

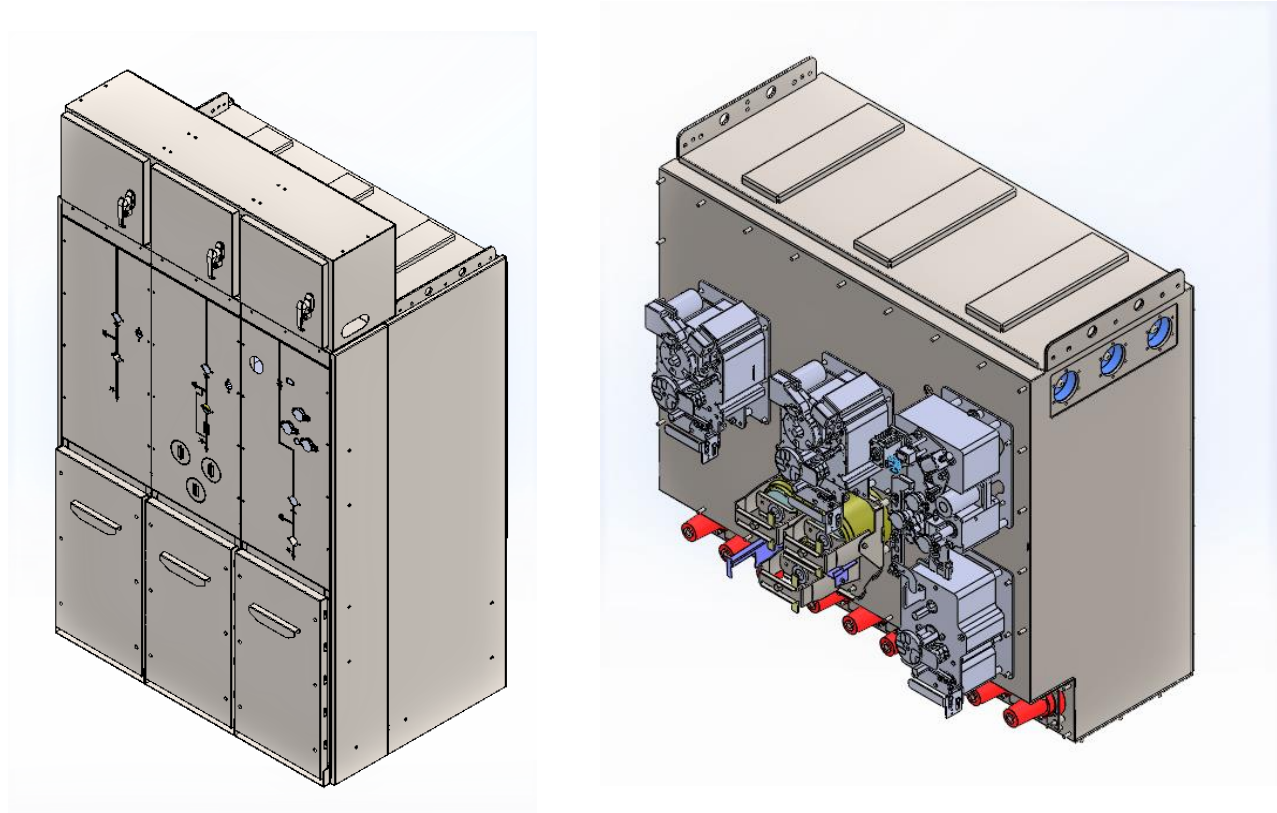


ZENITH SWITCHGEAR

ZSR

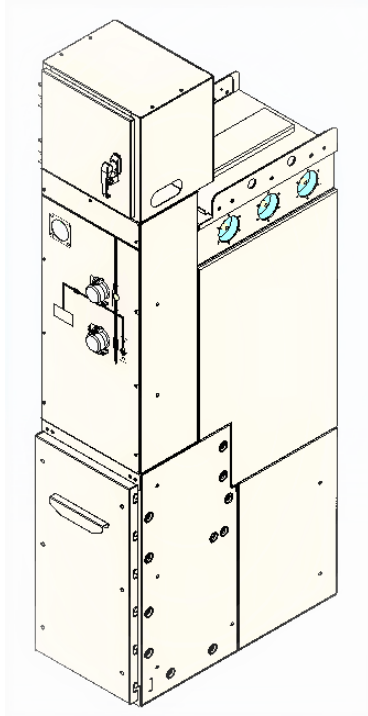
12/17.5/24kV SF6
RING MAIN UNITS

ZSR SF6 12/17.5/24kV RMU

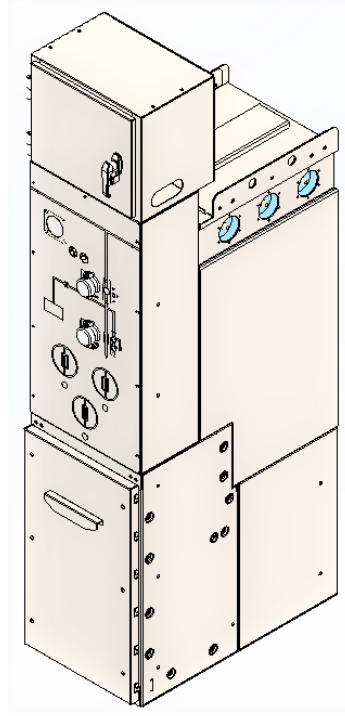


A PATTERN SWITCHGEAR DESIGN OF PERFECTION

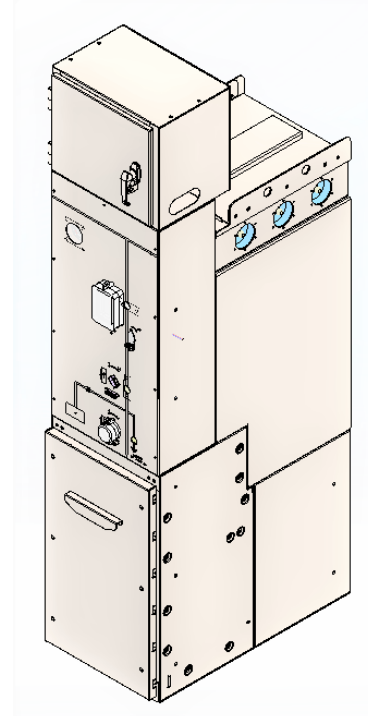
ZSR SF6 12/17.5/24kV RMU



C MODULE



F MODULE

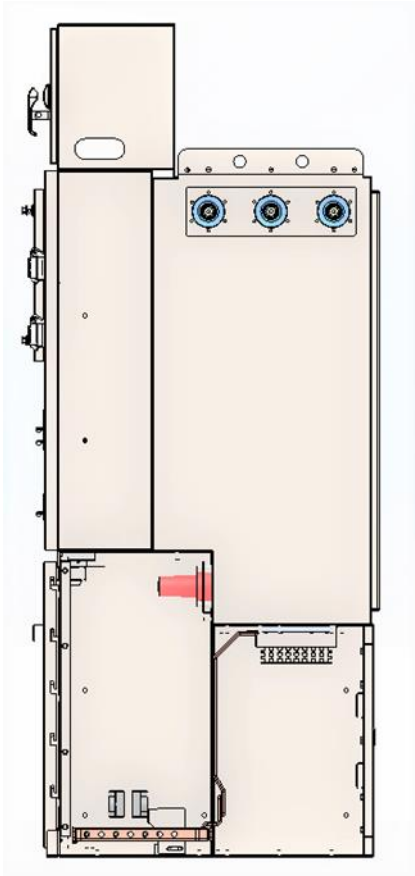


V MODULE

Index of ZSR12/17.5/24 SF6 RMU Technical Brochure

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1.0. ZSR RMU Key complying standards



IEC 62271-1	Common specifications
IEC 62271-200	Metal-enclosed switchgear and control gear
IEC 62271-100	MV circuit breakers
IEC 60265-1	MV Switches
IEC 62271-102	Disconnectors and earthing switches
IEC 62271-105	MV fuse switch
IEC 60529	Degrees of protection

