

Schedule A: Schedule of Manufacturer Information**(Information to be supplied with Tender)**

Item No.	Description	Manufacturer	Place of Manufacture	Place of Testing and Inspection	Model No / Designation of Equipment
1	Miniature Substations				
2	Miniature Substation Transformers				
3	Miniature Substation Ring main Units				
4	Pole mounted Transformers				
5	Distribution Transformers				
6	PM Transformer outdoor MV Bushings				
7	Transformer Type C indoor MV bushings				
8	Transformer LV bushings				
9	Minisub RMU MV HRC fuses				
10	Minisub RMU cable live and phasing VDS Module				
11	Minisub shunt trip thermostat				
12	Minisub shunt trip latching relay				
13	Earth fault indication equipment				

Schedule B: Schedule of Technical Data
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ITEM CATEGORY A: PARTICULARS OF POLE MOUNTED TRANSFORMERS (Information to be supplied with Tender)

[illegible]

24	Oil:									
24.1	Total quantity required									
24.2	Oil to SANS 555-2 and H2O < 10 mg/kg									
24.3	Oil PCB free (< 10 ppm)									
25	MV bushings:									
25.1	Type									
25.2	Manufacturer									
25.3	Model No.									

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY A: PARTICULARS OF POLE MOUNTED TRANSFORMERS (Cont'd) (Information to be supplied with Tender)

[illegible]

29.1	Valid Short Circuit Withstand certificate referenced and provided?	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
29.2	SANS 60076-5 Similar Transformer motivation provided.	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*
29.3	Transformer Design Sheet provided (if no valid SC Withstand Certificate)?	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*	YES/N/A*

* Delete whichever is not applicable.

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY B: PARTICULARS OF DISTRIBUTION TRANSFORMERS (Information to be supplied with Tender)

		ITEM B1	ITEM B2	ITEM B3	ITEM B4	ITEM B5
1	Name of transformer manufacturer					
2	Rated power kVA	200	315	500	800	1000
3	Rated voltage: (a) MV V	11000	11000	11000	11000	11000
	(b) LV V	420	420	420	420	420
4	Vector group	Dyn11	Dyn11	Dyn11	Dyn11	Dyn11
5	Grade of cold rolled core steel					
6	Core steel loss at flux density for nominal voltage W/kg					
7	Maximum flux density (peak) in iron at nominal voltage: (a) Cores Tesla					
	(b) Yokes Tesla					
8	Maximum current density in windings at rated current: (a) MV windings A/mm ²					
	(b) LV windings A/mm ²					
9	Fixed losses at normal ratio kW					
10	Load losses at normal ratio, rated power at 75°C kW					
11	Efficiency at rated power, normal ratio and unity power factor %					
12	Regulation at rated power as percentage of rated voltage:					
	(a) At unity power factor %					

	(b) At 0,8 power factor lagging	%					
13	Rated impedance voltage	%					
14	Sound level	dB					
15	Impulse withstand voltage (peak)	kV	95	95	95	95	95

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY B: PARTICULARS OF DISTRIBUTION TRANSFORMERS (Cont'd) (Information to be supplied with Tender)

			ITEM B1	ITEM B2	ITEM B3	ITEM B4	ITEM B5
16	Material and thickness of transformer tank, conservator and radiators:						
	(a1) Main tank sides and cover material						
	(a2) Main tank sides and cover thickness	mm					
	(b1) Tank bottom material						
	(b2) Tank bottom thickness	mm					
	c1) Radiator material						
	(c2) Radiator thickness	mm					
	(d1) LV compartment walls and door material						
	(d2) LV compartment walls and door thickness	mm					
	(d3) LV compartment cover material						
	(d4) LV compartment cover thickness	mm					
	(d5) LV compartment gland plate material						
	(d6) LV compartment gland plate thickness	mm					

	(d7) Lock protector box material					
	(d8) Lock protector box thickness	mm				
	(e1) MV cable box material					
	(e2) MV cable box thickness	mm				

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY B: PARTICULARS OF DISTRIBUTION TRANSFORMERS (Cont'd) (Information to be supplied with Tender)

