

# Across the value chain of Power Distribution Solutions



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## Medium Voltage Switchgear

For Primary & Secondary Distribution



## MV Switchgear

- 3.6kV to 36kV Air Insulated Switchgear
- 12kV & 24kV SF6 Insulated Ring Main Units

Medium Voltage Switchgear products are manufactured in state-of-the-art production facility at Greater Noida, India and Haridwar India.

MV Switchgear products find use in growing market for Medium Voltage Switchgear in India, both for primary and secondary

distribution segments. Primary distribution switchgear are used in power plants and heavy industries likewise, secondary distribution switchgear are used in light industries and distribution network of power utilities and real estate projects.

C-sec Technologies is one of the leading suppliers of Ring Main Units and Air Insulated Switchgear to various power utilities in India and are contributing in big way to strengthen the power distribution network in various states in India.

### Switchgear for Primary Distribution



12kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker



24kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker



36kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker



33kV Outdoor Vacuum Circuit Breaker- Kiosk

### Switchgear for Secondary Distribution



SF6 Insulated Indoor Ring Main Unit



SF6 Insulated Indoor/Outdoor Ring Main Unit



SF6 Insulated Outdoor Ring Main Unit





# Switchgear for Secondary Distribution



## Ring Main Unit: CSG I

### General characteristics

- SF6 insulated compact switchgear
- Equipped with SF6 switch disconnecter
- Equipped with vacuum circuit breaker
- Developed according to international standard IEC 62271-200
- Resistant to environmental conditions
- Modular or compact versions
- Internal arc resistant
- SCADA compatible motorised unit, on request
- Stainless steel tank
- With Canopy / Enclosure for outdoor use

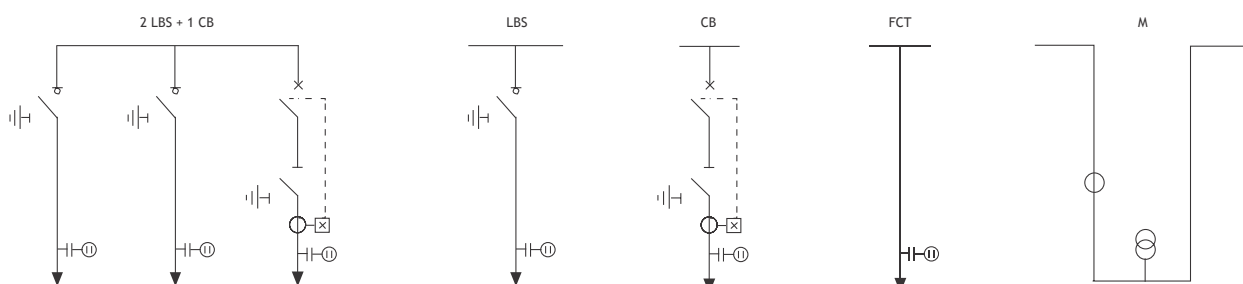


### Technical Data

Electrical Data			
Rated voltage	kV	12	24
Insulation level			
- lightning impulse (1.2/50 μs)	kVp	75	125
- power frequency (50 Hz/1 min)	kVrms	28	50
Rated current	A	630	630
Rated short-time current	kArms	21 for 3s	21 for 3s
Short circuit making current	kAp	52.5	52.5
Mechanical characteristics			
Protection degree	Mechanism - IP2X		
	Cable Compartment - IP3X		
	Tank - IP67		
	Canopy / Enclosure - IP54		
Standard colour	RMU - RAL 7035		
	Canopy / Enclosure - RAL 7012		
Normal service conditions			
Ambient temperature	°C	basic:-5..+40 options:-10.. +55	
Dimensions (2LBS+1CB)			
Height	mm	1470	
Width	mm	1190	
Depth	mm	727	



