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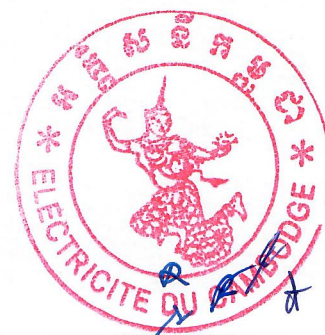
TECHNICAL SPECIFICATION

EDC-DTS-ME004

Miniature Circuit Breakers (MCB)

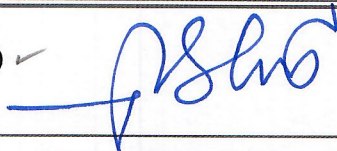
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ELECTRICITE DU CAMBODGE

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1.0	January, 2022	Miniature Circuit Breakers (MCB) ✓	 Dr. Praing Chulasa



EDC-DTS-ME003- Miniature Circuit Breakers (MCB)

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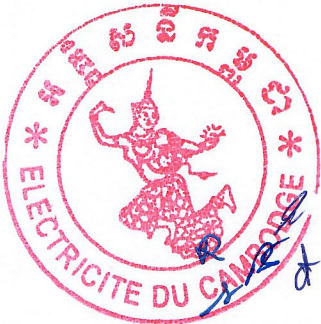


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MINIATURE CIRCUIT BREAKERS (MCB)

1 Scope

This Specification covers the general requirements of the design, manufacture and testing of Miniature Circuit Breaker (MCB), to be used on Customer Services for providing overcurrent and short circuit protection. They will be installed after metering.

This document defines the main characteristics of this equipment.

2 Standards

Unless a year is specified, the equipment shall comply with the latest editions and amendment of standards / specifications listed below:

IEC International Electromechanical Commission

IEC 60898-1 : Electrical accessories – Circuit Breakers for overcurrent protection for household and similar installations. – Part 1: Circuit Breakers for A.C. operation

IEC 60898-2 : Electrical accessories – Circuit Breakers for overcurrent protection for household and similar installations. – Part 2: Circuit Breakers for A.C. and DC operation

IEC 60947-2 Low-voltage switchgear and control gear - Part 2: Circuit-breakers

ISO Standards

ISO/IEC 17025 : General requirements for the competence of testing and calibration laboratories

ISO 9001 : Quality management systems – Requirements

The Supplier may propose alternative standards, provided it is demonstrated that they give an equivalent degree of quality as the referenced standard. Acceptability of any alternative standard is at the discretion of the Purchaser.

3 Definitions

The definitions of the relevant IEC and ISO standards apply to this technical specification.

4 Testing and Inspection

4.1 General Notes for Test

MCB may be inspected at the factory by EDC's representatives.

The inspection and routine tests shall be carried out in accordance with the provisions of the relevant IEC and ISO recommendations.

Miniature circuit breakers shall be subjected to tests as specified below.



4.2 Type Tests

All type tests required by the IEC and ISO or any national standards shall be carried out.

Type test reports shall be carried out by internationally recognized electrical testing laboratories.

Full copies of type test reports shall be submitted within the bid of the manufacturer/supplier. If not the offer shall not be considered.

If the manufacturer is certified by EDC, it is not necessary to submit type test reports for the considered equipment.

Nevertheless, in case the testing laboratory is not internationally recognized, the testing laboratory shall be mandatorily accredited ISO/IEC 17025 by an international or national accreditation body specialized in testing laboratories accreditation/acceptance. In that case, the testing laboratory shall prove mandatorily its capability/capacity to carry out all type tests mentioned in the type tests reports by supplying: Full description of all tests the laboratory can carry out, list of testing equipment with full characteristics, drawing of testing rooms with location of testing equipment, etc..., supported by pictures and copy of the ISO/IEC 17025 accreditation certificate.

Acceptability of any accredited testing laboratory is at the discretion of the EDC.

Following Type Test reports conforming to IEC 60898-1 shall be provided with the offer.

