



Electricity Specification 315

Issue 3

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Pole Mounted Auto Reclosers and Auto Sectionalisers

Contents

- 1 Scope
 - 2 Definitions
 - 3 General Requirements for Approval and Testing
 - 4 Requirements for Type and Routine Testing
 - 5 Performance Requirements
 - 6 Technical Requirements
 - 7 Technical Support and Training
 - 8 Drawings and Maintenance Instructions
 - 9 Disposal of Switchgear and/or its Components
 - 10 Manual Handling
 - 11 Failure, Modes, Effects and Cause Analysis (FMECA)
 - 12 Documents Referenced
 - 13 Keywords
- Appendices

Approved for issue by the Technical Policy Panel

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Issue and Amendment Summary

Amendment No. Date	Brief Description and Amending Action
0 01/03/97	<p>Issue 1</p> <p>First Issue</p> <p>Prepared by: P Whittaker</p>
0 04/02/08	<p>Issue 2</p> <ul style="list-style-type: none"> • Latest Template Applied • Technical detail updated to reflect latest national and international specifications <p>Prepared by: G Bryson</p> <p>Approved by the Technical Policy Panel and signed on its behalf by:</p>
0 09/01/17	<p>Issue 3</p> <ul style="list-style-type: none"> • Latest Template Applied • Technical reference detail updated to reflect latest national and international specifications. • Section 3.6 updated to 40years life expectancy. • Section 5 updated to include ENA TS standards. Title changed to include standards as well. • Section 6.1 updated to include remote gas level monitoring and Bluetooth option for site checking. • Section 6.3 update to include remote battery monitoring. • Section 6.7 updated on CT requirements. • App B updated to include change in section 5. <p>Prepared by: M A Kayes</p> <p>Approved by the Technical Policy Panel and signed on its behalf by: Steve Cox, Director of Engineering and Technical.</p>

POLE MOUNTED AUTO RECLOSERS AND AUTO SECTIONALISERS

1. SCOPE

This Specification covers the requirements for pole mounted auto reclosers and auto sectionalisers for use on the 11kV and 6.6kV electricity distribution network operated by Electricity North West Limited, hereinafter referred to as Electricity North West. The switchgear can be controlled locally and remotely in either stand alone application or as part of a distribution automation scheme.

2. DEFINITIONS

Approval:	Sanction by the Electricity North West Plant Policy Manager that specified criteria have been satisfied.
Contract:	The agreement between Electricity North West and the Contractor for the execution of the Works including therein all documents to which reference may properly be made in order to ascertain the rights and obligations of the parties under the said agreement.
Contractor:	The person or person's firm or company, including personal representatives, successors and permitted assigns, whose Tender has been accepted by Electricity North West.
ENAS TS	Energy Networks Association Technical Specification.
Specification:	The Specifications and schedules (if any) agreed by the parties for the purpose of the Contract.
Sub-Contractor:	Any person (other than the Contractor) named in the Contract for any part of the Works or any person to whom any part of the Contract has been sub-let with the consent in writing of the Electricity North West Plant Policy Manager, and the legal representatives, successors and assigns of such person.
Supplier:	Any person or person's firm or company who supplies goods to Electricity North West or to its contractor.
Tender:	An offer in writing to execute work or supply goods at a fixed price.
Tenderer:	The person or person's firm or company, including personal representatives, successors and permitted assigns, invited by Electricity North West to submit a Tender.
Words:	Words importing persons shall include firms and corporations; words importing the singular only, also include the plural, and vice versa where the context requires.
Work:	All materials, labour and actions required to be provided or performed by the Contractor under the Contract.
Writing:	Any manuscript, typewritten or printed statement under seal or hand as the case may be.
EIDMT:	Extremely Inverse Definite Minimum Time. Extremely Inverse (Type C) protection relay characteristic curve as defined in BS

EN60255-151:2009

- IDMT:** Inverse Definite Minimum Time. Standard Inverse (Type A) protection relay characteristic curve as defined in BS EN60255-151:2009
- VIDMT:** Very Inverse Definite Minimum Time. Very Inverse (Type B) protection relay characteristic curve as defined BS EN60255-151:2009

09/01/17

3. GENERAL REQUIREMENTS FOR APPROVALS AND TESTING

3.1 Product not to be Changed

No change in the product, packaging or labelling shall be made after Approval has been granted without prior notice to the Electricity North West Plant Policy Manager, and receipt of a written agreement to the proposed change from the Electricity North West Plant Policy Manager.

