Eskom	Standard	Technology

Title: **POLE-MOUNTED SERVICE DISTRIBUTION BOXES FOR SPLIT PREPAYMENT METERING STANDARD**

Unique Identifier:	**240-75659760**
Alternative Reference Number:	**34-2024**
Area of Applicability:	**Engineering**
Documentation Type:	**Standard**
Revision:	**3**
Total Pages:	**8**
Next Review Date:	**April 2025**
Disclosure Classification:	**Controlled Disclosure**

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Date: 2020-04-14	Date: 17/04/2020	Date: 21 April 2020

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PCM Reference: **PTM&C**

SCOT Study Committee Number/Name: **Metering and Measurements**

Content

1. Introduction

This document states the requirements for the manufacturing of pole mounted service distribution boxes for split prepayment metering. The designs of the boxes are similar for the various applications. The options include the following:

- 2-way split prepayment kiosk
- 4-way split prepayment kiosk
- 6-way split prepayment kiosk
- 8-way split prepayment kiosk

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

This standard specifies Eskom's requirements for pole-mounted service distribution boxes for split prepayment metering. This standard also sets out Eskom's requirements for the manufacturing of service distribution box single phase, low voltage for small electrical power users supplying adjacent customers in overhead electricity supply networks.

2.1.2 Applicability

This document shall apply throughout Eskom Holdings Limited Divisions.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] NRS 017: Overhead split-concentric cable for single-phase service connections.

[2] NRS 032: Electricity distribution — service distribution boxes: pole-mounted types for overhead single-phase a.c. service connections at 230 V.

[3] SANS 556: Moulded-case circuit-breakers.

[4] SANS 1186: Symbolic safety signs.

[5] SANS 1507: Electric cables with extruded solid dielectric insulation for fixed installations (300 V/500 V to 1900 V/3300 V).

[6] 240-75660817: Standard for non-metallic cable glands

[7] D-DT-1042: Manufacturing drawings for a 2-way split prepayment kiosk

[8] D-DT-1043: Manufacturing drawings for a 4-way split prepayment kiosk

[9] D-DT-1044: Manufacturing drawings for a 6-way split prepayment kiosk

[10] D-DT-1045: Manufacturing drawings for a 8-way split prepayment kiosk

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

For the purpose of this specification, the definitions (for terms not given below) and abbreviations (not given below) in NRS 032 shall apply.

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 Abbreviations

Abbreviation	Description
MCB	Miniature circuit-breaker
SMDB	Split Meter Distribution Box

2.5 Roles and Responsibilities

The relevant sections within Eskom Distribution are responsible to implement the new design according to the requirements as listed in this document.

2.6 Process for monitoring

Adherence to this document shall be monitored through routine inspections.

2.7 Related/Supporting Documents

Not applicable

3. Requirements

3.1 Pole-mounted Service Distribution Boxes for Split Prepayment Metering

All pole-mounted service distribution boxes for split prepayment metering shall comply with NRS 032 and this standard.

3.1.1 Service Distribution Box types

a) Split type 2-way for one phase. It shall be fitted with one 50A MCB (20A supplies) or two 63A MCBs (60A supplies) with 5kA short circuit breaking capacity, DIN rail to accommodate two split prepayment meters and connection points for 2 customers and a streetlight.

b) Split type 4-way for one phase: It shall be fitted with two 50A MCBs (20A supplies) or four 63A MCBs (60A supplies) with 5kA short circuit breaking capacity, DIN rail to accommodate four split prepayment meters and connection points for 4 customers and a streetlight.

c) Split type 6-way for two phases. It shall be fitted with three 50A MCBs (20A supplies) or six 63A MCBs (60A supplies) with 5kA short circuit breaking capacity for each phase, DIN rails to accommodate six split prepayment meters and connection points for 6 customers and a streetlight.

d) Split type 8-way for two phases. It shall be fitted with four 50A MCBs (20A supplies) with 5kA short circuit breaking capacity for each phase, DIN rails to accommodate eight split prepayment meters and connection points for 8 customers and a streetlight.

e) The minimum dimensions for the split meter distribution boxes are given in D-DT-1042, 1043, 1044 & 1045.

