Reg No 2003/011612/30

CD13/2022

SUPPLY AND DELIVERY OF PILLAR BOXES, CIRCUIT BREAKERS, FUSE-UNITS, CARRIERS AND FUSES, COPPER BUSBAR, CONTACTORS AND DAYLIGHT SWITCHES, RIPPLE AND RADIO CONTROL RECEIVER RELAYS, CURRENT TRANSFORMERS AND LOW VOLTAGE DISTRIBUTION BOARDS

CONTENTS

1. INVITATION

CENTLEC (SOC) Ltd (here after refers to as CENTLEC) invites bidders to submit their bids for the supply and delivery of pillar boxes, circuit breakers, fuse-units, carriers and fuses, copper bus bar, contactors and daylight switches, ripple and radio control receiver relays, current transformers and low voltage distribution boards as detailed in the specification below for a period of thirty-six (36) months.

2. MINIMUM SUBMISSION REQUIREMENTS

Any omission of the listed items would render an automatic disqualification

2.1 Supply unique security personal identification number (PIN) from SARS for TAX compliant status.

2.2 Supply municipal services (water, sanitation, rates, and electricity) clearance certificate or Lease Agreement with a current Bill and rates clearances, or Current Bill of Account not owing more than 90 days. In a case where the services are paid by the Landlord, the signed lease agreement and statement of account must be submitted by the bidder.

2.2.1 In an event, that the Bidder utilizes prepaid services (e.g. Water or electricity) a valid municipal clearance certificate(s) must still be provided.

2.3 Submit proof of registration on the National Treasury Centralized Supplier's Database.

2.4 Please note that the Special Conditions table as per point 3 below, needs to be met. All supporting documents needs to be submitted where applicable.

3. SPECIAL CONDITIONS

Description	YES	NO	Submit Supporting Documents
Please note that CENTLEC reserves the right to appoint more than one bidder where applicable.			Not Applicable
The successful bidder will be expected to enter into a Service Level Agreement with CENTLEC.			Only on Appointment
The SANS/ISO specifications mentioned in this document may have been revised and/or amended, the prospective bidder(s) are to ensure that equipment complies with the latest specification.			Letter of Confirmation

4. SCOPE OF WORK

This contract covers the supply and delivery of pillar boxes, circuit breakers, fuse-units, carriers and fuses, copper bus bar, contactors and daylight switches, ripple and radio control receiver relays, current transformers and low voltage distribution boards as described in the specification and schedules. All equipment shall be suitable for the use of CENTLEC.

5. TECHNICAL SPECIFICATION

5.1 GENERAL SPECIFICATIONS FOR PILLAR BOXES AND METER BOXES:

5.1.1 Steel meter boxes shall be manufactured with mild steel plate, galvanized as per SANS / ISO 1416 - 2000, hot metal sprayed with aluminum as per SANS 1391-2:1983 or 3CR12 steel alloy plate and all joints are to be welded and treated against corrosion afterwards.

5.1.2 Earthing of All steel meter boxes shall be fitted with an earth bar as indicated on drawing TS-5-20 or at least one anodized steel stud, M10 x 40mm welded to the meter box, supplied with two anodized washers and nuts, as an earth terminal.

5.1.3 Meter boxes to be neat and square with knockouts to size indicated on the drawing.

5.1.4 All metal parts to be properly cleaned in accordance with SANS 064 after all welding, drilling and grinding has been done and treated. Mild steel parts to be galvanized as per SANS / ISO 1416 - 2000 or hot metal wire sprayed with Aluminum by means of a Metco 4R arc system or similar.

5.1.5 All metal surfaces shall be primed with a suitable primer complying with the requirements for type 1 of SANS 679, and coated with acceptable, quick drying alkyd enamel complying, in all respects other than drying time, with the requirements for type 1 of SANS 630. The dry film thickness of the primer and the alkyd enamel shall be at least 20µm and the total dry thickness shall be at least 60µm.

5.1.6 The colour of the final coating shall be an acceptable match to SANS 630 colour No C12 “Avocado green” for all meter boxes.

5.1.7 Stubby boxes, special locking devices must be according to attached TS-5-58 Drawing. The frames and covers must be exact so that covers are interchangeable.

5.1.8 All hinges, locking handles and devices to be manufactured with Galvanized/anodized mild steel. Hinges to be mounted on the inside of the door and fitted with brass pins.

5.1.9 The locking devices of the front doors on the 4-, 6- and 8-way pillar box shall be fitted with an anodized mild steel swivel type padlock latch (3-point locking type) and a protector box shall be fitted as illustrated in figure A1 and A4 in NRS 059-1999. See Drawing TS - 9 -2 & Drawing TS - 5 -57.

5.1.10 The back covers of these pillar boxes shall slide downwards in position and be hooked on to the frame by means of six concealed hooking devices on the sides (over bended lips or other approved method). The back panel shall be held in the down position by means of two anodized spring-loaded barrel bolts, operated from the inside(front). See drawing TS - 5 - 57. No other material or method will be accepted.

5.2 PILLAR AND METER BOXES FOR ELECTRICAL HOUSEHOLD CONNECTIONS

5.2.1 PILLAR BOXES AND PLINTHS

5.2.1.1 All boxes shall be manufactured with 2 mm (14 SWG) thick mild steel plate, galvanized as per SANS / ISO 1416 - 2000, hot metal sprayed with aluminum as per SANS 1391-1:1983 or 3CR12 steel alloy plate. Dimensioned in accordance with amended Drawing No's TS - 5 - 19, TS - 5 - 20, TS - 5 - 21, TS - 5 - 58, TS - 5 - 59, TS - 9 - 11 and TS - 9 - 12 attached.

Table 1: Pillar Boxes and Plinths

Item	Description	Type of material - specify offered (3CR12)	Manufacturer	Delivery Period in weeks
1.	Domestic pillar box (two way) and Extra covers (Drawing TS - 5 - 19 "Avocado green" colour)			
2.	Plinth for the two way pillar box			
3.	4-Way pillar box and Extra covers (Drawing TS – 5 – 20 "Avocado green" colour)			
4.	Plinth for the 4-way pillar box			
5.	6-Way pillar box and Extra covers (Drawing TS – 5 – 21 "Avocado green" colour)			
6.	Plinth for the 6-way pillar box			
7.	8-Way pillar box and Extra covers (Drawing TS - 5 – 21 "Avocado green" colour)			
8.	Plinth 8-way pillar box			
9.	Stubby Box - One way (Drawing TS – 5 – 59 "Avocado green" colour)	3CR12 cover only		
10.	Plinth for the 1-way stubby box			
11.	Stubby Box – Two way (Drawing TS – 5 – 58 "Avocado green" colour)	3CR12 cover only		
12.	Plinth for the two-way stubby box			
13	Pillow type cover for distribution box (Drawing TS – 9 – 11	3CR12 cover only		

Item	Description	Type of material - specify offered (3CR12)	Manufacturer	Delivery Period in weeks
	"Avocado green colour")			
14	Pillow type distribution box cover with meter kiosk top (Drawing TS – 9 – 12 "Avocado green colour")	3CR12 cover only		
15				
15.1	Window fitted to Item 1.5 (Size 100 x 90 x 6mm lens)			
15.2	Window fitted to Item 1.6 (Size 230 x 90 x 6mm lens)			
16				
16.1	Lens (320 x 130 x 6mm) for Pillar box - two way - Item 1.1	Minimum order = 100		
16.2	Lens (100 x 90 x 6mm) for Stubby - one way - Item 1.5	Minimum order = 100		
16.3	Lens (230 x 90 x 6mm) for Stubby - two way - Item 1.6	Minimum order = 100		

5.2.2 METER BOXES

5.2.2.1 All meter boxes shall be manufactured strictly to size and specification in accordance with Drawing No's. TS - 5 - 2, 18, 18A & 49 attached.

5.2.2.2 Each box to be fitted with a "Viro" night latch with a special master key combination known as **ABC cascading system, set to the BM 44 profiles.** (No keys to be supplied, but a sample of the lock which will be supplied by the successful bidder must be submitted for approval prior to delivery).

5.2.2.3 A 8 mm Masonite or Super wood board shall be fitted in each box as per drawing.

5.2.2.4 The V-strap clamps on drawing TS - 5 – 18, 18A and 49 shall be **arc welded to box** and suitable to strap the box to a wooden pole (160-220mm Dia) by means of a 19mm² wide steel strap and buckle with **a 10mm gap between the pole and the box**.

Table 2: Meter Boxes

Item	**Description**	**Type of material - specify offer (galv. steel, 3CR12 or other)**	**Delivery Period in weeks**
2 A	Rural Meter box with V-strap brackets Drawing TS - 5 - 18	Unpainted, treated 3CR12 steel only	
2 B	3 Phase Rural Meter box with V-strap brackets - Drawing TS - 5 -18 A	Unpainted, treated 3CR12 steel only	
2 C	Standard kVA Meter box - Drawing TS - 5 - 2 ("Avocado green" colour)		
2 D	Pole box for one single phase split pre-payment meter Drawing TS - 5 – 49 (310mm)	Unpainted, treated 3CR12 steel only	
2 E	Pole box for one single phase split pre-payment meter & a ripple relay Drawing TS - 5 – 49 (510mm)	Unpainted, treated 3CR12 steel only	
2 F	Pole box for two single phase split pre-payment meters & a ripple relay Drawing TS - 5 - 49 (805mm)	Unpainted, treated 3CR12 steel only	

5.3 READY BOARDS FOR SUB-ECONOMIC HOUSING COMPLETE WITH MOUNTING BASEPLATE (AS PER ITEM 4B)

5.3.1. Boards shall be of the compression molded glass-fiber reinforced polyester type to SANS 1619: 2006.

5.3.2 Boards to be pre-assembled and wired to SANS 10142-1: 2003 standard and ready to install.

5.2.3 Boards to be fitted with one bulkhead fitting with BC Holder for max 60 Watt lamp.

5.3.4 Board's to house the following equipment: One 60 amp single pole plus neutral earth leakage Unit (2.5 kA 30mA), one 20 amp single pole 2.5 KA Circuit breaker, one 16 A light switch and three 16 A switched plug sockets.

5.3.5 **Boards to be engraved/embossed with the word CENTLEC (± 30 x 15mm) on the face of the board in an approved position and manner.**

5.3.6 Boards to be mounted on to mounting plate and wired with 2 x 800mm long red and black 10mm² PVC Stranded copper wires and connected on the incoming terminals of the earth leakage switch (main) and 1 x 500mm long bare 10mm² stranded copper wire connected to the earth terminal inside the board.

5.3.7 If boards are equipped with hinges, the hinges must be on the left hand side (Door to open to the left).

Table 3: Ready Boards

Item	**Description**	**Manufacturer**	**Delivery Period in weeks**
1	Ready Boards		

5.4 MOUNTING BASE-PLATES FOR THE INSTALLATION OF PRE-PAID METERS, FOR PRE-PAID METERS WITH A READY BOARD AND FOR RIPPLE CONTROL RECEIVER RELAYS

5.4.1 Baseplates shall be of the compression molded glass-fibre reinforced polyester type.

5.4.2 Baseplates to be fitted with 4mm brass inserted nuts.

5.4.3 Baseplates to be suitable for
- 5.4.3.1 Single pre-paid meter and
- 5.4.3.2 Pre-paid meter with ready board
- 5.4.3.3 Ripple control receiver relay

5.4.5 For detail design and measurements refer to amended drawing numbers:

TS - 5 - 13, 14 & 15 attached.

BASE-PLATE FOR PRE-PAID METER ONLY AS PER AMENDED DRAWING TS - 5 - 14

Table 4: Base-Plates for Pre-paid meters only

Item	Description	Manufacturer	Delivery Period in weeks
1	Base-Plates for Pre-paid meters only		

4(b) BASE-PLATE FOR PRE-PAID METER AND READY BOARDS AS PER DRAWING TS - 5 - 13

Table 5: Baseplates for pre-paid meters and ready boards

Item	Description	Manufacturer	Delivery Period in weeks
1.	Baseplates for pre-paid meters and ready boards		

4(c) BASE-PLATE FOR RIPPLE RELAY (LOAD CONTROL RELAY) AS PER DRAWING TS - 5 - 15

Table 6: Baseplates for Ripple Relays

Item	Description	Manufacturer	Delivery Time
1.	Baseplates for Ripple Relays		

5.5 CIRCUIT BREAKERS FOR STREETLIGHTS

5.5.1 All circuit breakers shall be in accordance with SANS 156: 1977 as amended, IEC 60947-2 and bears the mark of the SANS. Preference will be given to the mini rail mounting type breakers for maintenance purposes.