		ITEM B1	ITEM B2	ITEM B3	ITEM B4	ITEM B5
16	(f1) Longitudinal skid under base material					
	(f2) Longitudinal skid under base thickness mm					
17	Overall dimensions of transformers:					
	(a) Breadth mm					
	(b) Length mm					
	(c) Height mm					
18	Mass of core without windings	kg				
19	MV winding type and material (Cu / Al)					
20	Mass of conductor in MV windings	kg				
21	LV winding type and material (Cu / Al)					

22	Mass of conductor in LV windings	kg					
23	Total mass of complete transformer including oil	kg					
24	Oil:						
24.1	Total quantity required						
24.2	Oil to SANS 555-2 and H2O < 10 mg/kg		YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
24.3	Oil PCB free (< 10 ppm)		YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*

* Delete whichever is not applicable.

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY B: PARTICULARS OF DISTRIBUTION TRANSFORMERS (Cont'd) (Information to be supplied with Tender)

		ITEM B1	ITEM B2	ITEM B3	ITEM B4	ITEM B5
25	MV bushings:					
25.1	Type					
25.2	Manufacturer					
25.3	Model No.					
26	LV bushings:					
26.1	Type					
26.2	Manufacturer					
26.3	Model No.					
27	LV busbars:					
27.1	Cross sectional area	mm ²				
27.2	Maximum current density	A/mm ²				
28	LV Compartment Split Gland Plate provided, as specified	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO
29	LV metering	No	No	No	No	No
30	Make and type of terminal blocks					
31	Short Circuit Withstand Certification:					
31.1	Valid Short Circuit Withstand certificate referenced and provided?	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
31.2	SANS 60076-5 Similar Transformer motivation provided?	YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*
31.3	Transformer Design Sheet provided (if no valid SC Withstand Certificate)?	YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*

* Delete whichever is not applicable.

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY C: PARTICULARS OF MINIATURE SUBSTATIONS (Information to be supplied with Tender)

		ITEM C1	ITEM C2	ITEM C3	ITEM C4
1	Name of miniature substation and transformer manufacturer				
2	Rated power kVA	315	500	800	1000
3	Rated voltage: (a) MV V	11000	11000	11000	11000
	b) LV V	420	420	420	420
4	Vector group	Dyn11	Dyn11	Dyn11	Dyn11
5	Miniature Substation Type	Type B	Type B	Type B	Type B
6	Miniature Substation Internal Arc Classification (IAC AB 20kA 0,5 s to SANS 62271-202 req'd)				
7	Grade of cold rolled core steel				
8	Core steel loss at flux density for nominal voltage W/kg				
9	Maximum flux density (peak) in iron at nominal voltage: (a) Cores Tesla				
	(b) Yokes Tesla				
10	Maximum current density in windings at rated current: a) MV windings A/mm ²				
	(b) LV windings A/mm ²				
11	Fixed losses at normal ratio kW				
12	Load losses at normal ratio, rated power at 75°C kW				
13	Efficiency at rated power, normal ratio and unity power factor %				
14	Regulation at rated power as percentage of rated voltage: (a) At unity power factor %				
	(b) At 0,8 power factor lagging %				
15	Rated impedance voltage %				
16	Sound level dB				
17	Impulse withstand voltage kV	95	95	95	95

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY C: PARTICULARS OF MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

		ITEM C1	ITEM C2	ITEM C3	ITEM C4
18	Material and thickness of MV and LV Compartments, underbase and roof of miniature substation: (a1) MV and LV compartments material (a2) MV and LV compartments thickness mm (b1) Doors material (b2) Doors thickness mm (c1) Lock protector box material (c2) Lock protector box thickness mm (d1) Channel underbase material (d2) Channel underbase thickness mm (e1) Roof material (e2) Roof thickness mm				
19	Material and thickness of transformer tank and radiators: (a1) Main tank sides and cover materia (a2) Main tank sides and cover thickness mm (b1) Tank bottom material (b2) Tank bottom thickness mm (c1) Tap changer compt & door material (c2) Tap changer compt & door thickness mm (d1) Radiator material (d2) Radiator thickness mm				
20	Overall dimensions of miniature substations: (a) Breadth mm (b) Length mm (c) Height mm				
21	Mass of core without windings kg				
22	MV winding type and material (Cu / Al)				
23	Mass of conductor in MV windings kg				
24	LV winding type and material (Cu / Al)				
25	Mass of conductor in LV windings kg				