### Typical functions





# Switchgear for Secondary Distribution



## Ring Main Unit: CSG IK

### General characteristics

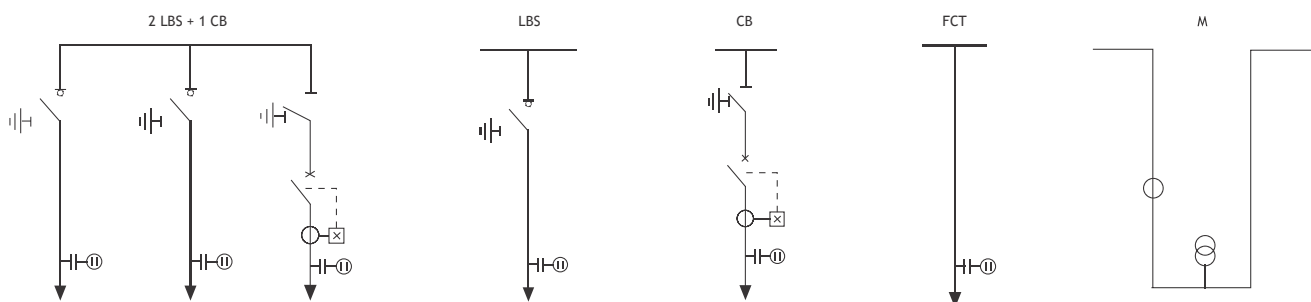
- SF6 insulated compact switchgear
- Equipped with SF6 switch disconnecter
- Equipped with vacuum circuit breaker
- Developed according to international standard IEC 62271-200
- Insensitive to environmental conditions
- Modular or compact versions
- Internal arc resistant
- SCADA compatible motorised unit, on request
- Stainless steel tank  
For outdoor & indoor use

### Technical Data

Electrical Data			
Rated voltage	kV	12	17.5
Insulation level			
- lightning impulse (1.2/50 $\mu$ s)	kV peak	75	95
- power frequency (50 Hz/1 min)	kV rms	28	38
Rated current	A	630	630
Rated short-time current	kA rms	21 (3s)	21 (3s)
Short circuit making current	kA peak	52.5	52.5
Mechanical characteristics			
Protection degree		RMU - IP54	
		Tank - IP67	
Standard colour		RAL - 7032	
Normal service conditions			
Ambient temperature	$^{\circ}$ C	basic:-5..+40	
		options:-10.. +55	
Dimensions (2LBS+1CB)			
Height	mm	1912	
Width	mm	1255	
Depth	mm	790	



### Typical functions





# Switchgear for Secondary Distribution



## Ring Main Unit: CSG O

### General characteristics

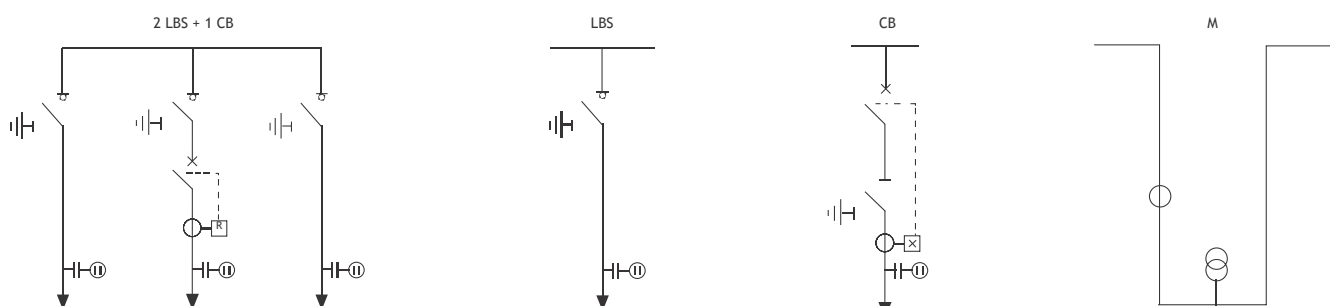
- SF6 insulated compact switchgear
- Equipped with SF6 switch disconnecter
- Equipped with vacuum circuit breaker
- Developed according to international standard IEC 62271-200
- Resistant to environmental conditions
- Modular or compact versions
- Internal arc resistant
- SCADA compatible motorised unit, on request
- Stainless steel tank
- For outdoor & indoor use

