



TITLE	SPECIFICATION FOR MINIATURE AND EARTH LEKAGE CIRCUIT BREAKERS	REFERENCE CP_TSSPEC_017 DATE: PAGE:	REV 7 AUGUST 2021 OF 44
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TABLE OF CONTENTS

	Page
FOREWORD	3
INTRODUCTION	4
1 SCOPE	4
2 NORMATIVE REFERENCES	4
3 DEFINITIONS AND ABBREVIATIONS	4
4 REQUIREMENTS	5
4.1 General	5
4.2 Physical characteristics	5
4.3 Electrical characteristics	5
4.4 Accessories	6
4.5 Labeling and packaging	7
4.6 Documentation	7
5 TESTS	8
5.1 Type tests	8
5.2 Routine tests	8
6 TRAINING	9
7 QUALITY MANAGEMENT	9
8 ENVIRONMENTAL MANAGEMENT	9
9 HEALTH AND SAFETY	9
Annex A - Bibliography	10
Annex B - Revision information	11
Annex C - Item 1- MCB 20A 6KA SP - SAP 5455	12
Annex C - Item 2 - MCB 30A 6KA SP - SAP 6242	14
Annex C -Item 3 - MCB 40A 6KA SP - SAP 5494	16
Annex C - Item 4 - MCB 50A 6KA SP - SAP 5449	18
Annex C - Item 5 - MCB 60A 6KA SP - SAP 5169	20
Annex C- Item 6 - MCB 80A 5KA SP - SAP 5451	22
Annex C- Item 7 - MCB 100A 6KA SP - SAP 5315	24
Annex C- Item 8 - MCB 2A 6KA SP - SAP	26

**SPECIFICATION FOR MINIATURE AND
EARTH LEAKAGE CIRCUIT BREAKERS**

Annex C- Item 9 - MCB 5A 6KA SP - SAP28

Annex C- Item 10 - MCB 10A 6KA SP DC- SAP30

Annex C- Item 11 - MCB 15A 6KA SP - SAP32

Annex C- Item 12 - MCB 25A 6KA SP - SAP34

Annex C- Item 13 - MCB 125A 6KA SP DC- SAP36

Annex C- Item 14 - MCB 150A 6KA SP - SAP38

Annex C- Item 15 - ELCB 63A 6KA SP - SAP.....39

**Annex C- Item 16 to 19 – Miscellaneous MCB related products – SAP 7075, 5303, 1686 and
540 41**

Annex D – Stock Items43

INTRODUCTION

City Power utilise miniature circuit breakers for protection and control of LV circuits. The primary function of circuit breakers is to protect an installation or appliance against sustained overloading and short circuit faults. It is therefore important to ensure that low voltage CB's comply with the required specifications and are of acceptable quality. The implication to suppliers is that City Power will only purchase miniature circuit breakers that comply with the compulsory specification.

1 SCOPE

This specification covers City Power's requirements for miniature and earth leakage circuit breakers in accordance with the compulsory specification VC 8036 and VC 8035.

2 NORMATIVE REFERENCES

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

SANS 556 -1, *Moulded case circuit breakers*

SANS 556 -2-1, *Earth leakage circuit breakers*

SANS 60947- 2: *Low Voltage Switchgear and Controlgear Part 2: Circuit-breakers*

SANS VC 8036: *Moulded-Case Circuit-breakers*

SANS VC 8035: *Earth leakage protection devices*

3 DEFINITIONS AND ABBREVIATIONS

The definitions and abbreviations in SANS 556-1, SANS 556-2-1 and SANS IEC 60947- 2 shall apply to this specification.

