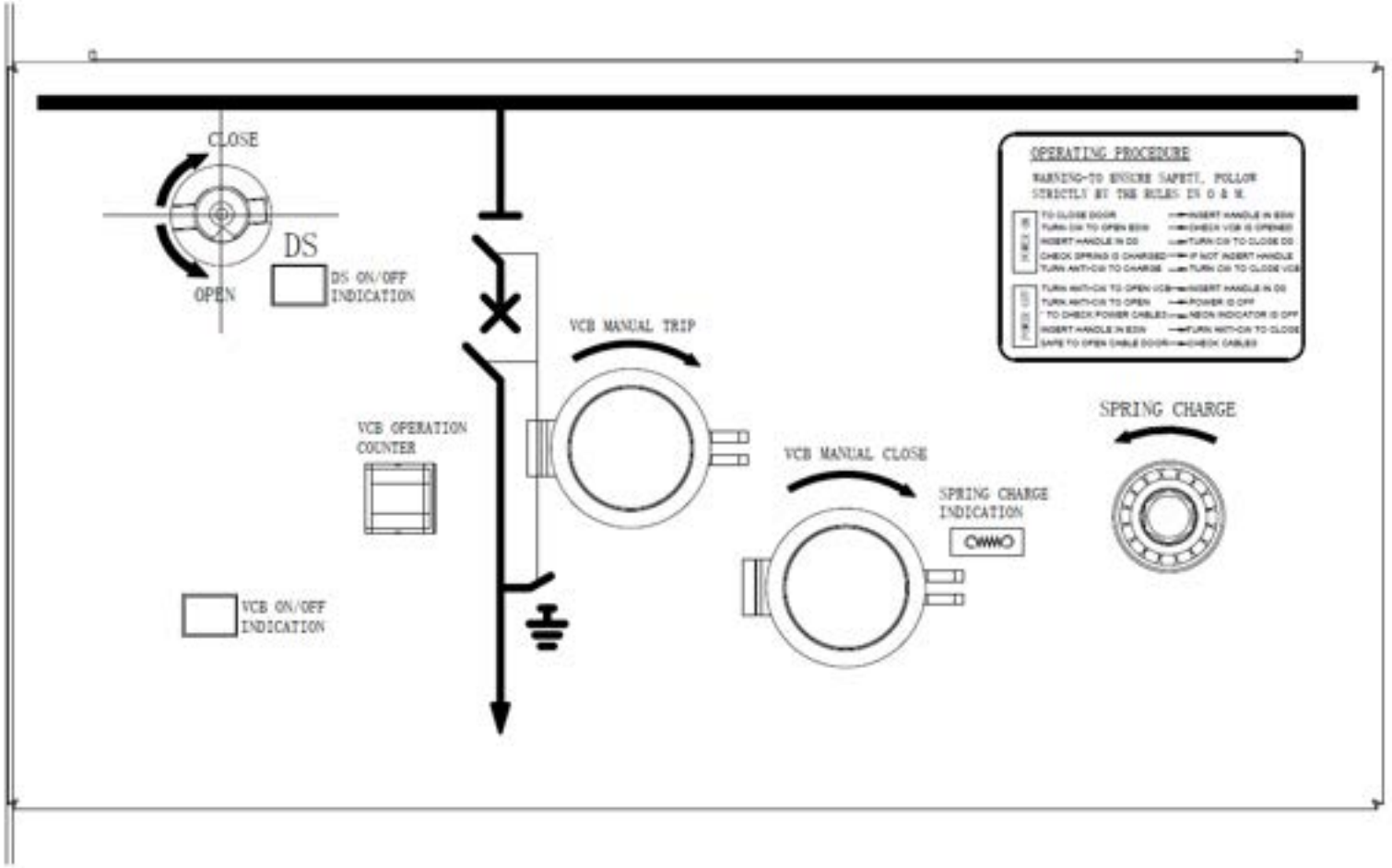
3.2. KEY DESIGN FEATURE - ZSD12 DRY AIR INSULATED SWITCHGEAR

- 1. ZSD12 12KV DS-VCB-CT BUSHING-ESW - 630/1250A 25KA (FOR SUBSTATION APPLICATION WITH PROTECTION RELAYS)
- 2. ZSD12 12KV DS-VCB-FUSED SWITCH-ESW - 630A/T50-315A/50KA
- 3. ZSD12 12KV DS-LBS-ESW- 630A 20KA