Fault current capacity	:	2,5 kA
Type	:	Single pole
Current carrying capacity	:	5 Amps and 10 Amps
Voltage	:	230 volt
Physical size;		
Length	:	82mm
Width	:	13mm
Depth	:	66mm

Table 7: Circuit Breakers for Streetlights

ITEM	DESCRIPTION	MANUFACTURER	ITEM CODE	Delivery Time
1.	Streetlight circuit breaker in a pole box with 2m long UV-stable connecting tails			
2.	Miniature Circuit Breaker, S / P, 5 Amp, 2.5kA, Std curve			
3.	Miniature Circuit Breaker, S / P, 10 Amp, 2.5kA, Std curve			
4.	PVC shroud for single miniature breaker on an adaptor plate - Similar to CBI type QA-(13)			

5.	Adaptor plate - Similar to CBI “S” range to type “E” clip tray - single			

5.6 CIRCUIT BREAKERS SINGLE POLE - 230 / 400V AC

5.6.1 All circuit breakers shall be in accordance with SANS 156: 1977 as amended and bear the mark of the SANS. Preference will be given to the mini rail mounting type breakers for maintenance purposes.

5.6.2 Circuit breakers shall be of the single pole type, complete with shroud, shroud screws and be suitable for surface mounting. Terminals shall be of the box type. All circuit breakers shall carry their rated current as detailed in the schedule for at least one hour without tripping at room temperature. When tested at room temperature, circuit breakers shall carry 200% of their rated current for 6 seconds without tripping but must trip within 20 seconds.

5.6.3 All circuit breakers will be tested upon delivery and those not complying with the load characteristics given above will be rejected. Provision shall be made to seal the circuit breakers in the off position. Full technical information in connection with the circuit breakers offered shall accompany the Bid to enable the CENTLEC to investigate any technical points that cannot be deduced from the schedule. Tripping current/time curves must be submitted with the Bid.

Table 8: Single Pole Circuit Breakers

ITEM	DESCRIPTION	MANUFACTURER	MANUFACTURERS ITEM CODE	Delivery Time
1.	Circuit breaker, S / P, 2 Amp, 2.5kA, Curve 2			
2.	Circuit breaker, S / P, 5 Amp, 2.5kA, Curve 2			
3.	Circuit breaker, S / P, 10 Amp, 2.5kA, Curve 2			
4.	Circuit breaker, S / P, 15 Amp, 2.5kA, Curve 2			
5.	Circuit breaker, S / P, 20 Amp, 2.5kA, Curve 2			

ITEM	DESCRIPTION	MANUFACTURER	MANUFACTURERS ITEM CODE	Delivery Time
6.	Circuit breaker, S / P, 30 Amp, 2.5kA, Curve 2			
7.	Circuit breaker, S / P, 30 Amp, 5kA, Curve 2			
8.	Circuit breaker, S / P, 40 Amp, 2.5kA, Curve 2			
9.	Circuit breaker, S / P, 40 Amp, 5kA, Curve 1			
10.	Circuit breaker, S / P, 50 Amp, 2.5kA, Curve 2			
11.	Circuit breaker, S / P, 60 Amp, 2.5kA, Curve 2			
12.	Circuit breaker, S / P, 60 Amp, 5kA, Curve 1			
13.	Circuit breaker, S / P, 80 Amp,5kA, Curve 1			
14.	Circuit breaker, S / P, 100 Amp, 5kA, Curve 1			
15.	Circuit breaker, S / P, 120 Amp, 5kA, Curve 1			
16.	Circuit breaker, S / P, 120 Amp, 5kA, Curve 2			

ITEM	DESCRIPTION	MANUFACTURER	MANUFACTURERS ITEM CODE	Delivery Time
17.	PVC shroud for single breaker (5 kA) with surface mounting clip and sealing screws			
18.	PVC shroud for double breaker(5 kA) with surface mounting clip and sealing screws			
19.	PVC shroud for triple breaker with surface mounting clip and sealing screws			

NB: Items 1 - 6, 8, 10, 11 must be curve 2 breakers with a breaking capacity of 2,5 kA. Items 7, 9, 12 - 15, must be curve 1 breaker with a breaking capacity of 5 kA with a Orange handle. Item 16 must be curve 2 breakers with a breaking capacity of 5 kA

5.7 CIRCUIT BREAKERS 3 POLE - 400V AC

5.7.1 Circuit breakers shall be in accordance with SANS 156: 1977 and bear the mark of the SANS. Circuit breakers shall be suitable for surface mounting. Circuit breakers shall be of the hydraulic-magnetic or thermal-magnetic type of the sizes as specified below. **ALL CIRCUIT BREAKERS SHALL BE RATED AT THE SPECIFIED RATING AND BE OF THE NON-ADJUSTABLE TYPE.**

5.7.2 Circuit breakers shall be fitted with lug-type terminals connecting incoming and outgoing circuits and suitable to accept a minimum size of sectoral aluminum conductor cable type terminal crimping lugs or for connecting copper busbars as follows; Item (1), (2) (3) ~ 120mm² aluminum conductor cable, Item (4) ~ 70mm² copper conductor cable, Item (5) - (6) ~ 185mm² aluminum conductor cable, Item (7) ~ (8) - 300mm² aluminum conductor cable, Item (9) - (11) ~ 50mm x 10mm copper busbar, Item (12) ~ 70mm x 10mm copper busbar. Provision shall be made to seal the circuit breakers in the off position. ALL CIRCUIT BREAKERS MUST BE SUPPLIED COMPLETE WITH PVC SHROUDS AND SEALING SCREWS.

5.7.3 Full technical information in connection with the circuit breakers offered shall accompany the Bid to enable CENTLEC to investigate any technical points that cannot be deduced from the schedule. Tripping current time curves must be submitted with the Bid.

Table 9: Triple Pole Circuit Breakers – 400V AC

Item	**ITEM DESCRIPTION**	**Manufacturer**	**MANUF. ITEM NO**	**Delivery Time**
1.	(a) Circuit breaker, 3 pole, 100 amp, 15kA breaking cap. (sym) at 400 V AC			
2.	(b) Circuit breaker, 3 pole, 100 amp, 25kA breaking cap. (sym) at 400 V AC			
3.	(c) Circuit breaker, 3 pole, 125 amp, 25kA breaking cap. (sym) at 400 V AC			
4.	(d) Circuit breaker, 3 pole, 150 amp, 25kA breaking cap. (sym) at 400 V AC			
5.	(e) Circuit breaker, 3 pole, 200 amp, 25kA breaking cap. (sym) at 400 V AC			
6.	(f) Circuit breaker, 3 pole, 250 amp, 35kA breaking cap. (sym) at 400 V AC			
7.	(g) Circuit breaker, 3 pole, 300 amp, 35kA breaking cap. (sym) at 400 V AC			

Item	ITEM DESCRIPTION	Manufacturer	MANUF. ITEM NO	Delivery Time
8.	(h) Circuit breaker, 3 pole, 350 amp, 35kA breaking cap. (sym) at 400 V AC			
9.	(i) Circuit breaker, 3 pole, 400 amp, 35kA breaking cap. (sym) at 400 V AC			
10.	(j) Circuit breaker, 3 pole, 500 amp, 40kA breaking cap. (sym) at 400 V AC			
11.	(k) Circuit breaker, 3 pole, 630 amp, 40kA breaking cap. (sym) at 400 V AC			
12.	(l) Circuit breaker, 3 pole, 700 amp, 40kA breaking cap. (sym) at 400 V AC			
13.	(m) Circuit breaker, 3 pole, 800 amp, 40kA breaking cap. (sym) at 400 V AC			
14.	(n) Circuit breaker, 3 pole, 1000 amp, 40kA breaking cap. (sym) at 400 V AC			
15.	7a1 PVC shroud and sealing screws for the 3 pole, 100			
16.	7b1 PVC shroud and sealing screws for the 3 pole, 100			
17.	7c1 PVC shroud and sealing screws for the 3 pole, **125**			
18.	7d1 PVC shroud and sealing screws for the 3 pole, 150			
19.	7e1 PVC shroud and sealing screws for the 3 pole, 200			
20.	7f1 PVC shroud and sealing screws for the 3 pole, 250			
21.	7g1 PVC shroud and sealing screws for the 3 pole, 300			
22.	7h1 PVC shroud and sealing screws for the 3 pole, 300			
23.	7i1 PVC shroud and sealing screws for the 3 pole,			
24.	7j1 PVC shroud and sealing screws for the 3 pole, 500			
25.	7k1 PVC shroud and sealing screws for the 3 pole, 630			
26.	7l1 PVC shroud and sealing screws for the 3 pole,			

Item	ITEM DESCRIPTION	Manufacturer	MANUF. ITEM NO	Delivery Time
27.	7m1 PVC shroud and sealing screws for the 3 pole,			
28.	7n1 PVC shroud and sealing screws for the 3 pole,			

5.8 ISOLATING SWITCHES 3 POLE - 230 / 400 V AC

5.8.1 All isolating switches shall be in accordance with SANS 152 as amended and bear the mark of the SANS. Full technical information in connection with the isolating switches offered shall accompany the Bid. Rated voltage 660 V AC. All isolating switches must be suitable for surface mounting and supplied complete with a relevant PVC shroud, mounting clips and sealing screws.

Table 10: Isolating Switches Triple Pole

Item	ITEM DESCRIPTION	Manufacturer	MANUF. ITEM NO	Delivery Time
1.	8a Isolating Switch, 1 pole, 100 amp, 10kA breaking cap. (sym) at 230 V AC - complete with shroud, clips & screws			
2.	8b Isolating Switch, 2 pole, 100 Amp, 10kA breaking cap. (sym) at 400 VAC - complete with shroud, clips & screws			
3.	8c Isolating Switch, 3 pole, 100 amp, 10kA breaking cap. (sym) at 400 V AC - complete with shroud, clips & screws			
4.	8d Isolating Switch, 3 pole, 100 amp, 20kA breaking cap. (sym) at 400 V AC - complete with shroud, clips & screws			
5.	8e Isolating Switch, 3 pole, 200 Amp, 20kA breaking cap. (sym) at 400 VAC - complete with			

Item	ITEM DESCRIPTION	Manufacturer	MANUF. ITEM NO	Delivery Time
	shroud, clips & screws			
6.	8f Isolating Switch, 3 pole, 300 amp, 30kA breaking cap. (sym) at 400 V AC - complete with shroud, clips & screws			
7.	8g Isolating Switch, 2 pole, 30 amp, 5kA breaking cap. (sym) at 120V DC - complete with shroud, clips & screws			

5.9 RIPPLE CONTROL RECEIVER RELAYS

5.9.1 The receiver shall be completely enclosed in a substantially dust-tight, moisture- and insect-proof case and mounted on a base of non-magnetic material and a polycarbonate cover and separate terminal cover. The cover material shall be resistant against ultraviolet light. Provision must be made for separate attachment of seals to the polycarbonate cover and terminal cover. The case shall be inflammable.

5.9.2 The load switch position must be clearly marked e.g., positions marked on/off, A/B. Municipal name, number and code markings shall be provided as specified by the Engineer.

5.9.3 The insulation resistance between current carrying parts, the supply voltage circuit, and/or any exposed metal parts shall be at least 5 meg ohms when tested at 500 volts DC.

5.9.4 The receiver shall be of the solid-state type and shall continuously monitor the receiver function and signal any malfunction. It must have a preset able switch position upon loss of mains voltage with programmable options upon restoration of mains supply. If programming of the receiver requires the replacement of components such as proms, code cards, etc. The unit price of such a component shall be stated in the price schedule. Preference shall be given to a design where the receiver relays can be programmed via a PC and interface.

5.9.5 Testing units for testing the complete receiver including all additional receiver functions shall be offered. All receivers must be adaptable on the existing system.