### Technical Data

Electrical Data			
Rated voltage	kV	12	17.5
Insulation level			
- lightning impulse (1.2/50 $\mu$ s)	kV peak	75	95
- power frequency (50 Hz/1 min)	kV rms	28	38
Rated current	A	630	630
Rated short-time current	kA rms	21 (3s)	21 (3s)
Short circuit making current	kA peak	52.5	52.5
Mechanical characteristics			
Protection degree		RMU - IP54	
		Tank - IP67	
Standard colour		RAL - 7012	
Normal service conditions			
Ambient temperature	$^{\circ}$ C	basic:-5..+40	
		options:-10.. +55	
Dimensions (2LBS+1CB)			
Height	mm	1755	
Width	mm	840	
Depth	mm	1125	



### Typical functions





# Switchgear for Primary Distribution



## 12kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker: CSA 12

### General characteristics

- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

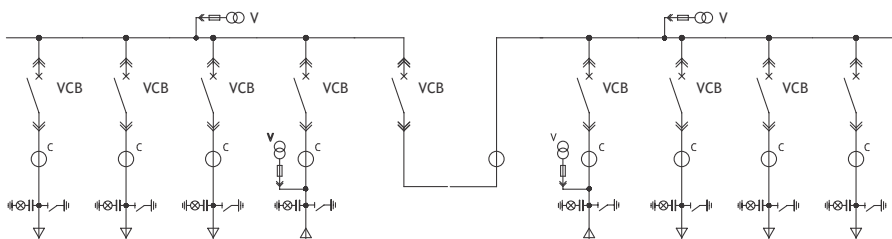
### Technical Data

Electrical Data		
Rated voltage	kV	12/17.5*
Insulation level		
- lightning impulse (1.2 / 50 ms)	kVp	75/95*
- power frequency (50Hz / 1 min)	kVrms	28/38*
Rated frequency	Hz	50
Rated current	A	630 to 3150
Breaking current	kArms	25/40
Making current	kAp	63/100
Rated short-time current	kArms	25 for 3s/40 for 3s
Mechanical characteristics		
Protection degree	IP4X (others on request)	
Standard colour	RAL 7035 (others on request)	
Normal service conditions		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
Dimensions		
Height	m	2150
Depth	m	1560
Width	m	
Upto 1250A, 25kA	mm	600
1600A, 25kA	mm	750
Upto 1250A, 1600A, 40kA	mm	750
2000A, 2500A, 25kA & 40kA	mm	850
3150A, 25kA & 40kA	mm	1000

\*on request



### Typical functions





# Switchgear for Primary Distribution



## 12kV Air Insulated Switchgear with Floor Mounted Vacuum Circuit Breaker: CSA 12 N

### General characteristics

- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with floor rolling cum cassette type vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

### Technical Data

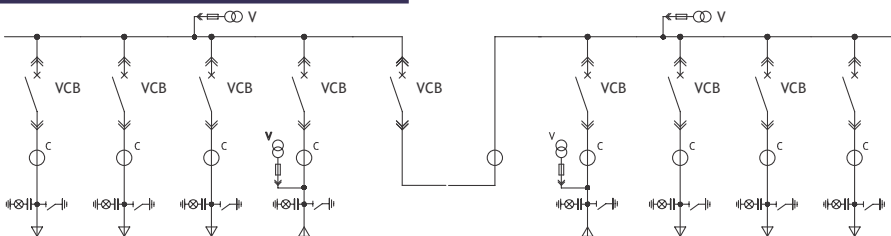
#### Electrical Data

Rated voltage	kV	12
<b>Insulation level</b>		
- lightning impulse (1.2 / 50 ms)	kVp	75/95*
- power frequency (50Hz / 1 min)	kVrms	28/38*
Rated frequency	Hz	50
Rated current	A	630 to 1250A
Breaking current	kArms	26.3
Making current	kAp	65.75
Rated short-time current	kArms	26.3 for 3s
<b>Mechanical characteristics</b>		
Protection degree	IP5X (others on request)	
Standard colour	RAL 7035 (others on request)	
<b>Normal service conditions</b>		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
<b>Dimensions</b>		
Height	m	1950
Depth	m	1750
Width Upto 1250A, 26.3kA	mm	600