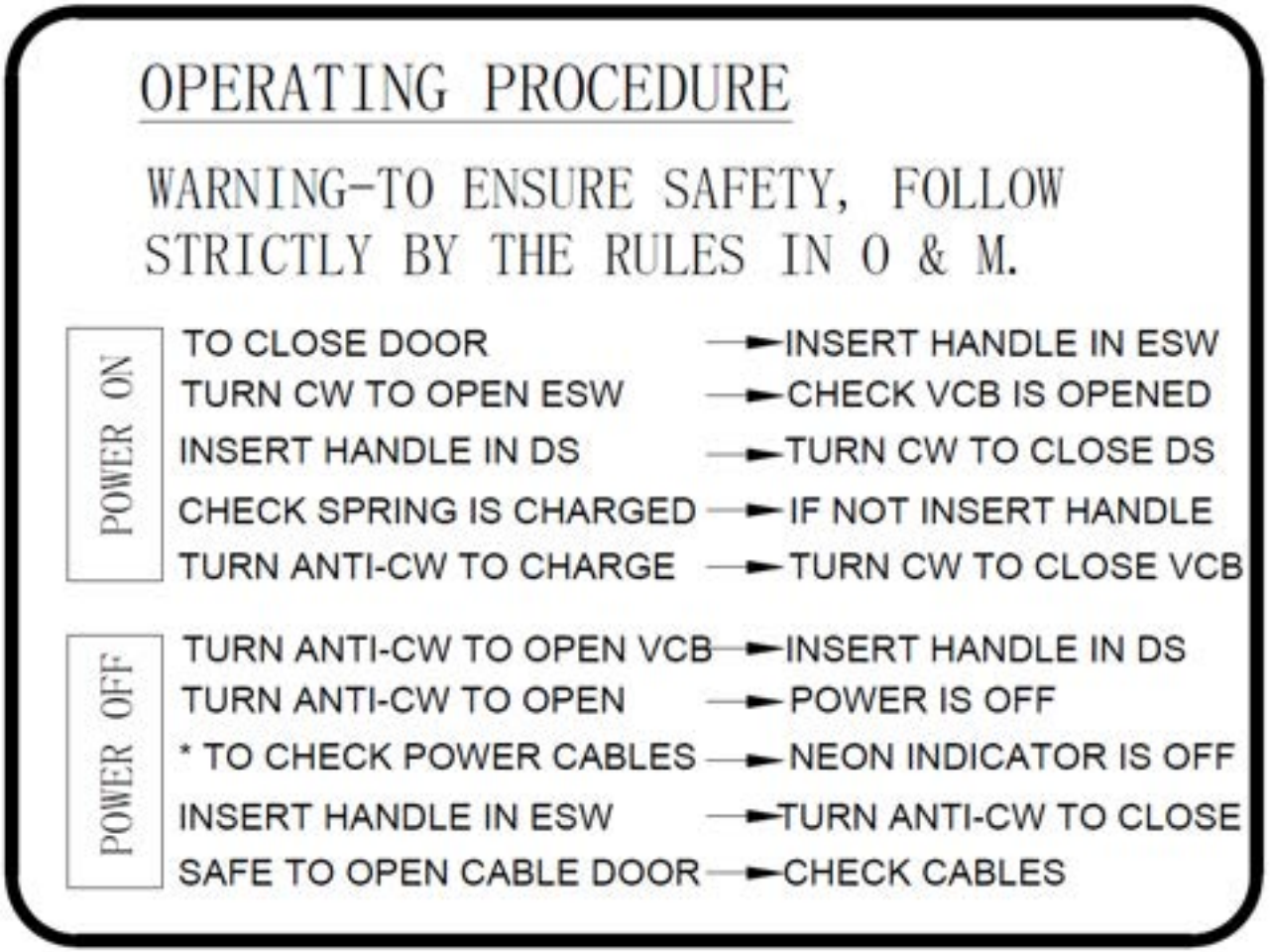


- The important features are:
- 1. Modular epoxy embedded design DS-VCB-CT BUSHING-ESW in a Dried air insulated enclosure.
- 2. Safe mechanical interlocks between DS/VCB/ESW/Cable Door.
- 3. 10,000 operation life for motorised VCB mechanism.
- 2. Compact dimensions of 500/600/900W, 960/1200/1500D, 2000/2200/2500H. (depending whether an arc diffusion chamber is required);
- 3. Power frequency withstand voltage up to 38kV, impulse withstand 75/95kV or 95/110kV;
- 4. Low partial discharge of less than 15pC;
- 5. Front or back access / top or bottom access of power cables with amper working space;
- 6. ETAH Epoxy CTs are used.

3.3. DESIGN FEATURES – VERY SAFE INTERLOCKS & OPERATION PROCEDURES

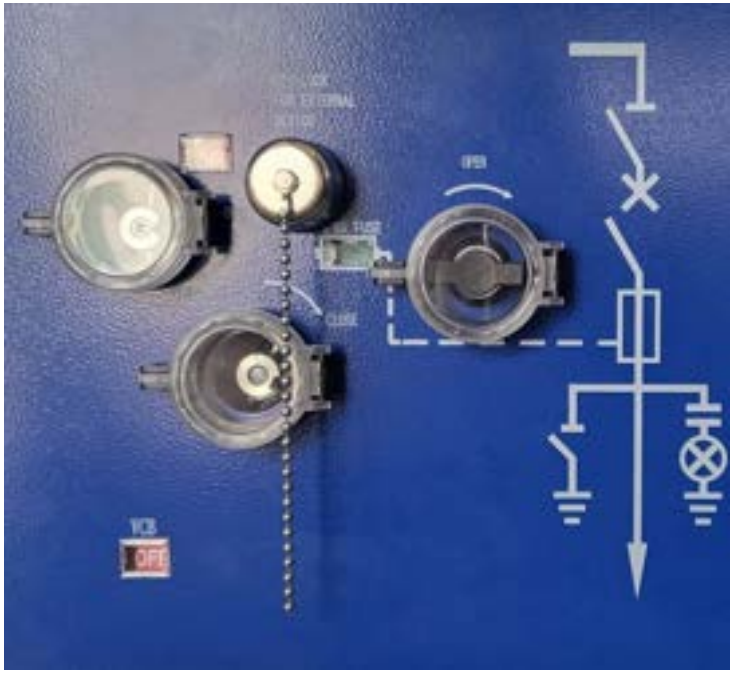


3.4. DESIGN FEATURES – VERY SAFE INTERLOCKS & OPERATION PROCEDURES



3.5. DESIGN FEATURES – KEY INTERLOCKS

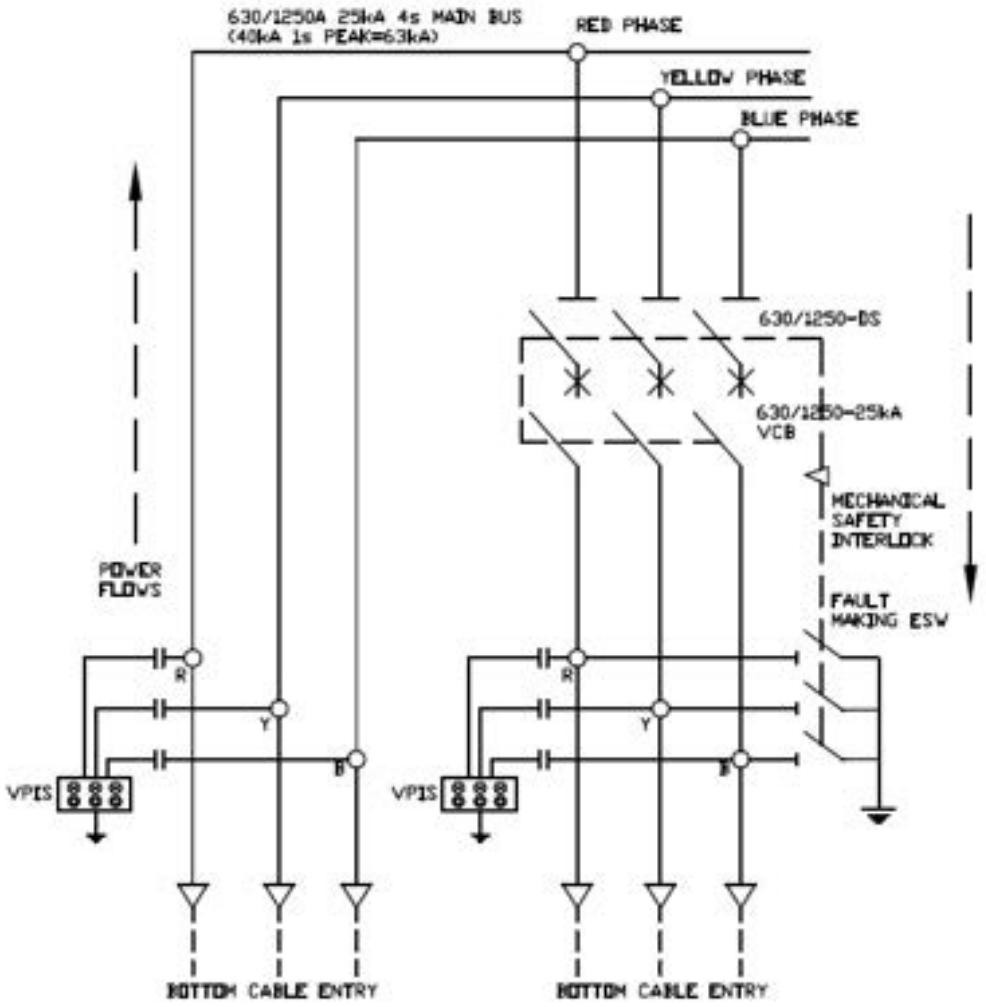
- 1. KEY INTERLOCKS ARE POSSIBLE TO INSTALL IN THE DISCONNECTED SWITCH AND THE EARTHING SWITCH.
- 2. KEY CAN ONLY REMOVED AT CLOSED POSITION.
- 3. KEY CAN ONLY BE REMOVED AT OPENED POSITION.