- (a) Indelibility of marking
- (b) Reliability of screws, current carrying parts and connections
- (c) Reliability of terminals for external conductors
- (d) Protection against electric shock
- (e) Dielectric properties and isolating capability
- (f) Temperature rise
- (g) 28 days test
- (h) Tripping characteristic
- (i) Mechanical and electrical endurance
- (j) Short Circuit
- (k) Resistance to mechanical shock and impact
- (l) Resistance to heat
- (m) Resistance to abnormal heat and fire
- (n) Resistance to rusting

Test Certificates, performance curves, table, etc., based on the type tests conforming to the relevant standard shall be supplied along with the offer for evaluation purpose.



4.3 Routine Tests

The Routine tests carried out by the manufacturer according requirement of IEC 60898 shall be backed by routine test reports signed by the factory's quality control department.

The following Routine Test as per annex I of IEC 60898-1 (or IEC 60947-2 for 80A and 100 A MCB) shall be carried out on all units and test report shall be furnished for the observation of the Engineer appointed by the purchaser at the time of inspection.

(a) Tripping tests

(b) Verification of clearance between open contacts

4.4 Inspection

MCB shall be subject to inspection by a representative of EDC at the place of manufacture and routine tests carried out on samples picked at random in their presence.

The supplier shall make necessary arrangements for pre-shipment inspection by an Inspector sent by EDC and to carry out in his presence necessary Sample / Acceptance tests on equipment and material supplied. Routine test reports as per IEC 60898-1 (or IEC 60947-2 for 80A and 100 A MCB) shall also be made available for the observation of the inspector Quality Management

5 Quality management

Design, development and production of the proposed equipment shall be ISO 9001 certified. The valid ISO 9001 certificate shall be submitted within the bid.

6 Ambient Conditions

Low voltage distribution boards for pole mounted distribution substation shall be suitable to operate in the ambient conditions described here after:

Altitude	Sea level to 1,000 meters
Climate	Tropical
Annual Rainfall	1,300 mm.140 days
Monsoon Period	June to November
Ambient Air Temperatures:	
Average	27.5°C
Minimum	13.3°C
Maximum	40.5°C
Relative Air Humidity	65-100%
Soil Thermal Resistivity,:	
Average	1.20c m/W



Maximum	3.00c m/W
Solar Emissivity	0.8
Solar absorption	0.8
Wind Velocity:	
Average	37 km/h (10.3 m/s)
Maximum	72 km/h (20 m/s)

7 System parameters

- (a) Nominal voltage : 400/230 V
- (b) System highest voltage : 415/240 V
- (c) System frequency : 50 Hz
- (d) Method of neutral earthing : Solidly earthed
- (e) System fault level : 25 kA

8 Technical requirements

- Rated Current (In) : Two wires: 6, 10, 16, 20, 25, 32, 40, 50, 63 Ampere
: Four wires: 32, 63, 80, 100 Ampere
- Rated operational voltage (Ue) : 230V AC for single phase and 400V AC for three phase
- Rated impulse withstand voltage (1.2/50 μ s) : 4.0 kV peak
- Rated insulation voltage (Ui) : 500 V
- Rated short circuit capacity (Icn) : 10 kA
- Tripping Characteristic: : curve C
- i) Overload tripping : Conventional no tripping current - 1.13 In
: Conventional Tripping current - 1.45 In
- ii) Instantaneous Tripping - : Above 5 In up to and including 10 In
- Degree of Protection : IP 20
- Mechanical and electrical endurance : 4,000 operating cycles at rated current
- Mounting MCB : Ω DIN rail (MCB is clip on)
- Number of poles 230 V MCB : either 1 protected pole + Neutral or 2 protected poles
- Number of poles 400 V MCB : 3 protected poles + Neutral
: 4 protected poles



9 Design

The Miniature Circuit Breaker shall be a compact electro-mechanical device for making, breaking and disconnecting a circuit in normal conditions and protecting circuit in abnormal conditions such as over-current and short circuit. The circuit breaker time current operating characteristics shall conform to type C, table 7 of IEC 60898-1.