\* on request



### Typical functions





# Switchgear for Primary Distribution



## 24kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker: CSA 24

### General characteristics

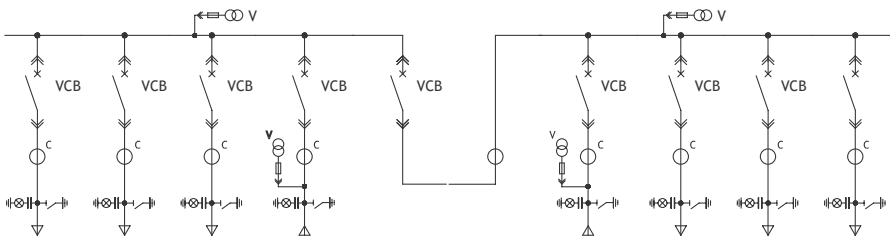
- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

### Technical Data

Electrical Data		
Rated voltage	kV	24
Insulation level		
- lightning impulse (1.2 / 50 ms)	kVp	125
- power frequency (50Hz / 1 min)	kVrms	50
Rated frequency	Hz	50
Rated current	A	630 to 1600A
Breaking current	kArms	25
Making current	kAp	63
Rated short-time current	kArms	25 for 3s
Mechanical characteristics		
Protection degree	IP4X (others on request)	
Standard colour	RAL 7035 (others on request)	
Normal service conditions		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
Dimensions		
Height Depth	m	2350
Width	m	1700
Upto 1600A, 25kA	m	800



### Typical functions







# Switchgear for Primary Distribution



## 36kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker: CSA 36

### General characteristics

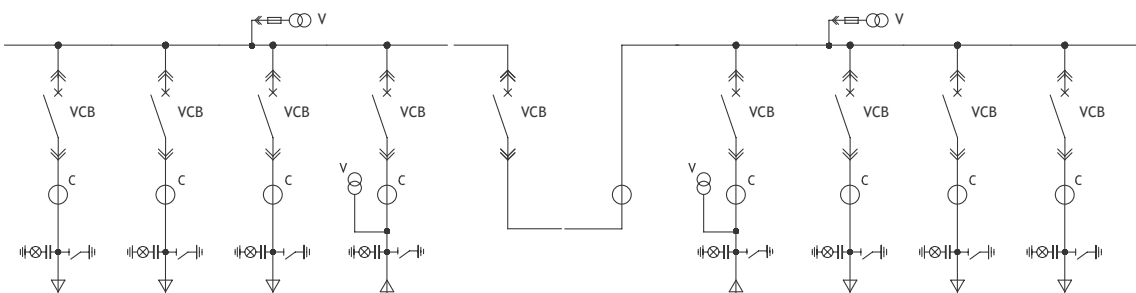
- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

### Technical Data

Electrical Data		
Rated voltage	kV	36
Insulation level		
- lightning impulse (1.2 / 50 ms)	kVp	170
- power frequency (50Hz / 1 min)	kVrms	70
Rated frequency	Hz	50
Rated current	A	630 to 1600
Rated Breaking current	kArms	25
Rated Making current	kAp	63
Rated short-time current	kArms	25 for 3s
Mechanical characteristics		
Protection degree	IP4X (others on request)	
Standard colour	RAL 7035 (others on request)	
Normal service conditions		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
Dimensions		
Height	m	2250
Depth	m	2570
Width	m	1200



### Typical functions





# Switchgear for Primary Distribution



## Vacuum Circuit Breaker with Cassette : CSCN

### General characteristics

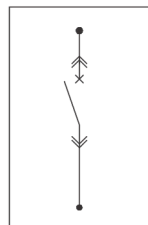
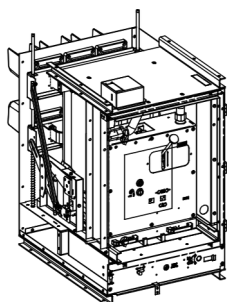
- Compact construction
- Equipped with Vacuum Circuit Breaker tested in accordance with IEC 62271-100
- Comes with all interlocks required as per IEC 62271-200
- Easy to operate & integrate in panel
- Built-in racking-in and racking-out mechanism, fixed & moving contacts, safety shutters
- Offers retrofit solutions for old switchgear
- Several optional equipment available
- Reduced maintenance and increased reliability
- Ideal solution for panel builders



