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

1. Purpose

This document details Northern Powergrid's (the Company) requirements for LV service terminations and associated equipment required for use on the company's distribution network.

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

Document Reference	Document Title	Version	Published Date
NPS/002/006	Technical Specification for Service Cut-outs, Terminal Blocks, Meter Tail Protectors and Pole Mounted Fuse Units	6.0	Oct 2021

2. Scope

This document details the Company's technical requirements for the products detailed below:-

- Heavy duty cut-outs for power supplies to premises with loads in excess of 100 Amps,
- Single and three phase 100 amp house service cut-outs and single pole fuse units,
- Red link isolator installed in single phase base unit,
- Insulated terminal blocks for use in conjunction with 100 Amp cut-outs,
- Outdoor pole mounted single-phase fuse units, up to 400 Amp, and,
- Meter tail protectors.

Technical requirements for heavy duty cut-outs with integral CT metering are detailed in NPS/002/030 - Technical Specification for Heavy Duty Cut-outs with Integral Current Transformers.

Technical documents referenced within this specification refer to 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.

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, and,
- Appendix 5 – Technical Information Check List.

2.1. Table of Contents

3. Heavy Duty Cut-Outs

3.1. Application

Heavy-duty cut-outs shall be suitable for providing power supplies to commercial and industrial premises with loads in excess of 100 Amps per phase. Where appropriate cut-outs shall be fixed vertically to walls or metal frames in customers' premises. Alternatively, they may be installed within compartments in customer's switchboards.

Cut-outs shall be capable of providing a PME earth, an SNE earth by means of a removable link and no earth by means of a blanking plate or insulated cover.

3.2. Materials and Construction

The cut-out enclosure, including the cable termination enclosure, shall be manufactured from insulating material, and shall conform to the relevant requirements of BS 7657:2022 - Specification for cut-out assemblies up to 100 A rating, for power supply to buildings, relating to impact, insulation / tracking and flammability. Typically, the compartments shall have rating of IP54.

All parts forming the main current path shall be manufactured from hard drawn high conductivity copper or brass, which shall be electro tin plated. All ferrous parts must be either stainless steel or adequately plated to prevent corrosion in normal service conditions.

The equipment shall be shielded pattern in accordance with ENA TS 37-2 and with an IP2X rating. The permanent shielding shall be readily and safely removable and replaceable, without special tools, to allow adequate access for installing the cables.

The cable termination chamber shall be of a two piece construction with the outer section being removable for cable connections with the inner in-situ. The inner section shall contain captive nuts (or similar) to receive the fixing screw used to join the two halves. The inner and outer halves of the chamber shall be non-interchangeable.

Cable entries shall be possible from directly below and from either side of the cable chamber. Unused cable entries shall have blanking plugs. Removal of the blanking plugs shall only be possible after entry to the cable enclosure. No part of the cable chamber shall be removable without first removing the fuse compartment cover.

The main fuse compartment shall have a one-piece lid, retained in the closed position by screw fixings. Each of the fixings shall be capable of being sealed in the closed position using standard galvanised sealing wire of maximum diameter of 2mm.

If wood is used for the top cable entry plate, wall-mounting frame or as cable entry blanking plugs, then this must be a durable hardwood other than oak, be smooth finished and sealed against the ingress of moisture.

3.3. 200 Amp Unit

3.3.1. Incoming Cable Termination

Range taking shear bolt connectors or mechanical lugs to terminate solid aluminium conductors on 3c CNE or SNE 35mm^2 circular cores and 3c CNE or 4c SNE sector shaped cores between 95mm^2 and 185mm^2 cables to BS 7870-3.40 with stranded copper neutral / earth conductors. Where mechanical lugs are used M12 bolts, nuts, flat washers and spring washers shall be supplied with the cut-out.

An additional single piece temporary shield shall be provided. This shield will be fitted over the live incoming terminations, with the main fuses removed, to permit safe working on the outgoing circuit. The shield shall maintain IP2X protection under reasonable mechanical stress arising from the work. It shall be readily and securely fixed without conductive fittings and the use of tools.

3.3.2. Outgoing Cable Termination

Either of two methods is acceptable to terminate the outgoing cables, which could be two cores per phase, ranging between 35mm^2 and 95mm^2. If bolted connections in which mechanical lugs (supplied by purchaser) are to be utilised then the unit shall be supplied with M12 bolts, nuts, flat & spring washers.