The Miniature Circuit Breaker shall be of wire in (top), wire out (bottom) type and basically comprises the following features;

- (a) Independent Manually operated latched switching mechanism with trip free release.
- (b) Arc-quenching chamber.
- (c) Overload protection.
- (d) Instantaneous Short circuit protection
- (e) Safe Disconnection of load from the source.

The two wires/single phase Miniature Circuit Breaker shall be of two pole (one protected + neutral or 2 protected pole) type suitable for operating on 230V supply.

The four wires/ three phase Miniature Circuit Breaker shall be of two type:

- three protected pole + Neutral
- Four protected poles

Both type are suitable for operating on 400 V supply.

10 Construction

10.1 Case

Miniature Circuit Breaker of following classification shall be supplied without enclosure

- (a) Two pole circuit breaker with one or two protected pole
- (b) Four pole circuit breaker with three protected pole + Neutral
- (c) Four pole circuit breaker with four protected pole

The insulated case of the MCB shall be made out of moulded insulating material possessing high thermal stability and good mechanical strength to reasonably withstand rough usage without any fracture or permanent distortion.

The MCB shall be suitable for Ω DIN rail mounting.

The case width for 63A and less MCB : W shall be:

Two wires MCB	: $35 \text{ mm} \leq W \leq 36 \text{ mm}$
Four wires MCB	: $70 \text{ mm} \leq W \leq 72 \text{ mm}$

For four wires MCB of 80A and 100 A this width W shall not exceed 110 mm

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10.2 Terminals

The screw type terminals of the MCB shall have provision for accommodating and securely clamping the incoming and outgoing copper service wires cross section as indicated below;

MCB Type	Current rating (A)	Terminal Cross section
Two wires	6, 10, 16, 20, 25, 32,	16 mm ² Copper
	40, 50, 63	25 mm ² Copper
Four wires	32	16 mm ² Copper
	63, 80, 100	25 mm ² copper

Temperature rise for terminals and accessible parts shall conform to the Table 6 of IEC 60898-1 or equivalent clause from IEC 60947-2 for 80A and 100 A MCB.

10.3 Neutral terminal

The neutral terminal of 1P+N and 3P+N MCB shall be mandatorily located on **right side of the MCB** when facing the front face of the MCB.

10.4 Operating Mechanism

The Operating Mechanism of the MCB shall be of independent manual operation type (for closing and opening operation) and designed for automatic tripping on over-current and short circuit. The MCB Shall be provided with trip free mechanism.

Both the "On" and "Off" positions of the Circuit Breaker shall be clearly indicated. The indication shall be clearly visible to the operator when the Circuit Breaker is mounted in the normal manner.

The operating mechanism of all the poles shall be according to the clause 8.1.2 of IEC 60898-1 or equivalent clause from IEC 60947-2 for 80A and 100 A MCB.

10.5 Contacts

The contacts shall comply with clause 8.1.4.4 of IEC 60898-1 (or equivalent clause from IEC 60947-2 for 80A and 100 A MCB) , be of high current carrying capacity with good arc resistance property.

The breaker shall be provided with arc chutes enclosing the contacts of each pole or a similar device which should serve to quench the arc during breaking.

10.6 Overload Release

A delayed over-current release shall be fitted in each phase with inverse characteristics.

10.7 Short Circuit Release

An instantaneous short circuit release shall be provided to trip the circuit breaker within 0.1 sec. during short circuit condition.

10.8 Mechanical and Electrical Endurance

The mechanical and electrical endurance of the Miniature Circuit Breaker shall not be less than 4,000 operating cycles conforming to IEC 60898-1 and IEC 60947-2 for 80A and 100 A MCB.



11 Other mandatory requirement

11.1 Experience

The manufacturer shall have at least 10 years' experience in manufacturing and supply of MCBs and manufacturer shall furnish documentary evidence with the offer to prove his manufacturing experience.