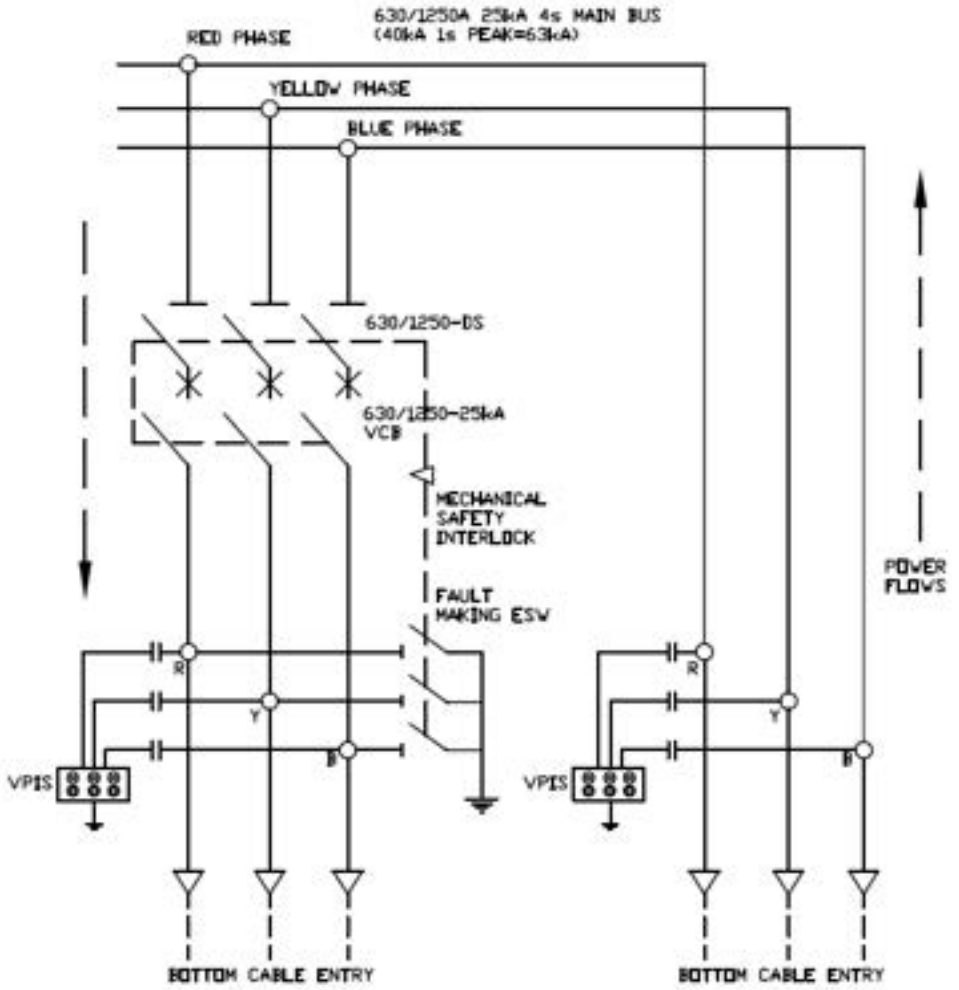
DISCONNECTED SWITCH

EARTHING SW

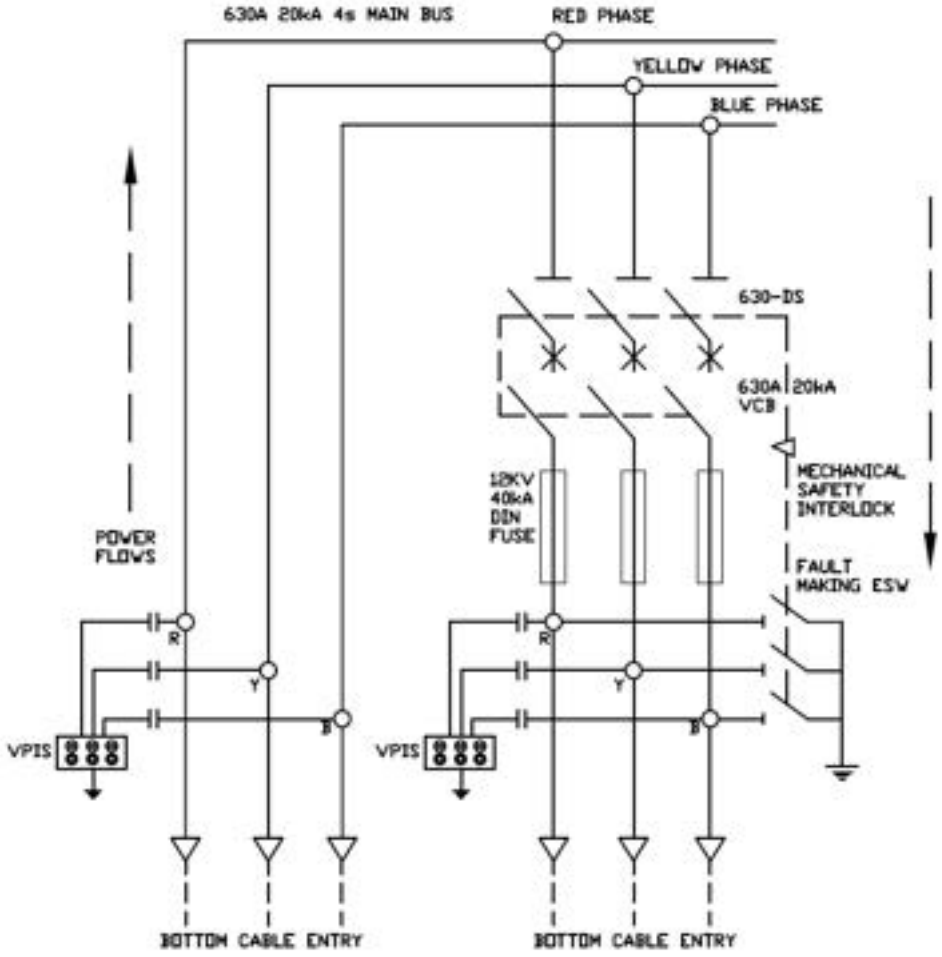
4.1. DESIGN CONFIGURATION - ZSD12-DS-VCB LHS IN-OUT PANEL



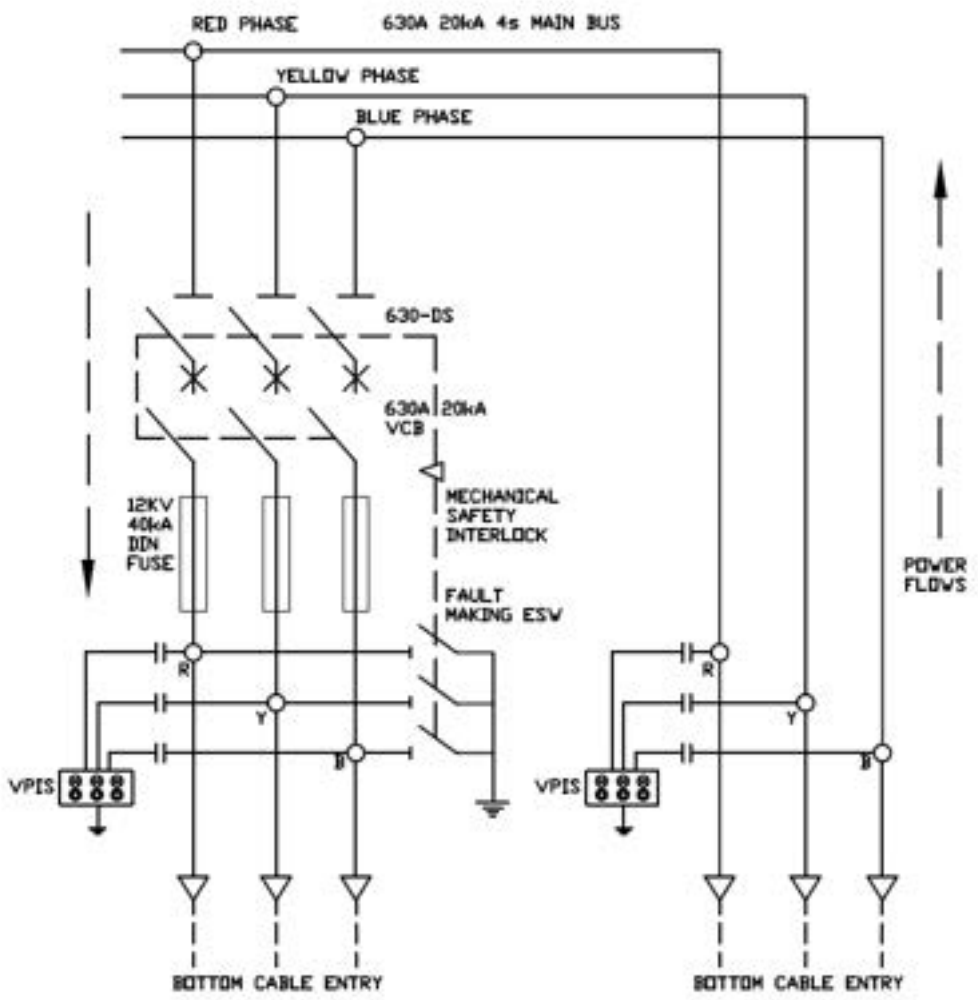
4.2. DESIGN CONFIGURATION - ZSD12-DS-VCB RHS IN-OUT PANEL



4.3. DESIGN CONFIGURATION - ZSD12-DS-FS LHS IN-OUT PANEL

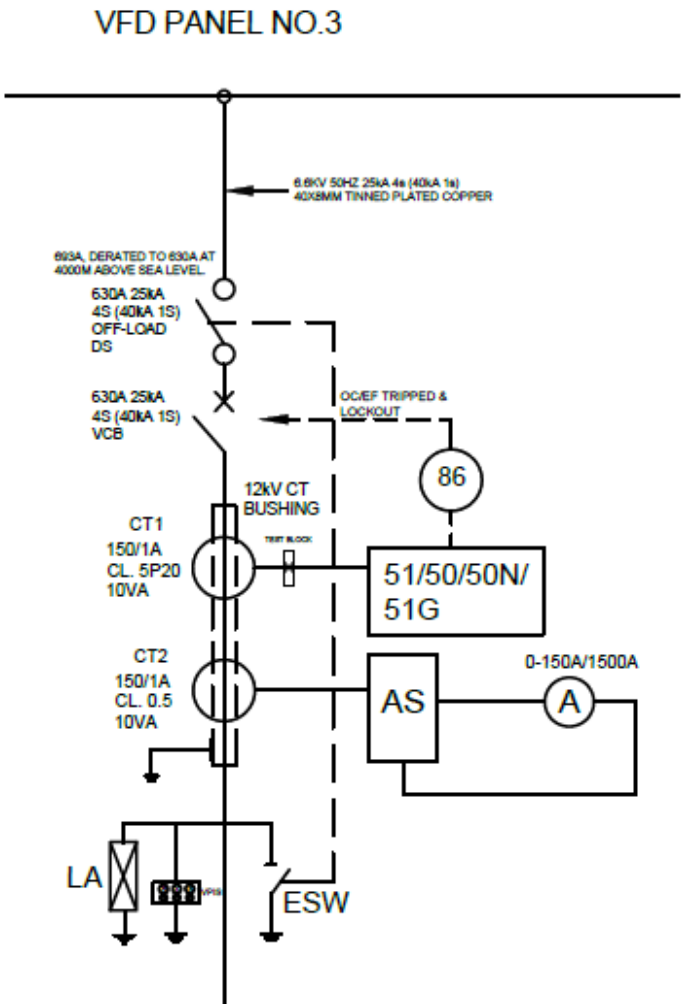


4.4. DESIGN CONFIGURATION - ZSD12-DS-VCB RHS IN-OUT PANEL

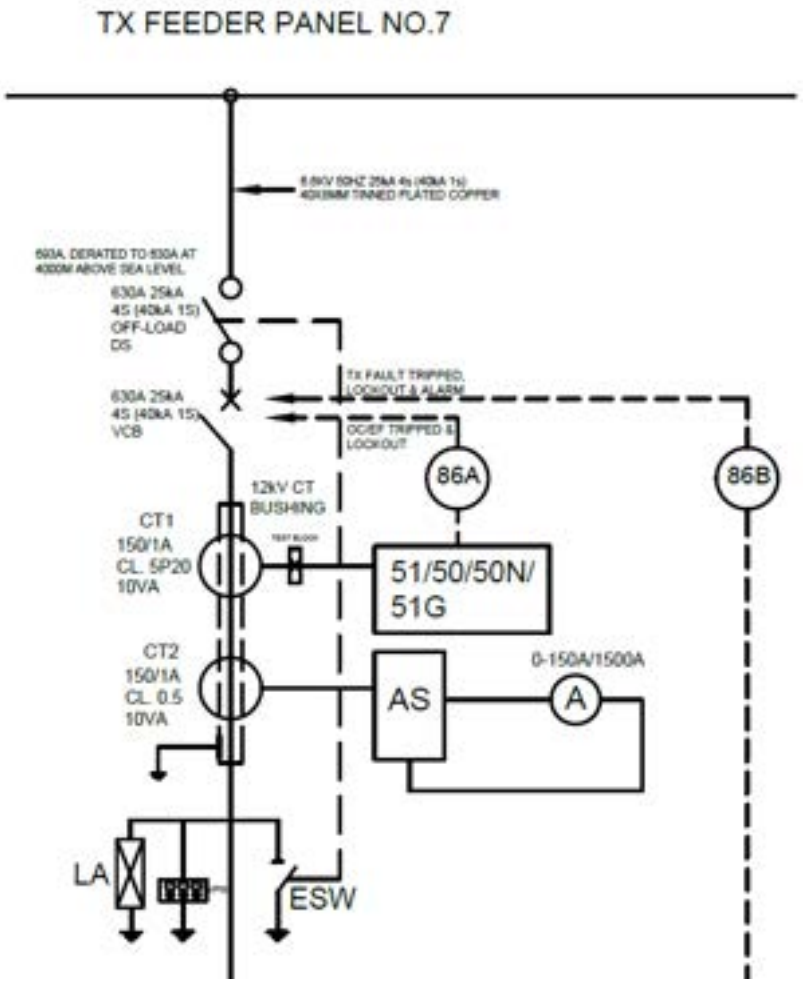


4.5. ZSD12-PANELS IN SS IP54 ENCLOSURE

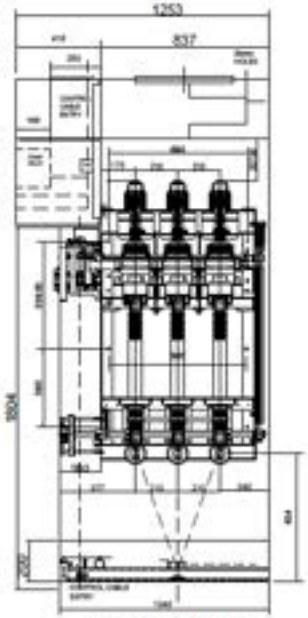
4.6. ZSD12-DS-VCB PANEL FOR VFD SUPPLY

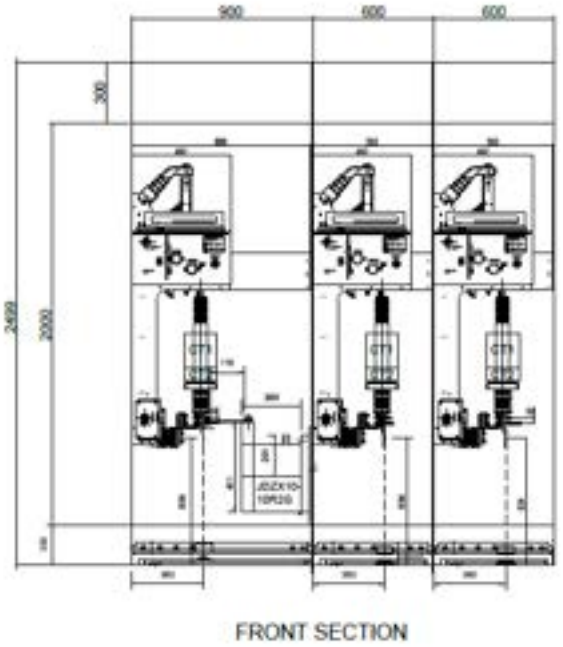


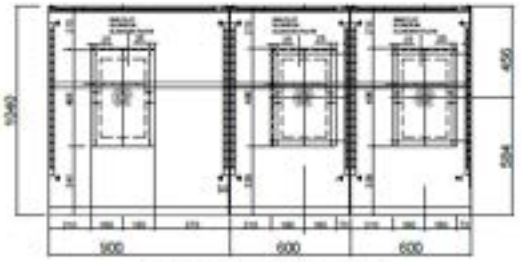
4.7. ZSD12-DS-VCB PANEL FOR TX SUPPLY