3.1.2 Box

a) The boxes shall be suitable for wood or concrete pole mounting. Stainless steel straps shall be used for securing SMDB around the pole.

b) The degree of protection for the SMDB shall be IP33.

c) The SMDB door shall be hinged on top and a sturdy non-ferrous door stay shall be fitted to keep the door in a 110 degree open position.

d) The door shall be secured through a lock lip on the box and an Eskom padlock. At least one captive screw or locking mechanism shall also be provided for the door to be secured to the SMDB.

e) DIN rails shall be supplied and fitted with the SMDB.

3.1.2.1 Material

a) The Material of SMDB shall be as per NRS 032.

b) SMDB shall be UV protected.

c) The colour of SMDB shall be as per NRS 032.

3.1.3 Electrical equipment

3.1.3.1 Miniature circuit breakers

a) The 20A supplies shall either have a 40A hydraulic magnetic MCB or 50A thermal magnetic MCB and shall comply to the following:

- DIN rail mounted
- 5kA short circuit breaking capacity
- 230V rated voltage
- The 50A thermal magnetic MCBs shall comply with the following requirements and SANS 556-1:
  - o full discrimination with a 20A standard curve MCB up to 1000A.
  - o tripping curve which conforms to the limits given in the graph in appendix A.

b) The 60A supplies shall either have a 63A hydraulic magnetic MCB or thermal magnetic curve C MCB and shall comply to the following:

- DIN rail mounted
- 5kA short circuit breaking capacity
- 230V rated voltage

3.1.3.2 Busbars

a) Neutral busbar(s) shall be provided and fitted. The current rating shall be as specified in the design drawings. Busbars shall be made of tinned copper.

b) No earth bar is required for non-steel kiosks.

c) The busbar(s) to parallel the 63A MCBs shall be insulated and be able to carry 60A continuously.

3.1.3.3 Surge arrestors

a) Surge arresters complying with the requirements of 240-75660532 shall be mounted in the split prepayment metering pole top box.

b) They shall be connected between the “LIVE” input terminal of the first meter and “NEUTRAL” bar.

3.1.3.4 Power Supply cables

a) The distribution box shall be fitted with either 10mm^2, 16mm^2 or 25mm^2 insulated copper supply conductors each 1,5 m long unless specified otherwise in the manufacturing drawings. The conductor shall be UV stabilized and in accordance with SANS 1507.

b) The supply cable connections are in addition to the number of service connections specified. There shall be 2 supply cables for the 2-way (1 phase and 1 neutral), 4 supply cables for the 4-way supplies (2 phase and 2 neutral), 6 supply cables for the 6-way supplies (3 phase and 3 neutral) and 4 supply cables for the 8-way 20A supplies (2 phase and 2 neutral).

3.1.3.5 Internal wiring

a) The internal wiring shall be from 10mm^2 insulated copper conductor and as specified in the manufacturing drawings.

b) The conductor shall be UV stabilized and in accordance with SANS 1507.

c) The wiring shall be bend as per the manufacturing drawings to accommodate the four terminal, bottom entry split prepayment meters.

d) The ends of the wiring shall have the insulation stripped off by 15mm.

3.1.3.6 Cable glands

a) High strength cable glands for service cable entries, streetlight supply cables and customer supply cables shall be UV-stabilized and suitable for 2.5 -10 mm^2 concentric cables in accordance with 240-75659670. Cable glands shall comply with Eskom standard 240-75660817.

3.1.3.7 Split meters

a) The four terminal DIN-rail mounted split prepayment meters will not be supplied by the manufacturer of the SMDB.

3.2 Tests

Tests shall be carried out in accordance with NRS 032.

3.3 Marking, Labelling and Packaging

a) Labelling and marking on the SMDB shall be in English.

b) A danger sign of minimum size 100 mm × 60 mm shall be supplied on the door and shall form an integral part of the lid. The sign shall be as specified in table 7, WW7 of SANS 1186-1:2011.

c) The words "Danger, Gevaar, lngozi" shall appear as part of the danger sign.

d) The sign shall be weather proof and UV-stable.

e) The SMDB shall be marked legibly and indelibly with the manufacturer's name and the month and year of manufacturing (inside).

f) Packaging shall not damage the unit.

