NPS/002/004 – Technical Specification for 25 Amp Cut-outs for Street Furniture

1. Purpose

The purpose of this document is to detail the requirements of Northern Powergrid (the Company) in relation to the products detailed within this document.

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

Reference	Version	Date	Title
NPS/002/004	5.0	March 2018	Technical Specification for 25 Amp Cut-outs for Street Furniture

2. Scope

This document refers to the specification requirements of the Company with respect to 25 Amp cutouts for street furniture. Cut-outs covered by this technical specification shall comply with the latest issue of:-

- BS 7654:2010 - Specification For 25 Amp Street Lighting Cut-outs,
- BS 7652:2022 - Cut-out assemblies up to 100 A rating, for power supply to buildings — Specification
- BS HD 60269-2:2013 BS 88-2:2013 – Low-voltage fuses - Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) — Examples of standardized systems of fuses A to K.

This document is intended to amplify and/or clarify the Company requirements relating to these specifications with respect to: -

- Cutout, 25 Amp, Single Phase, Single Pole Separate Neutral and Earth (SNE) (TYPE 1),
- Cutout, 25 Amp, Single Phase, Single Pole Combined Neutral and Earth (CNE) (TYPE 2),
- Cutout, 25 Amp, Single Phase, Double Pole Combined Neutral and Earth (CNE) (TYPE 5).

The following appendices form part of this technical specification:

- Appendix 1 – Product requirements,
- Appendix 2 - Logistical requirements,
- Appendix 3 - Self certification conformance declaration,
- Appendix 4 - Addendum to supplier requirements,
- Appendix 5 - Technical information check List.

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3. Technical Requirements

3.1. Basic Parts

The units shall have the ability to loop in / out with either 2 x 25mm^2 solid aluminium conductor cables or 2 x 16mm^2 stranded copper conductor cables and shall also comprise of three basic parts; a one-piece rear panel, front incoming termination/terminal cover and fuse carrier. The one-piece rear panel shall comprise of all the parts necessary for the connection to the system.

3.2. Materials and Construction

All non-metallic parts including fuse bases, front terminal covers, cable termination covers and fuse carriers shall be manufactured from insulating material, and shall conform to the relevant requirements of BS 7654:2010 relating to impact, insulation / tracking and flammability. Typically, the degree of protection provided to all internal or live parts shall have a rating of no less than IP22.

The incoming cable termination/block cover shall be moulded in a clear transparent material and comply with the relevant requirements of BS 7654:2010. It shall be interlocked so that it cannot be removed until the fuse-carrier has been withdrawn.

Small access holes shall be provided in the incoming cable termination/block cover adjacent to the in-coming phase and neutral contact slots for testing purposes.

3.3. Safety Features

- A red coloured insulated shield covering the incoming phase terminals with a protection rating of no less than IP 2X shall be provided, which allows for the removal and insertion of the fuse link as defined in BS 7654:2010.
- Facilities shall be provided to allow the unit to be sealed in the closed position using standard galvanised sealing wire of maximum diameter of 2mm.

3.4. Dimensions

The unit shall be capable of being fixed to a 12mm thick x 65mm wide (minimum) mounting board, by a minimum of 2 x corrosion-proof, cross-headed screws. Suitable screws should be supplied with the unit.

3.5. Incoming Phase Terminal Block

A double, incoming phase terminal block shall be formed form solid brass and electroplated. All terminal bores shall be serrated to ensure good electrical contact and suitable for the connection of either 2 x 16mm^2 stranded copper or 2 x 25mm^2 solid aluminium conductors.

3.6. Incoming Neutral/Neutral Earth Block

The combined Neutral/Earth or the separate Neutral and Earth blocks shall be formed from solid brass and electroplated. Terminal bores shall be serrated to ensure good electrical contact and suitable for copper or aluminium conductors.

An insulated barrier shall be provided between any adjacent terminal assemblies.

3.7. Outgoing Terminals

The outgoing phase, neutral and earth terminals shall be suitable for terminating up to 10mm^2 cross-sectioned copper conductors.

3.8. Fuse Carrier

Fuse carrier shall be capable of carrying a fuse-link in accordance with BS HD 60269-2:2013 BS 88-2:2013 – Low voltage fuses - Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) — Examples of standardized systems of fuses A to K.