Tunnel terminals are also acceptable for cables up to 2 x 95mm^2 per phase. The terminals shall be serrated to accept aluminium or copper conductors and shall have two cable pinching screws, which shall be of sufficient size to give adequate purchase to the cable connections and have been satisfactorily load cycle tested with the minimum and maximum conductor sizes recommended.

3.3.3. Fuse Carrier

The cut-outs shall be provided complete with fuse carriers with 82mm fixing centres suitable for BS HD 60269-2:2013 + A1 2022 BS 88-2:2013 + A1 2022 type "J" fuses.

The body of the carrier shall be of suitable insulating material and be so shaped as to allow a definite grip to facilitate the installation or removal of the fuses by hand, while providing an insulated barrier to all live parts.

Fuse carriers shall be of wedge type and shall be equipped with two thumbscrews for tightening in situ. The design of these thumbscrews must be such that, when in position, the whole fuse assembly cannot be fortuitously dismantled when the thumbscrews are released to their full extremities. The thumbscrews shall be of insulating material with the same electrical performance as the fuse carrier.

A fuse link **shall not** be supplied with the fuse carrier.

3.3.4. Neutral Terminal

A facility is required for connecting up to four neutral cores. Suitable M12 bolts, nuts, flat and spring washers shall be supplied with the cut-out.

3.3.5. Earth Terminal

The cut-out shall be capable of providing a PME earth, a SNE earth by means of a removable link and no earth by mean of a blanking plate or insulated cover.

3.3.6. Dimensions (approximate)

H = 480mm max, W = 370mm max, D = 210mm max.

3.3.7. Top Plate

Hardwood type divided along its length or closed cell neoprene.

3.4. 400 Amp Unit

3.4.1. Incoming Cable Termination

Range taking shear bolt connectors to terminate solid aluminium cores on 3c CNE or 4c SNE sector shaped conductors between 185mm^2 and 300mm^2, for cables to BS 7870-3.40 with stranded copper neutral / earth conductors. An additional single piece temporary shield shall be provided. This shield will be fitted over the live incoming terminations, with the main fuses removed, to permit safe working on the outgoing circuit. The shield shall maintain IP2X protection under reasonable mechanical stress arising from the work. It shall be readily and securely fixed without conductive fittings and the use of tools.

3.4.2. Outgoing Cable Termination

PVC insulation and sheath, stranded copper or aluminium conductors in the range 95mm^2 – 185mm^2 will be terminated using compression or mechanical lugs. Suitable M12 bolts, nuts, flat washers and spring washers shall be provided. A clear distance of 105mm shall be provided between the centre of the fixing hole and the top plate. It shall be possible to connect two outgoing cores per terminal. Back to back connections are acceptable.

3.4.3. Fuse Carrier

The cut-outs shall be provided complete with fuse carriers with 82mm fixing centres suitable for BS HD 60269-2:2013 + A1 2022 BS 88-2:2013 + A1 2022 type "J" fuses.

The body of the carrier shall be of suitable insulating material and be so shaped as to allow a definite grip to facilitate the installation or removal of the fuses by hand, while providing an insulated barrier to all live parts.

Fuse carriers shall be of wedge type and shall be equipped with two thumbscrews for tightening in situ. The design of these thumbscrews must be such that, when in position, the whole fuse assembly cannot be fortuitously dismantled when the thumbscrews are released to their full extremities. The thumbscrews shall be of insulating material with the same electrical performance as the fuse carrier

A fuse link **shall not** be supplied with the fuse carrier.

3.4.4. Neutral Terminal

A facility is required for connecting up to four neutral cores; suitable M12 bolts, nuts, flat and spring washers to be supplied with the cut-out.

3.4.5. Earth Terminal

The cut-out shall be capable of providing PME earth, SNE earth by means of a removable link and no earth by mean of a blanking plate or insulated cover.

3.4.6. Dimensions (approximate)

H = 650 max, W = 470 max, D = 235 max.

3.4.7. Top Plate

Hardwood type divided along its length or closed cell neoprene.

3.5. 500 Amp Unit

3.5.1. Incoming Cable Termination

Range taking shear bolt connectors to terminate solid aluminium cores on 3c CNE or 4c SNE sector shaped conductors up to 300mm^2, for cables to BS 7870-3.40 with stranded copper neutral / earth conductors an additional single piece temporary shield shall be provided. This shield will be fitted over the live incoming terminations, with the main fuses removed, to permit safe working on the outgoing circuit. The shield shall maintain IP2X protection under reasonable mechanical stress arising from the work. It shall be readily and securely fixed without conductive fittings and the use of tools.