12 Marking

Each Miniature Circuit Breaker shall be marked in a durable manner with the following particulars conforming to IEC 60898-1. These markings shall be located in a place such that they are visible and legible when the circuit-breaker is installed.

- (a) Manufacturer's name or Trade mark
- (b) Type designation, Catalogue Number or serial Number
- (c) Rated voltage
- (d) Rated current (In) and tripping curve
- (e) Rated frequency,
- (f) Rated Short-circuit capacity, in amperes
- (g) Indication of the open and closed position, with O and I respectively
- (h) Neutral location for 1P+N and 3P+N MCB

13 Packing

The Miniature Circuit Breaker of same current rating, breaking capacity and number of poles shall be packed together in a box made out of biodegradable material. Each box shall contain a maximum of 100 MCB's of the same Type.

Each box shall be clearly marked with the following information;

- (a) Name of Manufacturer
- (b) Country of Manufacture
- (c) Operating Voltage
- (d) Rated Current
- (e) Tripping curve
- (e) Breaking Capacity
- (f) Number of pole (Single phase/Three Phase)
- (g) Quantity
- (h) Gross Weight

Handwritten initials and signature in blue ink.



14 Samples

Under EDC request, one samples of MCB offered shall be submitted. These samples shall not be returned to the Supplier.

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No.	Description	Unit	Requirements	Supplier's Offer
Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, ", V , etc..." are not accepted.				
15.1 Two wires (230V) Miniature Circuit Breaker (either 1P+N or 2P)				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference		to be specified	
4	Manufacturing country		to be specified	
5	Applicable Standards		IEC 60898-1 IEC 60898-2	
6	Type tests reports		To be provided with bid	
7	Self-ignition type test report		To be provided with bid	
8	Non flammability type test report		To be provided with bid	
9	Rated Current (In)	A	6 <input type="checkbox"/> 10 <input type="checkbox"/> 16 <input type="checkbox"/> 20 <input type="checkbox"/> 32 <input type="checkbox"/> 40 <input type="checkbox"/> 50 <input type="checkbox"/> 63 <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10	Rated voltage (Un)	V	230	
11	Rated impulse withstand voltage (1.2/50 μs)	kV peak	4	
12	Rated insulation voltage (Ui)	V	500	
13	Rated short circuit capacity (Icn)	kA	10	
14	Tripping curve		C	
15	Overload tripping			



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	Conventional no tripping current :		1.13 In	
	Conventional Tripping current:		1.45 In	
16	Instantaneous Tripping		Above 5 In up to and including 10 In	
16	Degree of Protection		IP 20	
18	Mechanical and electrical endurance		4,000 operating cycles at rated current	
19	Mounting MCB		Ω DIN rail (MCB is clip on)	
20	Proposed Number of poles		Protected pole + Neutral or 2 protected poles	<input type="checkbox"/> <input type="checkbox"/>
21	Independent Manually operated latched switching mechanism with trip free release.		Mandatory	
22	Arc-quenching chamber		Mandatory	
23	Overload protection		Mandatory	
24	Instantaneous Short circuit protection		Mandatory	
25	Safe Disconnection of load from the source		Mandatory	
26	Case made out of moulded insulating material possessing high thermal stability and good mechanical strength to reasonably withstand rough usage without any fracture or permanent distortion		Yes	
27	Case width: W		$35 \text{ mm} \leq W \leq 36 \text{ mm}$	To be specified
28	Incoming wires		Top located	
29	Outgoing wires		Bottom located	
30	6A, 10A, 16A, 20A, 25A, 32 A MCB Terminals accommodate copper conductors of:		16 mm ²	