3.2 Electricity North West Technical Approval

- 3.2.1 The Tenderer shall submit, with this Tender, proposals for testing which will demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, compliance with this Specification. Such tests shall be carried out without expense to Electricity North West.
- 3.2.2 Alternatively, the Tenderer may submit technical reports and other data that he considers will demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, compliance with this specification. Acceptance of this evidence shall be at the discretion of the Electricity North West Plant Policy Manager but will not be unreasonably withheld.
- 3.2.3 Approval shall be 'factory specific' and is not transferable to another factory without the written approval of the Electricity North West Plant Policy Manager.
- 3.2.4 The supplier and product shall comply with all the relevant requirements of Electricity North West documents EPD311 and CP311.

3.3 Quality Assurance

- 3.3.1 The Tenderer shall confirm whether or not approval is held in accordance with a Quality Assurance Scheme accredited under ISO 9000. If not, he shall submit a statement of the quality assurance procedures employed to control the quality of the product, including the performance of Suppliers and Sub-Contractors.
- 3.3.2 The right is reserved for the Electricity North West Plant Policy Manager to require, from time to time, the repeat of such tests as he may deem to be reasonably necessary to demonstrate continued compliance with the Specification.
- 3.3.3 The Tenderer shall submit, with his Tender, a list of tests and inspections which are carried out on the product prior to despatch which shall demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, fitness for installation and service.

- 3.3.4 The Tenderer shall provide free of charge to Electricity North West such samples as may, in the opinion of the Electricity North West Plant Policy Manager, be reasonably required for inspection and/or retention as quality control samples. The Electricity North West Plant Policy Manager will confirm the requirement for samples at the time of Tendering.
- 3.3.5 The right is reserved for the Electricity North West Plant Policy Manager to make, from time to time, such inspections of the Tenderer's facilities as he may deem to be reasonably necessary to ensure compliance with this Specification and any Contract of which it forms a part.
- 3.3.6 The Tenderer shall submit, with his Tender, such details of product packaging disposal, as will enable Electricity North West to comply with the requirements of BS EN ISO 14001: 2015- Environmental Management Systems.

3.4 Formulation

The Tenderer shall submit, with his Tender, such details of the formulation and use of the product and associated substances as will enable Electricity North West to comply with the obligations of the Health and Safety at Work Act 1974 and the Control of Substances Hazardous to Health Regulations 2002, in the use, storage and disposal of the product. The Tenderer may stipulate, prior to submission of such information, that he requires it to remain confidential and the Electricity North West Plant Policy Manager will, if requested, confirm his agreement to this prior to receipt of the information.

3.5 Identification Markings

- 3.5.1 The Tenderer shall submit, with his Tender, details of markings which it is proposed to apply to the product or packaging to identify manufacturing batches or items. The forms and content of such markings shall be subject to the Approval of the Electricity North West Plant Policy Manager, and shall in all cases include the Electricity North West Approved Description and Commodity Code Number.
- 3.5.2 The Tenderer shall submit, with his Tender, such details of marking gross weight on components, assemblies and packages, as will enable Electricity North West to comply with the Health and Safety Manual Handling Operation Regulations 1992, for components, assemblies and packages supplied with a gross weight over 1kg. The forms and content of such markings shall be subject to the Approval of the Electricity North West Plant Policy Manager.

3.6 Minimum Life Expectancy

The minimum life expectancy of all products covered by this Specification is 40 years.

3.7 Product Conformity

Preference will be given to those suppliers who can provide suitable Product Conformity Certification to a recognised or specified standard, or an equivalent certification.

Switchgear shall at the time of Tender have a valid Approval Notice or Notice of Conformity as issued by the Electricity Network Association Switchgear Assessment Panel. Copies of Approvals Certificates and Notices of Conformity shall accompany the Tender.

4. REQUIREMENTS FOR TYPE AND ROUTINE TESTING.

The Electricity North West Plant Policy Manager shall set out the requirement of the following tests to be carried out by the Supplier at the Supplier's cost.

4.1 Requirement for Type Tests at the Supplier's Premises

These are a series of one-off type tests, which are carried out to ensure the satisfactory performance of the product design, under extremes of operating stresses, and of endurance, as may be appropriate, to be determined by the Electricity North West Plant Policy Manager.

These may or may not be destructive tests.