26	Total mass of complete miniature substation including oil/SF6	kg				
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Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY C: PARTICULARS OF MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

		ITEM C1	ITEM C2	ITEM C3	ITEM C4
27	Oil:				
27.1	Total quantity of oil required (excluding RMU)				
27.2	Oil to SANS 555-2 and H2O < 10 mg/kg	YES / NO*	YES / NO*	YES / NO*	YES / NO*
27.3	Oil PCB free (< 10 ppm)	YES / NO*	YES / NO*	YES / NO*	YES / NO*
28.1	MV bushings Make & Model No:				
28.2	LV bushings Make & Model No:				
29	Screened, insulated and "booted" transformer to RMU flexible connections	YES / NO*	YES / NO*	YES / NO*	YES / NO*
29.1	Manufacturer and model of USC on RMU circuit breaker module bushings				
29.2	Manufacturer and model of bushing boot on transformer side bushings				
30	LV busbars:				
	(a) Cross sectional area mm ²				
	(b) Maximum current density A/mm ²				
31	LV metering	Yes	Yes	Yes	Yes
32	Make and type of terminal blocks				
33	Main Switch-disconnector				
33.1	Make				
33.2	Model				
33.3	Utilisation Category				
33.4	Rated Current A				
33.5	Rated Short-time withstand current kA				
33.6	Rated Short-time withstand current duration s				
33.7	Rated Short-circuit Making Capacity A				
33.8	Rated Insulation Level V				
33.9	Rated Impulse Withstand Voltage kV				

34	Short Circuit Withstand Certification:	YES / NO*	YES / NO*	YES / NO*	YES / NO*
34.1	Valid Short Circuit Withstand certificate referenced and provided?				
34.2	SANS 60076-5 Similar Transformer motivation provided?	YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*
34.3	Transformer Design Sheet provided (if no valid SC Withstand Certificate)?	YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*

* Delete whichever is not applicable.

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY D: PARTICULARS OF HIGH SECURITY MINIATURE SUBSTATIONS (Information to be supplied with Tender)

		ITEM D1	ITEM D2	ITEM D3	ITEM D4
1	Name of miniature substation and transformer manufacturer				
2	Rated power kVA	315	500	800	1000
3	Rated voltage: (a) MV V	11000	11000	11000	11000
	(b) LV V	420	420	420	420
4	Vector group	Dyn 11	Dyn 11	Dyn 11	Dyn 11
5	Miniature Substation Type	Type B	Type B	Type B	Type B
6	Miniature Substation Internal Arc Classification (IAC AB 20kA 0,5 s to SANS 62271-202 req'd)				
7	Grade of cold rolled core steel				
8	Core steel loss at flux density for nominal voltage W/kg				
9	Maximum flux density (peak) in iron at nominal voltage:				
	(a) Cores Tesla				
	(b) Yokes Tesla				
10	Maximum current density in windings at rated current:				
	a) MV windings A/mm ²				
	(b) LV windings A/mm ²				
11	Fixed losses at normal ratio kW				
12	Load losses at normal ratio, rated power at 75°C kW				
13	Efficiency at rated power, normal ratio and unity power factor %				
14	Regulation at rated power as percentage of rated voltage:				
	(a) At unity power factor c %				
	(b) At 0,8 power factor lagging %				

15	Rated impedance voltage	%				
16	Sound level	dB				
17	Impulse withstand voltage	kV	95	95	95	95

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY D: PARTICULARS OF HIGH SECURITY MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

