Eskom Distribution **SPECIFICATION**

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DATE: 19/01/2010….	DATE: 4.11.2009	DATE: 19/01/2010…….	DATE: 26/01/2010…….

Content

Foreword

Not applicable.

Revision history

This is a new document.

Date	Rev.	Clause	Remarks
Jan 2010	0	-	**Compiled By:** AJ Maudu
		.	New document

Authorisation

This document has been seen and accepted by:	
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This specification shall apply throughout Eskom Holdings Limited, its divisions, subsidiaries and entities wherein Eskom has a controlling interest.

Development team

Jutas Maudu and Shalen Goonoa

Introduction

See scope.

Keywords

Miniature circuit breaker, concentric cable, pole top box for split meters, bursbars, Low voltage and Split meter.

1 Scope

This specification specifies Eskom's requirements for pole-mounted service distribution boxes for split prepayment metering.

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.

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

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

SANS 556: Moulded-case circuit-breakers.

SANS 1186: Symbolic safety signs.

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

DSP 34-623, *Specification for non-metallic cable gland*

3 Definitions and abbreviations

3.1 Definitions

None

3.2 Abbreviations

MCB: Miniature circuit-breaker

SDB: Service distribution box

SMDB: Split Meter Distribution Box

4 Requirements

4.1 All pole-mounted service distribution boxes for split prepayment metering shall comply with NRS 032, this specification and the particular requirements specified in schedule A of an enquiry document.

4.2 SDB shall be in accordance with NRS 032 and this specification.

Split type A1-A1-2 for one phase. It shall be fitted with one 50 A MCB (5kA short circuit breaking capacity), DIN rail to accommodate two split prepayment meters and connection points for 2 customers and a streetlight.

Split type A1-A1-4 for one phase: It shall be fitted with one 50 A MCB (5kA short circuit breaking capacity), DIN rail to accommodate four split prepayment meters and connection points for 4 customers and a streetlight.

Split type A2-8 for two phases. It shall be fitted with one 50 A MCB (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.

Max dimensions for a split meter distribution box are given in schedule A.

4.3 The 50A MCB shall comply with the following requirements and SANS 556-1:

- full discrimination with a 20A standard curve MCB up to 1000A.
- tripping curve which conforms to the limits given in the graph in annex A
- DIN rail mounted
- thermal or hydraulic magnetic tripping mechanism
- 5kA short circuit breaking capacity
- 230V rated voltage

4.4 The DIN rail shall provide space for an additional two MCBs to be mounted for Split type A1-4 and A2-8.

4.5 The distribution box shall be fitted with insulated 16 mm^2 copper supply conductors each 1,5 m long (see D-DT 3055) unless specified otherwise in schedule A. The conductor shall be UV stabilized and in accordance with SANS 1507. The supply cable connections are in addition to the number of service connections specified. There shall be 2 supply cables for the small boxes (split type A1-4 and A1-2: 1 phase and 1 neutral) and 3 supply cables for the larger box (split type A2-8: 2 phase and 1 neutral).

4.6 No earth bar is required.

4.7 A neutral and live busbar shall be provided and fitted (see D-DT 3055). Current rating shall be 150 A as specified in schedule A. Busbars shall be made of copper or brass.

4.8 Clearances between live and neutral shall be in accordance with NRS 032.

4.9 Surge arresters complying with the requirements of DSP 34-312 shall be mounted in the split prepayment metering pole top box. They shall be connected between the “LIVE” and “NEUTRAL” terminals.

4.10 Cable glands for service cable entries and busbar connection points shall UV-stabilized and be suitable for 2,5 -10 mm^2 concentric cables in accordance with DSP 34-2023. Cable glands shall comply with Eskom specification DSP 34-623.

4.11 Each split type SDB shall have an “Electric Shock-Hazard” in accordance with SANS 1186 on the removable face of the box. The sign shall be weather proof and UV-stable.

4.12 The boxes shall be suitable for wood or concrete pole mounting. Stainless steel straps shall be used for securing SMDB around the pole. Degree of protection for the SMDB shall be IP43. SMDB door shall be hinged as per NRS 032 and Eskom’s padlock shall be used.