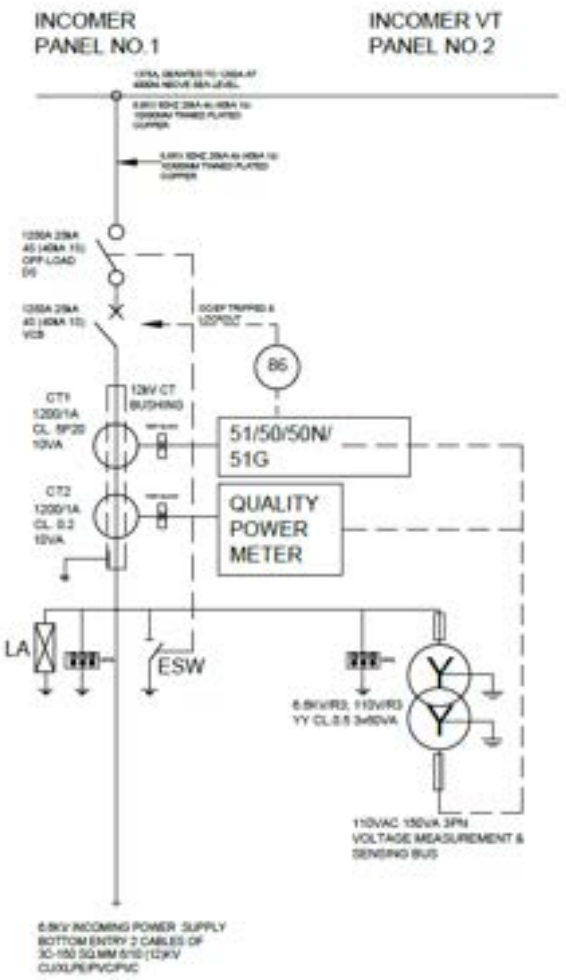


4.8. DESIGN CONFIGURATION - ZSD12-DS-VCB INC C/W VT

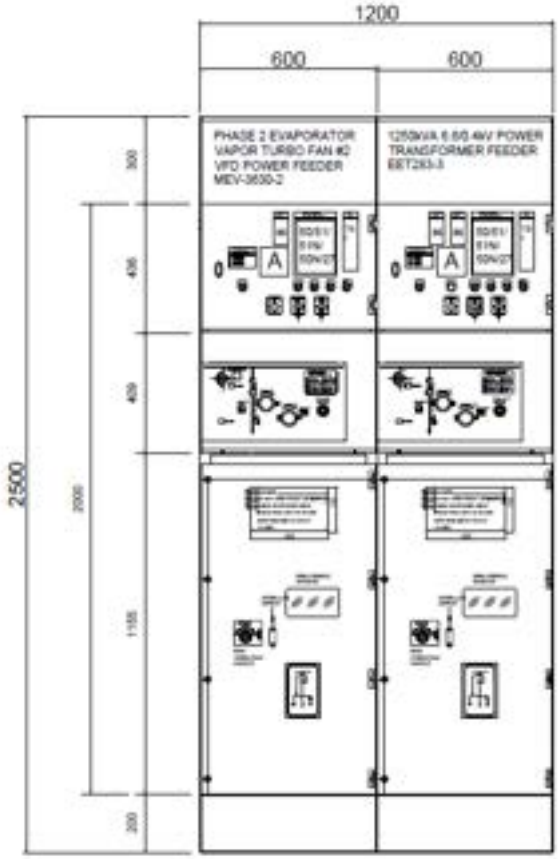




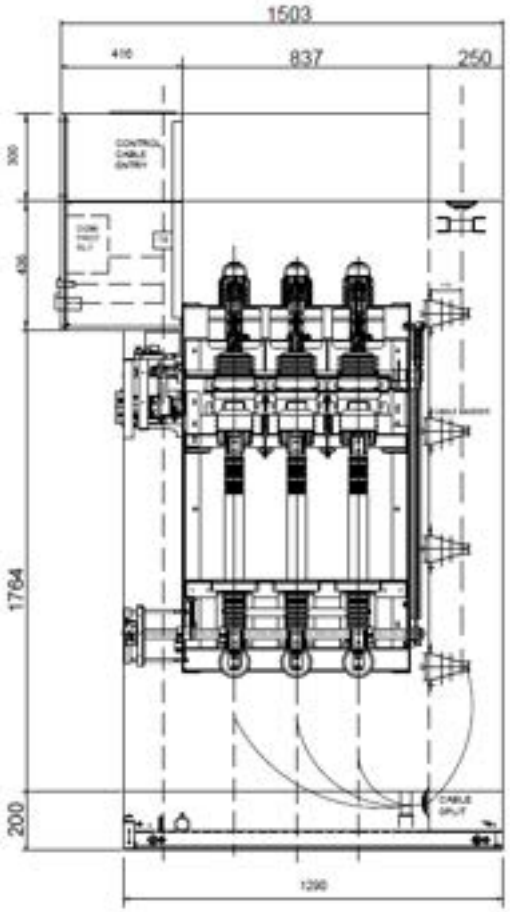




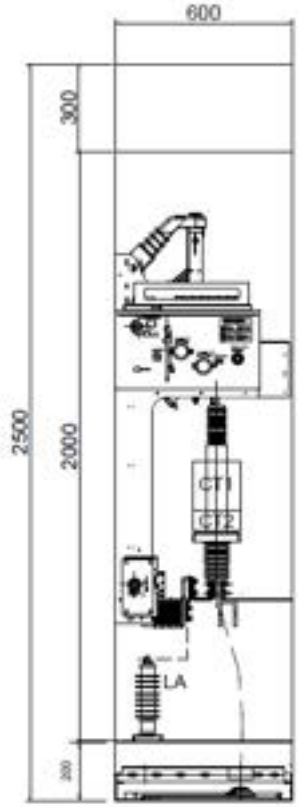
4.9. DESIGN CONFIGURATION - ZSD12-DS-VCB C/W PROTECTIONS



FRONT VIEW



SIDE SECTION



FRONT SECTION

5.1. ZSD12-DS-VCB TECHNICAL DATA

Item No.	Description	Unit	Parameters
1	VCB MODEL NUMBER	C	ZSD12-630/1250-25
1	Maximum rated voltage	kV	12
2	Rated power-frequency withstand voltage (1 min rms)	kV	38/45
3	Rated lightning impulse withstand voltage (peak)	kVp	75/85
4	Rated frequency	Hz	50/60
5	Rated current	A	630
6	Phase centers (P CC)	mm	210
7	Rated peak short-circuit making current	kAp	62.5
9	Rated load breaking current	A	630