4. Authorisation

This document has been seen and accepted by:

Name and surname	Designation
Mohamed Khan	MV and LV services SC Chairperson
Mohamed Omar	Metering SC Chairperson

5. Revisions

Date	Rev	Compiler	Remarks
Jan 2020	3	Henri Groenewald	Technical content changed to reflect the new revised designs of the split prepayment kiosks.
March 2017	2	Jutas Maudu	Document content transferred from old template to latest SCOT template, no technical changes on the document
Feb 2014	1	Jutas Maudu	Document reformatted. No content change. This Document supersedes Document number: DSP_34-2024
Nov 2012	1	Jutas Maudu	Final Document approved Draft Document for review created from DSP 34-2024

6. Development team

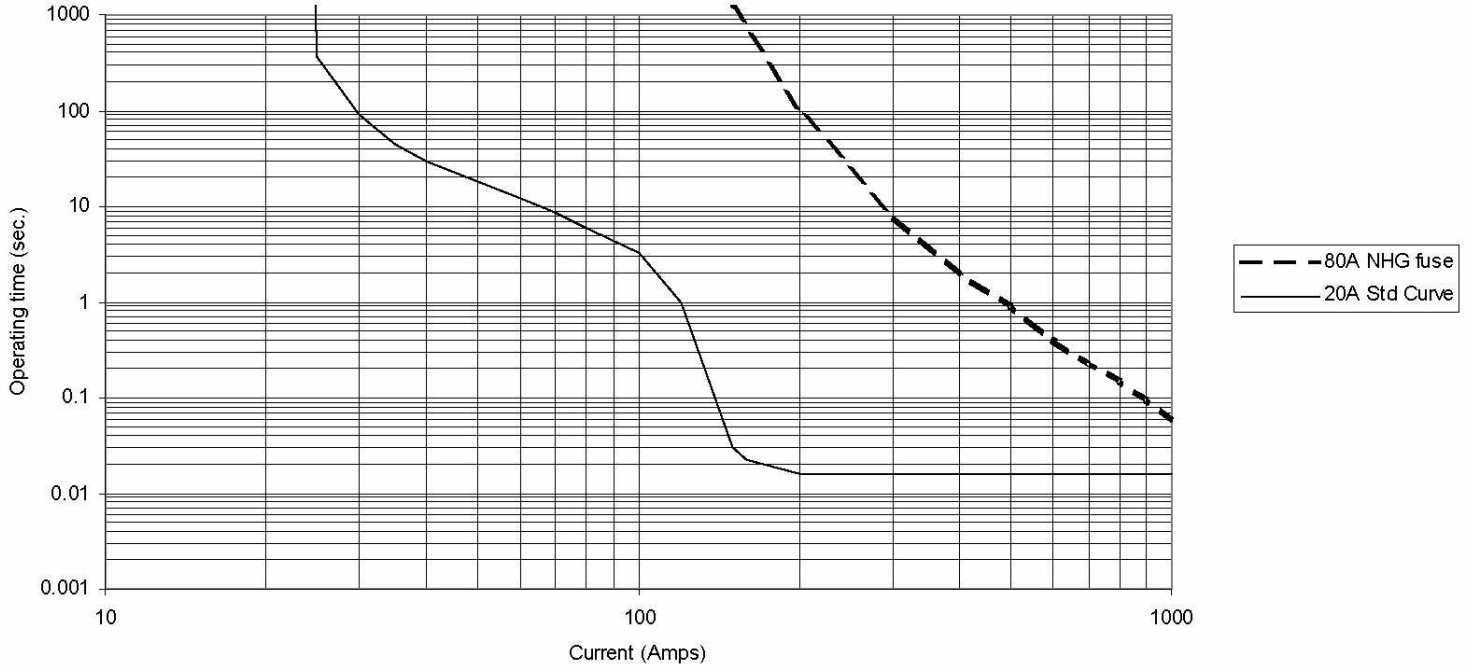
The following people were involved in the development of this document:

- Metering panels care group
- LV services care group

7. Acknowledgements

Not applicable.

Annex A – : 50A MCB tripping curve limits



10 100 1000 Current (Amps)

The 50A MCB must have a tripping curve range between the upper limit of a 20A curve MCB and the lower limit of a 80A NHG fuse.