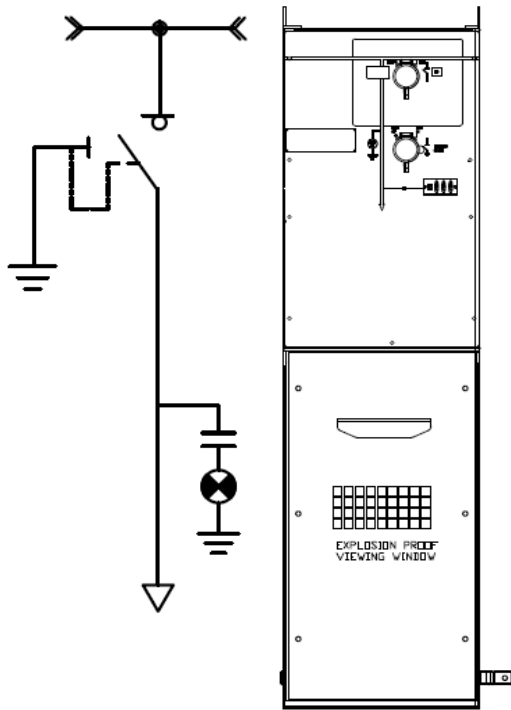
2.0. ZSR RMU Normal service conditions



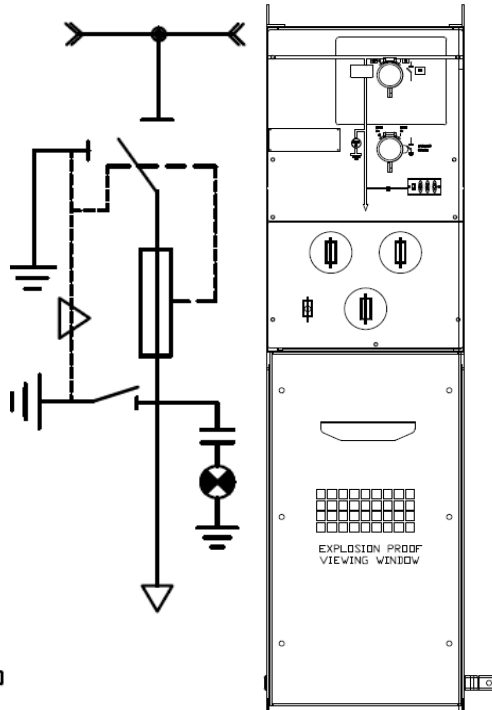
1. Ambient temperatures: -15° $+50^{\circ}$ C
 2. Max. daily average relative humidity: 95%
 3. Max. monthly average relative humidity: 90%
 4. *Max. height above sea level: 1000m
 5. Max. earth-quake: Grade 7 Richter Scale
 6. ZSR is an indoor switchgear usually installed in a secondary or package substation.
 7. Note: If ZSR is used in outdoor environment, then we provide a standard IP54 weatherproof enclosure.
- * Note: 24kV rating can be used for 12-17.5kV ratings up to 5000m above sea level.

3.1. ZSR RMU Basic standard modules

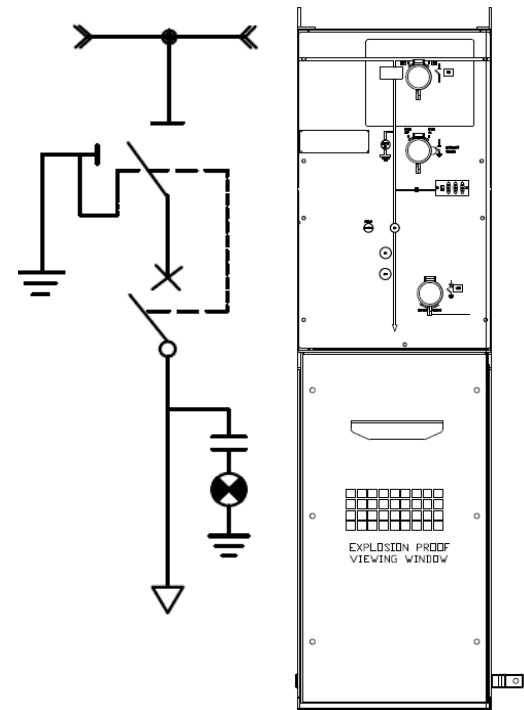
C Panel (LBS)



F Panel (FSW)