3.5.2. Outgoing Cable Termination

The terminals shall enable stranded or solid copper or aluminium cored cables up to 300mm^2 to be terminated using mechanical lugs. Suitable M12 or M16 bolts, nuts, flat and spring washers shall be supplied with the cut-out.

A clear distance of 105mm shall be provided between the centre of the fixing hole and the top plate. It shall be possible to connect two outgoing cores per terminal. Back to back connection is acceptable.

3.5.3. Fuse Carrier

The cut-outs shall be provided complete with fuse carriers with 92mm fixing centres suitable for BS HD 60269-2:2013 + A1 2022 BS 88-2:2013 + A1 2022 type "J" fuses.

The body of the carrier shall be of suitable insulating material and be so shaped as to allow a definite grip to facilitate the installation or removal of the fuses by hand, while providing an insulated barrier to all live parts.

Fuse carriers shall be of wedge type and shall be equipped with two thumbscrews for tightening in situ. The design of these thumbscrews must be such that, when in position, the whole fuse assembly cannot be fortuitously dismantled when the thumbscrews are released to their full extremities. The thumbscrews shall be of insulating material with the same electrical performance as the fuse carrier.

A fuse link **shall not** be supplied with the fuse carrier.

3.5.4. Neutral Terminal

A facility is required to connect four neutral cores including one neutralising core; M12 bolts, nuts and washers to be supplied with the cut-out.

3.5.5. Earth Terminal

The cut-out must be capable of providing a PME earth, a SNE earth by means of a removable link and no earth by mean of a blanking plate or insulated cover.

3.5.6. Dimensions (approximate)

H = 700 max, W = 500 max, D = 210 max.

3.5.7. Top Plate

Hardwood type divided along its length or closed cell neoprene.

3.6. Single Phase & Three Phase 100 Amp House Service Cut-Outs

3.6.1. Application

The cut-out shall be suitable for providing power supplies to commercial or domestic premises with loads up to 100 Amps per phase. Cut-outs will be fixed vertically onto a wooden meter board located internally or alternatively they may be installed within an outdoor meter cabinet on the customer's premises.

3.6.2. Materials and Construction

The unit is to be moulded in Glass Reinforced Polyester (GRP) or a similar material and shall conform to the relevant requirements of BS 7657:2022 relating to impact, insulation / tracking and flammability.

Access to all incoming and outgoing neutral and earth terminals shall be prevented by means of an interlocking insulated cover; the cover shall not be removable unless the fuse carrier is fully removed. Access to specific outgoing earthing terminals shall be provided by means of a knockout.

3.6.3. Type A1 Cut-Out

In accordance with BS 7657:2022, type A1 cut-outs shall consist of a single-phase fuse-unit incorporating **separate neutral and earth terminals**, complete with an appropriate fuse carrier, but not

equipped with a fuse link. Access to the outgoing terminals shall be provided, e.g. by knockouts. A separate cable termination cover may be included, if required.

3.6.4. Type A2 Cut-Out

In accordance with BS 7657:2022, type A2 cut-outs shall consist of a single-phase fuse-unit incorporating **combined neutral and earth terminals**, complete with an appropriate fuse carrier, but not equipped with a fuse link. Access to the outgoing terminals shall be provided, e.g. by knockouts. A separate cable termination cover may be included, if required.

3.6.5. Type A4 and Type A5 Three Phase Cut-Out

This shall be of modular construction. It shall comprise of one type "A" cut-out and two single pole fuse units/holders. A separate cable termination cover may be included if required.

3.6.6. Service Cut-Out with Integral Sealing Chamber – Single and Three Phase

This range of cut-out is required for use when replacing cut-outs particularly in connection with paper insulated lead covered cables. The units shall have an integral sealing chamber and to facilitate the need to not disturb the cable polarity during a cut-out replacement, the phase and neutral terminals shall be interchangeable.

3.6.7. Fuse Holder

The combination of a fuse base with its fuse-carrier with no fuse link included.

3.6.8. Insulated Link

An insulated copper link which connects the incoming phase terminal assembly of a type "A" cut out with the incoming phase assembly of a single pole fuse holder to provide a two-way outgoing fused single phase supply as detailed in clause 8.1.8.2 a) of BS 7657:2022. This insulated link shall only be connected via the bottom terminals of the cut-out.

3.6.9. Cut-Out Terminals

Two incoming and outgoing terminals shall be provided on both phase and neutral in accordance with clause 8.1.8.2 c) of BS 7657:2022 and shall have capacity for cable core up to 35mm^2 cross section.

In addition, access to outgoing earth terminals shall be provided for the user without breaking seals in accordance with BS 7657:2022 for type A1 or A2 fuses. Knockouts are an acceptable means of access.