			ITEM C1	ITEM C2	ITEM C3	ITEM C4
18	Material and thickness of MV and LV Compartments, underbase and roof of miniature substation:					
	(a1) MV and LV compartments material					
	(a2) MV and LV compartments thickness	mm				
	(b1) Doors material					
	(b2) Doors thickness	mm				
	(c1) Lock protector box material					
	(c2) Lock protector box thickness	mm				
	(d1) Channel underbase material					
	(d2) Channel underbase thickness	mm				
	(e1) Roof material					
	(e2) Roof thickness	mm				
19	Material and thickness of transformer tank and radiators:					
	(a1) Main tank sides and cover materia					
	(a2) Main tank sides and cover thickness	mm				
	(b1) Tank bottom material					
	(b2) Tank bottom thickness	mm				
	(c1) Tap changer compt & door material					
	(c2) Tap changer compt & door thickness	mm				
	(d1) Radiator material					
	(d2) Radiator thickness	mm				
20	Overall dimensions of miniature substations:					
	(a) Breadth	mm				
	(b) Length	mm				
	(c) Height	mm				
21	Mass of core without windings	kg				
22	MV winding type and material (Cu / Al)					

23	Mass of conductor in MV windings	kg				
24	LV winding type and material (Cu / Al)					
25	Mass of conductor in LV windings	kg				
26	Total mass of complete miniature substation including oil/SF6	kg				

Schedule B: Schedule of Technical Data (Cont'd)

ITEM CATEGORY D: PARTICULARS OF HIGH SECURITY MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

			ITEM C1	ITEM C2	ITEM C3	ITEM C4
27	Oil:					
27.1	Total quantity of oil required (excluding RMU)	l				
27.2	Oil to SANS 555-2 and H2O < 10 mg/kg		YES / NO*	YES / NO*	YES / NO*	YES / NO*
27.3	Oil PCB free (< 10 ppm)		YES / NO*	YES / NO*	YES / NO*	YES / NO*
28.1	MV bushings Make & Model No:					
28.2	LV bushings Make & Model No:					
29	Screened, insulated and "booted" transformer to RMU flexible connections		YES / NO*	YES / NO*	YES / NO*	YES / NO*
29.1	Manufacturer and model of USC on RMU circuit breaker module bushings					
29.2	Manufacturer and model of bushing boot on transformer side bushings					
30	LV busbars:					
	(a) Cross sectional area	mm ²				
	(b) Maximum current density	A/mm ²				
31	LV metering		Yes	Yes	Yes	Yes
32	Make and type of terminal blocks					
33	Main Switch-disconnector					
33.1	Make					
33.2	Model					
33.3	Utilisation Category					
33.4	Rated Current	A				
33.5	Rated Short-time withstand current	kA				
33.6	Rated Short-time withstand current duration	s				
33.7	Rated Short-circuit Making Capacity	A				
33.8	Rated Insulation Level	V				

33.9	Rated Impulse Withstand Voltage	kV				
34	Short Circuit Withstand Certification:		YES / NO*	YES / NO*	YES / NO*	YES / NO*
34.1	Valid Short Circuit Withstand certificate referenced and provided?					
34.2	SANS 60076-5 Similar Transformer motivation provided?		YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*
34.3	Transformer Design Sheet provided (if no valid SC Withstand Certificate)?		YES / N/A*	YES / N/A*	YES / N/A*	YES / N/A*

* Delete whichever is not applicable.

Schedule B: Schedule of Technical Data (Cont'd)

PARTICULARS OF RING MAIN UNITS FOR MINIATURE SUBSTATIONS (Information to be supplied with Tender)

	DESCRIPTION	SPECIFIED	OFFERED
1	Manufacturer		
2	Equipment type and Model (Identifying name)		
3	Insulation medium	SF6	
4	Switch Disconnecter Interrupting Medium	SF6 / Vacuum	
5	Rated voltage	kV	12
6	Highest voltage	kV	13,2
7	Frequency	Hz	50
8	Rated short-time withstand current	kA	20 for 3s
9	Rated peak withstand current	kA	50
10	Rated peak lightning impulse withstand voltage	kV	95
11	Rated short-time power frequency withstand rms voltage	kV	28
12	Internal arc classification of ring main unit (separate from miniature substation) (SANS 62271-200)	IAC AFL 20kA 0,5s	
13	Internal arc classification of ring main unit / miniature substation combination (SANS 62271-202)	IAC AB 20kA 0,5s	
14	Rated normal current of busbars	A	630