4.2 Requirement for Routine Tests at the Supplier's Premises

These tests may be required to be carried out on every individual unit or component, as specified, or at some regular frequency to be determined by the Electricity North West Plant Policy Manager.

The results of these tests may be required to be supplied to Electricity North West with each unit purchased or retained for inspection, at a period to be determined by the Electricity North West Plant Policy Manager.

5. STANDARDS AND PERFORMANCE REQUIREMENTS

The equipment shall comply with the requirements of ENA TS 41-36, except where varied by, or supplemented with, the requirements specified elsewhere in this specification. Equipment that complies with ENA TS 41-26 previously approved for use in Electricity North West will also be considered.

09/01/17

It shall be designed for minimum maintenance and it shall be possible to connect and disconnect it using "Live Line" techniques. Demonstration of compliance with these requirements shall be given by the Tenderer upon request.

Preference will be given to units offering extended maintenance free periods of service; the supplier shall state the capability of the equipment in terms of the maximum allowable fault operations before maintenance.

In the evaluation of Tenders full regard will be taken of lifetime costs.

5.1 Variations

Any innovative features which are a departure from the specification but will assist in the improvement of the reliability of supplies to customers and/or the reduction in operating costs shall be brought to the attention of Electricity North West at the time of Tender or at anytime within the period of the Contract

The Tenderer shall complete the conformance declaration sheet in Appendix B.

5.2 Equipment Ratings

Table 1 - Equipment Ratings

	Voltage	Normal Current	Short circuit current
Auto Recloser	12 or 7.2 kV	400 A	12 kA at 12 kV preferred
Auto Sectionaliser	12 or 7.2 kV	400 A	12 kA at 12 kV preferred

5.3 Operating Temperature Range

All equipment shall be capable of operating within the temperature range -30°C to +50°C.

6. TECHNICAL REQUIREMENTS

6.1 Arc Interruption Medium

The arc interruption medium shall be non-oil. In the case of SF₆ filled equipment, means shall be provided for monitoring the gas pressure and for topping up. Low Gas Pressure warning and monitoring devices shall be fitted, with failure announced locally and remotely. Local Gas Pressure monitoring should ideally be from ground level to remove the need for climbing to confirm gas levels. The use on Bluetooth is considered acceptable. Full monitoring details and methods used shall be submitted with the Tender. The maximum and minimum permissible gas pressure values shall be permanently marked, for example as absolute pressure values in PSI or N/m² or as red and green zones on a Bourdon tube gauge.

09/01/17

Low pressure lockout facilities shall be provided, unless the SF₆ gas is used solely for insulation purposes and the equipment has been tested for satisfactory operation with the gas at atmospheric pressure.

6.2 Mounting

Equipment shall be supplied complete with bracket(s) and fixing(s) for mounting on single wood poles. The mounting bracket shall be supplied with two 22mm diameter holes vertically spaced on 280mm centres. Other forms of mounting brackets may be acceptable, subject to approval by Electricity North West.

At the time of Tendering, information shall be provided on the method of transportation including lifting, handling, mounting upon and removal from the pole. These shall comprise method statements, a certificate covering the testing of lifting attachments and general safety guidance. If a transportation carriage is required, the fact shall be stated and a price quoted in the pricing schedule.

6.3 Batteries

The secondary batteries for the operating mechanisms and the control/protection systems may be separate or combined.

The power source for the charging device may be derived from the network through Voltage Transformers (VTs), from solar cells or exceptionally from a local 400/230V, 50Hz supply network. However, equipment using this last source will be precluded from selection for certain locations.

The operational lifetime of secondary batteries shall be at least 10 years. The capacity of the secondary batteries shall be such that the equipment remains fully functional for at least two weeks, even if the charging devices should fail. The test duty cycle for this two week period shall be: quiescent for 336 hours, followed by OPEN-3s-CLOSE-3s-OPEN-3s-CLOSE.

Charger fail warning and battery monitoring devices shall be fitted, with failure announced locally and remotely.

09/01/17

Information covering battery handling, maintenance and exchange together with guidance on the disposal of batteries shall be included in the Tender documents. Preference will be given to units allowing batteries to be changed without the need to de-energise the primary switches. Disconnection of the batteries for maintenance or replacement shall not cause loss of stored data.

6.4 Mechanism

Facilities shall be provided for both local and remote operation by means of stored energy. Electrical operation of the operating mechanism's motors or solenoids shall be provided.