It should also be capable of carrying currents associated with the operation under fault conditions.

It shall not be possible to fit the fuse-link in the neutral position.

The fuse carrier shall have a captive screw and a sealing wire facility.

A fuse link is NOT required to be supplied with fuse carrier / cut-out.

3.9. Gland Plate

The base gland plate shall be split plastic and be suitable for accepting up to 2 x 16mm^2 stranded copper conductor single phase cables or 2 x 25mm^2 solid aluminium conductor single phase cables, each cable entry hole shall be fitted with an appropriate 'cone' shaped rubber grommet.

3.10. Date Stamp

All cut-out types shall be indelibly marked with the month and year of manufacture. This "date stamp/tag" shall be located on the main body of the cut-out only and shall be easily visible in the normally installed position of the unit.

3.11. EV Charging

There is a requirement for street furniture installations to be retrospectively installed with EV charging units (3-5kW) designed to be used on 25A cut-out installations. 25A cut-outs shall comply with the max allowable temperature rise specified in BS 7657:2022 during normal operation(including and not limited to environmental solar radiation) and shall not have a derating factor applied in such situations.

4. References

The products described within this document shall comply with the relevant British Standard Specifications current at the time of tendering, except where varied by this standard. The following documents are particularly relevant.

The supplier shall provide, with the tender, full technical details of the equipment offered and shall indicate any divergence from these standards or specifications.

4.1. External Documentation

Reference	Version/Date	Title
BS 7654:2010	3.0 / 2010	Specification for single phase street lighting fuses (cut-outs) for low-voltage public electricity distribution systems. 25 A rating for highway power supplies and street furniture.
BS 7652:2022	2022	Cut-out assemblies up to 100 A rating, for power supply to buildings — Specification
BS HD 60269-2:2013 BS 88-2: 2013	2013	Low-voltage fuses - Part2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) - Examples of standardized systems of fuses A to k.

4.2. Internal Documentation

Reference	Title
Nil	

4.3. Amendments from Previous Version

Clause	Amendments
2. Scope & 4.External References	Additional BS 7652:2022 standard
3. Technical Requirements	Minor text changes
4. References	Remove International Standards & ENATS references
5. Definitions	Added definitions
6. Authority for Issue	Amended to include Approval step
Appendix 3.	Additional IP rating and Additional Max allowable temperature rise conformance requirements

5. Definitions

Term	Definition
CNE	Combined Neutral Earth
SNE	Separate Neutral Earth
The Company	Northern Powergrid

6. Authority for Issue

6.1. CDS Assurance

I sign to confirm that I have completed and checked this document and I am satisfied with its content and submit it for approval and authorisation.

		Date
Liz Beat	Governance Administrator	01/03/2023

6.2. Author

I sign to confirm that I have completed and checked this document and I am satisfied with its content 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 Years	**Reason:** Update will be dictated by contract renewal date or any significant changes in the specification or documents referenced.
Should this document be displayed on the Northern Powergrid external website?		Yes

		Date
Paul Hanrahan	Engineer – Asset Management	02/03/2023

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
Steven Salkeld	Policy & Standards Engineer	02/03/2023
Joe Helm	Policy & Standards Manager	21/03/2023

6.4. Authorisation

Authorisation is granted for publication of this document.

		Date
Paul Black	Head of System Engineering	27/03/2023

Appendix 1 – Product Requirements

Requirements	Commodity Code
Cutout, 25 Amp, Single Phase, Single Pole, Separate Neutral and Earth (SNE)(TYPE 1)	044198
Cutout, 25 Amp, Single Phase, Single Pole, Combined Neutral and Earth (CNE)(TYPE 2)	044206
Cutout, 25 Amp, Single Phase, Double Pole, Combined Neutral and Earth (CNE) (TYPE 5)	181140

Supporting evidence of compliance with type tests shall be submitted with the completed tender document.

Manufacturers may provide alternative tenders for items not complying with the above specification. This shall be clearly stated together with detailed descriptions of any variation from the specification, together with drawings and test results.

The supplier shall provide with the tender full technical details of the equipment offered and shall indicate any divergence from these standards or specifications.

Appendix 2 - Logistical Requirements

To enable the Company to store the product(s) in accordance with the manufacturer's recommendations the Tenderer should provide details of the recommended storage environment with respect to each tendered product.