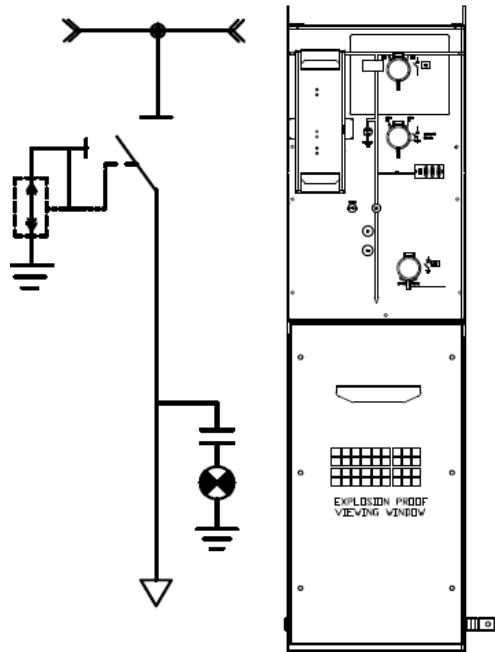


V Panel (VCB)

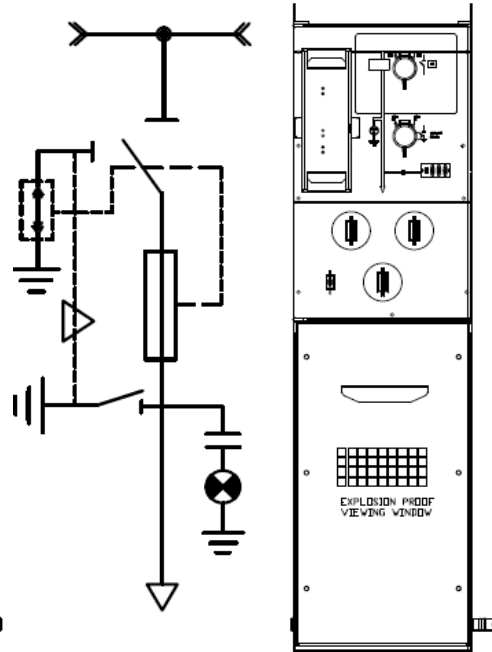


3.2. ZSR RMU Basic Standard Modules with MV Test Bushings

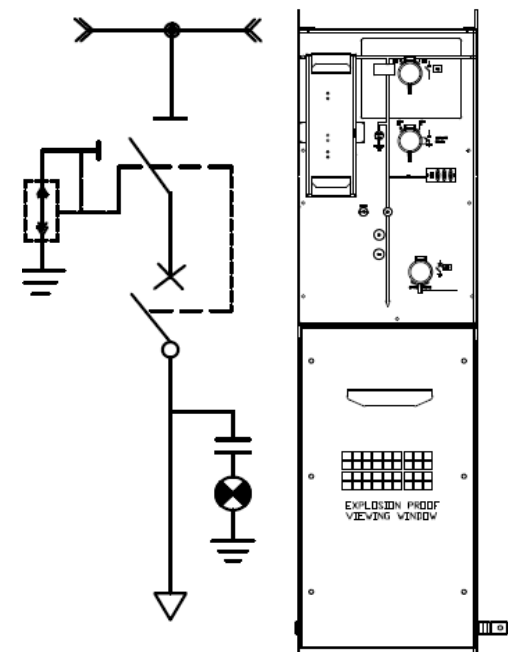
C Panel (LBS)



F Panel (FSW)



V Panel (VCB)



4.1. ZSR RMU Key design features

- Modular panel design
- Standard panel dimensions are used
- Easy to install and service
- Front access of power and control cables
- Back can install against the wall (100mm)
- Compact and save space
- Basically no maintenance is required
- Internal arc fault tested for safety

5.1. ZSR RMU General Technical Parameters			
Maximum rated voltage (kV)	12	17.5	24
Lightning impulse withstand voltage (kVp)	75/95	95	125
Power frequency withstand voltage (kV)	28/38	38/42	50
Frequency (Hz)	50/60	50/60	50/60
Normal rated current @ 40 ^o C	800/630	800/630	800/630
Short-time withstand current for main and earthing circuits (kA @ 3 seconds)	20/25	20/25	20/25
Peak withstand current for main and earthing circuits (kA)	50/63	50/63	50/63
Short-circuit duration (Seconds)	1	1	1
Internal fault: short -circuit current (kA)	20/25	20/25	20/25
Internal fault: short-circuit duration (Seconds)	1	1	1
Internal fault: type of accessibility	AFL/*AFLR		
Degree of protection (internal)	IP65		
Degree of protection (external)	IP41		
Degree of protection	IP54*		

Note: *1. On request of customers. *2. Application for outdoor installation..