The power supplies to the mechanisms shall be independent of the presence of a high voltage supply to the units.

Initiation of the operating mechanisms shall be either local manual, remote or by the action of the local protection system.

6.5 Operational Safety Padlocking

The equipment shall be lockable, by means of a safety padlock, to prevent operation, whether it be in the OPEN or CLOSED position. Exceptionally and subject to the approval of Electricity North West, this may be achieved by the removal of a link or coupling. If this is the case, facilities shall be provided to store the links or couplings within the control cabinet.

The power supply to the prime movers of the actuators shall be provided through lockable switches or removable fuse and link arrangements, providing double pole isolation.

6.6 Voltage Gradient and Protection from System Overvoltages

The supplier shall state the requirements for system voltage grading to ensure satisfactory operation of the equipment and its overvoltage protection devices.

The equipment shall allow for the fitting of surge arresters to both the supply and controlled side terminals. The particular surge arresters to be used shall be approved by Electricity North West.

6.7 Current Transformers

The Current Transformers (CTs) shall be of ratio 200/1, complying with BS EN 61869-1:2009 and BS EN 61869-2:2012 and the CT shall have a continuous thermal rating to match the normal current rating of the recloser. The CTs shall be suitable for operation throughout the loading range. If multiple ratio CTs are offered the ratio selected will be 200/1 A unless specified otherwise. The CT shall have a short time rating to match the fault rating of the recloser. All ratings shall be marked on a rating plate.

09/01/17

6.8 Protection

The protection settings shall include the following ranges.

Table 2 - Protection Ranges And Available Settings

Condition		Range
IDMT	Phase fault	20 – 200% (minimum) in 20% steps.
	Earth fault	10 – 80% (minimum) in 10% steps.
	Sensitive Earth fault	1 –15% in 1% steps with added time delay option from 0 to 180 s.
Instantaneous	Phase fault	100 to 300% of minimum trip in steps of 10% 300 to 2000% of minimum trip in steps of 100%
	Earth fault	As Phase fault setting.
Sequence co-ordination with downstream devices must be provided		

Table 3 - Requirements For Protection Characteristics

Characteristic curves	Requirement
IDMT	To be provided in all cases, with available settings as Table 2.
Instantaneous	To be provided in all cases, with available settings as Table 2.
VIDMT	Optional.
EIDMT	Optional.
Time multipliers	0.1 to 0.5 in steps of 0.025, 0.5 to 2 in steps of 0.1, additional definite delay time to be stated.
Any setting curve is to be selectable for every trip, with individual trip settings and variable dead time on each trip.	

6.9 Controls

In this section LOCAL means from control cabinet mounted on the pole, REMOTE means via a Telecontrol/SCADA system.

Preferably, remote operation and indication shall be implemented by means of an additional module(s) forming an upgrade option that may be installed either at the time of initial purchase of the equipment or at a later date. If this is the case, the quotation shall include equipment with and without remote control and indication module(s) together with quotations for the supply only and supply, installation and commissioning of the control and indication module(s) at a later date.

If remote operation and indication is implemented, this will be the normal operational mode. However, controls shall be provided on the equipment, allowing local operation to be enabled and remote operation disabled.

Table 4 - Local And Remote Operational Requirements

	Auto Reclosers	Auto Sectionalisers
Local operation shall include:	<ul style="list-style-type: none"> • CLOSE • OPEN • Auto recloser OPERATIONAL / NOT OPERATIONAL • Earth Fault protection OPERATIONAL / NOT OPERATIONAL • Sensitive Earth Fault protection OPERATIONAL / NOT OPERATIONAL • Adjust protection sequence for Live Line working, that is, one instantaneous trip without a reclose • Protection ENABLED / DISABLED (CB CLOSE and LOCK IN) • Control LOCAL / REMOTE • CB OPEN and LOCK OUT 	<ul style="list-style-type: none"> • CLOSE • OPEN • Auto sectionaliser OPERATIONAL / NOT OPERATIONAL • Auto sectionaliser CLOSE and LOCK IN • Auto sectionaliser OPEN and LOCK OUT • Control LOCAL / REMOTE
Remote operation shall include:	<ul style="list-style-type: none"> • CLOSE • OPEN • Auto recloser OPERATIONAL / NOT OPERATIONAL • Earth Fault protection OPERATIONAL / NOT OPERATIONAL • Sensitive Earth Fault protection OPERATIONAL / NOT OPERATIONAL • Adjust protection sequence for Live Line working, that is, one instantaneous trip without a reclose • Protection ENABLED / DISABLED 	<ul style="list-style-type: none"> • CLOSE • OPEN • Auto sectionaliser OPERATIONAL / NOT OPERATIONAL • Auto sectionaliser CLOSE and LOCK IN • Auto sectionaliser OPEN and LOCK OUT