10	Rated short time withstand current	kA	25
11	Duration of short circuit current	s	4
13	Operating sequence	Duty	O-0.3s-CO-180s-CO
14	Rated closing/opening/tripping time	ms	20~50 / 15~35 / <60
15	Closing spring energy storage		Motor spring charge
16	Control supply voltage	V	220VAC

5.2. ZSD12-DS-FUSED SWITCH PANEL TECHNICAL DATA

Item No.	Description	Unit	Parameters
1	FUSED PANEL MODEL NUMBER	MODEL	ZSD12-TXXX/50
1	Maximum rated voltage	kV	12
2	Rated power-frequency withstand voltage (1 min rms)	kV	38/45
3	Rated lightning impulse withstand voltage (peak)	kVp	75/85
4	Rated frequency	Hz	50/60
5	Rated current	A	50~315
6	Phase centers (P CC)	mm	210
9	Rated short-circuit breaking current	kA	50
13	Operating sequence	Duty	O-0.3s-CO-180s-CO
14	Rated closing/opening/tripping time	ms	20~50 / 15~35 / <60
15	Closing spring energy storage		Motor spring charge
16	Control supply voltage	V	220VAC

6.1. DIN STANDARD FUSE SELECTION TABLE FOR MOTOR PROTECTION

Table 2

Type	Rated voltage (KV)	Rated current of fusing part (V)	Main dimension (mm)		Rated cut-off current (KA)
			Length	Diameter	
WDL*J	7.2/12	25、31.5、40、50、63	292	Φ51	50
WFL*J		50、63、80、100		Φ76	
WKL*J		125、160			
WXL*J	7.2	160、200、224、250、315		Φ88	
	12	160、200			
WFN*J	7.2	25、31.5、40、50、63、80、100、125	403	Φ76	
	12	25、31.5、40、50、63、80、100			
WKN*J	7.2	160、200、224、250、315			
	12	125、160			
WXN*J		200		Φ88	
WFM*J	7.2	25、31.5、40、50、63、80、100、125	442	Φ76	
	12	25、31.5、40、50、63、80、100			
WKM*J	7.2	160、200、224、250、315			
	12	125、160			