4 REQUIREMENTS

4.1 General

- 4.1.1 All live parts shall be shielded against inadvertent contact by strong covers of insulating material.
- 4.1.2 The design of the circuit breaker shall not endanger the safety of City Power personnel.
- 4.1.3 Circuit breakers shall be suitable for use at an altitude of 1800m
- 4.1.4 The CB shall comply with VC 8036.
- 4.1.5 The Earth Leakage Circuit Breakers shall comply with VC 8035

4.2 Physical characteristics

4.2.1 Construction

- 4.2.1.1 The terminals shall be of robust construction and galvanically compatible with copper conductors.
- 4.2.1.2 When the circuit breaker is mounted the terminals shall be accessible from the front.
- 4.2.1.3 A slotted screw type connection shall be provided which will not require the use of special tools.

4.2.2 Sealing Facilities

- 4.2.2.1 In order to prevent unauthorized tampering with the mechanism or access to the terminals, provision shall be made for sealing the shroud of the CB.
- 4.2.2.2 The toggle(s) shall also be capable of being sealed in the "OFF" position.
- 4.2.2.3 The sealing facilities provided shall be suitable for sealing the circuit breaker by means of wire and lead seals.
- 4.2.2.4 It must not be possible for the sealing wire, when inserted in the sealing hole of the circuit breaker cover, to touch live terminals or penetrate the shroud.

4.2.3 Markings

- 4.2.3.1 Each circuit breaker shall be legibly and indelibly marked in accordance with VC 8036 and for earth leakages with VC 8035.
- 4.2.3.2 The toggle position shall be clearly indicated with on and off.
- 4.2.3.3 These positions shall be indicated with the symbols referred to in SANS IEC 60947-2.

4.3 Electrical characteristics

4.3.1 Time-delay characteristics

- 4.3.1.1 All current-time tripping characteristics must comply with the requirements of SANS 60947-2.
- 4.3.1.2 Circuit breakers shall trip within the parameters set in VC 8036.

4.3.2 Rated service short-circuit breaking capacity

All MCBs shall have a rated service breaking capacity (Ics) equal to at least 50% of the ultimate breaking capacity (Icu). Rated service breaking capacity, as a percentage of ultimate breaking capacity, will be in accordance with SANS 60947-2.

4.3.3 Current ratings

4.3.3.1 Rated service breaking capacity and current rating shall be as follows:

Item number	SAP material name	Required Breaking Capacity	Required Rating	Type of Curve
1	MCB 2A 6KA SP	6KA	2A	D
2	MCB 5A 6KA SP	6KA	5A	D
3	MCB 10A 6KA SP DC	6KA	10A	N/A
4	MCB 15A 6KA SP	6KA	15A	D
5	MCB 20A 6KA SP	6KA	20A	D
6	MCB 20A 6KA SP	6KA	25A	D
7	MCB 30A 6KA SP	6KA	30A	D
8	MCB 40A 6KA SP	6KA	40A	D
9	MCB 50A 6KA SP	6KA	50A	D
10	MCB 60A 6KA SP	6KA	60A	D
11	MCB 80A 6KA SP	6KA	80A	D
12	MCB 100A 6KA SP	6KA	100A	D
13	MCB 125A 6KA SP DC	6KA	125A	N/A
14	MCB 150A 6KA 2P	6KA	150A	D
15	ELMCB 150A 6KA 2P	6KA	63A	D

4.3.3.2 These ratings shall not show significant change as a result of ambient temperature.

Note: Take cognisance of point 4.6.2 e)

4.4 Accessories

4.4.1 Mounting requirements

Standard 35mm DIN rail mounting is required.

NOTE: Circuit breakers capable of dual mounting, both Din rail and clip tray would be advantageous from a maintenance point of view.

4.4.2 Shrouds and pole top covers

- 4.4.2.1 Shrouds shall be suitable for the circuit breakers offered.
- 4.4.2.2 The CB's housed within the shrouds and pole top covers could be accessed by semi-skilled personnel. The shrouds and pole top covers, when in position, shall provide adequate protection against inadvertent contact with the live terminals of the circuit breaker, at least IP2X.
- 4.4.2.3 The circuit breakers, shrouds and pole top covers will be housed within enclosures where the ambient temperature shall be equals or greater than 80°C. Shrouds shall not be adversely affected at this temperature.
- 4.4.2.4 The shrouds shall comply with the requirements in this specification.
- 4.4.2.5 Pole top covers shall consist of a non – conductive base and removable cover suitable for mounting on the cross – arm of LV bare overhead mains.
- 4.4.2.6 Pole top covers and shrouds shall be supplied with all necessary fixing and mounting equipment.