15	Rated normal current of ring main switch disconnectors A	630	
16	Rated normal current of switch-fuse combination tee-off A	200	
17	Rated short circuit breaking current: Circuit breaker module tee-off kA	20	
18	Rated short circuit making current (all modules) kA pk	50	
19	Integral cable earthing switch:	YES	YES/NO*
19.1	ring main switch disconnectors		
19.2	circuit breaker tee-off	YES	YES/NO*
20	Making capacity of ring main switch disconnectors earthing switch kA peak	50	

* Delete whichever is not applicable.

Schedule B: Schedule of Technical Data (Cont'd)

PARTICULARS OF RING MAIN UNITS FOR MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

	DESCRIPTION	SPECIFIED	OFFERED
21	Making capacity of circuit breaker tee-off tee-off earthing switch kA peak	50	
22	Switch disconnectors Class	E2 M1	
23	Integral cable test facilities:	YES	YES/NO*
23.1	ring main switch disconnectors		
23.2	circuit breaker tee-off	Preferred	YES/NO*
24	Extensible busbars	NO	YES/NO*
25	Accessibility of Compartments:	Non-accessible	
25.1	RMU Gas insulated switch compartment		
25.2	RMU Air insulated fuse compartment	Interlock-controlled	
25.3	RMU Cable compartments	Interlock-controlled	
25.4	RMU Cable test facility compartment	Interlock-controlled	
26	Ring main unit partition class	PM	
27	Ring main unit loss of service continuity category	LSC1	

28	Minimum degree of protection – ring main unit MV compts		IP 4X	
29	RMU maximum test voltages (DC to earth)	kVdc	19	
30	RMU maximum test voltages (AC to earth)	kVac	13	
31	Units are to be lockable with padlocks with 5 mm diameter shackle (Supplied by the Purchaser)		YES	YES/NO*
32	Mass of unit complete with SF6 and operating mechanism	kg		
33	Volume of SF6 in complete unit	ℓ	YES	YES/NO*
34	Lifting facilities provided			

* Delete whichever is not applicable.

Schedule B: Schedule of Technical Data (Cont'd)

PARTICULARS OF RING MAIN UNITS FOR MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

	DESCRIPTION		SPECIFIED	OFFERED
35	Dimensions of cable boxes:			
35.1	Height	mm		
35.2	Depth	mm		
35.3	Width	mm		
36	Cable support clamps suitable for 3-core aluminium or copper 35 mm ² to 120 mm ² PILC DSTA cable		YES	YES/NO*
37	Distance between cable support clamp and cable bushing centres (switch disconnecter and switch-fuse combination)	mm	650	
38	Distance between cable bushing centres	mm	SANS 876	#
39	Distance from cable bushing contact face to nearest earthed metal	mm	SANS 876	#
40	Cable Bushings:		EN 50181 Type C	
40.1	Switch Disconnectors			
40.2	circuit breaker tee-off		EN 50181 Type C	
41	Cable bushings routine partial discharge tested		YES	YES/NO*
42	Ring main unit material details:			
42.1	Type of material: Main Switch Tank			
42.2	Material thickness: Main Switch Tank	mm		
42.3	Type of material: Sheet Steel Work			
42.4	Material thickness: Sheet Steel Work	mm		
42.5	Corrosion protection method: Sheet Steel Work			
43	Transit and storage bushing covers provided		YES	YES/NO*

* Delete whichever is not applicable.

