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NPS/001/030 – Technical Specification for Wall and Pole Mounted Outdoor Service Boxes

1. Purpose

The purpose of this document is to detail the Northern Powergrid technical performance requirements for wall and pole mounted outdoor service boxes.

This document supersedes the following documents, all copies of which should be destroyed.

Reference	Version	Date	Title
NPS/001/030	3.0	March 2018	Technical Specification for Wall and Pole Mounted Outdoor Service Boxes

2. Scope

This document contains reference to the technical standards relevant to the products specified and the particular requirements of Northern Powergrid. The range includes 100A and 200A fused wall boxes, under eaves service joint boxes and pole mounted LV isolating boxes for pole mounted auto reclose circuit breakers.

This specification contains self-certification conformance declarations in Appendix 3 that shall be completed by potential suppliers to Northern Powergrid. Appendix 1 provides a schedule of items for the products covered by this specification.

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3. Technical Requirements

3.1. Wall Mounted Service Fused Box

3.1.1. Enclosure

Fused wall boxes shall be supplied waterproof with a minimum IP44 rating in accordance with BS EN 60529 and a mechanical rating of IK 06 as detailed in BS EN 62262. They shall be designed with key-hole slots to allow ease of installation and have a means of securely fastening the cover in place. Enclosures shall be UV stable, flame retardant, tamper proof and be provided with blanks for any unused ports. The front cover shall be permanently marked with the hazard warning “Danger Electricity”.

Enclosures dimensions shall be adequate to allow termination of the cables but minimised to reduce visual impact.

3.1.2. Interior Components

Specific requirements are detailed in Appendix 1 but units shall be provided with fixed single phase and neutral or three phases and neutral cut-outs, with or without an earth provision. For units comprising 100A house service cut-outs they shall meet the requirements of Northern Powergrid technical specification NPS/002/006 - Technical Specification for Service Cut-outs, Terminal Blocks, Meter Tail Protectors and Pole Mounted Fuse Units. 200A three phase cut-outs shall also meet NPS/002/006 and be supplied with 82.5mm, BS88-2 “L” type fuse arrangements.

200A heavy duty three phase wall boxes shall be fitted with 82.5mm centre JSU type fuse carriers and labelled with phase indication. Live and neutral terminals shall be fitted with shrouds that can be removed to enable installation. Cable terminations shall be tunnel type with serrated bores suitable for aluminium or copper cores.

3.1.3. Cable Requirements

100A units shall be designed to accept single and three phase concentric incoming service cables up to and including 35mm². For three phase boxes there shall be the facility to have three outgoing single core 35mm² concentric service cables with two outgoing ports for single phase wall boxes.

200A units shall provide the capacity for two incoming three phase and neutral cables up to 95mm². The outgoing load side shall provide the facility for one 95mm² three phase and neutral cable and two 35mm² single phase and neutral cables. An earth block shall be provided with the facility for one 95mm² and six 25mm² cables.

3.2. Wall Mounted Service Joint Box

Single phase wall mounted service joint boxes shall be designed for straight and double branch connections for both CNE and SNE concentric service cables up to 35mm². The enclosure shall be IP45 rated with electrical testing carried out to BS EN 50393 and impact tested to BS 7657. Enclosures shall be UV stable, flame retardant and be provided with blanks for any unused ports.

The connector shall be centrally located, with shear technology and allow a maximum of two outgoing service cables.

The internal connectors shall be enclosed in a gel that protects against ingress of moisture.

The enclosure shall be wall mountable and provide a degree of tamper resistance. The front cover shall be permanently marked with the hazard warning “Danger Electricity”. Dimensions of the enclosure shall be minimised to reduce visual impact.

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3.3. Pole Mounted LV Isolation Box

3.3.1. Enclosure

The enclosure shall be non-metallic, waterproof with a minimum IP 44 rating in accordance with BS EN 60529 and a mechanical rating of IK 06 as detailed in BS EN 62262. Enclosures shall be UV stable, flame retardant, tamper proof and be provided with blanks for any unused ports. They enclosures shall be designed with fixings that allow the enclosure to be secured on the surface of a round wood pole without affecting the waterproofing properties of the enclosure; additionally they shall be provided with a means of securely fastening the cover in place.