4.5 Labeling and packaging

- 4.5.1 Packaging shall prevent damage or deterioration of the product during transport, handling and storage.
- 4.5.2 The box shall be labelled with the contract number, City Power SAP number, supplier name, and basic circuit breaker details.

4.6 Documentation

- 4.6.1 Full technical and descriptive details, relating to all the items offered in this enquiry, shall be submitted so the offer can be fully evaluated.
- 4.6.2 The information shall include:
- a) Company history
 - b) Business address
 - c) Contact person and details
 - d) Relevant current-time curves
 - e) Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade.
 - f) Training details (see 6).
 - g) Completed Annexure C.
 - h) Copy of type test certificates.
 - i) Catalogue detailing the specific items on offer.

5 TESTS

5.1 Type tests

Circuit breakers shall be type tested as per SANS 60947-2, SANS 556-1 and SANS 556-2-1.

- a) Temperature-rise
- b) Tripping limits and characteristics
- c) Dielectric properties
- d) Operational performance capability
- e) Overload performance (where applicable)
- f) Short-circuit breaking capacities
- g) Short-time withstand current (where applicable)
- h) Performance of integrally fused circuit-breakers
- i) Critical d.c. load current

5.2 Routine tests

Circuit breakers shall be routine tested as per SANS 60947-2, SANS 556-2-1 and SANS 556- 1.

- a) mechanical operation
- b) verification of the calibration of overcurrent releases
- c) verification of the operation of undervoltage and shunt releases
- d) additional tests for CBRs to Annex B
- e) dielectric tests
- f) verification of clearances

6 TRAINING

The supplier shall provide certified training to City Power staff on the correct application and installation of the CB.

7 QUALITY MANAGEMENT

A quality management plan shall be set up in order to assure the proper quality management of the miniature and earth leakage circuit breakers during design, development, production, installation and servicing phases. Guidance on the requirements for a quality management plan may be found in the ISO 9001:2015. The details shall be subject to agreement between City Power and the Supplier.

8 ENVIRONMENTAL MANAGEMENT

An environmental management plan shall be set up in order to assure the proper environmental management of the miniature and earth leakage circuit breakers throughout its entire life cycle (i.e. during design, development, production, installation, operation and maintenance, decommissioning and disposal phases). Guidance on the requirements for an environmental management system may be found in ISO 14001:2015 standards. The details shall be subject to agreement between City Power and the Supplier. This is to ensure that the asset created conforms to environmental standards and City Power SHERQ Policy

9 HEALTH AND SAFETY

A health and safety plan shall be set up in order to ensure proper management and compliance of the miniature and earth leakage circuit breakers during installation, operation, maintenance, and decommissioning phases. Guidance on the requirements of a health and safety plan may be found in OHSAS 18001:2007 standards. This is to ensure that the asset conforms to standard operating procedures and City Power SHERQ Policy. The details shall be subject to agreement between City Power and the Supplier.

Annex A - Bibliography

none

Annex B - Revision information

DATE	REV. NO.	NOTES
Nov 2002	0	First issue
Sept 2004	1	4.3.3.1-info in table form 4.3.3.2-table added 4.4.-note re dual mounting added 4.6.2-more detail re documentation required, Annexure C - more detailed, and a separate form for each item, following problems with tender
Nov 2007	2	All reference to SANS 159 changed to SANS 556- 1 4.4.2 Shrouds and pole top covers Technical schedules for shrouds and pole top covers
Nov 2011	3	Format changes Added ranges
Feb 2016	4	Added trip curves
March 2020	5	Added new study committee Added clause 7,8 and 9, Added clause 4.3.3.1
May 2021	6	General Editing Added new work group
Aug 2021	7	Added Type Tests