4.13 DIN rails and PVC wire links shall be supplied and fitted (see D-DT 3055) with SMDB. Numbers of PVC wire links to be provided are specified in schedule A.

Note: Only Eskom’s approved meters shall be used.

4.14 The boxes for split type A1-2 and split type A1-4 shall provide an external circuit breaker toggle lever suitable for use with a link stick with a reset loop of not less than 30mm in diameter. Document Content

5 Tests

Tests shall be carried out in accordance with NRS 032.

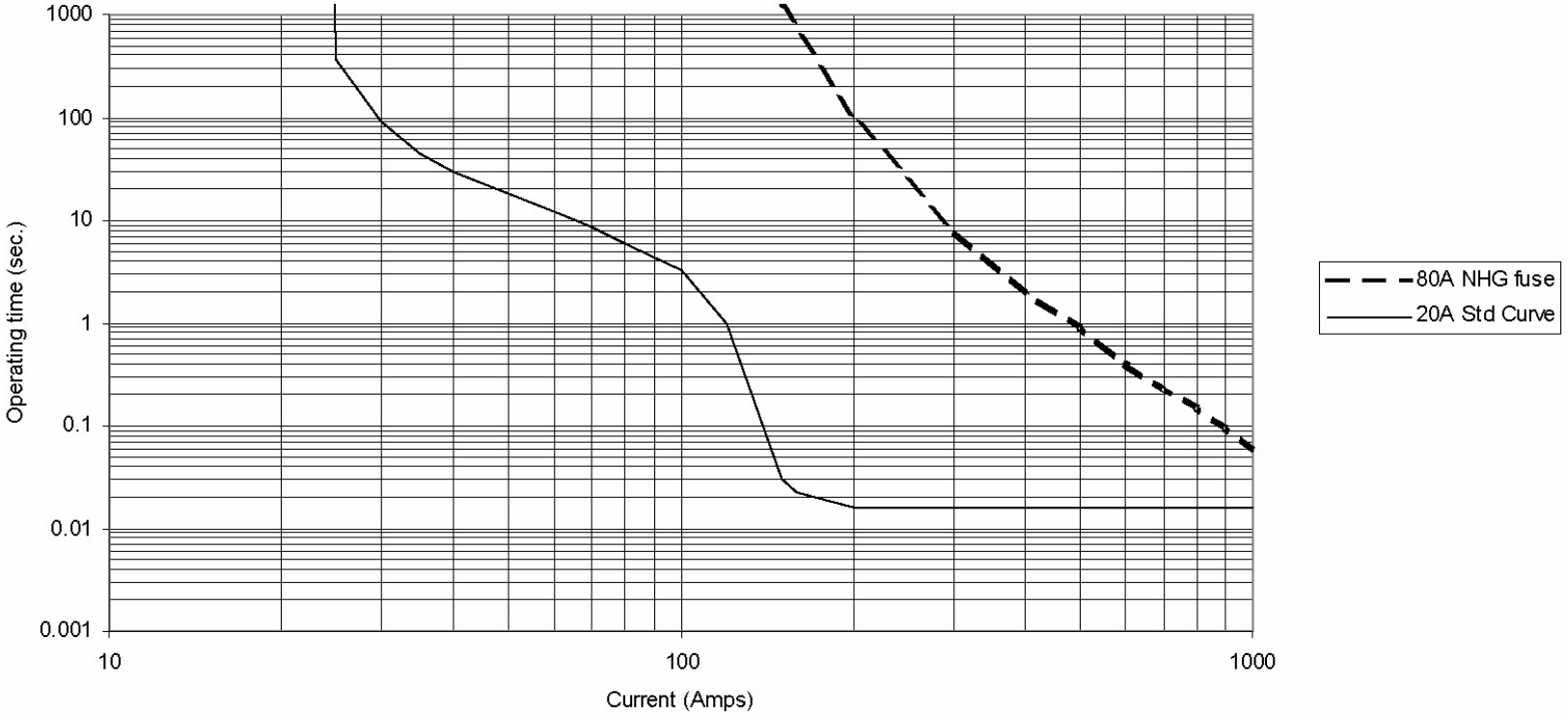
6 Marking, labeling and packaging

The SMDB shall be marked legibly and indelibly with the manufacturer's name and the year manufactured (inside). Marking and labelling are specified in schedule A.