5.9.6 If any software and/or any ancillary instruments are needed to program the receivers the unit price of such software and/or instruments shall be stated in the price schedule.

GENERAL:

Supply voltage (Nominal Voltage): 200/250V

Supply frequency: 50 Hz (-2% +2%)

Operating signal: Volts: _____ (% Vn)

: Non-operating Level: _____ (% Vn)

: Frequency: 425/1050 Hz (Reprogrammable)

: Bandwidth: _____ Hz

: Harmonics Immunity: _____ Hz

Maximum number of relays per receiver : _____ (1 → 6)

Continuous current rating: _____ (not less than 25A at 400V AC)

Guaranteed short circuit current rating for 5 sec: _____ AMPS

Guaranteed short circuit current rating for 10 sec:_____ AMPS

Material of load contacts: _____

Type of load switch (e.g. Single Throw): _____

Guaranteed number of operations at rated current and voltage:_____

Guarantee on complete receiver : _____

Preference shall be given to 40-amp contacts for geysers and 16 - 25 amp for traffic control purposes.

Table 11: Receivers

Item	**DESCRIPTION**	**CURRENT RATING OF CONTACT**	**MANUF. ITEM CODE**	**Delivery Time**
1.	Receiver with 1 x 40A contact			
2.	Receiver with 2 x 40A contacts			
3.	Receiver with 3 x 40A contacts			
4.	Receiver with 5 x 16A contacts			
5.	Receiver with 1 x 25A contact			
6.	Receiver with 2 x 25A contacts			
7.	Receiver with 3 x 25A contacts			
8.	Software program			
9.	Signal volt Meter (1050Hz)			
10.	Signal volt meter (425Hz)			
11.	Programming device			

Item	**DESCRIPTION**	**CURRENT RATING OF CONTACT**	**MANUF. ITEM CODE**	**Delivery Time**
12.	Loose Contact Assembly 25A			
13.	Loose Contact Assembly 40A			
14.	Clip in receiver 25A single pole – DIN rail			
15.	Clip in receiver 25A single pole – Samite rail			

5.10 RING TYPE (METERING) CURRENT TRANSFORMERS (LOW VOLTAGE)

5.10.1 Specifications for ring type LV current transformers. All current transformers must be supplied complete with PVC shrouds and sealing screws.

DESCRIPTION:

Burden (Minimum) : 10 VA
Class : 0.5
Insulation Level : 660 Volt
Frequency : 50 Hz
Maximum outer diameter : 150mm
Minimum inner diameter : 60mm
Maximum Width : 80mm
Position of terminals : 45° to mounting bracket
Mounting bracket : Bottom, flat with 2 x 8mm Dia Holes
Terminals : 6mm Brass studs, nuts & washers
Phase displacement : None

Table 12: Low Tension Current Transformers

Item	**RATIO**	**PHYSICAL SIZE**	**MANUF. ITEM CODE**	**Delivery Time**
1.	200/5			
2.	300/5			
3.	400/5			
4.	500/5			
5.	600/5			
6.	800/5			

7.	1000/5			
8.	1200/5			
9.	1500/5			

Compliance to BS 7626 : YES/NO _____

Accuracy class of test instrumentation : _____

NB_TEST CERTIFICATES STATING ACCURACY SHALL BE PROVIDED WITH EACH CURRENT TRANSFORMER. NO CONSIGNMENT WILL BE ACCEPTED UNLESS IT IS ACCOMPANIED BY ALL THE RELEVANT TEST CERTIFICATES.

5.11 CURRENT TRANSFORMERS FOR USE ON MEDIUM VOLTAGE (12kV) SYSTEM

5.11.1 Current transformers shall only be ring type unless specifically specified as primary wound.
Wound primary current transformers must be fitted with straight bus bar or 90 degree bend bus bar as specified when ordered. All current transformers must be supplied complete with PVC shrouds and nonconductive sealing mechanism. **NB: Ring type current transformers to be supplied without bus bars.**

5.11.2 All current transformers to be fitted with flat bottom mounting brackets with four 10mm dia slotted holes. Ring type CT'S inside diameter to be at least 65mm.
Outside diameter not to exceed 165mm and the height is not to exceed 200mm.
One additional set of rating plates (stickers) must be supplied with each current transformer, temporarily affixed to it. Current transformers must comply with BS 7626 and IEC 60044-1.

Please Note:

(a) Bidder must submit fully dimensioned drawings with the Bid documents.

(b) Test certificates stating accuracy shall be provided with each current transformer. No consignment will be accepted unless it is accompanied by all the relevant test certificates. Serial numbers shall be provided on each current transformer and the corresponding certificate.

Table 13: Medium Voltage Current Transformers

Item	**DESCRIPTION**	**FOR METERING**	**FOR PROTECTION**	**FOR PROTECTION**
1.	Burden minimum	10 VA	-	10VA
2.	Class	**0,5**	X	10p10
3.	Voltage Level & Insulation level for primary wound type	12/28/95kV	12/28/95kV	12/28/95kV
4.	Frequency	50Hz	50Hz	50Hz
5.	Phase Displacement	None	N/A	N/A
6.	KpV		180 Volt	
8.	STC	25kA/3SEC	25kA/3SEC	25kA/3SEC

Table 14:12kV Equipment

ITEM 10B	USE	RATIO	CLASS	Bus bar Fitted?	Delivery Time
1	Metering	60-30/5	**0,5**	400Amp straight bus bar with 10mm holes	
2	Metering	100-50/5	**0,5**	400Amp straight bus bar with 10mm holes	
3	Metering	300-200-100/5	**0,5**	No – ring type	
4	Metering	600-400-200/5	**0,5**	No – ring type	
5	Metering	600-400-200/5	**0,2**	No – ring type	
6	Protection	600/5	10P 10	No – ring type	
7	Protection	600/5	X	No – ring type	
8	Protection	300/5	10P 10	No – ring type	
9	Protection	200/5	10P 10	No – ring type	
10	Protection	60-30/5	10P 10	400Amp straight bus bar with 10mm holes	
11	Protection	60-30/5	10P 10	400Amp 90 degree bend bus bar(P1 side) with 10mm holes	
12	Protection	600/1	10P 10	No – ring type	
13	Protection	600/1	X	No – ring type	
14	Protection	100/1	10P 10	No – ring type	
15	Protection	1200/1	10P 10	No – ring type	
16	Protection	1200/1	X	No – ring type	
17	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp straight bus bar with 10mm holes	
18	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp straight bus bar with 10mm holes	
19	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp 90 degree bend bus bar with 10mm holes (P1 side)	
20	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp 90 degree bend bus bar with 10mm holes (P1 side)	

5.12 CURRENT TRANSFORMERS FOR USE ON MEDIUM VOLTAGE (36kV) SYSTEM

5.12.1 NB: Ring type current transformers to be supplied without bus bars.

All current transformers to be fitted with flat bottom mounting brackets with four 10mm dia slotted holes. Ring type CT'S inside diameter to be at least 65mm.
Outside diameter not to exceed 165mm and the height is not to exceed 200mm.
One additional set of rating plates (stickers) must be supplied with each current transformer, temporarily affixed to it. Current transformers must comply with BS 7626, IEC60044-1 and IEC 61869-2.

Table 15 : 36kV Equipment

Item no.10B	Ratio	VA	Class	KPV	IM(A)	R(OHM)	Delivery Time
21	300/1 300/1	10	5P10 PX	 150	 0.080	2.500 2.200	
22	200-800-1200/1 200-800-1200/1	10	0.5/0.2 PX	 250	 0.100	3.0 3.0	

Name of manufacturer : _____

% local content : _____%

Comply with BS 7626, IEC60044-1: yes/no _____

Accuracy class of test
Instrumentation equipment used : _____

Make and model of test
Equipment used : _____

Delivery period : _____
Bulk discount for ordering 12
or more of an item : _____%

5.13 PLASTIC AND LEAD SEALS AND SEALING WIRE PLUS STEEL SEALING FERRULES AND STEEL WIRE

5.13.1 All seals shall be suitable for sealing off house service meters and circuit breakers. Lead seals shall be of the round type with a minimum outside diameter of 10mm (to be supplied with suitable wire). Steel Ferrules shall be of the 6mm non-chamfered type for using with heavy duty sealing pliers and suitable steel wire.

Table 16: Ferrules and Sealing Wire

Item	DESCRIPTION	Manufacturer	Delivery Time
1.	A - Narrow tail seal of nylon with metal insert in locking chamber. Small round head with laser printing. Stock printed ICS and serially numbered in the following colors: yellow, green, blue, red, orange and white. (per pkt of 500)		
	B – 6mm^2 Steel Ferrules (per pkt of 100)		
	C – 6mm^2 Tinned Copper Ferrules (per pkt of 100)		
	D - Steel wire for (C) - single core corrugated bright steel wire - 150mm lengths (per bundle)		
	Qty per bundle (100 per bundle preferred)		

5.14 FUSE UNITS 3 PHASE 4 WIRE HRC / LOW VOLTAGE

5.14.1 These shall be of the "Henley" type vertically mounted in-line fuse units without the neutral link at the bottom and 3 phase mountings with knife blade terminals capable of accommodation slotted tag type HRC fuses of the following center to center sizes:

Table 17: Fuse Units

ITEM	DESCRIPTION	Manufacturer	Delivery Period
1.	76mm Centres up to 200 amp rating		
2.	83mm Centres up to 400 amp rating		
3.	92mm Centres up to 600 amp rating		

5.15 FUSE CARRIERS FOR SLOTTED TAG TYPE HRC FUSES

5.15.1 These shall be wedge type carriers with thumb screw fasteners to take double slotted tag HRC fuses with fixing centers as detailed below and suitable for fitting on the "Henley" type fuse units described under item 15 above.

Table 18: Fuse Carriers

ITEM	DESCRIPTION	Manufacturer	Delivery Time
1.	76mm Centres up to 200 amp rating		
2.	83mm Centres up to 400 amp rating		
3.	92mm Centres up to 600 amp rating		

5.16 FUSES HRC SLOTTED TAG TYPE / LOW TENSION

5.16.1 These shall be suitable to fit fuse carriers as per Centlec standards and specifications

Table 19: HRC Fuses

ITEM	DESCRIPTION	Manufacturer	Delivery Period
A	76mm Centres 100 amp		
B	83mm Centres 100 amp		
C	76mm Centres 150 amp		
D	76mm Centres 200 amp		
E	83mm Centres 200 amp		
F	92mm Centres 200 amp		
G	76mm Centres 250 amp		
H	83mm Centres 250 amp		
I	83mm Centres 300 amp		
J	92mm Centres 300 amp		
k	83mm Centres 400 amp		
l	92mm Centres 400 amp		
m	92mm Centres 500 amp		
n	92mm Centres 600 amp		

Table 20: PT FUSES – BLADE TYPE

ITEM	DESCRIPTION	Manufacturer	Delivery Time
1.	PT Fuse unit 6A – surface mount front connection		
2.	PT Fuse unit 6A – surface mount rear connection studs		
3.	PT 6A Fuses – 10 per box		

5.17 LOW VOLTAGE DISTRIBUTION BOARDS

5.17.1 Specification: This Specification details the requirements for indoor low-voltage (LV) distribution fuse assemblies for use in electricity distribution substations, which supply power cables at low voltage. (220 / 400 Volts)

5.17.2 LV assemblies as detailed in this specification are suitable for use with transformers up to and including 500KVA for a type “A” distribution assembly, and for use with transformers up to and including 1000KVA for a type “B” distribution assembly.

5.17.3 The LV assemblies shall be suitable for use on 3 Phase, 4 wire, separate neutral and earth, AC systems at a frequency of 50Hz and at a nominal voltage of 400 V between phases and the assembly must comply with the specifications as mentioned.

5.18 References

5.18.1 This Standard refers to, or should be read in conjunction with, the following documents:

5.18.1.1 SANS IEC 60269 Low-voltage fuses Part 1 General requirements & Part 2

5.18.1.2 Part 2-1 Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial applications)

5.18.1.3 Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial applications) Sections I to V: Examples of types of standardized fuses.