6.2. DIN STANDARD FUSE SELECTION TABLE FOR TX PROTECTION

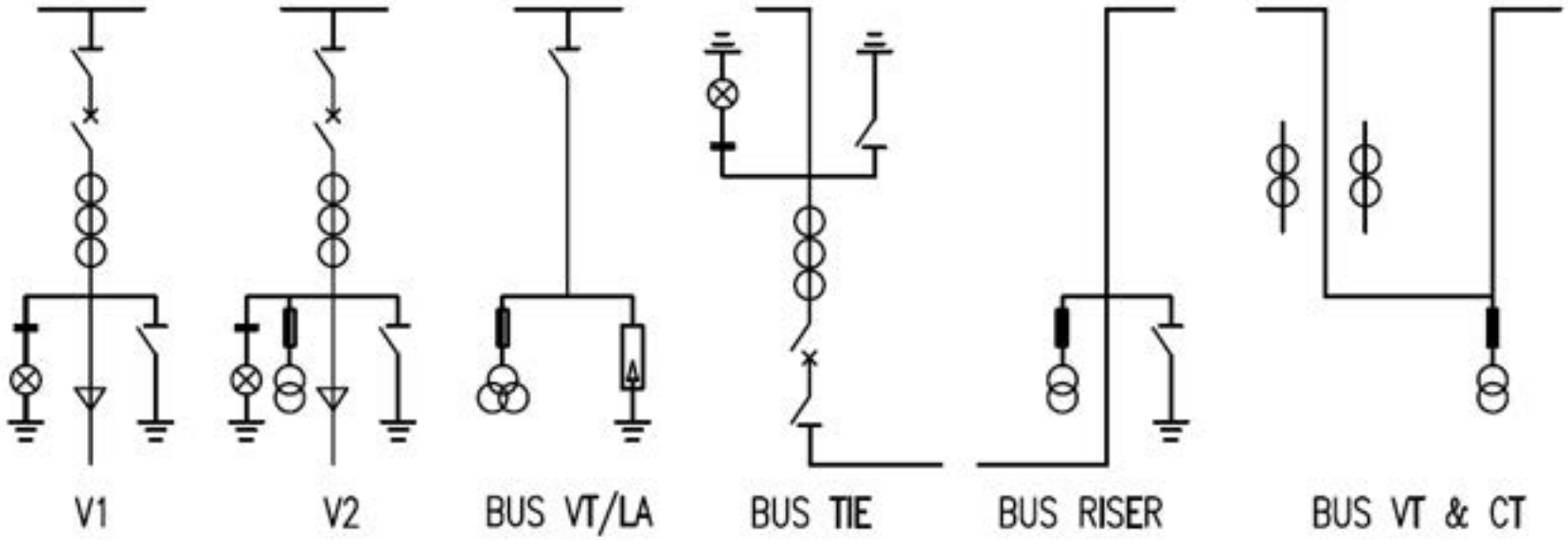
Type	Rated voltage (KV)	Rated current of fusing part (A)	Rated cut-off current (KA)	Main dimension (mm)	
				Diameter	Length
SKL*J	12	125	50	Φ76	292
SXL*J		160、200		Φ88	292
SDM*J		6.3、10、16、20、25、31.5、40、50、63		Φ51	442
SFM*J		63、80、100、125、160		Φ76	442
SXM*J		200、250		Φ88	442
SDL*J	24	3.15、6.3、10、16	50	Φ51	292
SFL*J		20、25、31.5、40、50、63		Φ76	292
SDM*J		3.15、6.3、10、16、20、25、31.5、40		Φ51	442
SFM*J		50、63、80、100		Φ76	442
SXM*J		125、160		Φ88	442
SDM*J	40.5	3.15、6.3、10、16	31.5	Φ51	442
SDQ*J		10、16、20		Φ51	537
SFQ*J		25、31.5、40、50		Φ76	537
SXQ*J		63、80		Φ88	537

7. Mechanical Interlocks

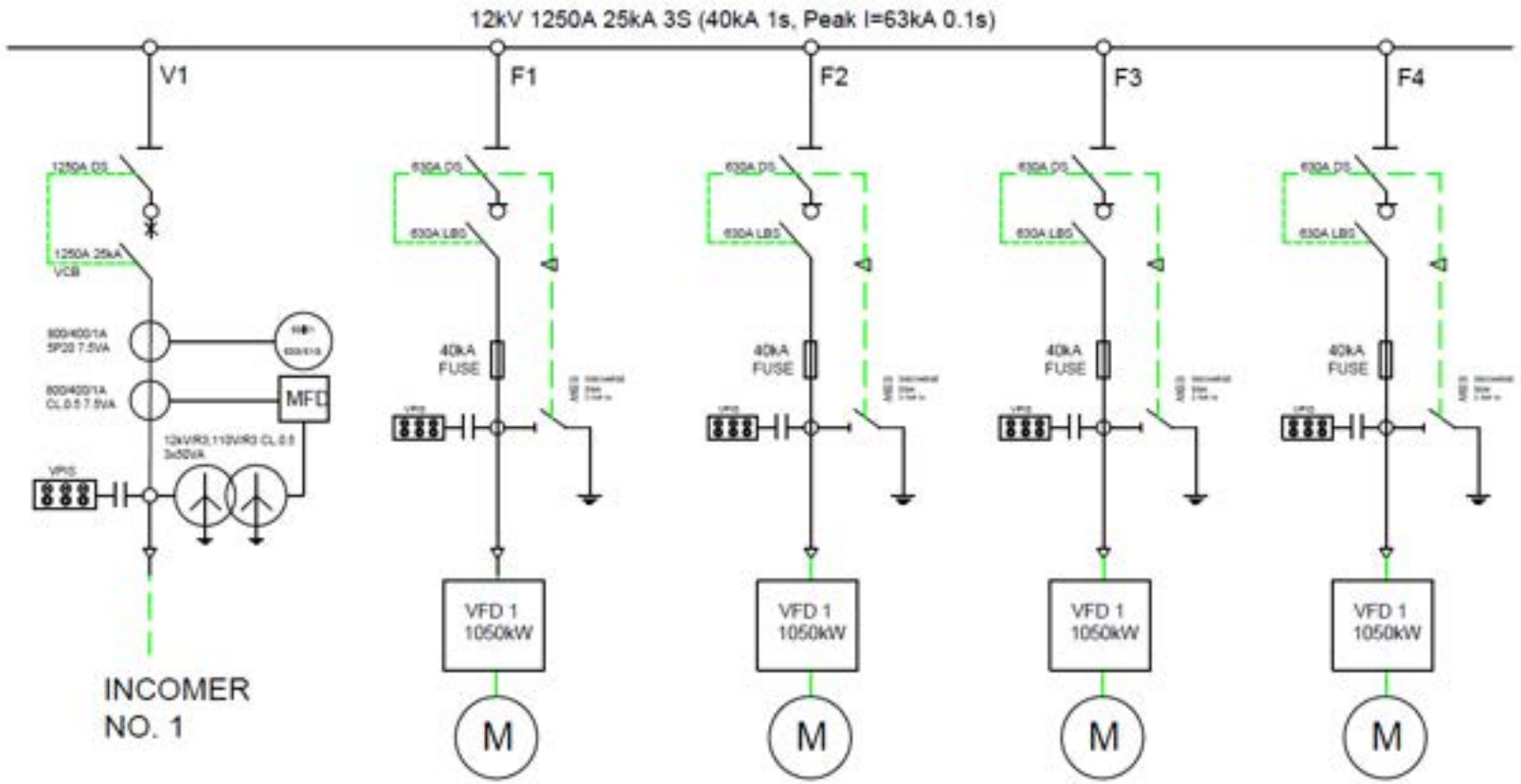
1. When Main Isolator is opened & VCB is opened, subject to no power supply at the cable side, Earthing Switch can be closed.
2. When Earthing Switch is opened, subject to VCB is opened, Main Isolator can be closed.
3. When Earthing Switch is opened, subject to Main Isolator is closed, then VCB can be closed.
4. When Earthing Switch is opened, subject to Main Isolator is closed, then VCB can be opened.
5. When Earthing Switch is opened, subject to VCB is opened, Main Isolator can be opened.
6. The front bottom door can only open when the Earthing Switch is closed. This would ensure 100% safety when need to access the VT and cable chamber inside the cubicle.

