

Specifications for Ring Main Units (RMU)

ANNEXURE B (KEBU_SPEC_007)

TECHNICAL SCHEDULES A AND B FOR
11KV TO 33KV FREE-STANDING METAL-ENCLOSED RING MAIN UNITS

Schedule A: Keetmanshoop Electricity Business Unit specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Description		Schedule A	Schedule B
1	Item and system description			
	Keetmanshoop Municipality stock code			xxxxxxxxxx
	Configuration		2R-B	xxxxxxxxxx
	Nominal system voltage	kV	11	xxxxxxxxxx
	System voltage range	pu	0.9 to 1.1	xxxxxxxxxx
	System earthing (effective/non-effective)		non-effective	xxxxxxxxxx
2	Ratings			
	Rated voltage	kV	12	
	Rated short-duration power-frequency withstand voltage [50Hz: 1min]	kV	28	
	Rated peak lightning impulse withstand voltage	kV	95	
	Rated normal current of ring-main busbars	A	630	
	Rated normal current of switch-disconnectors	A	630	
	Rated normal current of circuit-breaker	A	200/630	
	Rated short-circuit breaking current of circuit-breaker (3s)	kA	20	
3	Service Conditions			
	Location (indoors/outdoors)		Indoors (Outdoor Units to be installed in Kiosk)	
	Altitude (AMSL)	m	1500	
	Ambient air temperature range	°C	-5 to +45	
	Relative humidity range	%	up to 95	
	Corrosive conditions (inland/coastal)		Coastal	
4	Construction			
	Extensible unit required?		Yes	
	Degree of protection offered (RMU):			
	a) moving parts		xxxxxxxxxx	
	b) live parts		xxxxxxxxxx	
	c) cable boxes		xxxxxxxxxx	
	d) outdoor unit		xxxxxxxxxx	
	Degree of protection of kiosk (if applicable)		xxxxxxxxxx	
	Configuration		2R-B	
	Cable test facility details		xxxxxxxxxx	
	Interlock with remote equipment required?			xxxxxxxxxx
	a) type of interlock required			
	b) auxiliary supply details			
	c) interfacing details of remote equipment			
	Interlocking facilities offered		xxxxxxxxxx	
	Insulating medium		SF ₆	
	Interrupting technology (switch-disconnectors)		SF ₆ / vacuum	
	Interrupting technology (circuit-breaker - if applicable)		SF ₆ / vacuum	
	Internal arc classification		B-FLR	
	Is a kiosk required		Yes	
	Colour of kiosk		Olive Green (H21)	
	Recommended types of tools to install and maintain unit		xxxxxxxxxx	
	Method used to attach rating plates		xxxxxxxxxx	
	Method used to attach labels			
	Is a raising plinth required for indoor RMUs?			
	Is a concrete plinth complying with specifications required for outdoor RMUs?			
	Is RMU required for corrosive / non-corrosive environment?		Corrosive	
	Is earth fault indication required		Yes	
	- Does EFI comply with requirements of 8.9		Yes	
	- List of recommended spares attached		Yes	
	Is remote tripping and closing required (i.e. remote control via RTU)		Yes	
	Details of preferred auxiliary supply			
	a) voltage	Vdc		
	b) current	mA		
	Provision for future automation		Yes	

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Item	Description		Schedule A	Schedule B
5	Switch description			
	Manufacturer's designation of RMU		xxxxxxxxxx	
	Type of SF6 ring main unit			
	a) Manufacturer		xxxxxxxxxx	
	b) Country of manufacture		xxxxxxxxxx	
	Number of units installed in Namibia		xxxxxxxxxx	
6	Design			
	Ring main units designed and constructed in accordance with SANS 1874		Yes	
	Provision of facilities for lifting and slinging		Yes	
	- Type of provision		xxxxxxxxxx	
	Provision of SF6 pressure gauge		Yes	
	- SF6 pressure gauge visible from operating side of RMU (front of RMU)		Required	
	- Quantity of SF6			
	Is cable box required?		Yes	
	- compound-filled or air-filled cable box		Air-filled	
	VDS required for all circuits?		Yes	
	- type of live circuit indication offered		xxxxxxxxxx	
	Type of electronic ammeter/multi-meter offered		xxxxxxxxxx	
7	Earthing			
	Maximum earth fault current	kA		
	Current density (maximum)	A/m	200	
	Provision of reliable earthing terminal for each metal enclosure/tank (compatible with M12 lug-hole)		Required	
	Each earth terminal to be indelibly marked		Yes	
8	Cable termination requirements			
	Incoming MV cable requirements:			
	a) up to 185mm ² 3-core PILC or XLPE		Required	
	b) Cable support (clamping) required		Required	
	c) minimum distance from top of cable clamp to bushing centres	mm	800	
	d) type of termination		unscreened/screened as per SANS 876 / NRS	
	Clearance requirements		012	
	Only Type C (630A) bushings required		Yes	
	Bushings horizontally positioned		Yes	
	Bushing-centre spacing (min)	mm		
	Distance between outer bushing-centres and earthed metal enclosure (min)	mm		
	Provision for earthing of cables		Yes	
	Accessories for cable termination to be supplied by the RMU supplier?		No	
9	Materials and corrosion protection			
	Application with regard to corrosion protection, i.e. inland or coastal		Inland/coastal	
	Type of material offered:			
	a) Ring main unit		xxxxxxxxxx	
	b) Copper earth bar		xxxxxxxxxx	
	c) Kiosk (if applicable)		xxxxxxxxxx	
	d) Raising-base (if applicable)		xxxxxxxxxx	
10	Marking and labelling			
	Method of attachment of labels		xxxxxxxxxx	
	Main circuit designation labels		Yes	
	RMU rating plate		Yes	
	ON, OFF, and EARTH position labels		Yes	
	Mimic indication system required?		Yes	
	- Description of mimic indication system		xxxxxxxxxx	
	Instruction plates		Yes	

Specifications for Ring Main Units (RMU)

Item	Description		Schedule A	Schedule B
11	Documentation			
	Type test certificates	Sets	1	
	Proposed routine test certificates	Sets	1	
	Drawings	Sets	2	
	Circuit diagrams	Sets	2	
	Installation, operating and maintenance instructions	Sets	2	
	Details of special tools required	Sets	2	
	Detailed spare-parts list provided	Sets	2	
12	Protection			
	Protection tripping of circuit-breaker through self-powered protection relay		similar or equal WIC or MiCOM with digital display	
	Make and model of protection relay offered		xxxxxxxxxx	
	Details of over-current protection function		xxxxxxxxxx	
	Details of earth fault protection function		Required	
	Details of protection class current transformers		Required	
	Details of metering class current transformers		Required	
13	Miscellaneous			
	General			
	Guarentee period	Years	xxxxxxxxxx 25 years after discontinuation of switchgear	
	Required period for spares availability	Years		
	Comply with packaging requirements		Yes	
	Training provided		Yes	
	Quality management accreditation		Yes	
	Environmental management accreditation		Yes	