Both local and remote indications shall be provided to announce the successful changes of state associated with the control operations described above and in addition for auto reclosers only:

- Auto recloser TRIP
- Sensitive earth fault TRIP

6.10 Protection and Control Facilities

The uploading and downloading of information from the protection and control equipment shall be achievable from both a local operator interface and by a remote connection facility. The connection to the remote facility shall preferably be of serial format via a USB port. The methods of retrieval provided shall be stated at the time of Tender i.e. hand held data logger or LED display etc. Details of the protocol used for remote data transfer shall be provided at the time of delivery together with a licence, at no extra cost, allowing Electricity North West unrestricted use of the protocol for use in the future, in conjunction with its network management systems.

The following information shall be available from the protection and control equipment.

Local:

- Number of recloser or sectionaliser operations completed since installation
- Fault current magnitudes and duration, for each phase, for at least the last 25 recloser or sectionaliser operations.
- Present load current
- Operation (OPEN or CLOSE)
- Protection Settings (Auto reclosers only)
- Select individual protection feature, for example SEF (Auto reclosers only)
- Maximum demand within the past 12 months
- Contact wear on all three phases
- Battery condition indication

Remote:

- Indication of status (OPEN or CLOSED)
- Indication of Current and Voltage (three digits for current and five digits for voltage)
- Operation (OPEN or CLOSE)
- Protection Settings (Auto reclosers only)
- Indication of battery status
- Select individual protection feature, for example SEF (Auto reclosers only)

Where the optional remote operation and indication module(s) are fitted, protection and control data shall also be transferable to and from suitable modules, which shall be subject to a separate contract. The Tender shall specify the details of any limitations applicable to this arrangement.

6.11 Pole Mounted Control Cubicles

Where equipment is fitted with a local control cubicle, the cubicle shall comply with the following requirements.

6.11.1 Design and Construction

Control cubicles and doors shall be robustly fabricated from stainless steel of minimum 18/8 quality, at least 1.22mm (18 S.W.G.) thick. Cubicles shall be fitted with two strong stainless steel brackets with two 22mm diameter holes vertically spaced on 175mm centres for pole mounting. Double skinned ventilated carcass construction is preferred.

Protection shall be provided to at least IP65 of BS EN 60529. Doors shall be capable of locking in accordance with ENA TS 41-36.

6.11.2 Provisions for Electricity North West communications modules

Cubicles shall provide adequate space for a Remote Telemetry Unit (RTU), batteries and communications modules.

6.11.3 Earthing

Provision shall be made for the connection of earth lugs with 12mm diameter holes (one earth lug per cubicle).

6.12 Remote Control

To effect operation by telecontrol the protection and control unit shall interface with suitable communication equipments, to be specified and provided under a separate contract. The Tenderer shall provide details of any limitations which may apply to this arrangement.

6.13 Umbilical Cables

The preferred length(s) for the umbilical cable are 4m and 6m.

It may be necessary to call for special lengths of umbilical cable. Tenderers shall specify in the pricing schedule the price per metre for these cables.

6.14 Terminations

Each bushing shall be provided with an M12 stud, standard nut, two flat washers and one lock washer.

The arrangement of the supply side and controlled side bushings and terminals shall facilitate the connection and disconnection of jumpers by "Live Line" techniques, without the need for jumper cutting. A demonstration of the means by which this requirement is met shall be provided.

6.15 Electromagnetic Compatibility

Equipment (including control and communication systems) shall comply with ENA TS 41-36. Calibration certificates shall be provided.

6.16 Handling of SF₆ and Decontamination Procedures

In certain situations it will be necessary to access enclosures where Sulphur Hexafluoride (SF₆) has been used for insulation and/or arc extinction e.g.

- switchgear modification to correct manufacturing or material defect
- examination following failure
- examination following leak of SF₆
- maintenance
- disposal of switchgear at end of life

Whilst Electricity North West has a procedure for safe decontamination of enclosures containing SF₆ it is not envisaged that Electricity North West will undertake such work except in an emergency. The original equipment manufacturer, its successor or a suitable contractor, will be expected to assist as necessary in any such work and consequent actions. The supplier shall describe how it intends to discharge this obligation.

