

TECHNICAL SPECIFICATIONS
AND SCHEDULES

TECHNICAL SPECIFICATIONS

1. OVERHEAD SERVICE CABLES

The overhead service cables for single - phase and three phase consumer connections shall be manufactured with stranded copper phase conductors, 600/1000-volt grade PVC insulation, split concentric full six stranded neutral and earth-wire conductors of copper, PVC sheathed, generally in accordance with BS 4553 as appropriate or equivalent standard.

The single-phase cables shall comprise one 10sq .mm, stranded copper phase conductor, with the PVC insulation of the single core colored red.

The three-phase cables shall comprise three 16sq.mm-stranded copper phase conductors with the PVC insulation of the three cores colored red, yellow and blue respectively.

The Single-phase and three-phase cables shall be equipped with split concentric stranded neutral and earth wire, each of the same total cross section area as the respective phase conductors.

The strands comprising neutral conductor shall each be lightly insulated. The earth-wire strands may be bare wire but must be separated from the neutral strands by at least two PVC filler strands.

The cables shall be black PVC sheathed overall the outer sheath shall contain an evenly dispersed mixture of an approved anti-termite deterrent and shall be Ultra-Violet (UV) resistance The Tenderer shall state in his tender the type and amount of chemical he intends to add.

Tension charts for the required types of cables should be submitted with the offer to cover the following design conditions:-

	<u>Cold area</u>	<u>Hot area</u>
Min. ambient temp.....Deg C	-10	0
Every day temp.....Deg C	20	25
Max. ambient temp.....Deg C	40	50
Wind Loading (over ice)..... (N/m2)	700	700
Ice loading (radial thickness).... (mm)	10	0
Factor of safety at min. temp.	2.5	2.5
Factor of safety at every day temp.	5	5

2. CURRENT CARRYING CAPACITY AND DESIGN PARAMETERS

The maximum continuous current carrying capacity, the maximum permissible continuous conductor temperature shall be based on IEC 60287 and subsequent amendments.

3. CABLE IDENTIFICATION

The plastic over-sheath shall be embossed with the name of the manufacturer, the cable voltage rating, length, size and any necessary information.

The length in meters shall be also embossed on the outer sheath all along each cable length at each meters

4. CABLE DRUMS

Cable drums shall be returnable and shall be made of timber, pressure impregnated against fungal and insect attack, or made of steel suitably protected against corrosion. They shall be arranged to take a round spindle of a section adequately to support the loaded cable during installation and handling. They shall be lagged with closely fitting battens in accordance to I.E.C. standard , The wooden drums must be returned after being unloaded by us and should be taking from you not more than two weeks from the date of notifying you of their loading from our side

Each cable drum **shall have a metallic name plate** that appear a distinguishing number on the outside of both flanges Particulars of the cable, i.e. voltage, conductor size and material, number of cores, length and type length, gross and net weights **shall also be clearly shown by graving** on both flanges. The direction of rolling shall be indicated be an arrow on both flanges. The method of drum marking shall be to the Engineer's approval.

The rotation of the cores at the running end, which shall be marked "Red" shall Increase in a clockwise direction. The same requirement shall apply for all drum lengths, and the inner end of these cables shall be marked "Green".

Both sides of the cable must appear out of the drum; therefore, it is not necessary to extend the whole cable in order to see the initial and final length of the cable.

5. SAMPLES

The Contractor shall submit for approval samples of cables as required from time to time by the Engineer.

6. INSPECTION AND TESTING FOR POWER CABLES

All cables shall be subjected to inspection and testing in accordance with IEC60502-1. The purchaser shall attend these tests.

Adequate notice shall be given when the cables are ready for inspection and tests, every facility shall be provided by the supplier to enable the purchaser to carry out the necessary inspections and tests.

Before the cables are packed or dispatched, all tests called for shall have been carried out successfully.

No passing of plant or materials by the purchaser shall relieve the Contractor from his responsibility. The Contractor shall also be responsible for the proper carrying out of all tests of plant or materials carried out or supplied by a subcontractor to the same extent as if the work were carried out or supplied by the Contractor himself.

If, due to the Contract work and/or component materials not complying with these specification further tests are necessary, the Contractor shall pay all additional costs, which may be incurred in re-testing.

The following tests shall be carried out in accordance with IEC 60502-1 and their amendments: -

- a) Routine Tests.
- b) Type Tests, Electrical
- c) Type Tests, non-electrical.
- d) Special Tests

7. DOCUMENT TO BE SUBMITTED WITH THE OFFER

The following items must be attached and submitted with the offer:

- Instructions for installation for each type of offered accessories.
- Catalogues, technical leaflets, drawings...etc.
- Test certificates.
- Reference lists for similar products.