Details should be provided where relevant in respect to the minimum and maximum exposure levels, frequency of exposure and duration of exposure of the packaged item with respect to;

- Ambient temperature
- Atmospheric corrosion
- Humidity
- Impact
- Water
- Vibration
- Dust
- Solar radiation

The Tenderer shall ensure that each item is suitably packaged and protection to maintain the product and packaging as "fit for service" prior to installation taking account of the potential for an outdoor storage environment. All packaging shall be sufficiently durable giving regard to the function, reasonable use and contents of the packaging. Where product packages tendered are made up of sub packages all the sub packages shall unless varied by this specification, be supplied securely packaged together. Where items are provided in bagged/boxed form the material from which the bags are manufactured shall be capable of sustaining the package weight and resisting puncture by the materials within. Tenderer shall submit at the time of tendering the details of the proposed packaging (i.e. materials composition and structure) to be used for each product. Where the Tenderer is unable to provide packaging suitable for outdoor storage then this should be stated at the time of tender.

Palletised goods shall be supplied on standard 1200mm x 1000mm pallets.

Clearly legible, easily identifiable, durable and unambiguous labelling shall be applied to each individual and where relevant multiple package of like products. Where products packages tendered are made up of sub packages each sub packages shall be marked. As a minimum requirement the following shall be included;

- Manufacturer's trademark or name
- Supplier's trademark or name
- Description of item
- Date of packaging and/or batch number
- Northern Powergrid product code
- Weight
- Shelf Life

Tenderer shall submit at the time of tendering a sample of the proposed labelling for each product package type.

Appendix 3 – Self Certification Conformance Declaration

25 Amp street furniture cut-outs to be supplied against this specification shall comply with the latest issues of the relevant ENA TS, British and International Standards specified. The following tables are intended to amplify and/or clarify the requirements of elements of these Standards but do not preclude meeting all requirements of the standards.

The manufacturer shall declare conformance or otherwise, clause by clause, using the following levels of conformance declaration codes, where appropriate indicating if tests are type or routine tests.

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 to confirm 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' 'IEC' or 'ENATS' as appropriate.
- Provide technical data sheets and associated drawings for each product.

Manufacturer / Supplier: -

Manufacturer / Supplier Product Reference:

Northern Powergrid Product Reference (Commodity Code):

Details of the Product Type (Voltage, Type and Size)

Name:

Signature:

Date:

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

BS 7654:2010 - Specification for single phase street lighting fuses (cut-outs) for low-voltage public electricity distribution systems. 25 A rating for highway power supplies and street furniture.				
	Requirement	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
General	Conforms to BS 7654:2010			
Fuse units	4.3.2.4			
Constructional requirements	7.1			
Materials	7.1.2			
Fuse carriers/contacts	7.1.3 a)			
Fuse-bases	7.1.3 b)			
Clearances and creepage distances	7.1.4			
Terminals	7.1.8			
Constructional requirements	7.1.8.1			
Pillar type terminals	7.1.8.1.2			
Shielding	7.1.12			
Sealing	7.1.12			
IP Ratings	7.1.12			
Temperature-rise	7.2.2			
Tests	8			
Type tests	8.1.2			
Temperature-rise of the fuse-unit	8.3.3.3.4			
Test for mechanical strength of the electrical components	8.3.4			
Max allowable temperature rise(no derating factor applied)	Conforms to BS 7652:2022			

Appendix 4 - Addendum to Supplier Requirements

Supporting evidence of compliance with type tests shall be submitted with the completed tender document.

Manufacturers may provide alternative tenders for items not complying with the above specification. This shall be clearly stated together with detailed descriptions of any variation from the specification, together with drawings and test results.

The supplier shall provide with the tender full technical details of the equipment offered and shall indicate any divergence from these standards or specifications.

Appendix 5 - Technical Information Check List

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

Requirement	Provided (Y/N)
Full product descriptions and part number/reference	
Appendix 3 – completed self-certification conformance declaration	
Complete set of drawings for each variant	
Type test evidence	
Quality Plan	
Pre-commissioning testing/inspection requirements	
Recommended periodical inspection and maintenance requirements	
Packaging/delivery information	