Annex C - Item 1- MCB 20A 6KA SP - SAP 5455

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 20	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Dual Mounting	Yes	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

**Item 1 - MCB 20A 6KA SP - SAP 5455
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C - Item 2 - MCB 30A 6KA SP - SAP 6242

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered- Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 30	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

**Item 2 - MCB 30A 6KA SP - SAP 6242
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C -Item 3 - MCB 40A 6KA SP - SAP 5494

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating V	230	
4	4.3.3.1	Current ratings A	40	
5	4.2.3	Marking requirements in compliance with VC 8036 Yes/No	Required	
6		Circuit breaker width mm	REQUIRED	
7	4.3.2	Ics = 50% Icu or greater %	REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height mm	REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate °C	≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

**Item 3 - MCB 40A 6KA SP - SAP 5494
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C - Item 4 - MCB 50A 6KA SP - SAP 5449

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 50	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Item 4 - MCB 50A 6KA SP - SAP 5449
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex C - Item 5 - MCB 60A 6KA SP - SAP 5169

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 60	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

**Item 5 - MCB 60A 6KA SP - SAP 5169
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex C- Item 6 - MCB 80A 5KA SP - SAP 5451

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 80	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes/No REQUIRED	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

**Item 6 - MCB 80A 5KA SP - SAP 5451
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex C- Item 7 - MCB 100A 6KA SP - SAP 5315

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 100	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Item 7- MCB 100A 6KA SP - SAP 5315

Technical schedules A and B

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C- Item 8 - MCB 2A 6KA SP - SAP 3811

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 2	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Item 8- MCB 2A 6KA SP – SAP 3811
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C- Item 9 - MCB 5A 6KA SP - SAP 3812

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 5	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Item 9- MCB 5A 6KA SP – SAP 3812

Technical schedules A and B

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex C- Item 10 - MCB 10A 6KA SP DC- SAP 3813

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 500	
4	4.3.3.1	Current ratings	A 10	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

**Item 10 - MCB 10A 6KA SP DC- SAP 3813
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C- Item 11 - MCB 15A 6KA SP - SAP 3814

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 15	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

**Item 11 - MCB 15A 6KA SP – SAP 3814
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex C- Item 12 - MCB 25A 6KA SP - SAP 3815

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 25	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Item 12 - MCB 25A 6KA SP – SAP 3815
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C- Item 13 - MCB 125A 6KA SP DC- SAP 3816

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 125	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Item 13 - MCB 125A 6KA SP DC- SAP 3816
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

Annex C- Item 14 - MCB 150A 6KA SP - SAP 3817

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 150	
5	4.2.3	Marking requirements in compliance with VC 8036	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Item 14 - MCB 150A 6KA SP – SAP 3817
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1		Manufacturer's name	REQUIRED	
2		Product serial number	REQUIRED	
3	4.3	Nominal voltage rating	V 230	
4	4.3.3.1	Current ratings	A 63	
5	4.2.3	Marking requirements in compliance with VC 8035	Yes	
6		Circuit breaker width	mm REQUIRED	
7	4.3.2	Ics = 50% Icu or greater	% REQUIRED	
8	4.4.1	Mounting	35mm DIN rail	
9		Escutcheon height	mm REQUIRED	
10	4.1.3	Suitable for use at 1800m above sea level?	Yes	
11	4.3.1.1	Type of over current release	Non-adjustable time delay	
12	4.4.2.3	Maximum ambient temperature at which circuit breaker is designed to operate	°C ≥80	
13		Catalogue to be provided	Yes	
14	4.6	Relevant temperature derating tables showing current ratings at 30, 40 and 80 degrees centigrade provided.	Yes	
15	5	Certified copy of type test to be provided	Yes	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Item 15 - ELCB 63A 6KA SP – SAP 3818
Technical schedules A and B**

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Annex C- Item 16 to 19 – Miscellaneous MCB related products – SAP
7075, 5303, 1686 and 540**

Schedule A: Purchaser's specific requirements

SPECIFICATION FOR MINIATURE AND EARTH LEAKAGE CIRCUIT BREAKERS

REFERENCE CP_TSSPEC_017
PAGE 42 OF 44
REV 7

Schedule B: Guarantees and technical particulars of equipment offered - Note: The use of ticks, crosses, asterisks, TBA, and the word "Noted" are not acceptable.

