



# Switchgear and Power Products

## Indoor Circuit Breaker



Characteristics	Units	12kV Indoor Vacuum Circuit Breaker						36kV Indoor Vacuum Circuit Breaker		Vertical Isolation VCB	
		VCB						VCB	GCB	VCB	
Rated Voltage	kV	Upto 12 (Calix)*						Upto 36 (Felix)	Upto 36	3.6 to 12	
Rated Current	Amp	Upto 800	Upto 1250	Upto 2000	Upto 2500	Upto 3150	Upto 4000	630 to 2000		400 to 1250	
No. of Poles	nos	3						3		3	
Frequency	Hz	50/60						50/60		50	
Symmetrical Breaking Capacity	kA rms for 3sec	13.1	20	26.3	31.5	40	50	23.3 / 31.5 / 40		13.1	20
Making Capacity	kApk	32.75	50	65.75	78.75	100	125	65.75 / 78.75 / 100		32.75	50
Power Frequency Withstand Voltage	kV rms	28 (std) / 35 (optional)						70		28	
Impulse Withstand	kVpk	75 (std) / 95 (optional)						170 / 195 optional		75	
Operating Duty	cycles	O-0.3sec-CO-3min-CO (Rapid Autoreclosing Duty)						O-0.3sec-CO-3min-CO	O-3min-CO-3min-CO	O-0.3sec-CO-3min-CO	
Total Break Time	cycles	3			3.5			4		3	
Make Time	cycles	3						4		3	
DC Component	%	<50%						<50%		<50%	
Degree of Protection		IP 4X (std) / IP 5X (optional)						IP 4X (std) / IP 5X (optional)		IP 4X	
Applicable Standard		IS 13118, IEC 62271 - 100/200						IS 13118, IEC 62271 - 100/200		IS 13118, IEC 62271 - 100/200	
Variants Available		Integral Earth Switch, Portable earthing truck						Fixed type PT	Integral Earth Switch, Portable Earthing Switch		
*Rated Voltage: 15 / 17.5kV Available for Export Market											

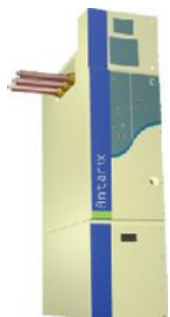
\*Rated Voltage: 15 / 17.5kV Available for Export Market



## Outdoor Vacuum Circuit Breakers



Characteristics	Units	Porcelain Clad Vacuum Circuit Breaker					Metal Clad Vacuum Circuit Breaker-KIOSK				
		PVCB					Roof Bushing	Line Up			Roof Bushing
Rated Voltage	kV	Upto 12*			36		12				36
Rated Current	Amp	Upto 800	Upto 1250	Upto 1600	Upto 2000		Upto 1250	Upto 1250	Upto 1600	Upto 3150	Upto 2000
No. of Poles	Nos	3					3				
Frequency	Hz	50/60					50				
Symmetrical Breaking Capacity	kA rms for 3sec	13.1	20	26.3	26.3	40	Upto 26.3	20	26.3	40	26.3
Making Capacity	kApk	32.75	50	65.75	65.75	100	32.75	50	65.75	100	65.75
Power Frequency Withstand Voltage	kV rms	28 (std) / 35 (optional)			70 (std) / 95 (optional)		28				70
Impulse Withstand	kVpk	75 (std) / 95 (optional)			170 (std) / 210 (optional)		70				170
Operating Duty	cycles	O-0.3sec-CO-3min-CO (Rapid Autoreclosing Duty)					O-0.3sec-CO-3min-CO				
Total Break Time	cycles	3			4		3				3.5
Make Time	cycles	3			4		3				3
DC Component	%	<50%					<50%				
Degree of Protection		IP 55					IP 54				
Applicable Standard		IS 13118, IEC 62271 - 100					IS 13118, IEC 62271 - 100/200				