The enclosure shall ensure that normal service conditions detailed in clause 4.1 of BS EN 62271 - 1 are achieved.

3.3.2. Isolator and Miniature Circuit Breaker (MCB) Modules

Each unit shall contain a DIN style mounting rail with a single double pole current limiting MCB with isolation properties supplied in accordance with IEC 60898-1 and IEC60947-2.

Rated Current	4A
Thermal-magnetic Tripping characteristic	Type D
Min Rated operational Voltage	400V AC
Number of Poles	2
Short Circuit breaking capacity	10kA
Energy Limiting Class	3
Rated Impulse Withstand	4kV

A detailed drawing is shown in Appendix 2.

3.3.3. Cable Requirements

Incoming cables shall be two core 2.5mm² SWA (Steel Wire Armoured) supplied in 7.5m or 4.5m lengths. They shall be terminated with a waterproof brass gland into the base of the enclosure. The other end of the incoming cable shall also have a brass gland to allow terminating into a brass mounting plate as shown on the drawing in Appendix 2. A 1m stripped length shall be provided to allow termination onto the low voltage bushings of the pole mounted transformer with M12 pre-insulated crimps applied to the cable ends. An additional 2.5mm² insulated earthing lead approximately 300mm in length shall be terminated onto a brass plate with an M6 lug and a M12 lug for the transformer end. The 1m section of insulated but non sheathed 2.5mm cable shall be protected against UV degradation by the use of lengths of black UV stable oversheath placed over the tails. The two core cable shall be coloured brown & blue with ferrule markers indicating L & N, respectively.

The remote ends of the incoming tails are occasionally used in an environment without an enclosure therefore suitable lengths of UV stable sleeve shall be provided.

Outgoing cables shall be three core 2.5 mm² SWA cables, 6m in length. They shall be terminated into the enclosure with a brass waterproof gland. A suitable length tail is required to terminate into the output terminals of the MCB module. The other end of the outgoing cable shall be terminated onto a brass gland with an extended tail of three insulated cores at 1500mm in length. The cores shall be coloured brown, blue and grey with all cores marked up with ferrule markers as detailed above.

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3.3.4. Testing

As a minimum, assembled units shall be subjected to the following routine testing with a test certificate provided with each unit supplied: -

- I. Continuity test from input to output ensuring correct connection and operation of the isolator/ MCB.
- II. A 500V insulation resistance test between live/neutral, live/earth and neutral/earth.

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4. References

4.1. External Documentation

The products described within this specification shall comply with the latest versions of the relevant International Standards, British Standard Specifications and all relevant Energy Networks Association Technical Specifications (ENA TS) current at the time of supply

Reference	Title
BS EN 60529: 1992 + A2: 2013	Specification for degrees of protection provided by enclosures (IP code)
BS EN 62262: 2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
BS EN 50393: 2015	Test methods and requirements for accessories for use on distribution cables of rated voltage 0,6/1,0 (1,2) kV
BS 7657: 2022	Specification for cut-out assemblies up to 100 A rating, for power supply to buildings
BS EN 62271-1:2017+A1:2021	High-voltage switchgear and controlgear. Part 1: Common specifications for alternating current switchgear and controlgear
IEC 60898-1: 2012	Electrical accessories. Circuit breakers for overcurrent protection for household and similar installations. Circuit-breakers for a.c. operation
IEC 60947-2: 2017	Low-voltage switchgear and control gear. Circuit-breakers

4.2. Internal Documentation

Reference	Title
NPS/002/006	Technical Specification for Service Cut-outs, Terminal Blocks, Meter Tail Protectors and Pole Mounted Fuse Units

4.3. Amendments from Previous Version

Clause	Subject	Amendments
3.3	Pole Mounted LV Isolation Box	Reference standard and clause updated
4.1	External documentation	Standard revisions updated
Appendix 4	Addendum to Suppliers Requirements	Section deleted
Appendix 5	Technical Information Check List	Renamed Appendix 4 and content updated

5. Definitions

Term	Definition
N/A	N/A

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6. Authority for Issue

6.1. CDS Assurance

I sign to confirm that this document has been assured for issue on to the CDS system.