Labelling on the SMDB shall be in English. Lettering shall not fade and adhesive shall adhere adequately to the SMDB surface.

Packaging shall not damage the unit and the method of packaging shall be specified in schedule B

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.

Annex B - Impact assessment

(Normative)

Impact assessment form to be completed for all documents.

1 Guidelines

- All comments must be completed.
- Motivate why items are N/A (not applicable)
- Indicate actions to be taken, persons or organisations responsible for actions and deadline for action.
- Change control committees to discuss the impact assessment, and if necessary give feedback to the compiler of any omissions or errors.

2 Critical points

2.1 Importance of this document. E.g. is implementation required due to safety deficiencies, statutory requirements, technology changes, document revisions, improved service quality, improved service performance, optimised costs.

Support split prepayment technology

2.2 If the document to be released impacts on statutory or legal compliance - this need to be very clearly stated and so highlighted.

N/A

2.3 Impact on stock holding and depletion of existing stock prior to switch over.

New stock shall be in accordance with this specification. Old stock shall be gradually phased out during new stock implementation.

2.4 When will new stock be available?

During implementation of this document.

2.5 Has the interchangeability of the product or item been verified - i.e. when it fails is a straight swop possible with a competitor's product?

Yes

2.6 Identify and provide details of other critical (items required for the successful implementation of this document) points to be considered in the implementation of this document.

N/A

2.7 Provide details of any comments made by the Regions regarding the implementation of this document.

None

Annex B
(continued)

3 Implementation timeframe

3.1 Time period for implementation of requirements.

Immediate

3.2 Deadline for changeover to new item and personnel to be informed of DX wide change-over.

No deadline

4 Buyers Guide and Power Office

4.1 Does the Buyers Guide or Buyers List need updating?

Yes, Buyers Guide to be created

4.2 What Buyer's Guides or items have been created?

New item (Pole Top Box specification for split prepayment metering)

4.3 List all assembly drawing changes that have been revised in conjunction with this document.

None

4.4 If the implementation of this document requires assessment by CAP, provide details under 5

4.5 Which Power Office packages have been created, modified or removed?

Packages to be created

5 CAP / LAP Pre-Qualification Process related impacts

5.1 Is an ad-hoc re-evaluation of all currently accepted suppliers required as a result of implementation of this document?

No

5.2 If NO, provide motivation for issuing this specification before Acceptance Cycle Expiry date.

-This specification is not on LAP.

-Revision to be done every 5 years.

5.3 Are ALL suppliers (currently accepted per LAP), aware of the nature of changes contained in this document?

N/A

Annex B
(continued)

5.4 Is implementation of the provisions of this document required during the current supplier qualification period?

N/A

5.5 If Yes to 5.4, what date has been set for all currently accepted suppliers to comply fully?

N/A

5.6 If Yes to 5.4, have all currently accepted suppliers been sent a prior formal notification informing them of Eskom's expectations, including the implementation date deadline?

N/A

5.7 Can the changes made, potentially impact upon the purchase price of the material/equipment?

New document.

5.8 Material group(s) affected by specification: (Refer to Pre-Qualification invitation schedule for list of material groups)

None

6 Training or communication

6.1 Is training required?

Yes. IARC and T & Q to give training to the FS

6.2 State the level of training required to implement this document. (E.g. awareness training, practical / on job, module, etc.)

No formal training.

6.3 State designations of personnel that will require training.

IARC,T&Q personnel and FS

6.4 Is the training material available? Identify person responsible for the development of training material.

Training Module to be created by IARC and T&Q

6.5 If applicable, provide details of training that will take place. (E.G. sponsor, costs, trainer, schedule of training, course material availability, training in erection / use of new equipment, maintenance training, etc).