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31	40A, 50A, 63A MCB Terminals accommodate copper conductors of:		25 mm ²	
32	The neutral terminal of 1P+N is located on right side of the MCB when facing the front face of the MCB and clearly identified		Mandatory	
33	<p>Operating Mechanism</p> <p>The Operating Mechanism of the MCB is of independent manual operation type (for closing and opening operation)</p> <p>And designed for automatic tripping on over-current and short circuit.</p> <p>The MCB Shall be provided with trip free mechanism.</p> <p>Both the "On" and "Off" positions of the Circuit Breaker are clearly indicated.</p> <p>The operating mechanism of all the poles shall be according to the clause 8.1.2 of IEC 60898-1.</p>		<p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p>	
34	<p>The contacts shall comply with clause 8.1.4.4 of IEC 60898-1, be of high current carrying capacity with good arc resistance property.</p> <p>The breaker shall be provided with arc chutes enclosing the contacts of each pole or a similar device which should serve to quench the arc during breaking</p>		<p>Mandatory</p> <p>Mandatory</p>	
35	An instantaneous short circuit release is provided to trip the circuit breaker within 0.1 sec. during short circuit condition		Mandatory	
36	Marking			



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	(a) Manufacturer's name or Trade mark		Yes	
	(b) Type designation, Catalogue Number or serial Number		Yes	
	(c) Rated voltage		Yes	
	(d) Rated current (In) and tripping curve		Yes	
	(e) Rated frequency,		Yes	
	(f) Rated Short-circuit capacity, in amperes		Yes	
	(g) Indication of the open and closed position, with O and I respectively		Yes	
	(h) Standard		IEC 60898	
37	Dimensions		To be specified	
38	Weight		To be specified	
39	Packing		To be clearly specified	

The manufacturer shall have at least 10 years' experience in manufacturing and supply of MCBs and manufacturer shall furnish documentary evidence with the offer to prove his manufacturing experience.

If not provided within the bid, the offer shall be rejected

Deviation from the technical specification:

The bidder shall list point after point and explain here in after all deviation from the requested technical specification.

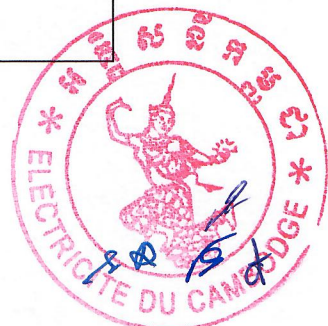
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Full technical information shall be supplied within the bid. If not, the offer shall not be considered.

Bidder signature:



EDC-DTS-ME003- Miniature Circuit Breakers (MCB)

No.	Description	Unit	Requirements	Supplier's Offer
Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, ", V , etc..." are not accepted.				
15.2 Three protected poles + Neutral Miniature Circuit Breaker				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference		to be specified	
4	Manufacturing country		to be specified	
5	Applicable Standards		IEC 60898-1 IEC 60898-2	
5a	Standard for 80 and 100 A MCB		IEC 60898-1 IEC 60898-2 Or IEC 60947-2 for 80A and 100 A	To be mentioned
6	Type tests reports		To be provided with bid	
7	Self-ignition type test report		To be provided with bid	
8	Non flammability type test report		To be provided with bid	
9	Rated Current (In)	A	32 <input type="checkbox"/> 63 <input type="checkbox"/> 80 <input type="checkbox"/> 100 <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10	Rated operational voltage (Ue)	V	400	
11	Rated impulse withstand voltage (1.2/50 μ s)	kV peak	4	
12	Rated insulation voltage (Ui)	V	500	
13	Rated short circuit capacity (Icn)	kA	10	
14	Tripping curve		C	
15	Overload tripping Conventional no tripping current :		1.13 In	