3.6.10. Fuse Carrier

Fuse carrier shall have a rated continuous current of 100 Amp shall fit all associated fuse bases. The fuse carrier shall accept fuse-links type 11b conforming to BS HD 60269-3:2010+A1:2013 BS 88-3:2010.

3.6.11. Red Link Isolator

Fuse carrier which shall be coloured **red** and have a rated continuous current of 100 Amp and fit all associated fuse bases. The fuse carrier shall be capable of accepting a solid metallic link.

3.6.12. Marking

Components that form part of the service cutout shall be clearly and permanently marked in line with the requirements of Clause 6.2 of BS 7657: 2022.

In addition to the marking requirements of BS 7657: 2022 all cut-out types shall be permanently 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.

3.6.13. Safety Features

Fixing screws shall not be located directly between phase and neutral blocks such that in the event of heat damage to the insulation, the fixing screw might cause flashover.

- Tamper resistant blanking plugs e.g. “golf tee” type, or knockouts, are required to protect unused cable or busbar entry positions. (No additional tooling shall be required to remove the blanking plugs).
- The provision of seals shall conform to Clause 8.1.12of BS 7657:2022 and shall meet the mechanical test requirements of Clause 9.2.2.2

3.6.14. Cable Cover

The cable cover is for the protection of incoming cables. The cover shall be capable of interlocking with the appropriate fuse base so that the cover cannot be removed until the fuse carrier has been withdrawn. The cable cover shall have a minimum of two cable entry ports provided at the bottom for which grommets shall be supplied.

This provision shall also apply to the cable cover of 3 phase cut-outs.

3.6.15. Mounting

Suitable fixing screw(s) e.g. ‘Pozidrive’, ‘Twinfast’, shall be supplied for fixing component parts to a 12mm thick wood chip mounting board. The cable cover of three phase cut-outs shall have three screw fixings.

3.7. Insulated Terminal Blocks

3.7.1. Materials and Construction

The terminal blocks shall be Type C1 as classified in BS 7657:2022 and shall generally conform to and be tested in accordance with that specification. They shall be suitable for terminating phase, neutral or earth conductors.

3.7.2. Connector Block

The connector block shall be fabricated from brass and shall be totally enclosed in a moulded insulated housing. The housing cover shall be held in place by a suitably robust screw with sealing tabs.

3.7.3. Seals

The provision of seals shall conform to Clause 8.1.12of BS 7657:2022 and shall meet the mechanical test requirements of Clause 9.2.2.2.

3.7.4. Terminals

The terminal assembly shall have at least five ways. Each terminal way shall be suitable for terminating aluminium or copper conductors up to 35mm^2 cross-section.

3.7.5. Mounting

A suitable fixing screw(s) e.g. ‘Pozidrive’, ‘Twinfast’ shall be supplied for fixing to a 12mm thick wood chip board, such that the terminal block is firmly retained or prevented from turning. The fixing screw shall not pass through any conducting part of the connector block.

3.8. Outdoor Pole Mounted Single Phase Fuse Units

3.8.1. Application

The pole-mounted fuse unit shall be used to provide network isolation, allow network sectioning or sub fusing of low voltage overhead networks.

The fuse unit shall be capable of being fixed to a wooden pole with a minimum radius of 90mm, by a single key-hole point fixing so as to prevent any movement during cable installation and fuse carrier removal and insertion.

3.8.2. Materials and Construction

The fuse unit shall be moulded from Glass Reinforced Polyester (GRP) or similar material and shall comprise of all parts to form a complete device as defined in BS 7656:1993+A1:2013.

A Suitable hot-dipped galvanised M12 coach screw in accordance with BS EN 1461 shall be provided for fixing the fuse unit to a wood pole.

3.8.3. Fuse Carrier

Fuse carriers shall be suitable for accepting fuse-links, which conform to the general requirements of BS EN 60269-1:2007 + A2:2014 BS 88-1:2007 + A2:2014 and BS HD 60269-2: 2013 + a1 2022 BS 88-2:2013 + A1 2022, with fixing centres of 82mm.

The body of the carrier shall be of suitable insulating material and be so shaped as to allow a definite grip to facilitate the installation or removal of the fuses by hand, while providing an insulated barrier to all live parts.

The fuse carrier shall be equipped with two thumbscrews for tightening in situ. The design of these thumbscrews must be such that, when in position, the whole fuse assembly cannot be fortuitously dismantled when the thumbscrews are released to their full extremities.