N/A:

Annex B
(continued)

6.6 Was Technical Training Section consulted w.r.t module development process?

N/A

6.7 State communications channels to be used to inform target audience.

Through T&Qs

7 Special tools, equipment, software

7.1 What special tools, equipment, software, etc will need to be purchased by the Region to effectively implement?

None.

7.2 Are there stock numbers available for the new equipment?

Not yet

7.3 What will be the costs of these special tools, equipment, software?

8 Finances

8.1 What total costs would the Regions be required to incur in implementing this document? Identify all cost activities associated with implementation, e.g. labour, training, tooling, stock, obsolescence

Comment:

……

……

……

Impact assessment completed by:

Name: AJ Maudu

Designation: Senior Engineer

Annex C – Model form for schedule A and B

Technical Schedules A and B

Schedule A: Particulars of Eskom's requirements
Schedule B: Guarantees and technical particulars of equipment offered.

1	2	3	4	5
Item number	**DSP 34-2024 Clauses no.**	**Technical description**	**Schedules A**	**Schedules B**
		Requirements		
	4.1	Phase-to-Earth/Phase-to-Phase Voltage	230/440V	
		System Frequency	50Hz	
		System Neutral Earthing	Solidly	
		Specification to which the SMDB complies	NRS 032 and Eskom DSP 34-2024	
1		SMDB designed for service conditions described in NRS 032 clause 4.1	Yes	
2		Material of SMDB as per NRS 032	xxxxxxxxxx	
		Colour of SMDB as per NRS 032	xxxxxxxxxx	
		- SMDB is UV protected - Additional corrosion protection recommended.	Yes	

Annex C
(continued)

		Restricted dimensions of completely assembled SMDB: • A1-2 Split type	Width: 180 mm **(max)** Height: 300 mm **(max)** Depth: 120 mm **(max)**	width: **mm (max)** Height: **mm (max)** Depth: **mm (max**
		• A1-4 Split type	Width: 340mm **(max)** Height: 340 mm **(max)** Depth: 120 mm **(max)**	Width: **mm (max)** Height: **mm (max)** Depth: **mm (max**
		• A2-8 Split type	Width: 340mm **(max)** Height: 440 mm **(max)** Depth: 120 mm **(max)**	Width: **mm (max)** Height: **mm (max)** Depth: **mm (max**
3	4.2	**Miniature Circuit Breaker (MCB)**		
4		Type and Number of MCBs accommodated on mounting rails: • A1-2 split type • A1-4 split type • A2-8 split type	See D-DT 3083 1 1 2	

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(continued)

		Current rating of MCBs	50Amp	
		Fault rating of MCBs	5 kAmp	
	4.5	SMDB		
5		SMDB fitted with 16 mm^2 copper supply conductors each 1.5 m long	xxxxxxxxxxxxx	
		Copper conductors are UV stable in accordance with SANS 1507	Yes	
6		Two copper supply conductors for type A1-2 and A1-4	Yes	
		Three copper supply cable for type A2-8	Yes	
	4.7	**Live Busbars**		
7		Live Busbars supplied in SMDB	Yes	
8		Type of Material	Copper	
		Current Rating	150A	
9		Number of Live Busbars and connection points: • A1-2 split type • A1-4 split type • A2-8 split type	• 1 x 6 Way Comb- type • 1 x 10 Way Comb-type • 2 x 10 Way Comb-type	
		Type of Live Busbars	DIN-Type	
		Neutral Busbars		
10		Two Neutral busbars with terminal connections supplied in SMDB	Yes	
11		Type of Material	Copper / Brass	
		Current Rating	150A	

Annex C

(continued)

12		Number and size of connection points • A1-2 split type • A1-4 split type • A2-8 split type	1 x 6 Way comb-type 2 x 5 Way comb-type 9 x 10 Way comb-type	
		Labeling method of Neutral busbars as per NRS032:2001		
	4.8	**Electrical Clearances**		
		Neutral and Live	As per NRS 032	
13	4.9	Have two surge arresters that comply with DSP 34-312 been supplied with the Split meter pole top box?	Yes	
	4.10	**Cable Entries**		

Annex C
(continued)