5.18.1.4 SANS IEC 60439 Low-voltage switchgear and control gear assemblies

5.18.1.5 Type tested and partially type testes assemblies

5.18.1.6 SANS IEC 60529 Degrees of protection provided by enclosures (IP code)

5.18.1.7 IEC 60269 Low-voltage fuses

5.18.1.8 General requirements

5.18.1.9 Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial applications)

5.18.1.10 Section VI gU fuse-links with wedge tightening contacts*

5.18.1.11 IEC 60695-11-10 Fire hazard testing – Test flames – 50W horizontal and vertical test methods.

5.18.1.12 IEC 60898 Circuit-breakers for over current protection for household and similar installations.

5.18.1.13 Part 1 Circuit breakers for ac. operation

5.18.1.13 ISO 272 Fasteners – hexagonal products – width across flats

5.18.1.14 ISO 2859 Part 1 Sampling schemes indexed by acceptable quality limit (AQL) for lot by lot inspection.

5.18.1.14 ISO 4759 Tolerances for fasteners

(*** very recent addition to IEC 60269-2; fuse links are also specified in BS 88 Part 5)**

5.19 Environmental conditions

5.19.1 The LV assemblies will be installed in the LV compartment of miniature substations. Service conditions shall be in accordance with normal service conditions as defined in clause 6 of SANS IEC 60439-1. The maximum daily average ambient temperature will not exceed 35°C.

5.20 TYPE AND DESIGN

5.20.1 Type “A” LV assemblies shall consist of:

5.20.1.1 1 - Mounting frame

5.20.1.2 1 - Set of 800A, triple pole and half size neutral busbars

5.20.1.3 1 - Earth bar extending the full length of the frame

5.20.1.4 1 - Set of 800A, triple pole and half size neutral incoming connections.

5.20.1.5 8 - 400A fuse distributor units.

5.20.1.6 1 - Lighting distribution board

5.20.1.7 1 - 16A Socket outlet

5.20.1.8 1 - Instrument panel

5.20.2 Type “B” LV assemblies shall consist of:

5.20.2.1 1 - A mounting frame

5.20.2.2 1 - Set of 1600A, triple pole and half size neutral bus bars

5.20.2.3 1 - Earth bar extending the full length of the frame

5.20.2.4 1 - Set of 1600A, triple pole and half size neutral incoming connections.

5.20.2.5 8 - 4 x 600A fuse distributor units.

5.20.2.6 1 - Lighting distribution board

5.20.2.7 1 – 16A Socket outlet

5.20.2.8 1 - Instrument panel

5.20.3 The LV assembly shall comply with SANS IEC 60439-1 and the following.

5.20.3.1 Assemblies shall be suitable for mounting into the LV compartment of a Miniature substation kiosk. The incoming circuit shall be positioned at the rear of the assembly and at the right hand side close to the

transformer LV terminals. No main circuit breaker shall be installed at the transformer LV terminals unless specifically required and specified by the client. Distributor units shall be mounted side by side. The spacing between the centres of fused distributor units shall be 120 +/- 5mm.

5.20.3.2 The LV assembly shall be arranged to suit outgoing distributor unit cables approaching from below. Incoming cables from the transformer will approach from the right hand rear from behind the assembly.

5.20.3.3 The design of all assembly shall be such that the outgoing distributor unit cables can be readily jointed from the front.

5.20.4 A channel (Unistrut or equal with open side facing upwards) shall be provided to support outgoing cables. The channel shall be positioned approximately 50mm above floor or plinth level, towards the rear and extend the full length of the assembly. Cable cleats (±62mm DIA) provided by the purchaser will be attached to the channel and support the incoming and outgoing cables.

5.20.5 Insulating materials shall be high quality, flame retardant and as nearly non-hydroscopic and resistant to tracking as good manufacturing techniques permit.

5.20.6 The main current carrying components (other than those made of aluminium or aluminium alloy) shall be electro-tin or electro–silver plated. All fastenings, nuts bolts etc. shall be electro-zinc plated and passivated and shall have corrosion-proof locking features.

5.20.7 All parts of the distribution equipment shall, as far as practicable, be readily accessible and replaceable without excessive dismantling.

5.20.8 All parts of equal size and rating shall be inter-changeable. The general design shall be such that the number of joints shall be kept to a minimum.

5.20.9 The minimum rated operational/insulation voltage (Ue/Ui) shall be 400/440V respectively. The rated impulse withstand voltage shall be 8kV.

5.21 Mounting frame

5.21.1 The mounting frame shall be fabricated from mild steel and be of a robust construction. The frame shall provide adequate support for the incoming circuit, busbars and distributor units. It shall be suitable for kiosk mounting. Adequate fixing holes shall be provided.

5.22 Busbar

5.22.1 Busbars shall be three phase neutral and earth and be manufactured from hard drawn high conductivity copper.

5.22.2 The neutral bar shall be rated at not less than half of the phase busbar rating.

5.22.3 The earth bar shall be capable of carrying the rated short time withstand current as specified in clause 4.9 and of a cross section as determined by SANS IEC 60439-1.

5.22.4 Phase and neutral busbar shall be situated at the rear of the equipment and positioned vertically above each other and in a sequence, red, yellow, blue and neutral from top to bottom. The earth bar shall be mounted, behind, and, at the same level as, the cable support cleats.

5.22.5 Phase busbars shall be colour identified in sequence from top to bottom, red, yellow, and blue. The neutral busbar shall be colour identified black and the earth busbar shall be unmarked.

5.22.6 The neutral busbar shall be connected to the earth busbar by means of a removable, bolted busbar, (capable of carrying the rated short time withstand current as specified in clause 4.9 and of a cross section as determined by SANS IEC 60439-1) and include one terminal / M12 fixing hole for each outgoing distributor unit.

5.22.7 The earth bar shall be bolted to the frame.

5.23 Incoming circuit from the transformer bushings

5.23.1 The incoming supply shall be solidly connected to the busbars.

5.23.2 For type “A” 800A Fuse boards, the incoming circuit shall cater for the connection of 4 single core cables (one per phase and neutral) up to and including 400mm², or, 7 single core cables (two per phase and one neutral) up to and including 185mm², stranded copper conductors with polymeric insulation.

5.23.2 For type B 1600A Fuse boards, the incoming circuit shall cater for the connection of 7 single core cables (two per phase and one neutral) up to and including 400mm², or, 11 single core cables (three per phase and two neutral) up to and including 185mm², stranded copper conductors with polymeric insulation.

5.23.2 Cable termination arrangements shall be suitable for compression lugs.

5.23.2 Incoming circuit-cable terminal bolts shall be M12. A plain washer and lock washer shall be provided for each cable terminal fixing. All fixing bolts, nuts and washers shall be electro-zinc plated steel.

5.23.2 One M12 earth terminal shall be provided adjacent to the incoming terminals. This shall be bonded to the earth bar with a solid copper conductor capable of carrying the rated short time withstand current as specified in clause 4.9 and of a cross section as determined by SANS IEC 60439-1.

5.23.3 Each phase of the incoming circuit of the LV assembly shall be equipped with a current transformer, ratio 800/5, class 0.5 and suitable for a burden of 5.0VA for a type “A” distribution assembly and current transformer, ratio 1600/5, class 0.5 and suitable for a burden of 5.0 VA for a type “B” assembly.

5.24 Fused distributor circuits

5.24.1 The rated normal current of an outgoing distributor unit shall be 400A.

5.24.2 Outgoing fused distributor units shall be three phase, with the neutral cable being connected directly to the neutral bus bar. Phases of fused distributor units shall be arranged vertically above each other.

5.24.3 Distributor units shall provide fuse protection as a means of isolating an outgoing circuit via, fuse links accommodated in fuse handles (see sub-clause 4.5.1). Each phase shall be independently operable. The fuse links shall be in accordance with Section V1 of IEC 69269-2-1 and have 82mm fixing centers.

5.24.4 Each phase of a fused distributor unit shall include a means of ensuring the fuse link and fuse handle are correctly aligned with the fixed contacts when closing the circuit. The design of distributor units shall ensure the fuse handle can be, inserted by hinge action pivoted on the lower contact and, withdrawn by snatch action. The contacts shall be arranged to permit contact tightening. Sufficiently good contact shall be made on insertion of the fuse handle such that current can be safely carried prior to tightening of the contact tightening thumbscrews.

5.24.4 Insulating dividing barriers shall be provided between, phase contact assemblies and, phase contacts and the neutral, such as to make it impossible to insert a fuse link between contacts of different phases or phase and neutral.

5.24.5 One set of three fuse handles shall be provided with each fuse distributor unit supplied.

5.24.6 Cable termination arrangements shall be suitable for accommodating up to and including 300mm2 x 4 core solid aluminum and sector shaped conductor cables with polymeric insulation and will be terminated using compression lugs.

5.24.7 The center line of the channel for the cleats shall be not less than 450mm below the center line of the cable lug fixing for the neutral conductor.

5.24.8 The phase cable terminals shall be vertically above each other and adjacent to the associated outgoing fuse link contacts. Cable terminations shall permit the terminating of phase conductors whatever their lay without the need to cross cores. The fixed contacts shall be provided with two holes, rear and forward positioned, to facilitate terminating the phase conductors using a solid spacer of adequate thickness to give clearance and, an M12 bolt and full nut.

5.24.9 Each neutral cable core shall be terminated using a M12 x 50mm electro-zinc plated steel bolt, washer, lock washer and nut.

5.24.10 Individual cable earths will be terminated on the earth bar using M8 nuts and bolts.

5.24.11 A plain washer and lock washer shall be provided for each cable terminal fixing.

5.24.12 It shall be possible with ease to fit a current transformer with metering accuracy, of a design supplied by the manufacturer, to all phases of the outgoing distributor unit.

5.24.13 Protection in accordance with IP 2X shall be provided with all fuse links/handles in

position. In addition, suitable insulated contact covers shall be provided to restore the same level of protection when the fuse links/handles are removed. With neither, fuse handles nor contact covers in place, maintenance of IP 2X is not mandatory but the design shall be such that it minimizes the possibility of inadvertent touching of live metal by the operator.

5.24.14 Contact covers shall be suitable for shielding the busbar or circuit contacts. With these contact covers it shall be possible to gain access to any one cable-side contact for testing, with all busbar-side contact and the other two cable-side contacts still shielded.

5.24.15 Access shall be provided for the use of test probes. They shall be able to make contact with the top and bottom fuse link terminals when fuse carriers are installed and, top and bottom contacts when the fuse carrier is removed.

5.24.16 Provision shall be made on each outgoing distributor unit to affix and padlock to prevent fuse-links being installed. Where appropriate this may involve the use of a supplementary insulated device. It shall be possible to fit the device safely whilst the feeder pillar is alive and in normal service.

5.25 Fuse handles

5.25.1 Three through grip shrouded fuse handles shall be provided with each outgoing fused distributor unit.

5.25.2 The ‘body’ of the handle shall be moulded from glass reinforced polyester resin (DMC) insulating material.

5.25.3 Each handle shall be complete with two insulated contact tightening thumbscrews. Reasonably good contact shall be made by wedge action on inserting the fuse carrier so that current can be safely carried in the interval prior to the tightening of the contact tightening thumbscrews. Metal components within the handles shall be protected against corrosion.

5.25.4 There shall be one standard size of fuse-carriers that shall accommodate an 82mm fixing center fuse-link between the ranges of 20 – 400A as specified previously.

5.26 Fuse links

5.26.1 Fuse links for outgoing distributor units shall be of the faster acting type specifically designed for electrical distribution networks. They shall be type gU with wedge tightening contacts in accordance with IEC 60269-2-1 Section VI. Fuse links shall have 82mm fixing centres. The Purchaser shall supply the fuse links.

5.27 Street lighting distribution sub board

5.27.1 The three phases and neutral, street lighting distribution board shall comprise:

5.27.1.1 1 – Fused distributor unit with 3 x 100A fuses, size A3, fuse links in accordance with SANS IEC 60269-2-1

5.27.1.2 1 – 100A Triple pole isolator, 20 KA

5.27.1.3 1 – 125A contactor with 230 v coil

5.27.1.4 1 - Street light by-pass switch

5.27.1.5 1 – Ripple control relay for remote switching, relay to be supplied by purchaser. (Assume nominal size of 250mm x 150mm)

5.27.1.6 6 – 40A Type C (10 KA) single pole MCB's (2 per phase) in accordance with IEC 60898-01, on outgoing street light circuits

5.27.1.7 4 – Neutral terminals (one for each outgoing circuit)

5.27.1.8 4 – Earth terminals (one for each outgoing circuit)

5.27.2 The street lighting distribution board may be mounted on, or, it may be integrated into the instrument panel, subject to suitable arrangements being made for the location and support of outgoing lighting circuit cables.

