Format No. EPMV-AIS-HOM-001			
Customer Name	Rocky Switchgear AC New Mangalore Port		
Project	MANGLORE PORT		
Switchboard	36 kV, Unigear ZS2, 1250 A, Copper Busbar 26.3 kA/3 Sec, 45 Degree ambient, Operating height <= 1000 Meters		
ABB Reference	4203043946		
REV	1		
	Technical Data Sheet for Switchgear		
S.No.	**Description**	**Parameters**	**Unit/Remark**
1	**System Parameters**		
	Switchgear Type	ZS2	
1.1	Ambient Temperature for design	45	°C
1.2	Main System	3-Phase; 3-Wire AC	
1.3	Frequency	50	Hz
1.4	Rated Voltage	36	kV
1.5	System Voltage	33	kV
1.6	Dry Power Frequency withstand voltage	70	kVrms
1.7	Rated Impulse voltage	170	kVpeak
1.8	Earthing System	Solidly Earhed	Solidly Earhed
1.9	Altitude	<1000	meter
1.10	System Fault Level	26.3	kA
1.10.1	Duration	3	sec
1.10.2	Rated Making Current	65.75	kApeak
1.11	Internal Arc	26.3	kA
1.11.1	Internal Arc Duration	1	sec
1.12	**Breaker(Arc control device)**		
1.12.1	Type	Vacuum	
1.12.2	Control voltage	VD4	
1.13	Closing coil (200Watts)(Permissible Voltage Variation 85 % to 110%)		
1.14	Tripping Coil (200Watts) (Permissible Voltage Variation 70 % to 110%)	24	DC
1.15	Spring Charging motor(350Watts) (Permissible Voltage Variation 85 % to 110%)	24	DC
1.16	Space heater Standard / Non Standard to be specified during handing over	240	AC
1.17	Closing Time	240	AC
1.18	Tripping Time	<80ms	
1.19	Max. Arcing time at 100% breaking capacity	<60ms	
1.20	Total break time at 100% breaking capacity	<18ms	
1.22	No of Breaker Pin	<70ms	
1.23	Breaker Operation Class	64	
1.24	Rated Operating Duty	E2, M2 & C2	
1.25	Reference Standards	O - 0.3Sec- CO-3MIN-CO	
i	Common specification for high voltage switchgear		
ii	High voltage AC circuit breaker	IEC 62271-1	
iii	AC metal-enclosed switchgear and controlgear	iEC 62271-100	
iv	Degree of Protection provided by enclosures	IEC 62271-200	
v	Current transformer	IEC 60529	
vi	Potential transformer	IS 2705	
	Note- offered switchgear shall be as per latest IEC as mentioned above.	IS3156	
1.15.1	CT Make		
	Type designation		
1.15.2	CT Fault Level	Pragati/ECS	Pragati/ECS
1.15.3	Duration	26.3	
1.16.1	PT Make	3	
1.17	Main Protection Relays	Pragati/ECS	Pragati/ECS
1.17.1	Make	Applicable	
1.17.2	Type	ABB	
1.17.3	Relay communication	Numerical	
1.17.4	Relay communication port	IEC61850	IEC61850+MODBUS
1.18	Meter	RJ45	
1.18.1	Type	Applicable	
2	**Construction**	Digital	RS 485
2.1	Type of Switchboard		
2.1.1	UG650_Breaker Transfort Trolley quantity	Floor rolling type	FRCB
2.1.2	UG800_Breaker Transfort Trolley quantity	NA	
2.1.3	UG1000_Breaker Transfort Trolley quantity	NA	
2.2	Installation	NA	
i	Mounting	Indoor	
ii	Lifting arrangement	Floor Mounted	
iii	Front access	Supply with Loose	
a	LV Compartment Door	Required	
b	Locable Breaker compartment Door in Test & Service position	Hinged	
c	Door for bottom compartment with PT	Hinged	
d	Door for bottom compartment without PT	NA	
iv	Rear access	NA	
v	Extension Switchboard	Bolted Cover	
2.3	Degree of Protection	No	
i	For enclosure		
ii	For within compartment	IP 4X	
iii	For LV Compartment door	IP 2X	
	note- other that the IP values mentioned above we don't envisage any other values	IP4X	
2.4	Fabrication		
i	Panel		
ii	Door and End covers are mounted on extreme LHS and RHS of the switchboard	Aluzinc	
2.5	Sheet Thickness	CRCA	
2.6	Metal Automatic Safety Shutter for Breaker chamber	2mm for Complete structure	
		Yes	