## Gas Insulated Switchgear (GIS)

### Antarix

- Compact design & reduced space requirement
- Easy future extensibility of the network through flexible plug-in connectors
- Ring type Current transformers

Characteristics - GIS	Value
Rated Voltage	36 kV
<b>Rated Current</b>	
General Busbars	1600 A
Outgoing Lines	1250 A
<b>Rated Short Circuit Current</b>	
Breaking Capacity	26.3 kA
Making Capacity	66 kAp
Short time current withstand	26.3 kA - 3 sec
<b>Lightening Impulse</b>	
Between phase & phase to earth	170 kVp
Isolating distance	195 kVp



## Ring Main Unit

- Stainless steel enclosure fabricated by automatic robotic welding
- Isolation in clean SF<sub>6</sub> gas for ring switch & in vacuum for CB



- Common switching chamber with Vacuum Tee off circuit breaker
- Internal arc protection including cable boxes
- Fully SCADA compatible unit with remote switching
- Highly compact and well protected with pad-lock, interlock & earthing facilities

	RMU			Multi Circuit SF 6 Gas Insulated Vacuum RMU	TRIDENT Range Oil RMU	
Characteristics	SABRE - VRE	VRE - 6A	SABRE	MCR	FRMU / NEFS / EFS / EOS / DEOS	
					Ring Switch	Fuse Switch
Rated Voltage kV	12 / 15.5		24	12	12 / 15.5	
Rated Current A	630		630 for Ring Switch & 400 for CB	630	630	400
Symmetrical Breaking Capacity kA/sec	21/3		16/3	21/3		
Making Current kAp	52.5		40	52.5	55 / 55	50 / 7.8
Impulse withstand kVp	75/110 (optional)		125	75 / 95 (optional)	110	110
Min Gas Pressure Bar	0			0		
Filling Pressure Bar	0.4		0.5	0.4		
Index of Protection	IP 54			IP 54	IP 54	



## Unitized Sub Station

### RADIX Series

- It comprises of:
  - HV compartment consisting of a Vacuum Circuit Breaker (VCB) or a Ring Main Unit (RMU)
  - A Step down Transformer (X'MER)
  - Low Voltage (LV) compartment consisting of LV distribution panel
- Protection from unauthorized access and environmental hazards
- Ease of operation & maintenance

### ENCLOSURE

All equipments mounted on a common galvanized steel GI base with fabricated enclosure

Completely detachable side wall, ensuring ease of access to all equipments  
Louvers are provided for cross ventilation

### HV COMPARTMENT

SF6 Gas filled Vacuum RMU

Choice of Oil cooled or Dry type transformer

Rating: Up to 1600kVA with Voltage: 12kV

### LV COMPARTMENT

Rating up to 2000 A, 440 V

LV Switchgear: ACB / MCCB feeder board up to 12 feeders



Characteristics - Unitized Sub Station	RADIX
Degree of Protection	IP 23D*
Duty	Outdoor
Type of Ventilation	Natural
Standard Color #	CG Blue
Rated Voltage	12 kV
Rated Power Frequency withstand Voltage	28 kV
Rated lightning Impulse withstand Voltage	75 kV
*Higher degree of protection shall be provided on request # Any other color shades shall be provided on request	

Characteristics - On-Load Tap Changer	F33	F66
System Voltage	36 kV	72 kV
Maximum No. of Positions	17	17
Maximum Step Voltage		
At rated current of 100A	1250 V	1250 V
At rated current of 200A	1250 V	1250 V
At rated current of 300 A	625 V	625 V
Rated Current	300 A	300 A

## On-Load Tap Changer

### F – Series

- A high speed resistor type, for use with 3-ph distribution substation transformer
- Housed in a single tank of current diversion & tap selection
- Suitable for limited power flow in reverse direction
- Designed for long service with an absolute minimum maintenance

Authorized Distributor:



evolve thru power

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