5.28 Instrument Panel

5.28.1 Each LV Assembly shall incorporate an instrument panel equipped with:

5.28.2 Three insulated thermal maximum demand indicators. The maximum demand indicators shall monitor the incoming current to the LV assembly and, be suitable for use with current transformers of ratio **800/5**, scaled 0-960A and have a 30 minute time delay for a type "A" assembly and with current transformers of ratio **1600/5**, scaled 0-1920A (2000A) and have a 30 minute time delay for a type "B" assembly.

5.29 Current Transformers

5.29.1 All current transformers shall comply with SANS IEC 60044-1.

5.30 Short circuit rating

5.30.1 The short circuit strength of the LV assemblies shall be 18.0kA for 0.5s. For a type "A" assembly and 25kA for 0.5s for a type "B" assembly.

5.31 Creepage and clearances

5.31.1 For the incoming circuit, bus bars and busbar connections to the lighting distribution board and auxiliary circuit fuse, the outgoing distributor circuits, clearance and creepage distances shall be not less than 25 mm between conductors and 19 mm from conductors to earth. Clearances and creepage distances within the lighting distribution board and auxiliary circuit shall be in accordance with SANS IEC 60439-1.

5.32 Personnel protection

5.32.1 LV assemblies shall be of the shielded type. Operator protection shall be provided in accordance with IP XXB of SANS IEC 60529 at the front, top, sides and back of the

assembly. This protection shall apply in all normal service conditions including:

5.32.1.1 Fuse handles in place.

5.32.1.2 Fuse handles removed, and temporary contact covers installed.

5.32.1.2 Cabling of one outgoing circuit with the remainder live and in service.

5.33 Rating plate

5.33.1 An external data plate shall be fixed to each assembly detailing the following information:

5.33.1.1 Serial number, that shall be unique
5.33.1.2 Year of manufacture
5.33.1.3 Normal current rating of the phase busbar
5.33.1.4 Gross weight, when fully equipped (Kg)
5.33.1.5 Manufacturers name and reference number
5.33.1.6 Indicate compliance to SANS and IEC.

5.34 Circuit labels

5.34.1 Each outgoing distributor unit shall be provided with a circuit label.

5.34.2 The circuit labels shall be, 75 x 50mm, made of insulating material be mounted at the top of each circuit unit. This label shall be securely held without the use of screws and it shall be possible to slot into position and remove the label from the front of the assembly. The labels shall be suitable for engraving, by the purchaser, with black letters on a white background.

5.35 Padlocking devices

5.35.1 One padlocking device shall be supplied with each LV assembly for locking outgoing fused distributor units in the isolated position (fuse handles removed). The purchaser will supply safety padlocks.

5.35.2 Safety padlocks have a body up to 38mm square with a 7 mm diameter shackle having a clear inside width of 20 mm and an inside length of between 16 mm and 30 mm. The hole provided for the shackle shall be not less than 8 mm diameter.

5.35.3 Clips shall be provided inside the frame to store locking off devices when they are not in use.

5.36 Type tests

5.36.1 Evidence shall be submitted to the purchaser to confirm that a complete LV assembly of each basic design has satisfactorily completed the type tests listed below.

5.37 Short circuit withstand strength

5.37.1 Short circuit-withstand tests in accordance with the requirements on sub clause 4.9 of this specification and sub clause 8.2.3 of SANS IEC 60439-1. The tests carried out shall include the incoming terminals, bus bars and outgoing distributor units. In the case of fused outgoing distributor units these shall fitted with 400A fuses for the test.

5.38 Temperature rise

5.38.1 Temperature rise tests shall be carried out in accordance with sub clause 8.2 of SANS IEC 60439-1 noting that:

5.38.1.1 The temporary incoming and outgoing test connection shall be cable of the type and size detailed in this specification, namely: (i) incoming circuit, one cables per phase of 400mm² stranded copper conductor cable, and (ii) fused distributor units, one cable per phase of 240mm^2 solid aluminium and sector shaped conductor.

5.38.1.2 Fused distributor units shall be fitted with 400A fuse links

5.38.1.3 The test shall be made with the incoming circuit carrying its rated current. Sufficient adjacent outgoing distributor units as the incoming current will permit shall be loaded to their rated current (unity diversity).

5.38.1.4 In addition to the requirements of SANS IEC 60439-1, the temperature rise of top fuse link contacts shall not exceed 65K.

5.39 Dielectric test

5.39.1 The requirements of clause 8.2.2 of SANS IEC 60439-1 apply noting that, the power frequency dielectric test (see sub-clause 8.2.2.4) shall be undertaken with the specified voltage maintained for one minute.

5.39.2 In addition the following additional tests shall be carried out.

5.40 Fuse handles (Carriers)

5.40.1 The test shall be carried out on each design of fuse carrier including its wedge mechanism.

5.40.2 The test shall be made at an ambient temperature between 15°C and 25°C.

5.40.3 The test voltage of 3.75 kV (rms) shall be applied for one minute between:

5.40.3.1 Both of the fuse carrier terminals without the fuse link being fitted.

5.40.3.2 One of the fuse carrier terminals and metal foil which is wrapped around surfaces of the insulating material of the fuse carrier, including thumbscrews, if any, which can be touched during live replacement or withdrawal of fuse carriers. For this test, a fuse link of the largest dimensions intended for the fuse carrier shall be fitted.

5.40.4 Results obtained shall be in accordance with sub-clause 8.2.2.5 of SANS IEC 60439-1.

5.40.5 Following the high voltage test, the fuse carrier shall complete a humid atmosphere test as detailed in sub-clause 8.2.4.2 of SANS IEC 60269 – Part 1, noting that, the insulation resistance at the conclusion of the test shall be measured between the points specified for the 3.75kV test above. The insulation resistance measured shall not be less than 5 meg-ohms.

5.41 Torque test on thumbscrew shafts

5.41.1 The test shall be carried out on six random samples of the insulating thumbscrew, each complete with a wedge operating screw, to confirm the mechanical strength of the thumbscrew. Each wedge operating screw shall in turn be placed in vice and a torque applied in a clockwise direction to the insulated thumbscrew using a torque spanner adapted as necessary. Each insulated thumbscrew shall withstand a torque of 12Nm, without fracturing or turning on the shank of the wedge operating screw.

5.42 Flammability tests

5.42.1 Representative specimens of each type of insulating material used shall be subjected to a flammability test in accordance with test method A – horizontal burning test of IEC 60695-11-10.

5.42.2 Compliance is checked by inspection that each set of specimens can be classified to Category FB40 criteria a) or b) in accordance with clause 8.4.1 of IEC 60695-11-10.

5.43 Routine tests

5.43.1 Sub-clause 8.3 of SANS IEC 60439-1 is applicable together with the following additional requirements.

5.43.1 Sampling for routine tests shall be in accordance with ISO 2859-1, using a maximum acceptable quality level (normal inspection). In the event of electrical breakdown of any component on test it shall be examined for the cause of failure. In accordance with AQL in ISO 2859-1, 100% of that production batch shall be subject to routine test.

5.44 Fuse handle wedge operating mechanisms

5.44.1 Tests shall be carried out on a representative sample of wedge operating thumbscrews by subjecting them to a dielectric test. Each thumbscrew under test shall have the major accessible portion of the insulating section encased in conducting foam. The conducting foam shall be carbon loaded and have a surface resistivity, measured on a square sample, of 1000 ohms per square.

5.44.2 A test voltage of 3.75 kV applied for one second between the metal insert of the thumbscrew and the conducting foam.

5.44.3 Results obtained shall be in accordance with sub-clause 8.3.2.3 of SANS and IEC 60439-1.

All traces of carbon must be removed after the test.

5.55 Type A - 800A low voltage distribution board

Table: 21: LV Boards (800 A)

ITEM	DESCRIPTION	Manufacturer	Delivery Time
1.	LV Boards (800 A)		

5.56 Type B - 1600A low voltage distribution board

Table 22: LV Boards (1600A)

ITEM	DESCRIPTION	Manufacturer	Delivery Time
1.	LV Boards (1600 A)		

5.57 HIGH VOLTAGE FUSES

5.57.1 These fuses shall be for the protection of equipment operating above 1000V AC. These shall all be fitted with a “Striker “mechanism for tripping and comply to BS 2692 Table 11.

5.57.2 **DIN FUSE LINKS** - 12kV to fit DIN 2703 fuse clip - 45mm DIA, 40 KA.
(Similar to Bussmann type DIN SDL)

Table 23: HT Fuses

ITEM	DESCRIPTION	TYPE OFFERED	Delivery Time
1.	36A - barrel = 51mm DIA X 292mm long		
2.	45A - barrel = 51mm DIA X 292mm long		
3.	63A - barrel = 51mm DIA X 292mm long		

5.57.3 **OIL TIGHT FUSE LINKS, TYPE OEFMA** - 12kV to fit B S fuse clips – 63.5mm DIA, 40 kA.

Table 24: Fuse Links – Type OEFMA

ITEM	DESCRIPTION	TYPE OFFERED	Delivery Time
1.	36A - 63.5mm DIA X 254mm barrel length		
2.	45A - 63.5mm DIA X 254mm barrel length		
3.	63A - 63.5mm DIA X 254mm barrel length		

5.57.4 **OIL TIGHT FUSE LINKS, TYPE OEGMA** - 12kV to fit B S fuse clips – 63.5mm DIA, 40 kA.

Table 25: Fuse Links – Type OEGMA

ITEM	DESCRIPTION	TYPE OFFERED	Delivery Time
1.	36A - 63.5mm DIA X 359mm barrel length		
2.	45A - 63.5mm DIA X 359mm barrel length		
3.	63A - 63.5mm DIA X 359mm barrel length		

5.58 COPPER BUSBAR

5.58.1 This item covers **tinted flat hard drawn copper** for making up bus bars. Weight per meter length must be stated.

Table 26: Copper Busbars

ITEM	DESCRIPTION	Kg/m	UNIT LENGTH IN m	Delivery Time
1.	25mm x 3.15mm **not tinted**		10m roll	
2.	25mm x 6mm		3m	
3.	40mm x 8mm		3m	
4.	50mm x 3mm **not tinted**		10m roll	
5.	50mm x 5mm tubular		3m	
6.	50mm x 6mm		3m	
7.	50mm x 10mm		3m	
8	100mm x 10mm		3m	
9.	25mm x 3mm **not tinted**		10m roll	
10.	50mm x 3mm **not tinted**		10m roll	
11.	40mm x 10mm(flat bar round edge)		3m	
12.	50mm x 6mm		3m	
13.	50mm x 10mm		3m	
14.	100mm x 10mm		3m	

5.59 CONDUIT - 20mm, 25mm AND 32mm

5.59.1 Must be in accordance with SANS 1065/1985 and SANS 950/1985 (IEC 60614-2-2), amendments and bear the SANS mark.

Items a -c should be suitable to be used with threaded connectors and couplings.

Table 27: Conduit

ITEM	DESCRIPTION	LENGTH	Delivery Time

1.	Steel (black) 20mm^2		
2.	Steel (black) 25mm^2		
3.	Steel (black) 32mm^2		
4.	PVC 20mm²		
5.	PVC 25mm²		
6.	PVC 32mm²		
7.	PVC 50mm^2		

5.60 PLUG TOPS 16A 250V PVC

In accordance with SANS 164: 2006 and amendments.

Table 28: Plug Tops

ITEM	DESCRIPTION	Delivery Time
1.	3 Pin solid (not hollow)/ Polycarbonate	
2.	3 Pin Rubber	
3.	3 Pin solid (not hollow)/ Polycarbonate – dedicated earth - red	

5.61 LAMP HOLDERS 250 V

In accordance with SABS 165: 2004 (IEC 60238 and IEC 61184) and amendments.