5.2. Technical Data of C RMU Panel						
Maximum rated voltage	12 kV		17.5 kV		24 kV	
Insulation level						
Lightning impulse withstand voltage						
- to earth and between phases	75 kV _p	95 kV _p	95 kV _p		125 kV _p	
- across the isolating distance	75 kV _p	115 kV _p	115 kV _p		145 kV _p	
Power frequency withstand voltage						
- to earth and between phases	28 kV	38 kV	38 kV	42 kV	50 kV	
- across the isolating distance	32 kV	45 kV	45 kV	48 kV	60 kV	
Frequency	50/60 Hz		50/60 Hz		50/60 Hz	
Normal rated current @ 40° C	630 A	800 A	630 A	800 A	630 A	800A
Load break current	630 A	800 A	630 A	800 A	630 A	800 A
Short-circuit making current	50/63 kA		50/63 kA		40 kA	50/63 kA
Short-time withstand current	20/25 kA		20/25 kA		16 kA	20/25 kA
Short-circuit duration	1 s		1 s		1 s	
Switching operation class	E1		E1		E1	
Mechanical endurance class	M1		M1		M1	
Standard operating mechanism	Manual		Manual		Manual	
Optional operating mechanism	Motorised		Motorised		Motorised	
Filling pressure of SF ₆ (Absolute)	1.3bar		1.3bar		1.3bar	
Dimensions of ZSR-C Panel (WxDxH)	396/*420x750/950 x1496/1768mm		396/*420x750/950 x1496/1768mm		396/*420x750/950 x1496/1768mm	

Note: Model with MV test plugs

5.3. Technical Data of F RMU Panel

Maximum rated voltage	12 kV		17.5 kV		24 kV	
Insulation level						
Lightning impulse withstand voltage						
- to earth and between phases	75 kV _p	95 kV _p	95 kV _p		125 kV _p	
- across the isolating distance	75 kV _p	115 kV _p	115 kV _p		145 kV _p	
Power frequency withstand voltage						
- to earth and between phases	28 kV	38 kV	38 kV	42 kV	50 kV	
- across the isolating distance	32 kV	45 kV	45 kV	48 kV	60 kV	
Frequency	50/60 Hz		50/60 Hz		50/60 Hz	
Normal rated current @ 40 ^o C	630 A	800 A	630 A	800 A	630 A	800 A
Load break current	630 A	800 A	630 A	800 A	630 A	800 A
Short-circuit making current	50/63 kA		50/63 kA		50/63 kA	
Short-time withstand current	20/25 kA		20/25 kA		20/25 kA	
Short-circuit duration	1 s		1 s		1 s	
Switching operation class	E1		E1		E1	
Mechanical endurance class	M1		M1		M1	
Standard operating mechanism	Manual		Manual		Manual	
Optional operating mechanism	Motorised		Motorised		Motorised	
Filling pressure of SF ₆ (absolute)	1.3bar		1.3bar		1.3bar	
Dimensions of F Panel (WxDxH)	396/*420x750/950 x1540/1768 mm		396/*420x750/950 x1540/1768 mm		396/*420x750/950 x1540/1768 mm	

Note: Model with MV test plugs

5.4. Selection of fuses for ZSR-F according to transformer sizes

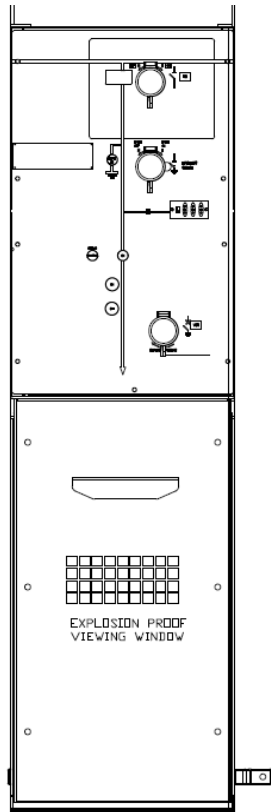
Transformer Rated Power	12kV			17.5kV	24kV		
	A			A	A		
kVA	6kV	10kV	12kV	15kV	15kV	20kV	24 kV
50	10	6	6	4	4	4	4
75	16	6	6	6	6	4	4
100	20	16	10	10	10	6	6
125	25	16	10	10	10	6	6
160	30	20	16	10	10	10	10
200	40	20	20	16	16	10	10
250	50	30	25	20	20	16	16
315	63	40	30	25	25	16	16
400	80	50	40	30	30	25	20
500	100	63	50	40	40	30	25
630	125	80	63	50	50	40	30
800	160	100	80	63	63	40	40
1000	**	125	100	80	80	63	40
1250	**	160	125	100	100	80	63
1600	**	**	160	**	**	100	80