### Technical Data

Electrical Data		
Rated voltage	kV	12
Insulation level		
- lightning impulse (1.2 / 50 ms)	kVp	75
- power frequency (50Hz / 1 min)	kVrms	28
Rated frequency	Hz	50
Rated current	A	630 to 1250
Rated Breaking current	kArms	26.3
Rated Making current	kAp	65.75
Rated short-time current	kArms	26.3 for 3s
Mechanical characteristics		
Protection degree	IP4X (others on request)	
Standard colour	RAL 7035 (others on request)	
Normal service conditions		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
Dimensions		
Height	m	1000
Depth	m	600
Width	m	1046

### Typical functions



m  
m  
VCB



# Packaged Sub Station



## Introduction

C-sec Packaged Substations are available upto 24KV. The fully equipped packaged substation (PSS), comprises of outdoor duty enclosure, medium voltage switchgear, distribution transformer, low voltage panel & AFPCR panel (optional) is a state of art equipment for all your power distribution requirements. The factory assembled self contained package substation is a complete weather proof solution. It only requires to connect incoming and outgoing cables and hence the site work involved is an absolute minimum.

It is a ready to position solution, provided with four lifting eyes located on the roof for ease of lifting, positioning and placement on a concrete base with the help of crane.

Each substation consists of three main equipment: Transformer, MV switchgear, and LV Switchgear. All the equipment are packed in a separate compartment and accessible individually using the respective compartment door

### Cost effective and economical

Using a Package Sub Station helps to reduce both capital expenditures and operational expenditures.

### Assured higher safety

EHS performance is improved thanks to Smart Communication and on-site presence.

### End to End solution

Everything taken care as per your requirement in one go from planning to the installation and commissioning.

### Time saving

Delivered in ready to use condition, a PSS saves precious time & money on-site as well.

### Optimized footprints

Due to its modularity and qualified compact design the footprints are at minimum.

### Reduced project risk

The civil, mechanical and electrical expertise incorporated in each custom-fabricated PSS solution returns benefits that minimize costs and support performance.



## Technical Data

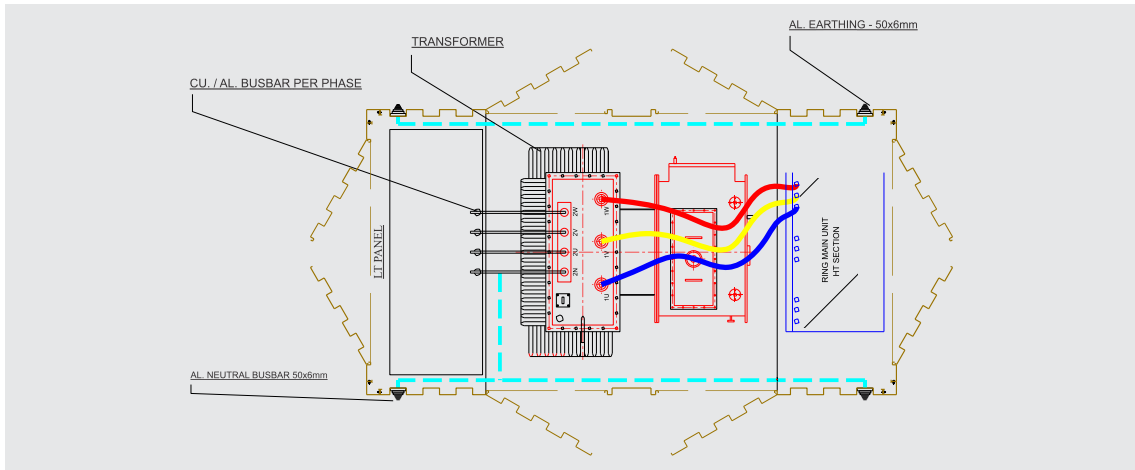
General characteristics			
Ambient temperature	Normal operating conditions	-5oC to 45oC	
		+50oC or 60oC Derating of MV and LV switchboards	
Standard colour		RAL 7032	
Installation		Outdoor	
Compartmented		Yes	
Type of ventilation		Natural	
Optional degree of protection	MV and LV Compartments	IP54	
	Transformer Compartment	IP23	(IP34 On Request)
Rated enclosure class		K 5 - 10	
Applicable Standard	IEC 62271-202		
Electrical characteristics			
Rated voltage (kV)		12	24 50 (33kV On Request)
Rated insulation level	kV rms, 50Hz 1min.	28	125
	kV impulse, 1.2/50 ms	75	50
Rated frequency (Hz)		50	630
Rated current of MV switchgear/CB's (A)		630	16 40
Max. allowable impulse current withstand	kA rms - 1s	21	3200
	kA peak	50	50/65
Maximum LV current (A)		3200	
LV Current withstand (kA)		50/65	