		Date
Liz Beat	Governance Administrator	06/06/2023

6.2. Author

I sign to confirm that I am satisfied with all aspects of the content and preparation of this document and submit it for approval and authorisation.

Review Period - This document should be reviewed within the following time period.

Standard CDS review of 3 years?	Non Standard Review Period & Reason	
No	Period: 5	Reason: Based on the standard contract period
Should this document be displayed on the Northern Powergrid external website?		Yes
		Date
Steven Salkeld	Policy and Standards Engineer	06/06/2023

6.3. Technical Assurance

I sign to confirm that I am satisfied with all aspects of the content and preparation of this document and submit it for approval and authorisation.

		Date
Ged Hammel	Senior Policy and Standards Engineer	06/06/2023

6.4. Authorisation

Authorisation is granted for publication of this document

		Date
Paul Black	Head of System Engineering	21/06/2023

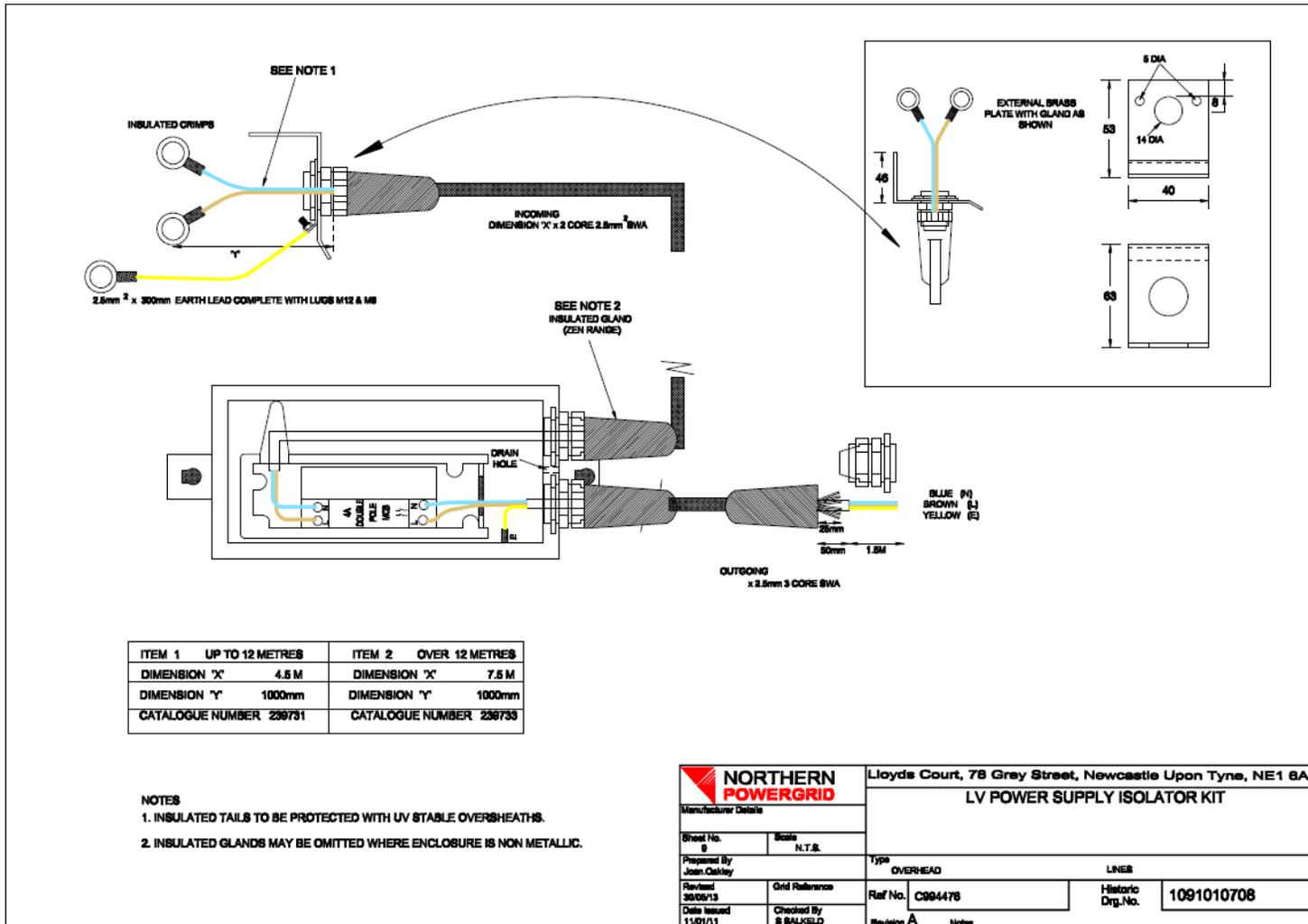
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Appendix 1 - Schedule of Items