14		Number of service cable entry points • A1-2 split type • A1-4 split type • A2-8 split type	5 Entries 7 Entries 12 Entries	
15		All cable entry points fitted with compression glands	Yes	
		Size of Compression Glands as per DSP 34-623	xxxxxxxxxxx	
	4.12	Number of pole mounting brackets	2	
16		Recommended size of stainless steel mounting straps [for securing around a round or square pole]	12mm WIDE by 0.75mm THICK	
17		Number of stainless steel mounting straps	2	
		Degree of protection	IP43	
		SMDB door to be hinged [Hinge as per NRS032]	Yes	
18		Locking mechanism used [included in sample]. Eskom's padlock shall be used.	Yes	
19	4.13	Number of DIN mounted meters • A1-2 split type • A1-4 split type • A2-8 split type	2 4 8	

Annex C
(continued)

20		Meter Type	Eskom's approved Landis + Gyr Cashpower Power-rail Prepayment Electricity Meter	
21		Number and size of PVC wire links between Neutral and Meter • A1-2 split type • A1-4 split type • A2-8 split type	2 x 4mm^2 4 x 4mm^2 8 x 4mm^2	
22		Number and size of Live Links between Live Busbars and Meter • A1-2 split type • A1-4 split type • A2-8 split type	2 x 10mm^2 4 x 10mm^2 8 x 10mm^2	
	6	Type tests to be conducted as per NRS032:2001 Section 5 and DS 34-2024. Results are to be submitted.	Yes	
	7	The SMDB must be marked legibly and indelibly with the following: (1) the manufacturer's name & trademark (all items), (2) the year of manufactured (inside)	Yes	
		Labelling on the SMDB to be in English and of good quality. Lettering should not fade and adhesive shall adhere adequately to the SMDB surface. Electric shock hazard sign as per SANS 1186.	Yes	
		Type tests to be conducted as per NRS032:2001 Section 5 and DS 34-2024. Results are to be submitted.	Yes	
		Method of packaging	xxxxxxxxxxxxx	
23		Sample supplied	Yes	

Technical Schedules A and B

Schedule A: Particulars of Eskom's requirements
Schedule B: Guarantees and technical particulars of equipment offered.

Ref No.	Technical description	Schedules A	Schedules B
1	**General**		
1.1	Name of Manufacturer		
1.2	Phase-to-Earth/Phase-to-Phase Voltage	253/440V	
1.3	System Frequency	50Hz	
1.4	System Neutral Earthing	Solidly	
1.5	Specification to which the SMDB complies	NRS 032 and Eskom DS 34-2024	
1.6	SMDB designed for service conditions described in NRS 032 clause 4.1	Yes	
2	**Type of Material**		
2.1	Colour of SMDB as per SANS NRS 032	xxxxxxxxxxx	
2.2	Material of SMDB as per NRS 032	xxxxxxxxxxx	
2.3	- SMDB is UV protected - Additional corrosion protection recommended.	Yes	
2.4	Material of all screws, bolts and metallic parts used to secure parts of SMDB	Stainless steel or Brass	
3	Restricted dimensions of completely assembled SMDB: • 2- way Split type • 4 and 8-way Split type	Width: 210 mm **(max)** Height: 290 mm **(max)** Depth: 90 mm **(max)** Width: 340mm **(max)** Height: 450 mm **(max)** Depth: 125 mm **(max)**	Width: **mm (max)** Height: **mm (max)** Depth: **mm (max** Width: **mm (max)** Height: **mm (max)** Depth: **mm (max**
4	Type of Mounting Rails for protective devices and metering devices	DIN Rails	
5	**Miniature Circuit Breaker (MCB)**		