NOTE: The Earthing Switch is design and type tested to be a fault making type earthing switch.

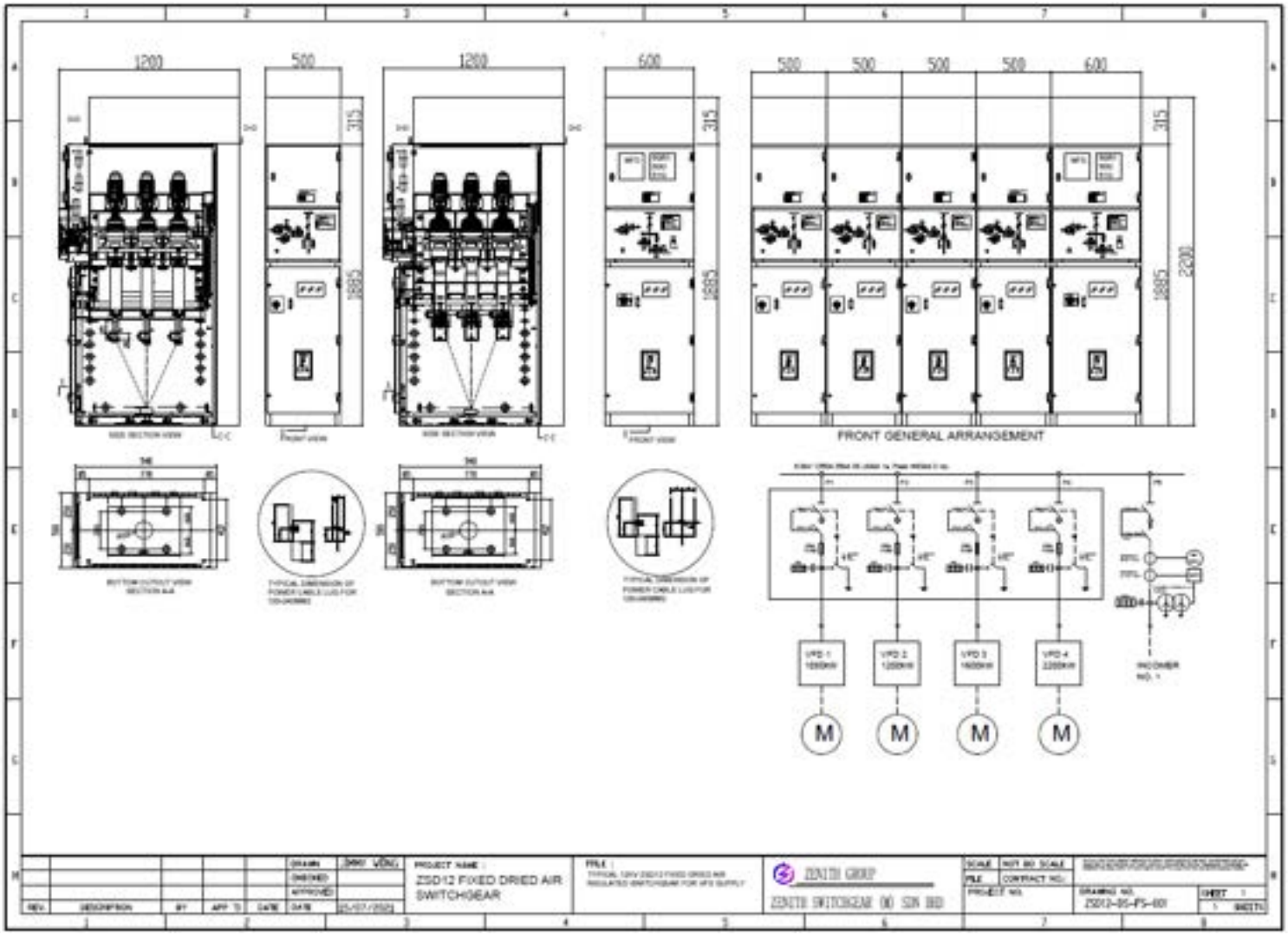
8.1. TYPICAL ZSD12 DAIS SCHEMES



8.2. TYPICAL ZSD12 DAIS FOR VFD PUMPING STATION



8.3. TYPICAL ZSD12 SUBSTATION FOR VFD CONTROLLED MOTORS



9.1. SOME KEY USERS' REFERENCES

(1) 9 SETS OF 12kV ZSD12-DS-VCB PANELS
(2) 5 SETS OF 12kV ZSD12-DS-FS PANELS

PROJECT:
THE NETHERLAND SOLEK II

9.2. SOME KEY USERS' REFERENCES

2 SETS OF 12kV ZSD12-DS-FS PANELS

PROJECT: SOUTH AFRICA FOR SENEGAL MINE

9.3. SOME KEY USERS' REFERENCES

8 SETS OF 12kV ZSD12-DS-VCB PANELS C/W IEC 61850 METERING & PROTECTION

PROJECT:
ARGENTINA
AQUATECH
POWER PLANT

9.4. SOME KEY USERS' REFERENCES

3 SETS OF 12kV ZSD12-DS-VCB PANELS C/W VT METERING & PROTECTION

PROJECT: MALAYSIA KERTEH 3MW BIOMASS POWER STATION

9.5. SOME KEY USERS' REFERENCES

2 SETS OF IP54
OUTDOOR 12.5kV
ZSD12-DS-VCB
PANELS

PROJECT:
OMAN FLOUR
MIL POWER
SUPPLY
STATION

9.6. SOME KEY USERS' REFERENCES

7 SETS OF 12kV
ZSD12-630/T200-50
FS PANELS

PROJECT:
ABU DHABI
DESALINATION
PLANT

10.1. ZSD12-POWER CABLE TERMINATION & CT INSTALLATION

10.2. ZSD12 PANELS IN HOISTING MODE

10.3. ZSD12 PACKING STANDARD – ISPM 15 CERTIFICATION

11. Ordering information required

1. Primary schemes or ZENITH SWITCHGEAR ZSD12 Scheme Number of each switchgear used; Other types of Schemes are on request only.
2. Single line system diagram indicating the schemes with metering & protection details;
3. Rated voltage, rated current, rated short circuit breaking current, and rated short time current;
4. Plan view of substation layout or switchgear layout diagram;
5. Specification and type of incoming and outgoing power and control cables;
6. Specification and requirement of control, measurement and protection schemes of each type of switchgear panel;
7. Requirement of interlocks and automatic features if any;
8. Model/part numbers, specification and quantity of key switchgear components.
9. If bus duct is required, please specified the rated current, length and height of crossing and other detail dimensions;
10. If switchgear is used in special operating environmental condition, please specify clearly;
11. Other special requirements if any.

12. How to contact us?

ZENITH SWITCHGEAR (M) SDN. BHD.

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