

SECTION (VI)

TECHNICAL SPECIFICATIONS
AND SCHEDULES

TECHNICAL SPECIFICATIONS

1. MINIATURE CIRCUIT BREAKERS

The Miniature Circuit Breakers (MCB'S) shall be of the 240V single phase and neutral and 415V three phase and neutral and shall comply with IEC 60898 or equivalent standard.

The MCB'S are required to provide fault capacity, current limiting, trip free mechanism. It shall be possible to switch the circuit-breaker ON and OFF by hand.

Normal overload protection shall be by thermal operation while short circuit protection preferably with magnetic trip operation for fault currents matching with **curve C characteristics** in accordance with IEC60898-1 .

The MCB'S shall be used to protect the electricity supply meters and also provide backup protection for the consumer's household service. Only the line poles shall be protected, and the neutral poles shall provide isolation only.

Circuit-breakers shall operate reliably even after long service and without danger to the user or surroundings.

The open position of MCB's shall be indicated by the symbol O (a circle) or by OFF and the closed position by the symbol I (a short vertical straight line) or by ON. Additionally, a color-coded indication of the MCB contact position could be used: red for ON and green for OFF. These indications shall be readily visible when the circuit-breaker is installed. Terminal intended exclusively for the neutral shall be indicated by the letter N.

The moving contacts of all poles of multi pole circuit-breakers shall be so mechanically coupled that all poles, except the switch neutral, if any make or break substantially together, whether operated manual or automatically, even if an overload occurs on one protected pole only.

The MCB'S shall have a breaking capacity to withstand 6000 Amp short circuit current at 240 V capacity to withstand 6000 Amp short circuit current at 240V/415V and 0.9 power factor without failure or damage.

The MCB'S shall have a suitable rigid plastic cover in order to enclose the terminals completely; the cover shall have a sealing facility (if required).

MCB's shall be sufficiently resistant to heat.

The maximum power loss permissible values per pole are indicated in below Table.

Range of rated current In A	Maximum power loss per pole W
$I_n \leq 10$	3
$10 < I_n \leq 16$	3,5
$16 < I_n \leq 25$	4,5
$25 < I_n \leq 32$	6
$32 < I_n \leq 40$	7,5
$40 < I_n \leq 50$	9
$50 < I_n \leq 63$	13
$63 < I_n \leq 100$	15
$100 < I_n \leq 125$	20

The current rating for the M.C.B'S shall be as follows as required in schedules:-

- 1 Phase + N 32 Amp.
- 3 Phases + N 20 Amp.
- 3 Phases + N 32 Amp.
- 3 Phases + N 50 Amp.
- 3 Phases + N 63 Amp.
- 3 Phases + N 80 Amp.

Samples of the offered MCB shall be submitted with the offer for evaluation purposes.

2. MINIATURE CIRCUIT BREAKERS IDENTIFICATION

- a) Manufacturer's name or trade mark.
- b) Type designation, catalogue number or serial number.
- c) Rated voltage(s).
- d) Rated frequency.
- e) The phases and neutral of M.C.B'S shall be identified by letters or symbols to indicate for it.
- f) Rated current with symbol of instantaneous tripping.
- g) Rated short-circuit capacity.
- h) Degree of protection (only if different from IP20).
- i) Rated impulse withstands voltage U_{imp} .
- j) Making and breaking capacity.

3. ROUTINE TESTS

- a- Tripping tests
- b- Verification of clearances between open contacts

4. DRAWINGS AND CATALOGUES

The Tenderer must submit with his offer the following terms:

- Catalogues
- Manufacturer's name and trade mark.
- Specifications indicating ratings.
- Weights & dimensions.
- Time current characteristics for MCB's.
- I^2t characteristics for MCB's.
- Type test certificate for same required MCB
- Samples

The catalogue and sample of each type of offered materials should be submitted with the offer. EDCO has the right to reject any offer is not clear or not enclosed with clear specification, drawing, catalogue and samples for the offered material.

SCHEDULE AND GUARANTEES

<u>SCHEDULE NO.</u>	<u>DESCRIPTION</u>
A	SCHEDULES OF REQUIREMENTS
B	SCHEDULES OF PRICES
C	GUARANTEED DELIVERY PERIODS
D	MANUFACTURER, PLACE OF MANUFACTURE & TESTING
E	TECHNICAL PARTICULARS AND GUARANTEES
F	DEVIATIONS FROM SPECIFICATIONS
G	LIST OF TYPE TEST CERTIFICATES
H	REFERENCE LIST

SCHEDULE (A)

SCHEDULE OF REQUIREMENTS

Item No.	Description	EDCO Stock Code	Unit	Quantity Required
1-	50 Ampere 415V, three phase and neutral MCB without cover as specified.		EA	440

SCHEDULE (B)

PRICE SCHEDULE

ITEM NO.	DESCRIPTION	QTY AND UNIT	UNIT PRICE & CURRENCY		TOTAL PRICE C&F AQABA-JORDAN
			
			FOB	C & F AQABA	
1-	50 Ampere 415V, three phase and neutral MCB without cover as specified	440			
TOTAL PRICE C&F AQABA					

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.**

SCHEDULE (C)
GUARANTEED DELIVERY PERIODS IN WEEKS

This Schedule shall be completed by the Tenderer and the periods entered shall be binding on the Contractor.

DESCRIPTION	DELIVERY PERIOD FOB PORT OF LOADING-SPECIFY PORT	DELIVERY PERIOD TO AQABA PORT- JORDAN
50 Ampere 415V, three phase and neutral MCB without cover as specified		

Note:-

Delivery time shall be as soon as possible, C&F Aqaba port from the date of receipt EDCO purchasing order.

SCHEDULE (D)

**MANUFACTURERS, PLACES OF MANUFACTURE
AND TESTING**

The Tenderer shall state the town and country where manufacturing, testing and inspection take place.

DESCRIPTION	MANUFACTURER	PLACE OF MANUFACTURE	PLACE OF TESTING AND INSPECTION
50 Ampere 415V, three phase and neutral MCB without cover as specified			

SCHEDULE (E)
TECHNICAL PARTICULARS AND GUARANTEES
FOR MINIATURE CIRCUIT BREAKERS

These Schedules are to be completed by the Contractor at the time of tendering and particulars and guarantees entered will be binding.

REQUIREMENTS		THREE PHASE AND NEUTRAL M.C.B'S
		ITEM(1) (50) A
Rated Current	Amp	
Rated Current at 40 C°	Amp	
Rated Voltage	Volts	
Ambient air temperature	C°	
No. of Poles	EA	
Breaking Capacity	Amp	
Rated Short-Circuit Capacity	Amp	
Range of instantaneous tripping characteristics	C	
Tropicalization		
Overall dimensions		
Height	mm	
Width	mm	
Depth	mm	
Weight	gm	
Cross-Sections of Conductors	Sq.mm	
Degree of Protection		
losses		

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

ITEM NO.	BREIF DESCRIPTION	DEVIATIONS

SCHEDULE (G)
LIST OF TYPE TEST CERTIFICATES FOR OFFERED MATERIALS

Tenderers shall provide the information required below for the type test certificates from a recognized testing station covering the equipment offered to IEC recommendations & shall be submitted with the tender.

Failure to provide copies of type test certificates/reports will result in rejection of the tender.

Type test made on identical designs of equipment to those offered	Certificate No.	Certificate Authority

SCHEDULE (H)
SERVICE EXPERIENCE OF MATERIAL

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

Customer	Total Quantity.	Type	No. of years in service