A test port access shall be available on the fuse carrier either side of the link. This can be used to confirm if the link has operated with the use of low voltage test lamps. The test access shall be covered by a moving insulated cover that protects the exposed busbar when not in use.

3.8.4. Current Rating

The fuse unit shall have a continuous current rating of 400 Amps.

3.8.5. Terminations

They shall enable cables with aluminium or copper conductor up to and including 185mm^2 to be terminated using compression lugs. An M12 captive stud with a flat washer, spring washer and nut shall be provided for each terminal.

3.9. Meter Tail Protectors: Encapsulated Connector Block

3.9.1. Application

The encapsulated connector block is used to provide an electrical connection between a single rate Electricity Meter manufactured to BS EN 62053-24:2015+A1:2017 and a standard single-phase domestic service cut-out.

3.9.2. Materials and Construction

The unit shall consist of two conductors partially encased in a solid insulating block with insulated 'Lead ins'. The conductors shall be stranded copper and have a cross-sectional area of 25mm^2.

The block shall be Grey or Black in colour and be either the integral solid type or the filled box type. In either case it shall consist of insulating material which complies with the flame test specified in BS 7657:2022 Single Phase Domestic Cut-outs up to 100A Rating.

The position and lengths of the conductor tails on the upper (meter) side of the block shall be compatible with the standardised terminals of a BS EN 62053-24:2015+A1:2017 Electricity Meter.

The connector block, when assembled with a meter and cut-out shall be such that access to unused phase terminals in the top of the cut-out is prevented.

The connector block shall generally comply with the criteria laid down in the voltage, insulation resistance and temperature rise tests of BS 7657:2022. The temperature rise test being carried out with the block installed between a BS 7657:2022 cut-out and a BS EN 62053-24:2015+A1:2017 Single-Phase Meter. The temperature rises shall not exceed those given in table1of BS 7657:2022.

4. References

The products described within this document shall comply with the relevant International Standards, British Standard Specifications and all relevant Energy Networks Association Technical Specifications (ENATS) current at the time of tendering, except were varied by this standard. In respect 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	Title
BS 7656:1993 + A1:2013	1993	Specification for Low-voltage pole-mounting fuses (cut-outs) - 400 A rating
BS 7657:2022	2022	Specification for cut-out assemblies up to 100 A rating, for power supply to buildings
BS 7870-3.40	2011	LV and MV polymeric insulated cables for use by distribution and generation utilities. Part 3: Specification for distribution cables of rated voltage 0.6/1 kV. Section 3.40: XLPE insulated, copper wire waveform concentric cables with solid aluminium conductors (Implementation of HD 603)
BS EN ISO 1461-2022	2022	Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods
BS EN 60269-1:2007 + A2:2014 BS 88-1:2007 + A2:2014	2014	Low-Voltage Fuses – Part 1: General Requirements
BS EN 60529: 1992+A2:2013	1992	Degrees of protection provided by enclosures (IP Code)
BS EN 62053-24:2015+A1:2017	2015	Electricity metering equipment (a.c.). Particular requirements. Static meters for active energy (classes 1 and 2)
BS HD 60269 3:2010+A1:2013 BS 88-3:2010	2013	Low-voltage fuses Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) — Examples of standardized systems of fuses A to F
BS HD 60269-2 + A1 2022: 2013 BS 88-2:2013 + A1 2022	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
ENA TS 37-2	2012	Public Electricity Network Distribution Assemblies

4.2. Internal Documentation

Reference	Title
MNT/010	Policy for the Inspection of LV Network Service Termination Equipment
NPS/002/004	Technical Specification for 25-Amp Cut-Outs for Street Furniture
NPS/002/030	Technical Specification for Heavy Duty Cut-Outs with Integral Metering Current Transformers
RPC/001/017	Code of Practice for the Replacement of LV Service Termination Cut-Outs

4.3. Amendments from Previous Version

Reference	Description
4.1 External Documentation	Updated specifications to latest versions
All sections	Updated specifications to latest versions throughout document
Appendix 3	Updated specifications to latest versions and new part references within latest versions
Section 6 –	List updated to reflect current structure

Authority for Issue	

5. Definitions

Term	Definition
CNE	Combined Neutral and Earth
CT	Current transformer
GRP	Glass Reinforced Polyester
PME	Protective Multiple Earthing
SNE	Separate Neutral and 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	27/09/2023

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	Asset Management Engineer	02/10/2023

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
Steve Salkeld	Policy & Standards Engineer	02/10/2023
Aaron Chung	Policy & Standards Engineer	05/10/2023

6.4. Authorisation

Authorisation is granted for publication of this document.