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	Conventional Tripping current:		1.45 In	
16	Instantaneous Tripping		Above 5 In up to and including 10 In	
17	Degree of Protection		IP 20	
18	Mechanical and electrical endurance		4,000 operating cycles at rated current	
19	Mounting MCB		Ω DIN rail (MCB is clip on)	
20	Type of MCB to be supplied		3 protected pole + N	
21	Independent Manually operated latched switching mechanism with trip free release.		Mandatory	
22	Arc-quenching chamber		Mandatory	
23	Overload protection		Mandatory	
24	Instantaneous Short circuit protection		Mandatory	
25	Safe Disconnection of load from the source		Mandatory	
26	Case made out of moulded insulating material possessing high thermal stability and good mechanical strength to reasonably withstand rough usage without any fracture or permanent distortion		Yes	
27	Case width: W		$70 \text{ mm} \leq W \leq 72 \text{ mm}$ $\leq 110 \text{ mm}$ for 80 and 100A	To be specified
28	Incoming wires		Top located	
29	Outgoing wires		Bottom located	
30	32 A MCB Terminals accommodate copper conductors of:		16 mm ²	
31	63, 80 and 100A MCB Terminals accommodate copper conductors of:		25 mm ²	



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32	The neutral terminal of 3P+N is located on right side of the MCB when facing the front face of the MCB and clearly identified		Mandatory	
33	<p>Operating Mechanism</p> <p>The Operating Mechanism of the MCB is of independent manual operation type (for closing and opening operation)</p> <p>And designed for automatic tripping on over-current and short circuit.</p> <p>The MCB Shall be provided with trip free mechanism.</p> <p>Both the "On" and "Off" positions of the Circuit Breaker are clearly indicated.</p> <p>The operating mechanism of all the poles shall be according to the clause 8.1.2 of IEC 60898-1.</p>		<p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p>	
34	<p>The contacts shall comply with clause 8.1.4.4 of IEC 60898-1, be of high current carrying capacity with good arc resistance property.</p> <p>The breaker shall be provided with arc chutes enclosing the contacts of each pole or a similar device which should serve to quench the arc during breaking</p>		<p>Mandatory</p> <p>Mandatory</p>	
35	An instantaneous short circuit release is provided to trip the circuit breaker within 0.1 sec. during short circuit condition		Mandatory	
36	<p>Marking</p> <p>(a) Manufacturer's name or Trade mark</p>		Yes	



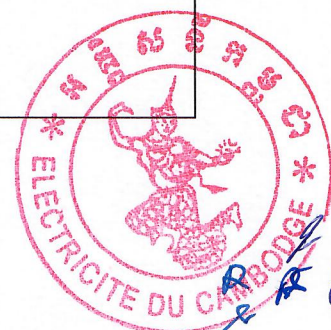
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	(b) Type designation, Catalogue Number or serial Number		Yes	
	(c) Rated voltage		Yes	
	(d) Rated current (In) and tripping curve		Yes	
	(e) Rated frequency,		Yes	
	(f) Rated Short-circuit capacity, in amperes		Yes	
	(g) Indication of the open and closed position, with O and I respectively		Yes	
	(h) Standard		IEC 60898	
37	Dimensions		To be specified	
38	Weight		To be specified	
39	Packing		To be clearly specified	
<p>The manufacturer shall have at least 10 years' experience in manufacturing and supply of MCBs and manufacturer shall furnish documentary evidence with the offer to prove his manufacturing experience.</p> <p>If not provided within the bid, the offer shall be rejected</p>				
<p>Deviation from the technical specification:</p> <p>The bidder shall list point after point and explain here in after all deviation from the requested technical specification.</p> <p>1/</p> <p>2/</p> <p>3/</p> <p>Full technical information shall be supplied within the bid. If not, the offer shall not be considered.</p> <p>Bidder signature:</p>				



EDC-DTS-ME003- Miniature Circuit Breakers (MCB)

No.	Description	Unit	Requirements	Supplier's Offer
Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, ", V , etc..." are not accepted.				
15.3 Four protected poles Miniature Circuit Breaker				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference		to be specified	
4	Manufacturing country		to be specified	
5	Applicable Standards		IEC 60898-1 IEC 60898-2	
5a	Standard for 80 and 100 A MCB		IEC 60898-1 IEC 60898-2 Or IEC 60947-2 for 80A and 100 A	To be mentioned
6	Type tests reports		To be provided with bid	
7	Self-ignition type test report		To be provided with bid	
8	Non flammability type test report		To be provided with bid	
9	Rated Current (In)	A	32 <input type="checkbox"/> 63 <input type="checkbox"/> 80 <input type="checkbox"/> 100 <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10	Rated operational voltage (Ue)	V	400	
11	Rated impulse withstand voltage (1.2/50 μ s)	kV peak	4	
12	Rated insulation voltage (Ui)	V	500	
13	Rated short circuit capacity (Icn)	kA	10	
14	Tripping curve		C	
15	Overload tripping Conventional no tripping current :		1.13 In	