Note: Samples of offered materials could be submitted for evaluation purposes

SCHEDULE AND GUARANTEES

<u>SCHEDULE NO.</u>	<u>DESCRIPTION</u>
A	SCHEDULES OF REQUIREMENTS
B	SCHEDULES OF PRICES
C	GUARANTEED DELIVERY PERIODS
D	MANUFACTURERS, PLACES OF MANUFACTURE AND TESTING
E	TECHNICAL PARTICULARS AND GUARANTEES
F	DEVIATION FROM SPECIFICATIONS
G	REFERENCE LIST

SCHEDULE (A)
SCHEDULE OF REQUIREMENTS

Item No.	Description	Stock Code	Unit	Approximate Quantity Required
1	Three phases (3x16+16+16) mm ² CU self-supporting, split concentric PVC insulated stranded copper O. H. L. Service cable complete as specified. (500m /drum)		Km	1.5

Notes

- 1- Drums shall be supplied with lengths as mentioned above.
- 2- EDCO has the right to modify the above estimated quantities of some items or decrease the quantities of some items and has the right not to order some of items.

SCHEDULE (B)
PRICES SCHEDULE

ITEM NO.	DESCRIPTION	QUANTITY AND UNIT	UNIT PRICE & CURRENCY		TOTAL PRICE C &F AQABA JORDAN
			FOB	C &F AQABA	
1.	Three phases (3x16+16+16) mm ² CU self-supporting, split concentric PVC insulated stranded copper O. H. L. Service cable complete as specified. (500m /drum)	1.5KM			
TOTAL PRICE & CURRENCY (must appear in the Tender Form)					
Cost for one engineer from EDCO to attend factory acceptance test (FAT) for one day and for a purchase order.					Value USD

IMPORTANT NOTES:

- 1. EDCO HAS THE RIGHT TO ACCEPT PARTIAL OFFERS AND TO AWARD PART OF THE ITEMS QUANTITIES WITHOUT ANY LIMIT OR NOTICE.**
- 2. EDCO HAS THE RIGHT TO REJECT ANY OFFER RECEIVED WITHOUT CLEAR TECHNICAL DETAILS; EDCO HAS THE RIGHT TO REJECT THAT OFFER DURING EVALUATION WITHOUT ANY PRIOR NOTICE.**

PRICE VARIATION DATA **METAL PRICES**

U.S. Dollar per Ton	
Basic Prices for copper on which the quoted prices are based	8900

Authorised source responsible for the publication of current market price
London Metal Exchange.

The following table shows the rise or fall in the quoted prices given in:-

U.S. Dollar per Ton rise or fall in the price of copper/aluminium from the basic prices stated above.

LME Price adjustment formula:

$$P_{\text{new}} = P_o + F(\text{CLME} - \text{BLME}) + \text{Freight charge}$$

Where: -

P_o : quoted price (FOB) per unit.

CLME: Current copper/aluminium price as London metal exchange closing price on the fifth working day from the date of purchase order.

BLME: metal price quoted in the offer (base LME).

F: metal factor.

SCHEDULE C
GUARANTEED DELIVERY PERIODS

ITEM	TYPE of CABLE	Weight of ALL conductors per 1000 meter (kg)	Copper factor
<u>1</u>	Three phases (3x16+16+16) mm ² CU self-supporting, split concentric PVC insulated stranded copper O. H. L. Service cable complete as specified. (500m /drum)		

SCHEDULE (D)
MANUFACTURER, PLACE OF MANUFACTURE & TESTING

ITEM NO.	DESCRIPTION	MANUFACTURER	PLACE OF MANUFACTURE	PLACE OF TESTING
1	Three phases (3x16+16+16) mm ² CU self-supporting, split concentric PVC insulated stranded copper O. H. L. Service cable complete as specified. (500m /drum)			

SCHEDULE (E)
TECHNICAL PARTICULARS AND GUARANTEES
TO BE FILLED COMPLETELY BY BIDDER

DESCRIPTION			ITEM NO. 1
Design Voltage		KV	
Length		Km	
Phase Conductor	Number of phase conductor		
	Cross section area		
	Material	mm ²	
	Construction	No./mm	
	Insulation Type		
	Minimum thickness	mm	
	Nominal thickness	mm	
	Nominal current rating at 20 Deg.	Amp	
	Nominal current rating at max. Cable temp.	Amp	
	Wight of conductor per meter		kg
Bedding	Material		
	Minimum thickness	mm	
Completed cable.	Overall diameter		mm
	Weight per meter		kg
	Maximum drum length		m
Concentric Conductors	Construction	Neutral	No./mm
		Earth Continuity	No./mm
Outer Covering	Material		
	Minimum thickness		mm
Catenary wire	N/A		
Max. Conductor Resistance per Km at 20 °C.	Phase		Ω/Km
	Neutral		Ω/Km
	Earth Continuity		Ω/Km
Minimum insulation resistance at 20 °C.		Ω/Km	
Mean electrostatic capacity of each conductor to earth per km of completed cable.		pF	
Minimum radius of bend around which cable can be laid.		mm	
Voltage test	Phase Conductor – All the wire		V/min
	Bare Earth Continuity- the covered neutral		V/min

SCHEDULE (F)
DEVIATIONS FROM SPECIFICATION IF ANY TO BE COMPLETED
BY THE TENDERER

ITEM NO.	BREIF DESCRIPTION	DEVIATIONS

SCHEDULE (G)

SERVICE EXPERIENCE OF MATERIAL

Tenderers shall provide the information required below for the service experience of the same offered material.

Customer	Total Qyt. (KM)	Type	No. of years in service