Commodity Code	Description
239943	200A 3 Phase Wall Box with Disconnection Facility
165006	Wall Service Box, Single Phase Fitted with 100A Cut Out
165010	Wall Service Box, Three Phase Fitted with 100A Cut Out
160304	Under Eaves Service Joint Box, Non-fused
239731	Pole Mounted Isolation Box with 4.5M Incoming Cable Feed
239733	Pole Mounted Isolation Box with 7.5M Incoming Cable Feed
226351	Pole Mounted Isolation Box with 4.5M Incoming Cable Feed. To be Fitted on Oil Filled Transformers with Exposed Cables

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Appendix 2 - Pole Mounted Isolation Box



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Appendix 3 - Self-Certification Conformance Declaration

Wall and pole mounted outdoor service wall boxes shall comply with the latest issues of the relevant national and international standards. Additionally this technical specification is intended to amplify and/or clarify requirements relating to these Standards.

This self-declaration sheet identifies the clauses of the aforementioned standards relevant to outdoor service boxes for use on the Northern Powergrid distribution network. The manufacturer shall declare conformance or otherwise, clause by clause, using the following levels of conformance declaration codes.

Conformance declaration codes

- N/A = Clause is not applicable/ appropriate to the product
- Cs1 = The product conforms fully with the requirements of this clause
- Cs2 = The product conforms partially with the requirements of this clause
- Cs3 = The product does not conform to the requirements of this clause
- Cs4 = The product does not currently conform to the requirements of this clause, but the manufacturer proposes to modify and test the product in order to conform.

Instructions for completion

- When Cs1 code is entered the supplier shall provide evidence of conformance
- When any other code is entered the reason and supporting evidence for non-Conformance shall be entered
- Prefix each remark with the relevant 'BS EN' or 'ENATS' as appropriate

Manufacturer:

Product Reference:

Name:

Signature:

Date:

NOTE: One sheet shall be completed for each item or variant submitted.

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BS EN 60529

Clause/Sub-clause	Requirement	Conformance Code	Evidence Reference	Remarks/Comments
11	IP Rating – General requirements for tests			
12	Protection against access to hazardous parts			
13	Protection against solid foreign objects			
14	Protection against water			

BS EN 62262

Clause/Sub-clause	Requirement	Conformance Code	Evidence Reference	Remarks/Comments
6	Tests to verify the protection against mechanical impacts			

BS 7657

Clause/Sub-clause	Requirement	Conformance Code	Evidence Reference	Remarks/Comments
8	Test Requirements			

BS EN 60694

Clause/Sub-clause	Requirement	Conformance Code	Evidence Reference	Remarks/Comments
2.1.1	Normal Service Conditions – Humidity levels			

BS EN 50393

Clause/Sub-clause	Requirement	Conformance Code	Evidence Reference	Remarks/Comments
7	Type test requirements – cable accessories			

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Appendix 4

The following information shall be provided by the supplier for technical review by Northern Powergrid. Additional information shall be provided if requested.

Requirement	Provided (Y/N)
Appendix 1 - Copy of pricing schedule template populated with product references	
Appendix 3 – Completed self-certification conformance declaration	
Complete set of drawings and product data sheet for each item	
Type test evidence	
Product Manufacturing Quality Plan	