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	Conventional Tripping current:		1.45 In	
16	Instantaneous Tripping		Above 5 In up to and including 10 In	
17	Degree of Protection		IP 20	
18	Mechanical and electrical endurance		4,000 operating cycles at rated current	
19	Mounting MCB		Ω DIN rail (MCB is clip on)	
20	Type of MCB to be supplied		4 protected poles	
21	Independent Manually operated latched switching mechanism with trip free release.		Mandatory	
22	Arc-quenching chamber		Mandatory	
23	Overload protection		Mandatory	
24	Instantaneous Short circuit protection		Mandatory	
25	Safe Disconnection of load from the source		Mandatory	
26	Case made out of moulded insulating material possessing high thermal stability and good mechanical strength to reasonably withstand rough usage without any fracture or permanent distortion		Yes	
27	Case width: W		$70 \text{ mm} \leq W \leq 72 \text{ mm}$ $\leq 110 \text{ mm}$ for 80 and 100A	To be specified
28	Incoming wires		Top located	
29	Outgoing wires		Bottom located	
30	32 A MCB Terminals accommodate copper conductors of:		16 mm ²	
31	63, 80 and 100A MCB Terminals accommodate copper conductors of:		25 mm ²	



32	<p>Operating Mechanism</p> <p>The Operating Mechanism of the MCB is of independent manual operation type (for closing and opening operation)</p> <p>And designed for automatic tripping on over-current and short circuit.</p> <p>The MCB Shall be provided with trip free mechanism.</p> <p>Both the "On" and "Off" positions of the Circuit Breaker are clearly indicated.</p> <p>The operating mechanism of all the poles shall be according to the clause 8.1.2 of IEC 60898-1.</p>		<p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p> <p>Mandatory</p>	
33	<p>The contacts shall comply with clause 8.1.4.4 of IEC 60898-1, be of high current carrying capacity with good arc resistance property.</p> <p>The breaker shall be provided with arc chutes enclosing the contacts of each pole or a similar device which should serve to quench the arc during breaking</p>		<p>Mandatory</p> <p>Mandatory</p>	
34	An instantaneous short circuit release is provided to trip the circuit breaker within 0.1 sec. during short circuit condition		Mandatory	
35	<p>Marking</p> <p>(a) Manufacturer's name or Trade mark</p> <p>(b) Type designation, Catalogue Number or serial Number</p> <p>(c) Rated voltage</p> <p>(d) Rated current (In) and tripping curve</p>		<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	



EDC-DTS-ME003- Miniature Circuit Breakers (MCB)

	(e) Rated frequency, (f) Rated Short-circuit capacity, in amperes (g) Indication of the open and closed position, with O and I respectively (h) Standard		Yes Yes Yes IEC 60898	
36	Dimensions		To be specified	
37	Weight		To be specified	
38	Packing		To be clearly specified	
<p>The manufacturer shall have at least 10 years' experience in manufacturing and supply of MCBs and manufacturer shall furnish documentary evidence with the offer to prove his manufacturing experience.</p> <p>If not provided within the bid, the offer shall be rejected</p>				
<p style="text-align: center;">Deviation from the technical specification:</p> <p>The bidder shall list point after point and explain here in after all deviation from the requested technical specification.</p> <p>1/ 2/ 3/</p> <p style="text-align: center;">Full technical information shall be supplied within the bid. If not, the offer shall not be considered.</p> <p style="text-align: center;">Bidder signature:</p>				