		Date
Paul Black	Head of System Engineering	30/10/2023

Appendix 1 – Product Requirements

Description	Commodity Code
Cut-out, 100 Amp, Single Phase, Single Pole, Separate Neutral and Earth (SNE)(TYPE A1)	041707
Fuse Unit, 100 Amp, Single Phase, Single Pole (TYPE B) (Compatible with cc 041707)	040782
Red Link Isolator, Inc Solid Link, Installed in Single Phase, Single Pole, Separate Neutral and Earth Base Unit (SNE)(TYPE A1)	282450
Cable Termination Cover for Single Phase (TYPE A1) SNE Cut-outs (Compatible with cc 041707 & 282450)	049916
Cable Termination Cover for Three Phase (TYPE A4) SNE Cut-outs (Compatible with cc 041707 + 2 x cc 040782)	181969
Cut-out, 100 Amp, Single Phase, Single Pole, Combined Neutral and Earth (CNE)(TYPE A2)	041715
Fuse Unit, 100 Amp, Single Phase, Single Pole (TYPE B)(Compatible with cc 041715)	041723
Red Link Isolator, Inc Solid Link, Installed in Single Phase, Single Pole, Combined Neutral and Earth Base Unit (CNE)(TYPE A2)	282451
Cable Termination Cover for Single Phase (TYPE A2) CNE Cut-outs (Compatible with cc 041715 & 282451)	049874
Cable Termination Cover for Three Phase (TYPE A5) CNE Cut-outs (Compatible with cc 041715 + 2 x cc 041723)	049890
Cut-out, 100 Amp, Single Phase with Interchangeable Phase & Neutral Positions including Termination Cover (Suitable for PILC Cables)	040584
Cut-out, 100 Amp, Three Phase with Interchangeable Phase & Neutral Positions including Termination Cover (Suitable for PILC Cables)	040592
Heavy Duty Cut-out, 200 Amp, Three Phase, PME, SNE, or No Earth (Item cc 183930 is required when no external earth connection is provided).	183875
Heavy Duty Cut-out - 200A Compacted Lucy Switchgear Design, for Replacement Installations with Limited Space	183880
Heavy Duty Cut-out, 400 Amp, Three Phase, PME, SNE, or No Earth (Item cc 183930 is required when no external earth connection is provided).	183998
Heavy Duty Cut-out, 500 Amp, Three Phase, PME, SNE, or No Earth (Item cc 183930 is required when no external earth connection is provided).	183926
Heavy Duty Cut-out Accessory, Earth Replacement Cover for Installations where the External Earth Bar is Removed, Supplier Part 54402-48	183930
Insulated Extension Link for Cut-outs, Single	046664
Insulated Connector Block, Single Pole, 5 Way (Earth Block)	045831
Blanking Plugs for Service Cut-outs	180888
400 Amp Pole Mounted Fuse Unit	184115

Appendix 2 – Logistical Requirements

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

Details shall be provided where relevant, in respect of 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 protected to enable storage in an outdoor environment whilst maintaining the product and packaging as "fit for service" prior to installation.

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.

In order to maximise storage space all palletised goods shall be supplied in standard returnable box pallets with the following specification. Where applicable, suppliers shall also indicate the maximum number of units of each product that are storable per box pallet.

- Size - 1200mm (w) x 1000mm (d) x 750mm (h)
- Weight (empty) – Up to 33kg
- Load Capacity – Up to 450kg
- Maximum Stacking Capacity – 10 High

Suppliers shall also include details of the type of material used to manufacture the box pallets.
The Company will give consideration to innovative alternatives to this specification.

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

Service Cut-outs, Terminal Blocks, Meter Tail Protectors & Pole Mounted Fuse Units are required to be supplied against this specification shall comply with the latest issues of the relevant ENATS, 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 type of product offered.