5.5. Technical Data of V RMU Panel						
Designation type	ZSR-V					
Maximum rated voltage	12 kV		17.5 kV		24 kV	
Insulation level						
Lightning impulse withstand voltage						
- to earth and between phases	75 kV _p	95 kV _p	95 kV _p		125 kV _p	
- across the isolating distance	75 kV _p	115 kV _p	115 kV _p		145 kV _p	
Power frequency withstand voltage						
- to earth and between phases	28 kV	38 kV	38 kV	42 kV	50 kV	
- across the isolating distance	32 kV	45 kV	45 kV	48 kV	60 kV	
Frequency	50/60 Hz		50/60 Hz		50/60 Hz	
Normal rated current @ 40 ^o C	630 A	800 A	630 A	800 A	630 A	800 A
Shorting circuit breaking current	20/25 kA		20/25 kA		20/25 kA	
Short-time withstand current	20/25 kA		20/25 kA		20/25 kA	
Short-circuit duration	1 s		1 s		1 s	
Making capacity	50/63 kA		50/63 kA		50/63 kA	
short-circuit duty class	E1		E1		E1	
Mechanical endurance class	M1		M1		M1	
Operating mechanism	Motorized spring charged		Motorized spring charged		Motorized spring charged	
Dimensions of ZSR-VCB Panel (WxDxH)	396/*420x750/950 x1496/1768mm		396/*420x750/950 x1496/1768mm		396/*420x750/950 x1496/1768mm	