Table 29: Lamp Holders

ITEM	DESCRIPTION	Delivery Time
1.	Button holder Brass with shade-ring and 50,8mm screw-hole centers	
2	Holder brass 20mm with shade-ring	

5.62 SWITCH - SOCKETS 16 AMP 250 V 3 PIN

Sockets must be of the shuttered type and in accordance with SABS 164: 2006 and amendments.

Table 30: Sockets 16Amp

ITEM	DESCRIPTION	Delivery Time
1.	Ivory shrouded flush mounted switch-socket outlet combination for 100 x 50 wall box	
2.	Ivory shrouded flush mounted switch-socket outlet combination for 100 x 100 wall box	
3.	Ivory shrouded flush mounted double switch-socket outlet combination for 100 x 100 wall box	
4.	Industrial switch-socket outlet combination with rocker type toggle complete with box	
5.	Ivory shrouded flush mounted switch-socket outlet combination for 100 x 100 wall box for dedicated red cover	

5.63 TERMINAL AND CONNECTOR BLOCKS

Terminal blocks must be of the clip-on type suitable for mounting on a Din rail Ref 46277/1. Terminal blocks must be equipped with screw type terminals on both ends for conductor as specified.

Full technical information must accompany the Bid.

Table 31: Terminal and Connector Blocks

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
1.	TERMINAL BLOCKS , single way for 16mm² stranded copper conductor		
2.	TERMINAL BLOCKS , single way for 25mm² stranded copper conductor		
3.	TERMINAL BLOCKS , single way for 35mm² stranded copper conductor		
4.	CONNECTOR BLOCK, 12 way /6 amp to take 2.5mm² wire		
5.	CONNECTOR BLOCK, 12 way /16 amp to take 4mm² wire		
6.	TEST TERMINAL BLOCKS, 13 way - 4 voltage terminals, 3 sets of current terminals with two links each**, front**		

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
	connection terminals without connecting studs (GEC- type KP 002300)		
7.	TEST TERMINAL BLOCKS, 13 way - 4 voltage terminals, 3 sets of current terminals with two links each, **with rear long connecting studs** (GEC- type KP 0023008)		

5.64 PHOTO ELECTRIC CONTROL UNIT (PECU) - DAYLIGHT SWITCHES FOR STREET LIGHTING CONTROL

5.64.1 The Photo Electric control unit shall be in accordance with NRS 025.

5.64.2 The PECU shall be designed to operate at ambient temperatures from 15ºC to + 65ºC and at humidity up to 91%.

5.64.3 The photo electric sensor of the PECU shall be Omni directional so that no particular orientation is required.

5.64.4 The cover and gaskets of the PECU shall be UV stabilized and shall be designed to withstand radiation, heat, moisture, cold and compression.

5.64.5 The cover of the PECU shall be designed to minimize the accumulation of dust or dirt and to discourage birds for perching on it. (Conical or spherical shape)

5.64.6 The degree of protection provided to any part of the PECU which is exposed to the environment shall be at least IP 54 and any other part of the PECU shall be at least IP 21 in accordance with the requirements of SANS 1222.

5.64.7 The PECU shall be capable of operating at 230 V ± 10% at 50 Hz AC.

5.64.8 The PECU shall be fitted with a suitable surge suppressor to withstand an induced lightning surge.

5.64.9 Switching operations shall be delayed by at least 15 seconds to prevent spurious operations.

5.64.19 The electrical contacts of the PECU shall be able to switch a reactive load of 1 800 VA at 230 volt.

5.64.20 The switch-on level shall be 60 lux ± 12 Lux and the switch-off level shall not be greater than 1,5 times the switch-on level.

Table 32: PECU Specification

DETAILS OF PECU OFFERED	
Rated supply voltage Rated switching current at 230 V Switch-on level in lux Limitations on the use of the PECU (if any) Price per each: (1) Photo Electric Control Unit with mounting bracket and connector leads 1.5 mm² Cu x 300mm long (2) Photo Electric Control Unit to fit Nema Socket - supplied without socket. (3) Base only: Nema Socket Base with gasket, lock ring and mounting screws. (4) Compact Photo Electric Control Unit to fit 22mm Diameter hole in a streetlight pole with weatherproof gaskets and lock nut complete with connection leads 1.5 mm² Cu x 300mm long	

5.65 CONTACTORS AND RELAYS

5.65.1 **THREE PHASE SURFACE MOUNTABLE CONTACTOR**
- 150A (AC1), 400V contacts, with 230V, 50 Hz coil **complete with terminal covers**.

Table 33: 150A Contactor

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
1.	150A (AC1) Contactor		

5.65.2 THREE PHASE SURFACE MOUNTABLE CONTACTOR –
100A (AC1), 400V contacts with 230V coil. (Similar to TC1 - D80)

Table 34: 100A Contactor

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
1.	100A (AC1) Contactor		

5.65.3 THREE PHASE SURFACE MOUNTABLE CONTACTOR –
32A(AC1), 400V contacts with 230V coil. (Similar to TC1 - D1810)

Table 35: 32A Contactor

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
1.	32A (AC1) Contactor		

5.65.4 CONTROL RELAY ON 8-PIN ROUND BASE –
10A, 241V (Similar to Telemecanique RUN21D21 P7)

Table 36: 10A Control Relay

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
1.	10 A, 241V Control Relay		

5.65.5 THREE PHASE SURFACE MOUNTABLE CONTACTOR –

200A (AC1), 400V contacts with 120DCV coil. (Similar to TC1 - D80)

Table 37: 200A Contactor

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
1.	200A (AC1) Contactor		

5.66 PADLOCKS AND NIGHT LATCHES

5.66.1 PADLOCK SPECIFICATION FOR CENTLEC

Padlock body: Colored flame-resistant glass reinforced nylon

Dimensions: Body = 50 x 46 x 20mm, Shackle = 21 x 24mm inside dia (locked)

Colour: Cedar green or black body, external metal keyway components to be sprayed black

Shackle: 6mm dia Chrome plated hardened steel with nickel coated spring (304-grade stainless steel - DIN 17224)

Mechanism: Dual stainless steel or electro less nickel barrel bolts,
Six pin tumbler cylinder type barrel with anti-picking mushroom pins and security plate or pin, phosphor bronze pin springs
Electro less nickel key components to be secured in position by a hidden screw under the shackle.
All moving components to be pre-lubricated with graphite powder

Marking: Stamped CENTLEC - BM 33 (or 44) on side wall

Keyed: "ABC" cascaded system with a Viro/Union BM 33 OR 44 key profile
(Supply with one key, stamped BM33 or BM44 separately packed per batch)

NB. Keys must be able to also fit the old Viro locks, keyway to be altered, a sample of the lock which will be supplied by the successful bidder must be submitted for approval prior to delivery).

5.66.1.1 NIGHT LATCH SPECIFICATION

Night latch mechanism to bare the SANS mark of approval.
ABC cascading key system to be use.
Lock barrel to be profiled to take Viro / Union type keys - BM 33 or 44.
Barrel to be stamped on face side - BM 33 or 44.
No keys to be supplied.

Table 38: Locks

ITEM	DESCRIPTION	MANUFACTURER ITEM CODE	Delivery Time
1.	**GREEN BM33 PADLOCK**		
2.	**BLACK BM44 PADLOCK**		
3.	**BLACK BM22 PADLOCK**		
4.	**BM33 NIGHT LATCH (SANS MARK)**		
5.	**BM44 NIGHT LATCH (SANS MARK) COMPLETE WITH BARREL TO TAKE BM 44 VIRO KEY**		
6.	**Graphite powder to lubricate padlocks 100ml plastic bottle**		

The keyway should fit VIRO locks.

Keys should be manufactured with composite material (not brass)

Keys should be stamped with BM number.

6 EVALUATION CRITERIA

All proposals submitted will be evaluated in accordance with the criteria set out in the policy of Supply Chain Management of the Entity.
The most suitable candidate will then be selected. Please take note that CENTLEC (SOC) Ltd is not bound to select any of the bidders submitting proposals.
Furthermore, technical competence is the principal selection criteria, CENTLEC (SOC) Ltd will evaluate the technical criteria first and will only look at the price and BBBEE level of contribution if it is satisfied with the technical evaluation. As a result of this, CENTLEC (SOC) Ltd does not bind itself in any way to select the bidder offering the lowest price.

6.1 The relative specific goal criteria are as follows'

Table 39: Evaluation Criteria

No.	Criteria	Description	Points
1.	Track record and experience	Submit reference letter(s), signed off by an authorised official to confirm the successful completion of a supply bid for similar materials to a local authority. Two (2) letters = **20 points** Three (3) or more letters = **40 points**.	40
2.	Local (Mangaung) operational capability and economic investment	Does the bidder have a local office with operational capability? (a) Existing and established local office = **20 points** (b) If not, but within RSA = **10 points**	20
3.	Quality and compliance to SANS requirements as specified in the technical specifications	Submit standards certificates for all items that needs to comply with such standards. Certificates submitted for at least: ISO 9001 certificate as obtained from the manufacturer = **20 points** Relevant SANS Certificates as per technical specification as obtained from manufacturers = **20 points**	40
	TOTAL		**100**

Evaluation criteria

A bidder who gets a minimum of 70 points and above on will qualify to the next stage. Individual tenders would have to be evaluated according to the preferential point system. The bidder must score minimum points as follows:

Item 1: 20 points

Item 2: 10 points

Item 3: 40 points; in the Evaluation Criteria.

The point system applicable to this project will be: 80/20

80 points for Price
20 points for BBEEE certificate from accredited verification agencies.

6.2 PRICE AND REFERENTIAL POINTS SCORING – STAGE 2 (Price and B-BBEE status)

All Bidders that have passed the technical evaluation threshold of 70 points would also be scored based the 80/20 principle where 80 Points is for the Price and 20 points for B-BBEE as per the detail given below

6.2.1 Points awarded for price

A maximum of 80 Points is allocated for price on the following basis:

Where $$Ps = 80\left[1 - \frac{Pt - P\,min}{P\,min}\right]$$

Ps	=	Points Scored for comparative price of bid under consideration
Pt	=	Comparative Price of bid under consideration
P min	=	Comparative Price of lowest acceptable bid

6.2.2 Points awarded for B-BBEE Status Level of Contribution

In terms of Regulation 5(2) and 6(2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below;

B-BBEE Status Level of Contributor	Number of Points (80/20 System)
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-Compliant Contributor	0

7 PRICING SCHEDULE

Table 40: PILLAR BOXES AND PLINTHS

Item	**Description**	**PRICE (R) PER UNIT**
1.	Domestic pillar box (two way) and Extra covers (Drawing TS - 5 - 19 “Avocado green” colour)	
2.	Plinth for the two way pillar box	
3.	4-Way pillar box and Extra covers (Drawing TS – 5 – 20 “Avocado green” colour)	
4.	Plinth for the 4-way pillar box	
5.	6-Way pillar box and Extra covers (Drawing TS – 5 – 21 “Avocado green” colour)	
6.	Plinth for the 6-way pillar box	
7.	8-Way pillar box and Extra covers (Drawing TS - 5 – 21 “Avocado green” colour)	
8.	Plinth 8-way pillar box	
9.	Stubby Box - One way (Drawing TS – 5 – 59 “Avocado green” colour)	
10.	Plinth for the 1-way stubby box	

Item	Description	PRICE (R) PER UNIT
11.	Stubby Box – Two way (Drawing TS – 5 – 58 "Avocado green" colour)	
12.	Plinth for the two-way stubby box	
13	Pillow type cover for distribution box (Drawing TS – 9 – 11 "Avocado green colour")	
14	Pillow type distribution box cover with meter kiosk top (Drawing TS – 9 – 12 "Avocado green colour")	
15		
15.1	Window fitted to Item 1.5 (Size 100 x 90 x 6mm lens)	
15.2	Window fitted to Item 1.6 (Size 230 x 90 x 6mm lens)	
16		
16.1	Lens (320 x 130 x 6mm) for Pillar box - two way - Item 1.1	
16.2	Lens (100 x 90 x 6mm) for Stubby - one way - Item 1.5	
16.3	Lens (230 x 90 x 6mm) for Stubby - two way - Item 1.6	