Detail actual value, not SANS reference

Schedule B: Schedule of Technical Data (Cont'd)

PARTICULARS OF RING MAIN UNITS FOR MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

	DESCRIPTION	SPECIFIED	OFFERED
44	Earth Fault Indicators		
44.1	Earth fault indicator Make		
44.2	Earth fault indicator Type and Model		
44.3	Earth Fault Indicator Sensitivity	25<Ie<50	
44.4	Earth fault indicator resetting	Automatic and Manual	
44.5	Automatic resetting time delay	8	
44.6	Remote indicator provided on kiosk for outdoor RMUs	YES	YES/NO*
45	Cable Live Indication & Electrical Phasing Facilities		
45.1	Equipment make		
45.2	Equipment model / type		
45.3	Equipment VDS compliant in accordance with SANS 61243-5	YES	YES/NO*
45.4	Permanent 3 phase facilities	YES	YES/NO*
46	SF6 Gas disposal:	YES	YES/NO*
46.1	Provision by RMU manufacturer for safe recovery and disposal of SF6 gas on scrapping or end of service life of RMU?		
46.2	Full details of SF6 gas disposal quality assurance plan provided with tender?	YES	YES/NO*

* Delete whichever is not applicable

Schedule B: Schedule of Technical Data (Cont'd)

PARTICULARS OF RING MAIN UNITS FOR MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

	DESCRIPTION	SPECIFIED	Ring Main Units
47	Protection Relays (Self Powered Relays for Circuit Breaker Modules)		
47.1	Relay Make and Model		
47.2	Relay overcurrent characteristics	DT, NI, VI, EI	
47.3	Relay earth fault characteristics	DT, NI, VI, EI	
47.4	Current transformer relays: Overcurrent setting range	20 – 140% In, 2.5% steps	
47.5	Current transformer relays: Earth fault setting range	10 – 100% In, 2.5% steps	
47.6	IDMTL Time multiplier settings	Min 0,05, 0,01 steps	
47.7	DT Time settings	Inst, 0,04 s – 1s, 0,05 s steps	
47.8	Minimum Primary Current for full relay functionality % In		
47.9	Relay “Wake-Up” time, CB closed onto fault ms		
47.10	Total time to trip: CB closed on fault (relay not “awake”), at settings:		
47.10.1	IDMT, NI Curve, 2 x In, 0,1 time multiplier ms		
47.10.2	DT, 10 x In, Instantaneous ms		
47.11	Total time to trip: fault while on load (relay “awake”), at settings:		
47.11.1	IDMT, NI Curve, 2 x In, 0,1 time multiplier ms		
47.11.2	DT, 10 x In, Instantaneous ms		
47.12	Trip indication	LED / HMI; pickup, I>/I>> trip per phase, Io>/ Io >> trip	
47.13	Trip indication manually resettable off-load	YES	YES/NO*
47.14	Protection relay fitted with electronic HMI	YES	YES/NO*
47.15	Load current indication per phase	YES	YES/NO*
47.16	Event and fault history record buffer	YES	YES/NO*
47.17	Number of fault events / disturbances recorded	YES	YES/NO*
47.18	HMI back-up battery type (where applicable)	2 (minimum	
47.19	HMI back-up battery minimum service life yr	10	
47.20	HMI minimum normal functionality duration (no CT / off-load /fault) h	72	
47.21	Standard protection relay IP rating, as installed	IP54	

Schedule B: Schedule of Technical Data (Cont'd)

PARTICULARS OF RING MAIN UNITS FOR MINIATURE SUBSTATIONS (Cont'd) (Information to be supplied with Tender)

	DESCRIPTION	SPECIFIED	Ring Main Units
48	Protection Current Transformers		
48.1	Means of current measurement	CTs	
48.2	CT Make and designation		
48.3	CT fully compliant to SANS / IEC 61869-2	YES	YES/NO*
48.4	CT Mounting Position	Bushing / Cable Tail	
48.5	CT Ratio A	100/200/1	
48.6	CT Class and accuracy limit factor	5P10	
48.7	CT Rated burden VA	2,5	
48.8	CT Short time current rating kA for 1 s	20	

Schedule B: Schedule of Technical Data (Cont'd)

DETAILS OF GUARANTEES, TYPE TEST CERTIFICATION AND SUPPORTING DOCUMENTATION (Information to be supplied with Tender)