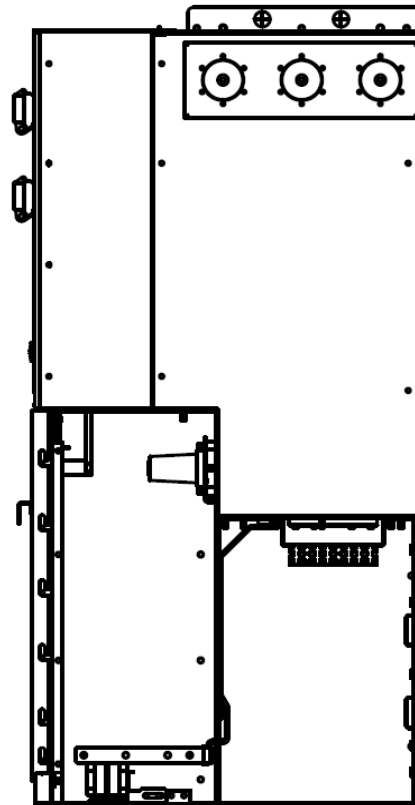
Note: Model with MV test plugs

6.1. ZSR- C Panel Dimensions

396/420mm



750/950mm

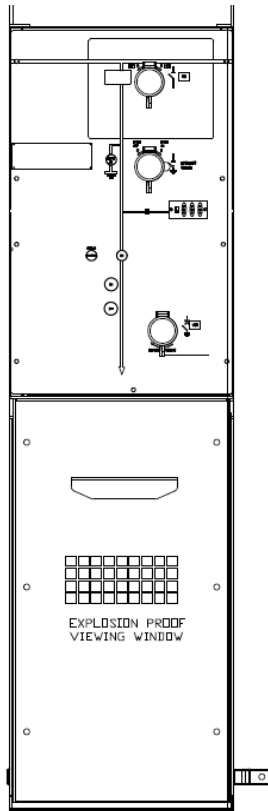


*1496/1768mm

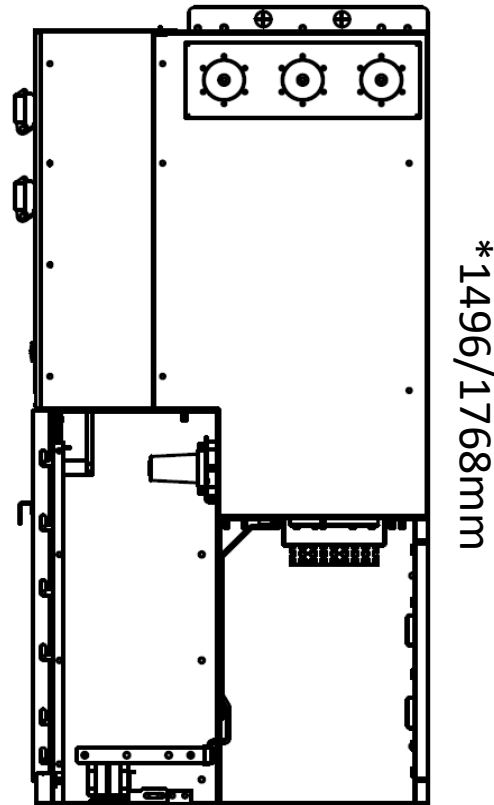
* Note: Height excluding metering & control panel

6.2. ZSR- F Panel Dimensions

396/420mm



750/950mm

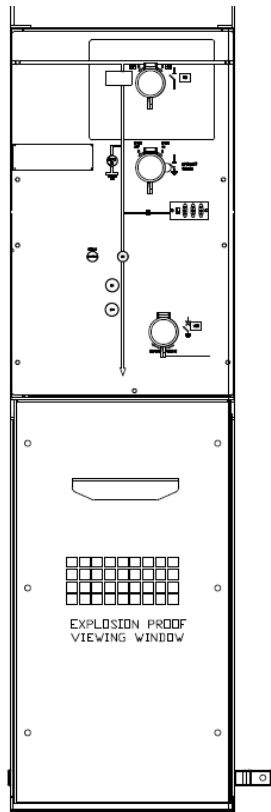


*1496/1768mm

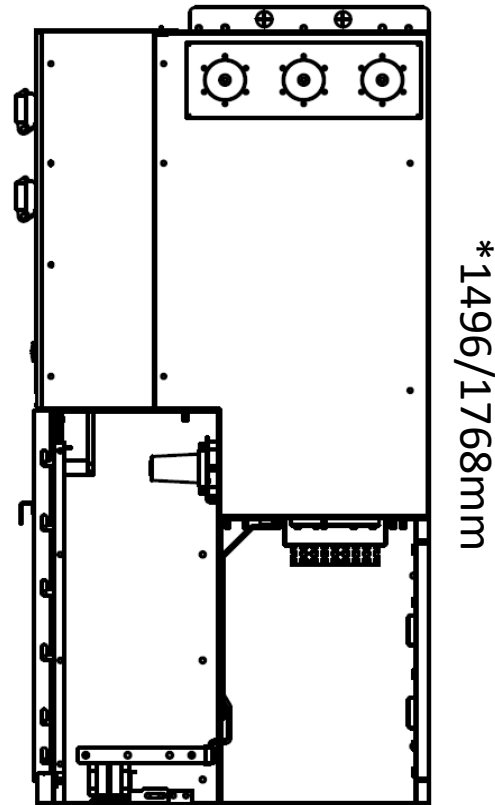
* Note: Height excluding metering & control panel