Table 41: METER BOXES

Item	Description	PRICE (R) PER UNIT
2 A	Rural Meter box with V-strap brackets Drawing TS - 5 - 18	
2 B	3 Phase Rural Meter box with V-strap brackets - Drawing TS - 5 -18 A	
2 C	Standard kVA Meter box - Drawing TS - 5 - 2 ("Avocado green" colour)	
2 D	Pole box for one single phase split pre-payment meter Drawing TS - 5 – 49 (310mm)	
2 E	Pole box for one single phase split pre-payment meter & a ripple relay Drawing TS - 5 – 49 (510mm)	
2 F	Pole box for two single phase split pre-payment meters & a ripple relay Drawing TS - 5 - 49 (805mm)	

Table 42: READY BOARDS FOR SUB-ECONOMIC HOUSING COMPLETE WITH MOUNTING BASEPLATE (AS PER ITEM 4B)

Item	Description	PRICE (R) PER UNIT
1.	Ready Boards	

Table 43: MOUNTING BASE-PLATES FOR THE INSTALLATION OF PRE-PAID METERS, FOR PRE-PAID METERS WITH A READY BOARD AND FOR RIPPLE CONTROL RECEIVER RELAYS

Item	Description	PRICE (R) PER UNIT
1.	Mounting Base-Plates (Prepaid Meters, Ready Boards and Ripple Control Relays)	

Table 44: BASE-PLATE FOR PRE-PAID METER ONLY AS PER AMENDED DRAWING TS - 5 - 14

Item	Description	PRICE (R) PER UNIT
1.	Base-plate for Prepaid Meter only	

Table 45: BASE-PLATE FOR PRE-PAID METER AND READY BOARDS AS PER DRAWING TS - 5 – 13

Item	Description	PRICE (R) PER UNIT
1.	Base-plate for Pre-paid meter and Ready Board	

Table 46: BASE-PLATE FOR RIPPLE RELAY (LOAD CONTROL RELAY) AS PER DRAWING TS - 5 - 15

Item	Description	PRICE (R) PER UNIT
1.	Base-plate for Ripple Relay	

Table 47: CIRCUIT BREAKERS FOR STREETLIGHTS

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	Streetlight circuit breaker in a pole box with 2m long UV-stable connecting tails	
2.	Miniature Circuit Breaker, S / P, 5 Amp, 2.5kA, Std curve	
3.	Miniature Circuit Breaker, S / P, 10 Amp, 2.5kA, Std curve	
4.	PVC shroud for single miniature breaker on an adaptor plate - Similar to CBI type QA-(13)	
5.	Adaptor plate - Similar to CBI “S” range to type “E” clip tray - single	

Table 48: CIRCUIT BREAKERS SINGLE POLE - 230 / 400V AC

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	Circuit breaker, S / P, 2 Amp, 2.5kA, Curve 2	
2.	Circuit breaker, S / P, 5 Amp, 2.5kA, Curve 2	
3.	Circuit breaker, S / P, 10 Amp, 2.5kA, Curve 2	
4.	Circuit breaker, S / P, 15 Amp, 2.5kA, Curve 2	
5.	Circuit breaker, S / P, 20 Amp, 2.5kA, Curve 2	
6.	Circuit breaker, S / P, 30 Amp, 2.5kA, Curve 2	

ITEM	DESCRIPTION	PRICE (R) PER UNIT
7.	Circuit breaker, S / P, 30 Amp, 5kA, Curve 2	
8.	Circuit breaker, S / P, 40 Amp, 2.5kA, Curve 2	
9.	Circuit breaker, S / P, 40 Amp, 5kA, Curve 1	
10.	Circuit breaker, S / P, 50 Amp, 2.5kA, Curve 2	
11.	Circuit breaker, S / P, 60 Amp, 2.5kA, Curve 2	
12.	Circuit breaker, S / P, 60 Amp, 5kA, Curve 1	
13.	Circuit breaker, S / P, 80 Amp,5kA, Curve 1	
14.	Circuit breaker, S / P, 100 Amp, 5kA, Curve 1	
15.	Circuit breaker, S / P, 120 Amp, 5kA, Curve 1	
16.	Circuit breaker, S / P, 120 Amp, 5kA, Curve 2	
17.	PVC shroud for single breaker (5 kA) with surface mounting clip and sealing screws	
18.	PVC shroud for double breaker (5 kA) with surface mounting clip and sealing screws	
19.	PVC shroud for triple breaker with surface mounting clip and sealing screws	

Table 38: SP Circuit Breakers

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	Circuit breaker, S / P, 2 Amp, 2.5kA, Curve 2	
2.	Circuit breaker, S / P, 5 Amp, 2.5kA, Curve 2	
3.	Circuit breaker, S / P, 10 Amp, 2.5kA, Curve 2	
4.	Circuit breaker, S / P, 15 Amp, 2.5kA, Curve 2	
5.	Circuit breaker, S / P, 20 Amp, 2.5kA, Curve 2	
6.	Circuit breaker, S / P, 30 Amp, 2.5kA, Curve 2	
7.	Circuit breaker, S / P, 30 Amp, 5kA, Curve 2	
8.	Circuit breaker, S / P, 40 Amp, 2.5kA, Curve 2	
9.	Circuit breaker, S / P, 40 Amp, 5kA, Curve 1	
10.	Circuit breaker, S / P, 50 Amp, 2.5kA, Curve 2	
11.	Circuit breaker, S / P, 60 Amp, 2.5kA, Curve 2	
12.	Circuit breaker, S / P, 60 Amp, 5kA, Curve 1	
13.	Circuit breaker, S / P, 80 Amp,5kA, Curve 1	
14.	Circuit breaker, S / P, 100 Amp, 5kA, Curve 1	
15.	Circuit breaker, S / P, 120 Amp, 5kA, Curve 1	
16.	Circuit breaker, S / P, 120 Amp, 5kA, Curve 2	

ITEM	DESCRIPTION	PRICE (R) PER UNIT
17.	PVC shroud for single breaker (5 kA) with surface mounting clip and sealing screws	
18.	PVC shroud for double breaker(5 kA) with surface mounting clip and sealing screws	
19.	PVC shroud for triple breaker with surface mounting clip and sealing screws	

Table 39: CIRCUIT BREAKERS 3 POLE - 400V AC

Item	ITEM DESCRIPTION	PRICE (R) PER UNIT
1.	(a) Circuit breaker, 3 pole, 100 amp, 15kA breaking cap. (sym) at 400 V AC	
2.	(b) Circuit breaker, 3 pole, 100 amp, 25kA breaking cap. (sym) at 400 V AC	
3.	(c) Circuit breaker, 3 pole, 125 amp, 25kA breaking cap. (sym) at 400 V AC	
4.	(d) Circuit breaker, 3 pole, 150 amp, 25kA breaking cap. (sym) at 400 V AC	
5.	(e) Circuit breaker, 3 pole, 200 amp, 25kA breaking cap. (sym) at 400 V AC	
6.	(f) Circuit breaker, 3 pole, 250 amp, 35kA breaking cap. (sym) at 400 V AC	
7.	(g) Circuit breaker, 3 pole, 300 amp, 35kA breaking cap. (sym) at 400 V AC	
8.	(h) Circuit breaker, 3 pole, 350 amp, 35kA breaking cap. (sym) at 400 V AC	
9.	(i) Circuit breaker, 3 pole, 400 amp, 35kA breaking cap. (sym) at 400 V AC	
10.	(j) Circuit breaker, 3 pole, 500 amp, 40kA breaking cap. (sym) at 400 V AC	
11.	7k Circuit breaker, 3 pole, 630 amp, 40kA breaking cap. (sym) at 400 V AC	
12.	(l) Circuit breaker, 3 pole, 700 amp, 40kA breaking cap. (sym) at 400 V AC	
13.	(m) Circuit breaker, 3 pole, 800 amp, 40kA breaking cap. (sym) at 400 V AC	
14.	(n) Circuit breaker, 3 pole, 1000 amp, 40kA breaking cap. (sym) at 400 V AC	

Item	ITEM DESCRIPTION	PRICE (R) PER UNIT
15.	7a1 PVC shroud and sealing screws for the 3 pole, 100 amp, 15kA circuit breaker	
16.	7b1 PVC shroud and sealing screws for the 3 pole, 100 amp, 25kA circuit breaker	
17.	7c1 PVC shroud and sealing screws for the 3 pole, **125 amp**, 25kA circuit breaker	
18.	7d1 PVC shroud and sealing screws for the 3 pole, 150 amp, 25kA circuit breaker	
19.	7e1 PVC shroud and sealing screws for the 3 pole, 200 amp, 25kA circuit breaker	
20.	7f1 PVC shroud and sealing screws for the 3 pole, 250 amp, 35kA circuit breaker	
21.	7g1 PVC shroud and sealing screws for the 3 pole, 300 amp, 35kA circuit breaker	
22.	7h1 PVC shroud and sealing screws for the 3 pole, 300 amp, 35kA circuit breaker	
23.	7i1 PVC shroud and sealing screws for the 3 pole, 400 amp, 35kA circuit breaker	
24.	7j1 PVC shroud and sealing screws for the 3 pole, 500 amp, 40kA circuit breaker	
25.	7k1 PVC shroud and sealing screws for the 3 pole, 630 amp, 40kA circuit breaker	
26.	7l1 PVC shroud and sealing screws for the 3 pole, 700 amp, 40kA circuit breaker	
27.	7m1 PVC shroud and sealing screws for the 3 pole, 800 amp, 40kA circuit breaker	
28.	7n1 PVC shroud and sealing screws for the 3 pole, 1000 amp, 40kA circuit breaker	

Table 40: ISOLATING SWITCHES 3 POLE - 230 / 400 V AC

Item	ITEM DESCRIPTION	PRICE (R) PER UNIT
1.	8a Isolating Switch, 1 pole, 100 amp, 10kA breaking cap. (sym) at 230 V AC - complete with shroud, clips & screws	
2.	8b Isolating Switch, 2 pole, 100 Amp, 10kA breaking cap. (sym) at 400 VAC - complete with shroud, clips & screws	
3.	8c Isolating Switch, 3 pole, 100 amp, 10kA breaking cap. (sym) at 400 V AC - complete with shroud, clips & screws	

4.	8d Isolating Switch, 3 pole, 100 amp, 20kA breaking cap. (sym) at 400 V AC - complete with shroud, clips & screws	
5.	8e Isolating Switch, 3 pole, 200 Amp, 20kA breaking cap. (sym) at 400 VAC - complete with shroud, clips & screws	
6.	8f Isolating Switch, 3 pole, 300 amp, 30kA breaking cap. (sym) at 400 V AC - complete with shroud, clips & screws	
7.	8g Isolating Switch, 2 pole, 30 amp, 5kA breaking cap. (sym) at 120V DC - complete with shroud, clips & screws	

Table 41: RIPPLE CONTROL RECEIVER RELAYS

	DESCRIPTION	**PRICE (R) PER UNIT**
1.	Receiver with 1 x 40A contact	
2.	Receiver with 2 x 40A contacts	
3.	Receiver with 3 x 40A contacts	
4.	Receiver with 5 x 16A contacts	
5.	Receiver with 1 x 25A contact	
6.	Receiver with 2 x 25A contacts	
7.	Receiver with 3 x 25A contacts	
8.	Software program	
9.	Signal volt Meter (1050Hz)	
10.	Signal volt meter (425Hz)	
11.	Programming device	
12.	Loose Contact Assembly 25A	

13.	Loose Contact Assembly 40A	
14.	Clip in receiver 25A single pole – DIN rail	
15.	Clip in receiver 25A single pole – Samite rail	

Table 42: RING TYPE (METERING) CURRENT TRANSFORMERS (LOW TENSION)

Item	RATIO	PRICE (R) per unit
1.	200/5	
2.	300/5	
3.	400/5	
4.	500/5	
5.	600/5	
6.	800/5	
7.	1000/5	
8.	1200/5	
9.	1500/5	