NPS/002/006 - Technical Specification for Service Cut-outs, Terminal Blocks, Meter Tail Protectors & Pole Mounted Fuse Units				
Heavy Duty Cut-outs				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Mounting:	Suitable for Vertical Fixing			
IP Rating:	IP 54			
Manufactured from moisture resistant material conforming to :-				
Impact:	BS 7657:2022 Part 9.2.2.1			
Insulating and tracking:	BS 7657:2022 Part 8.2.3.1			
Flammability:	BS 7657:2022 Part 9.2.1.1			
Screening / Shielding:	ENA TS 37-2 and IP2X			
Cable Termination Chamber:	Suitable for 3 or 4c 3 phase cables to BS 7870-3.40			
	Two Piece (split) Cover / Captive Fixings			
	Bottom Cable Entry			
	Side Cable Entry			
	Cable Entry Blanking Plugs			
Fuse Compartment:-				
Cover:	Single Piece			
Cover Fixings:	Captive & suitable for sealing with 2mm dia wire			
Fuse Carrier (without fuse link):	BS HD 60269-2: 2013 BS 88-2:2013 “J” Type: 82mm centres 200 & 400 Amp C/O			
	BS HD 60269-2: 2013 BS 88-2:2013 “J” Type: 92mm centres 500 Amp C/O			
Temporary Shielding:	To prevent inadvertent access to live terminals when fuses removed, IP2X rating			

Outgoing Cable Top Plate:	Hardwood type divided along its length or closed cell neoprene			
	Min distance (105mm) between C/L of outgoing cable fixings and top plate (400 & 500 Amp units)			
Neutral / Earth Terminal:	Suitable for 4 x M12 lugs c/w fixings			
	Capable of providing a PME earth connection via blanking plate / cover			
Earth Terminal:	Capable of providing a SNE earth connection via blanking plate / cover			

200 Amp Unit (Section 3.3)				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Incoming: -				
Cable Range:	95mm^2 to 185mm^2			
Terminations:	Range taking shear bolt connectors or M12 fixing lugs (c/w all fixings)			
Outgoing Circuits: -				
Cable Type:	Typically Double Ins 1c Solid or Stranded Al or Cu Conductor			
Size:	1 or 2 cables / phase, 35mm^2 to 95mm^2			
Terminations:	Range taking tunnel type connectors or M12 lugs (c/w all fixings)			
Typical Dimensions	H = 480 max, W = 370 max, D = 210mm max			

400 Amp Unit (Section 3.4)				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Incoming Cable: -				
Size:	185mm^2 to 300mm^2 3 or 4-core Waveform			
Terminations:	Range taking shear bolt connectors			
Outgoing Circuits: -				
Cable Type:	Typically Double Ins 1c Solid or Stranded Al or Cu Conductor			
Size:	1 or 2 cables / phase, up to 185mm^2			
Terminations:	Suitable for M12 lugs (c/w all fixings)			
Typical Dimensions:	H = 650 max, W = 470 max, D = 235mm max.			

500 Amp Unit (Section 3.5)				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Incoming Cable: -				
Size:	Up to 300mm^2 3 or 4-Core Waveform			
Terminations:	Range taking shear bolt connectors			
Outgoing Circuits: -				
Cable Type:	Typically Double Ins 1c Solid or Stranded Al or Cu Conductor			
Size:	1 or 2 cables / phase, up to 300mm^2			
Terminations:	Suitable for M12 or M16 lugs (c/w all fixings)			
Typical Dimensions:	H = 700 max, W = 500 max, D = 210mm max.			

Single phase, three phase service cut-outs (type A1 and A2) (Section 3.6) & terminal blocks units (Section 3.7)				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Mounting:	Suitable for Vertical Fixing			
Material:	Manufactured from GRP or similar			
Impact:	BS 7657:2022 Part 9.2.2.1			
Flammability:	BS 7657:2022 Part 9.2.1.1			
Cable Termination Cover:	BS 7657:2022 Part ?			
Degree of Protection:	BS 7657:2022 Part 8.1.12			
Phase / Neutral Cover:	BS 7657:2022 Part 8.1.11.1.3			
Earth Terminals:	BS 7657:2022 Part 8.1.11.1.3			
Security Seals:	BS 7657:2022 Part 8.1.12			
Cut-out Marking:	BS 7657: 2022 Part 6.2			
Date Stamp on Body of Cut-out:	As required in section 3.6.12 Marking			
Performance Requirements:-				
Temperature Rise:	BS 7657:2022 Part 8.2.2			
Contact Stability:	BS 7657:2022 Part 8.2.22			
Mechanical Endurance:	BS 7657:2022 Part 8.2.2.3			
Dielectric Properties:	BS 7657:2022 Part 8.2.3 & Part 9.3.3.4			
Overload & Short Circuit:	BS 7657:2022 8.2.3.2			
Cut Out Cable Terminals:	Two incoming and outgoing terminals			
	BS 7657:2022 Part 8.1.8.1(up to 35mm^2 conductors)			
2w Single Phase Supply Facility:	Insulated Busbar Link to BS 7657:2022 Part 7.1.7.2.101? No longer a requirement in specs?			
Fuse-holder: (without fuse-link)	BS 7657:2022 Part 8.1.3 (BS HD 60269-3:2010 + A2:2022, BS 88-3:2010 +A2 :2022)			
Fuse-carrier: (without fuse-link)	BS 7657:2022 Part 8.1.3 Rated 100 Amps and suitable for fuse-link type 11b to BS HD 60269-3:2010 + A2:2022, BS 88-3:2010 +A2 :2022			
Red Link Isolator: (without solid link)	BS 7657:2022 Part 8.1.3 Rated 100 Amps and suitable for accepting solid metallic links			