6.3. ZSR – V Panel Dimensions

396/420mm



750/950mm



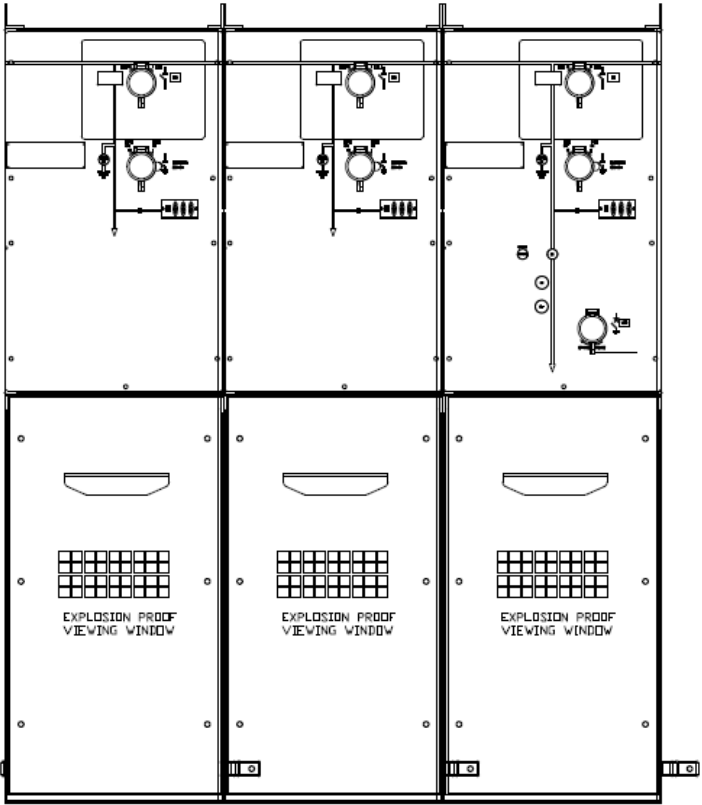
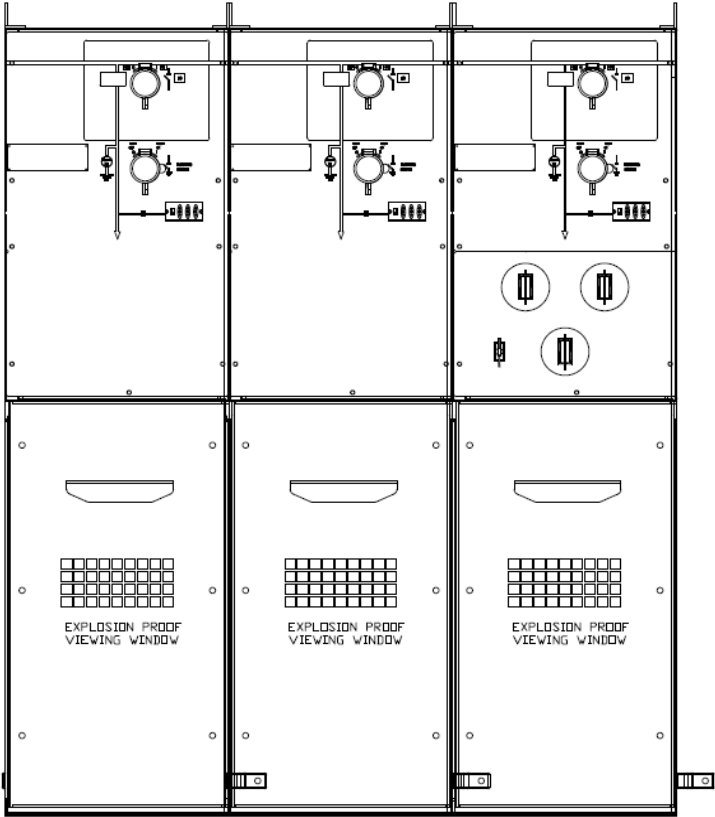
* 1496/1768mm

* Note: Height excluding metering & control panel

6.4. ZSR RMU Typical CCF CCV Dimensions

CCF

CCV



1188(W)X750/950(D)X1540(H)

7. Ordering information required

1. Primary schemes or Zenith Switchgear ZSR RMU Modules;
2. Single line system diagram;
3. Rated voltage, rated current, rated short circuit breaking current;
4. Control voltage and nos. of auxiliary contacts.
5. Plan view of substation layout or switchgear layout diagram;
6. Specification and type of incoming and outgoing power and control cables;
7. Specification and requirement of control, measurement and protection schemes of each type of switchgear panel;
8. Requirement of interlocks and automatic features if any;
9. Model/part numbers, specification and quantity of key switchgear components.
10. If switchgear is used in special operating environmental condition, please specify clearly;
11. Other special requirements if any.

8. How to contact us?

Zenith Switchgear (M) Sdn Bhd

Sales Office:

Unit AM13-PJ Industrial Park, Jalan Kemajuan, 462000 Petaling Jaya,
Selangor Darul Ehsan, Malaysia.

Jimmy Wong, Managing Director, Mobile: +60173460728,
Office/Fax: +60379317072, email: jimwkm@gmail.com,
jimwkm@qq.com; Website: www.zenithswitchgear.com.my

Factory address:

No. 5, Jalan Rajawali, Bandar Puchong, 47100 Selangor Darul Ehsan,
Malaysia.