5.1	Type and Number of MCBs accommodated on mounting rails: • 2-way split type • 4-way split type • 8-way split type	See D-DT 3083 1 1 2	
5.2	Current rating of MCBs	50Amp	
5.3	Fault rating of MCBs	5 kAmp	
6	**Live Busbars**		
6.1	Live Busbars supplied in SMDB	Yes	
6.2	Type of Material	Copper	
6.3	Current Rating	150A	
6.4	Fault Rating	xxxxxxxxxxx	kA
6.5	Number of Live Busbars and connection points: • 2-way split type • 4-way split type • 8-way split type	• 1x 5 Way Comb- type • 1 x 9 Way Comb-type • 2 x 17 Way Comb-type	
6.6	Type of Live Busbars	DIN-Type	
6.7	Size of connection points	Suitable for 2.5-10 mm^2	
7	**Neutral Busbars**		
7.1	Two Neutral busbars with terminal connections supplied in SMDB	Yes	
7.2	Type of Material	Copper	
7.3	Current Rating	150A	
7.4	Fault Rating	xxxxxxxxxxx	kA
7.5	Number and size of connection points • 2-way split type • 4-way split type • 8-way split type	3 x 2.5-10 mm^2 5 x 2.5-10 mm^2 9 x 2.5-10 mm^2	
7.6	Position of 25mm^2 terminal connection		
7.7	Mounting method of Neutral busbars	xxxxxxxxxxx	
7.8	Labeling method of Neutral busbars as per NRS032:2001		

8	**Electrical Clearances**		
8.1	MCB Phase to Phase	20mm (min)	
8.2	MCB Phase to Neutral	20mm (min)	
8.3	MCB Phase to Earth	20mm (min)	
8.4	Above and Below Meters	50 mm (min)	
8.5	Above and Below MCBs	50 mm (min)	
8.6	Pole Top Box and Rail	15mm (min)	
8.7	Neutral and Live		
9	SMDB fitted with a removable clip-on shroud for the live terminals	Yes	
10	**Cable Entries**		
10.1	Number of service cable entry points • 2-way split type • 4-way split type • 8-way split type	 2 Entries 5 Entries 9 Entries	
10.2	Position of supply cable entry points	Base of Box	
10.3	Number of supply cable, holes • 2-way split type • 4-way split type • 8-way split type	 2 holes 2 holes 3 holes	
10.4	Diameter of service cable entry knockouts for $10mm^2$ concentric cable	xxxxxxxxxxx	mm
10.5	Position of supply cable entry points	Base of Box	
10.6	All cable entry points fitted with compression glands	Yes	
10.7	Size of Compression Glands as per 34-623	xxxxxxxxxxx	
10	Number of pole mounting brackets	2	
11	Recommended size of stainless steel mounting straps [for securing around a round or square pole]	12mm WIDE by 0.75mm THICK	
12	Number of stainless steel mounting straps	2	
13	Maximum allowable weight supported by bracket and straps	xxxxxxxxxxx	kg
14	Degree of protection	IP43	
15	Locking mechanism used [included in sample]	Yes	
16	Surge protection [between Line and Neutral]	5kA/5kV surge arrestor	
17	Number of DIN mounted meters • 2-way split type • 4-way split type • 8-way split type	 2 4	

		8	
18	Meter Type	Landis + Gyr Cashpower Power-rail Prepayment Electricity Meter	
19	Number and size of PVC wire links between Neutral and Meter • 2-way split type • 4-way split type • 8-way split type	 2 x 4mm^2 4 x 4mm^2 8 x 4mm^2	
20	Number and size of Live Links between Live Busbars and Meter • 2-way split type • 4-way split type • 8-way split type	 2 x 10mm^2 4 x 10mm^2 8 x 10mm^2	
21	Total number of DIN rails	xxxxxxxxxxx	
22	Compression glands supplied with Box	Yes	
23	Box door to be hinged [Hinge as per NRS032:2001 clause 4.4.6]	Yes	
24	DMC Baseplate to be fixed to box	No	
25	The SMDB must be marked legibly and indelibly with the following: (1) the manufacturer's name & trademark (all items), (2) the year of manufacturer (inside)	Yes	
27	Labelling on the SMDB to be in English and of good quality. Lettering should not fade and adhesive shall adhere adequately to the SMDB surface. Electric shock hazard sign as per SANS 1186 - WW7 with DANGER SIGN	Yes	
29	Type tests to be conducted as per NRS032:2001 Section 5 and DS 34-2024. Results are to be submitted.	Yes	
30	Sample supplied	Yes	