3 Phase Cut-outs (additional requirements):				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Construction Arrangement:-	Modular, comprising a single type A cut-out (fuse-unit and fuse-holder)			
	Additional single pole fuse-holders (x 2)			
	Separate cable termination cover (Suitable for 3-Core CNE or SNE type Cables)			

Insulated terminal blocks (Section 3.7)				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Single Pole:	BS 7657:2022 4 Classification, Type C1			
Size & number of ways:	Up to 35mm^2 double insulated conductors / 5 way			

Outdoor pole mounted single phase fuse units (Section 3.8)				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
General	Clause / Requirements	Conformance	General	
Mounting:	BS 7656:1993+A1:2013 Part 6 (Suitable for Pole Fixing, min 90mm radius)			
	Single Point Fixing (M12 Coachscrew)			
Material:	BS 7656:1993+A1:2013 Part 7 (GRP or similar (Please state))			
Impact:	BS 7656:1993+A1:2013 Part 8.2.2.101			
Flammability:	BS 7656:1993+A1:2013 Part 8.2.1.1.2			
Resistance to Fire:	BS 7656:1993+A1:2013 Part 8.2.1.1.102			
Degree of Protection:	BS 7656:1993+A1:2013 Part 8.2.3.101			

Performance Requirements:-				
Rating:	400 amps (continuous)			
Temperature Rise:	BS 7656:1993+A1:2013 Part 8.3.3.3 (based on 400 Amp rating)			
Contact Stability:	BS 7656:1993+A1:2013 Part 7.2.1.101 (based on 400 Amp rating)			
Dielectric Properties:	BS 7656:1993+A1:2013 Part 7.2.3 & Part 8.3.3.4			
Overload & Short Circuit:	BS 7656 Part 7.2.2 and 7.2.5 (based on 400 Amp rating)			
Terminals:	BS 7656:1993+A1:2013 Part 7.1.8 (up to 185mm^2 conductors)			
Fuse-carrier: (without fuse-link)	BS 7656:1993+A1:2013 Part 7.1.3.101 (suitable for fuse-link to BS88-2 Type "L", 82mm fixing centres)			

Meter tail protectors: Encapsulated connector block (Section 3.9)				
General	**Clause / Requirements**	**Conformance Code**	**Evidence Reference**	**Remarks / Comments**
Integral solid or filled box type unit made from insulated material to:-				
Impact:	BS 7657:2022 Part 9.2.2.1			
Insulating and tracking:	BS 7657:2022 Part 8.2.3.1			
Flammability:	BS 7657:2022 Part 9.2.1.1			
Temperature Rise Test:	BS 7657:2022 Part 8.2.2.1 Table 1			
Colour:	Black or Grey			
Security:	Prevent access to unused cut-out terminals			
Conductors:	25mm^2 Cu conductors & insulated "lead in's"			
Interface between:	1 phase meter to BS EN 62053-24:2015 + A1:2017 & cut-outs to BS 7657:2022			

Appendix 4 – Addendum to Supplier Requirements

To enable the Company to install the product(s) in accordance with the manufacturer's recommendations the Tenderer should provide full instructions detailing the manufacturer's recommended method of installation of each tendered product with due consideration, where applicable, to the range of application.

Where the product(s) are considered to be suitable for a range of applications then the full scope of application within the range should be provided by the Tenderer for each tendered product.

The tooling costs associated with the handling, installation, inspection, maintenance, repair and decommissioning of the product(s) is crucial to the Company's assessment of the product viability. To enable the Company to understand and assess the cost of required tooling the Tenderer should provide full details of the tooling recommended for use by the manufacturer for the purpose of handling, installation, commissioning, inspection, maintenance, repair and decommissioning of each tendered product. Where available the Tenderer should provide indicative prices applicable to the recommended tooling.

All cut-outs must have successfully passed all of the tests described in BS 7657:2022.

If a special tool is required to affix the unit then this shall be stated at the time of tender.

All cut-out types shall be permanently 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.

Appendix 5 – Technical Information Check List

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