3	**Painting**		
3.1	Paint Shade		
i	Interior (Applicable for front doors)	Similar to Exterior	
ii	Exterior (Applicable for front doors & end covers)	RAL7032	
	Non-Standard Paint Shade	Not Applicable	
iii	Paint Finish	Texture	
Note:	Paint shall be provided for Doors and Switchboard End Covers only which are made of CRCA sheet. All other items which are made of Aluzinc material shall remain unpainted.		
4	**Busbars/Connections**		
4.1	Main Feeder Connections		
i	Temperature Rise Limit (As per IEC 62271-1)	115Deg C	
a	Silver plating at Bolted joints as per ABB Standard		5 micron
ii	Rated Current	As Per SLD	
iii	Material	Copper	
iv	Cross Section for Main Bus bar	Ref Cross section drawings	
v	Insulation (except at joints & tap-offs)	Full Rated Voltage Sleeve	Hongshang
vi	Insulation at Bus joints and tap-offs for Bus Bar compartment only.	Shrouds	
vii	Phase Identification	RYB Stickers	
4.2	Bus support Insulator	NA	Busbars are Self supported
5	**Earth Bus bar**		
i	Material	Copper	
ii	Size	30X8	mm
6	**Feeder Connections**		
6.1	From Main Bus bar to Circuit Breaker	As per breaker rating	
i	Material	Copper	
ii	Insulation	Full Rated Voltage Sleeve	Hongshang
6.2	Feeder Connections (in cable chamber)	As per breaker rating	
i	Material	Copper	
ii	Insulation	Full Rated Voltage Sleeve	Hongshang
7	**Auxiliary Equipment and Supply**		
7.2	Indication Circuit/ Annuncation Circuit	24	DC
7.3	Metering Auxiliary Supply	24	DC
7.4	Cable compartment Space Heater	200 W; 240 V AC	Watts
7.5	Breaker compartment Space Heater	100 W; 240 V AC	Watts
7.5	Socket	5	Amps
7.6	Illumination Lamp	3	Watts
8	**Wiring**		
8.1	Auxiliary Circuit	FRLS	
8.2	Insulation Grade	1.1	KV
8.3	Applicable Standard	IS	
8.4	Size and colour of wire (Control and Auxiliary Circuits)		
i	CT Circuit	4.0 Sq.mm R/Y/B/BL	
ii	PT Circuit	1.5 Sq.mm R/Y/B/BL	
iii	Control Circuit	2.5 Sq.mm Grey	
iv	Earthing Wire	2.5 Sq.mm Yellow/Green PVC	
v	Hinge door earthing	2.5 Sq.mm Yellow/Green PVC	
8.5	Auxiliary Bus Wire		
i	DC Circuit	4.0 Sq.mm Grey	
ii	AC Circuit	4.0 Sq.mm Black	
9	**Control Terminals**		
9.1	Terminal Block Material	POLYMIDE	
	Make	Phoneix/Elmex/Connectwell	
i	Type of Terminal	SCREW TYPE	
ii	Current Transformer Circuit	CBDT4	Disconnecting
iii	Potential Transformer Circuit	CBDT4	Disconnecting
iv	Control Circuit	AS2.5	Non-Disconnecting
10	**Termination Arrangement**		
10.1	Bus Duct		
i	Incomer/ TIE Feeder	NA	
a	Entry	BOTTOM	
ii	Outgoing Feeder	BOTTOM	
a	Entry	BOTTOM	
10.2	Power Cables		
i	Incomer Feeder	BOTTOM	
a	Entry	BOTTOM	
ii	Outgoing Feeder	BOTTOM	
a	Entry	BOTTOM	
10.3	Gland Plate		
i	For Single Core Cable	Aluminium	
ii	For Three Core Cable	GI	
11	**Switchboard Accessories**		
i	Panel Key for opening LV compartment		
ii	Breaker Rackin & Rack out handle (For each Five panel quantity -1)	2 per board	
iii	Earthing Switch handle if applicable	NA	
11.1	**Earthing Trucks**		
i	Cable Side (Each Breaker Rating quantity to be Sepcified)	Yes	01 NO
ii	Bus Side (Only 1250A)	Yes	01 NO
11.2	**Earthing CB**		
i	Cable Side (Each Breaker Rating quantity to be Sepcified)	No	
ii	Bus Side (Only 1250A)	No	
11.3	Foundation frame to be supplied	Yes	

Approved S.No. 4, 4.1 (iii)

2/4/25

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