Item	Sub clause of CP_TSSPEC_017	Description	Schedule A	Schedule B
1	4.4.2	Circuit breaker shroud 26mm wide	REQUIRED	
2	4.4.2	Circuit breaker shroud 78mm wide	REQUIRED	
3	4.4.2	Circuit breaker shroud 104mm wide	REQUIRED	
4	4.4.2	Pole mounted domed circuit breaker cover	REQUIRED	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**Items 16 to 19 16 to 19 – Miscellaneous MCB related products – SAP 7075, 5303, 1686
and 540**

Technical schedules A and B

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Sub clause of CP_TSSPEC_017	Proposed deviation

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block letters Signature

Full name of company: _____

**SPECIFICATION FOR MINIATURE AND
EARTH LEAKAGE CIRCUIT BREAKERS**

REFERENCE

REV

CP_TSSPEC_017**7**

PAGE

44

OF

44**Material Group: ELEC-MCB**

Item	SAP No.	SAP Material Name	SAP Short Specification
1	5455	MCB 20A 6KA SP	MINIATURE CIRCUIT BREAKER 20A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
2	6242	MCB 30A 6KA SP	MINIATURE CIRCUIT BREAKER 30A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
3	5494	MCB 40A 6KA SP	MINIATURE CIRCUIT BREAKER 40A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
4	5449	MCB 50A 6KA SP	MINIATURE CIRCUIT BREAKER 50A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
5	5169	MCB 60A 6KA SP	MINIATURE CIRCUIT BREAKER 60A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
6	5451	MCB 80A 6KA SP	MINIATURE CIRCUIT BREAKER 80A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
7	5315	MCB 100A 6KA SP	MINIATURE CIRCUIT BREAKER 100A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
8	3811	MCB 2A 6KA SP	MINIATURE CIRCUIT BREAKER 2A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
9	3812	MCB 5A 6KA SP	MINIATURE CIRCUIT BREAKER 5A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
10	3813	MCB 10A 6KA SP DC	MINIATURE CIRCUIT BREAKER 10A 6KA SINGLE POLE DC. ITEM SPECIFICATION NO. CP_TSSPEC_017
11	3814	MCB 15A 6KA SP	MINIATURE CIRCUIT BREAKER 15A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
12	3815	MCB 25A 6KA SP	MINIATURE CIRCUIT BREAKER 25A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
13	3816	MCB 125A 6KA SP	MINIATURE CIRCUIT BREAKER 125A 6KA SINGLE POLE DC. ITEM SPECIFICATION NO. CP_TSSPEC_017
14	3817	MCB 150A 6KA SP	MINIATURE CIRCUIT BREAKER 150A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
15	3818	ELCB 63A 6KA SP	EARTH LEAKAGE CIRCUIT BREAKER 63A 6KA SINGLE POLE. ITEM SPECIFICATION NO. CP_TSSPEC_017
16	7075	SHROUD MCB 26MM	SHROUD MINIATURE CIRCUIT BREAKER 26MM ITEM SPECIFICATION NO. CP_TSSPEC_017
17	5303	SHROUD MCB 78MM	SHROUD MINIATURE CIRCUIT BREAKER 78MM ITEM SPECIFICATION NO. CP_TSSPEC_017
18	1686	SHROUD MCB 104MM	SHROUD MINIATURE CIRCUIT BREAKER 104MM ITEM SPECIFICATION NO. CP_TSSPEC_017
19	540	POLE MOUNT DOME CB COVER	POLE MOUNT DOME MINIATURE CIRCUIT BREAKER COVER ITEM SPECIFICATION NO. CP_TSSPEC_017