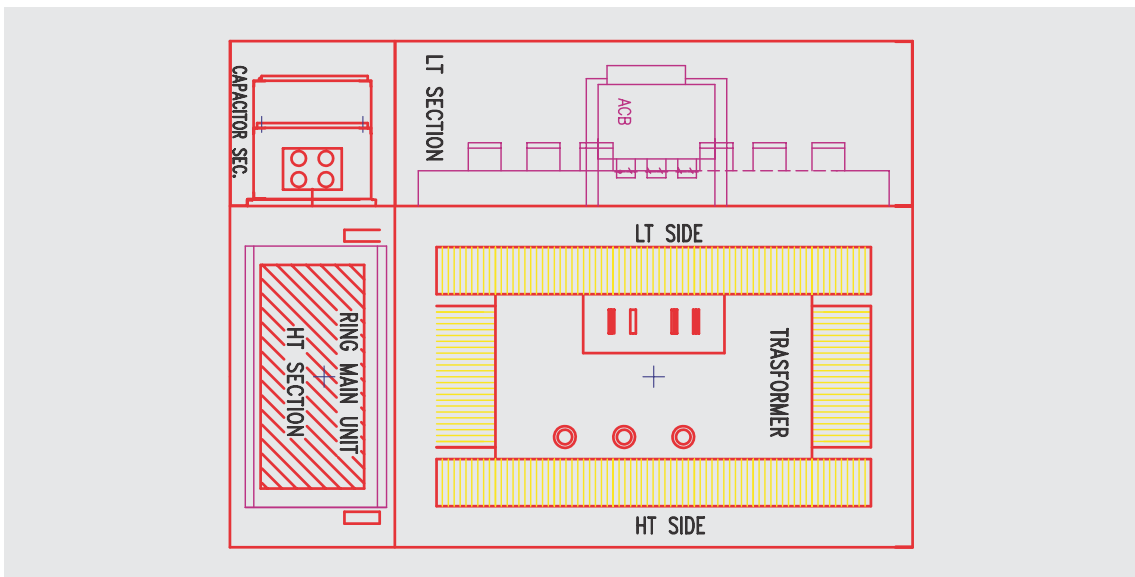
# Packaged Sub Station



## Standard Configuration



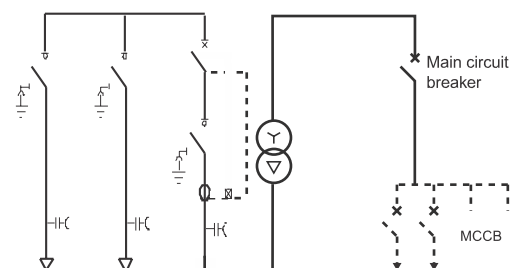
## Customised Configuration



## Dimensions - Type SLD of PSS

Type Designation	Max. Transformer	Length	Width	Height (above ground)
PSS-CS.1	Upto 315 KVA	2850	1850	2200
PSS-CS.2	Upto 400-630KVA	3150	2050	2500
PSS-CS.3	Upto 750-1000KVA	3150	2250	2500
PSS-CS.4	Upto 1250-1600KVA	3500	2450	2500
PSS-CS.5	Upto 2000KVA	3000	3000	2800

All Dimensions are in mm





# Installations



11kV RMU



22kV RMU



11kV Motorised RMU



11kV VCB Panel



11kV / 433V PSS



22kV / 433V PSS



**Vocal for Local**

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