	DESCRIPTION	SPECIFIED	OFFERED
1	Type Tests:	YES	YES/NO*
1.1	Transformers Type Tested to the specified standards?	YES	YES/NO*
1.2	Schedule of Type Tests for Transformers submitted with tender, as specified?	YES	YES/NO*
1.3	Specific motivation for use of SANS 60076-5 Similar Transformers provision included with tender, per Item and per instance?	YES	YES/NO*
1.4	Miniature Substations Type Tested to the specified standards?	YES	YES/NO*
1.5	Schedule of Type Tests for Miniature Substations submitted with tender, as specified?	YES	YES/NO*
1.6	Ring Main Units Type Tested to the specified standards?	YES	YES/NO*
1.7	Schedule of Type Tests for Ring main Units submitted with tender, as specified?	YES	YES/NO*
1.8	Transformer Design Sheets and Short Circuit calculations included for all Items without valid and applicable Short Circuit Withstand Certificate?	YES	YES/NO*
2	Drawings:	YES	YES/NO*
2.1	Dimensioned General Arrangement drawings for Pole Mounted Transformer, Distribution Transformer and Miniature Substation Items included with Tender, as specified?	YES	YES/NO*
2.2	Dimensioned General Arrangement drawings for the Ring Main Unit included with Tender, as specified?	YES	YES/NO*
2.3	Dimensioned section drawings of RMU and Miniature Substation internal arc overpressure relief provisions included with Tender, as specified?	YES	YES/NO*
2.4	Electrical schematic diagrams for Miniature Substation, Transformer and Ring Main Units included with Tender, as specified?	YES	YES/NO*
3	Operating and Maintenance Instructions:	YES	YES/NO*
3.1	Detailed Operating and Maintenance Instruction documentation for Ring main units and other equipment included with Tender, as specified?		
4	Guarantees:	12	
4.1	Manufacturer's Guarantee: Minisubstations and Transformers months	12	
4.2	Manufacturer's Guarantee: Ring Main Units months	12	
4.3	Manufacturer's Guarantee: Earth Fault Indicator Equipment months	12	

* Delete whichever is not applicable.

Schedule 15C: Details of Quality System and Manufacturing and After Sales Facilities in South Africa

(To be completed by Tenderer; Use Separate Sheet per Manufacturer)

	DESCRIPTION	TENDERER / MANUFACTURER DETAIL
1	Manufacturer:	
1.1	Name	
1.2	Factory Address	
1.3	Telephone Number	
1.4	Total years established Years	
1.5	Total years manufacturing units as specified (attach detail) Years	
1.6	Total Technical Staff employed by Manufacturer at above premises	
1.7	Total Administrative Staff employed by Manufacturer	
1.8	Factory total floor area m2	
1.9	Current factory transformer & minisubstation monthly capacity	
1.10	Planned factory monthly manufacturing capacity for this contract	
1.11	Address of repair or workshop facilities (if different from above)	
1.12	Are all required spare parts available in Republic of South Africa?	YES/NO*
2	Manufacturer Quality Assurance System:	
2.1	Is QA system approved in terms of SANS 9001?	YES/NO*
2.2	If yes, state registration certificate No.	
2.3	Manufacturer SANS 9001 certificate attached?	YES/NO*
2.4	Manufacturer QA Plan and Company Organigram attached?	YES/NO*
3	Tenderer name (If different from Manufacturer)	
3.1	Tenderer Address	
3.2	Telephone Number	
3.3	Tenderer total years established Years	
3.4	Total Technical Staff employed by Tenderer	

3.5	Total Administrative Staff employed by Tenderer	
3.6	Tenderer premises total floor area	m2

Schedule 15D: Schedule of Manufacturer's Experience
(To be completed by Tenderer)

The Tenderer shall insert in the spaces provided below a list of contracts awarded to the Manufacturer in the past 10 years for equivalent distribution transformers and miniature substations and those contracts currently being undertaken.

EMPLOYER / CLIENT (NAME, TEL No. AND FAX No.)	QUANTITY (AND RATING RANGE) OF DISTRIBUTION TRANSFORMERS, TYPE B MINISUBS AND TYPE C MINISUBS SUPPLIED (EACH)	VALUE OF WORK R(m) Excl. Vat	DURATION OF CONTRACT	COMPLETION DATE
COMPLETED CONTRACTS				

[illegible]

Schedule 15E: Departures from the Requirements of the Specification (To be completed by Tenderer)
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[illegible]

[illegible]