Table 43: CURRENT TRANSFORMERS FOR USE ON MEDIUM VOLTAGE (12kV) SYSTEM

ITEM 10B	USE	RATIO	CLASS	Bus bar Fitted?	PRICE per unit
1	Metering	60-30/5	**0,5**	400Amp straight bus bar with 10mm holes	
2	Metering	100-50/5	**0,5**	400Amp straight bus bar with 10mm holes	
3	Metering	300-200-100/5	**0,5**	No – ring type	
4	Metering	600-400-200/5	**0,5**	No – ring type	
5	Metering	600-400-200/5	**0,2**	No – ring type	
6	Protection	600/5	10P 10	No – ring type	
7	Protection	600/5	X	No – ring type	
8	Protection	300/5	10P 10	No – ring type	
9	Protection	200/5	10P 10	No – ring type	
10	Protection	60-30/5	10P 10	400Amp straight bus bar with 10mm holes	
11	Protection	60-30/5	10P 10	400Amp 90 degree bend bus bar(P1 side) with 10mm holes	
12	Protection	600/1	10P 10	No – ring type	
13	Protection	600/1	X	No – ring type	
14	Protection	100/1	10P 10	No – ring type	
15	Protection	1200/1	10P 10	No – ring type	
16	Protection	1200/1	X	No – ring type	
17	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp straight bus bar with 10mm holes	
18	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp straight bus bar with 10mm holes	
19	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp 90 degree bend bus bar with 10mm holes (P1 side)	
20	Dual CT Protection	600/1 600/1	10P 10 Class X	400Amp 90 degree bend bus bar with 10mm holes (P1 side)	

Table 44: CURRENT TRANSFORMERS FOR USE ON MEDIUM VOLTAGE (36kV) SYSTEM

Item no.10B	Ratio	VA	Class	KPV	IM(A)	R(OHM)	Price (R) per unit
21	300/1 300/1	10	5P10 PX	 150	 0.080	2.500 2.200	
22	200-800-1200/1 200-800-1200/1	10	0.5/0.2 PX	 250	 0.100	3.0 3.0	

Table 45: PLASTIC AND LEAD SEALS AND SEALING WIRE PLUS STEEL SEALING FERRULES AND STEEL WIRE

Item	DESCRIPTION	PRICE (R) PER UNIT
1.	A - Narrow tail seal of nylon with metal insert in locking chamber. Small round head with laser printing. Stock printed ICS and serially numbered in the following colours: yellow, green, blue, red, orange and white. (per pkt of 500)	
	B – 6mm^2 Steel Ferrules (per pkt of 100)	
	C – 6mm^2 Tinned Copper Ferrules (per pkt of 100)	
	D - Steel wire for (C) - single core corrugated bright steel wire - 150mm lengths (per bundle)	
	Qty per bundle (100 per bundle preferred)	

Table 46: FUSE UNITS 3 PHASE 4 WIRE HRC / LOW VOLTAGE

ITEM	**DESCRIPTION**	**PRICE (R) PER UNIT**
1.	76mm Centres up to 200 amp rating	
2.	83mm Centres up to 400 amp rating	
3.	92mm Centres up to 600 amp rating	
FUSE CARRIERS FOR SLOTTED TAG TYPE HRC FUSES		
ITEM	**DESCRIPTION**	**PRICE (R) PER UNIT**
1.	76mm Centres up to 200 amp rating	
2.	83mm Centres up to 400 amp rating	
3.	92mm Centres up to 600 amp rating	

FUSES HRC SLOTTED TAG TYPE / LOW TENSION		
ITEM	**DESCRIPTION**	**PRICE (R) PER UNIT**
A	76mm Centres 100 amp	
B	83mm Centres 100 amp	
C	76mm Centres 150 amp	
D	76mm Centres 200 amp	
E	83mm Centres 200 amp	
F	92mm Centres 200 amp	
G	76mm Centres 250 amp	
H	83mm Centres 250 amp	
I	83mm Centres 300 amp	
J	92mm Centres 300 amp	
k	83mm Centres 400 amp	
l	92mm Centres 400 amp	
m	92mm Centres 500 amp	
n	92mm Centres 600 amp	
PT FUSES – BLADE TYPE		
ITEM	**DESCRIPTION**	**PRICE (R) PER UNIT**
1.	PT Fuse unit 6A – surface mount front connection	
2.	PT Fuse unit 6A – surface mount rear connection studs	
3.	PT 6A Fuses – 10 per box	

Table 47: LOW VOLTAGE DISTRIBUTION BOARDS

Item	**Description**	**PRICE (R) PER UNIT**
1.	**Low Voltage Distribution Boards**	

Table 48: Street lighting distribution sub board

Item	**Description**	**PRICE (R) PER UNIT**
1.	**Street lighting distribution sub board**	

Table 49: Circuit labels

Item	Description	PRICE (R) PER UNIT
1.	**Circuit Lables**	

Table 50: Padlocking devices

Item	Description	PRICE (R) PER UNIT
1.	**Padlocking Devices**	

Table 51: Routine Test

Item	Description	Type)	PRICE (R) PER UNIT
1.	**Routine Test**		

Table 52: THREE PHASE SURFACE MOUNTABLE CONTACTOR – 200A (AC1), 400V contacts with 120DCV coil. (Similar to TC1 - D80)

Item	Description	PRICE (R) PER UNIT
1.	**THREE PHASE SURFACE MOUNTABLE CONTACTOR**	

Table 53: HIGH VOLTAGE FUSES

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	36A - barrel = 51mm DIA X 292mm long	
2.	45A - barrel = 51mm DIA X 292mm long	
3.	63A - barrel = 51mm DIA X 292mm long	
1.	36A - 63.5mm DIA X 254mm barrel length	
2.	45A - 63.5mm DIA X 254mm barrel length	
3.	63A - 63.5mm DIA X 254mm barrel length	
1.	36A - 63.5mm DIA X 359mm barrel length	
2.	45A - 63.5mm DIA X 359mm barrel length	
3.	63A - 63.5mm DIA X 359mm barrel length	

Table 54: COPPER BUSBAR

ITEM	DESCRIPTION	Kg/m	UNIT LENGTH IN m	PRICE (R) PER UNIT
1.	25mm x 3.15mm **not tinted**		10m roll	
2.	25mm x 6mm		3m	
3.	40mm x 8mm		3m	
4.	50mm x 3mm **not tinted**		10m roll	
5.	50mm x 5mm tubular		3m	
6.	50mm x 6mm		3m	
7.	50mm x 10mm		3m	
8	100mm x 10mm		3m	
9.	25mm x 3mm **not tinted**		10m roll	
10.	50mm x 3mm **not tinted**		10m roll	
11.	40mm x 10mm(flat bar round edge)		3m	
12.	50mm x 6mm		3m	
13.	50mm x 10mm		3m	
14.	100mm x 10mm		3m	

Table 55: CONDUIT - 20mm, 25mm AND 32mm

ITEM	DESCRIPTION	Unit LENGTH in m	PRICE (R) PER UNIT
1.	Steel (black) 20mm^2		
2.	Steel (black) 25mm^2		
3.	Steel (black) 32mm^2		
4.	PVC 20mm^2		
5.	PVC 25mm^2		
6.	PVC 32mm^2		
7.	PVC 50mm^2		

Table 56: PLUG TOPS 16A 250V PVC

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	3 Pin solid (not hollow)/ Polycarbonate	
2.	3 Pin Rubber	
3.	3 Pin solid (not hollow)/ Polycarbonate – dedicated earth - red	

Table 57: LAMP HOLDERS 250 V

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	Button holder Brass with shade-ring and 50,8mm screw-hole centers	
2	Holder brass 20mm with shade-ring	

Table 58: SWITCH - SOCKETS 16 AMP 250 V 3 PIN

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	Ivory shrouded flush mounted switch-socket outlet combination for 100 x 50 wall box	
2.	Ivory shrouded flush mounted switch-socket outlet combination for 100 x 100 wall box	
3.	Ivory shrouded flush mounted double switch-socket outlet combination for 100 x 100 wall box	
4.	Industrial switch-socket outlet combination with rocker type toggle complete with box	
5.	Ivory shrouded flush mounted switch-socket outlet combination for 100 x 100 wall box for dedicated red cover	

Table 59: TERMINAL AND CONNECTOR BLOCKS

ITEM	DESCRIPTION	PRICE (R) PER UNIT
1.	TERMINAL BLOCKS , single way for 16mm² stranded copper conductor	
2.	TERMINAL BLOCKS , single way for 25mm² stranded copper conductor	
3.	TERMINAL BLOCKS , single way for 35mm² stranded copper conductor	
4.	CONNECTOR BLOCK, 12 way /6 amp to take 2.5mm² wire	
5.	CONNECTOR BLOCK, 12 way /16 amp to take 4mm² wire	
6.	TEST TERMINAL BLOCKS, 13 way - 4 voltage terminals, 3 sets of current terminals with two links each**, front connection terminals without connecting studs** (GEC- type KP 002300)	
7.	TEST TERMINAL BLOCKS, 13 way - 4 voltage terminals, 3 sets of current terminals with two links each, **with rear long connecting studs** (GEC- type KP 0023008)	

Table 60: PHOTO ELECTRIC CONTROL UNIT (PECU)- DAYLIGHT SWITCHES FOR STREET LIGHTING CONTROL

DETAILS OF PECU OFFERED	NB: Please provide a three year pricing schedule
Rated supply voltage	_____V
Rated switching current at 230 V	_____A
Switch-on level in lux	_____LUX
Limitations on the use of the PECU (if any)	_____
Price per each:	
(1) Photo Electric Control Unit with mounting bracket and connector leads 1.5 mm² Cu x 300mm long	Manufacturer_____ Item ref nr _____ R_____
(2) Photo Electric Control Unit to fit Nema Socket - supplied without socket.	Manufacturer_____ Item ref nr _____ R_____
(3) Base only: Nema Socket Base with gasket, lock ring and mounting screws.	Manufacturer_____ Item ref nr _____ R_____
(4) Compact Photo Electric Control Unit to fit 22mm Diameter hole in a streetlight pole with weatherproof gaskets and lock nut complete with connection leads 1.5 mm² Cu x 300mm long	Manufacturer_____ Item ref nr _____
SANS or other (if any)	R_____

% Local content	_____
Delivery Period	_____
Discount for 30 day payment	_____
	_____%

CONTACTORS AND RELAYS

Table 61: THREE PHASE SURFACE MOUNTABLE CONTACTOR - 150A (AC1), 400V contacts, with 230V, 50 Hz coil complete with terminal

Item	Description	PRICE (R) PER UNIT
1.	150A (AC1) THREE PHASE SURFACE MOUNTABLE CONTACTOR	

Table 62: THREE PHASE SURFACE MOUNTABLE CONTACTOR – 100A (AC1), 400V contacts with 230V coil. (Similar to TC1 - D80)

Item	Description	PRICE (R) PER UNIT
1.	100A (AC1) THREE PHASE SURFACE MOUNTABLE CONTACTOR	

Table 63: THREE PHASE SURFACE MOUNTABLE CONTACTOR – 32A(AC1), 400V contacts with 230V coil. (Similar to TC1 - D1810)

Item	Description	PRICE (R) PER UNIT
1.	32A (AC1) THREE PHASE SURFACE MOUNTABLE CONTACTOR	

Table 64: CONTROL RELAY ON 8-PIN ROUND BASE– 10A, 241V (Similar to Telemecanique RUN21D21 P7)

Item	Description	PRICE (R) PER UNIT
1.	10A CONTROL RELAY ON 8-PIN ROUND BASE	

Table 65: PADLOCKS AND NIGHT LATCHES

Item	Description	PRICE (R) PER

		UNIT
1.	**PADLOCKS AND NIGHT LATCHES**	

8 CONTACT INFORMATION

8.1 For any further technical information regarding the document contents please contact Mr M Wassenaar e-mail: Mosa.Wessenaar@centlec.co.za. Such queries must be done in writing, the email address provided serves this purpose. The answer to one question will be sent to all the other prospective bidders that have bought the bid documents.

8.2 For Supply Chain Related questions, Please contact Me Palesa Makhele at 051 412 2753 or at Palesa.Makhele@centlec.co.za.

9 ANNEXURES – DRAWINGS AND SPECIFICATIONS

Please note that drawings will be available upon request. Kindly send an email to:
Mosa.Wessenaar@centlec.co.za