When the equipment reaches the end of its working life it will have to be decontaminated and disposed of safely. It is important that this is considered in the design of the equipment. Tenderers shall include a detailed procedure by which each type of switchgear offered under this Tender may be safely de-gassed and decontaminated prior to disposal at the end of its life. This applies to enclosures that have contained SF₆ as an insulator as well as those where SF₆ has been used as an arc interrupting medium.

It is a requirement of this Specification that Tenderers shall have procedures and safe working practices in place to:

- a) Decontaminate the equipment and site as necessary and recover switchgear for examination/disposal as required.
- b) Decontaminate the equipment on site or elsewhere, as required to carry out modifications
- c) Decontaminate the equipment prior to removal

Tenderers shall provide the following information: -

1. Mass of SF₆ in kg for each type and variant of switchgear offered.
2. Details of procedures for handling new and contaminated SF₆.
3. Details of procedures for decontaminating failed SF₆ equipment and the associated sites/substations.
4. Details of procedures for decontaminating SF₆ equipment prior to carrying out modifications.
5. Details of the procedure by which each type of switchgear offered under this Tender may be safely de-gassed and decontaminated prior to disposal as the end of its life and disposed of in accordance with current waste transfer and disposal directives. This shall cover enclosures (a) where SF₆ is used as an insulator and (b) where SF₆ is used as an arc interrupting medium.

7. TECHNICAL SUPPORT AND TRAINING

The supplier shall provide technical support and a source of spares over the lifetime of the equipment, including such upgrades to the application and operating systems software as may become available. If an annual charge is required for this service it shall be stated in the Tender document.

The training requirements relating to system configuration, commissioning, ongoing support and system development shall be provided with the Tender documents.

If the switchgear is of a type not previously supplied to Electricity North West, one unit will be required to be delivered to the Electricity North West Training Centre, free of charge, for the purposes of training. The Tenderer will also be required to provide training for Electricity North West instructors on the installation and operation of the unit.

8. DRAWINGS AND MAINTENANCE INSTRUCTIONS

General arrangement drawings shall be submitted with the Tender, to a scale and level of detail that will allow a technical assessment to be made.

A copy of all installation, operation and maintenance manuals shall be submitted with the Tender. These manuals shall, preferably, be on a CD in Adobe Acrobat (pdf) format. The maintenance manual shall include recommended schedules of maintenance. The supplier shall also provide details of field support including priced options for “full supplier maintenance” and “second line supplier maintenance”.

9. DISPOSAL OF SWITCHGEAR AND/OR ITS COMPONENTS

Tenderers shall provide details on how to dispose of the switchgear and/or its components to ensure compliance with the various waste management regulations [Environmental Protection Act 1990 (Part II); Special Waste Regulations 1996; Waste Management Licensing Regulations 1994; Control of Pollution (Amendment) Act 1989; Waste Electrical and Electronic Equipment (WEEE) Regulations 2006]

10. MANUAL HANDLING

Tenderers shall supply a Risk Assessment on the manual handling required for installation and operation of the switchgear.

11. FAILURE, MODES, EFFECT AND CAUSE ANALYSIS (FMECA)

Tenderers shall carry out a FMECA or equivalent study for each type of equipment offered. A copy of this study shall be provided with the Tender documents.

12. REFERENCES

Health and Safety at Work Act 1974

Control of Substances Hazardous to Health Regulations 2002

Manual Handling Operations Regulations 1992

Environmental Protection Act 1990

Special Waste Regulations 1996

Waste Management Licensing Regulations 1994

Control of Pollution (Amendment) Act 1989

Waste Electrical and Electronic Equipment (WEEE) Regulations 2006

BS EN60255-151:2009 Measuring relays and protection equipment. Functional requirements for over/under current protection

BS EN 14001 Environmental Management Systems Specification with Guidance For Use

BS EN 61869-2:2012 Instrument transformers. Additional requirements for current transformers

BS EN 60529 Specification for Degrees of Protection Provided by Enclosures (IP code)

ISO 9000 Quality Systems - Guide to Dependability Programme Management

ENA TS 41-36 Distribution Switchgear for service up to 36kV (cable and overhead conductor connected)

EPD311 Approval of Equipment

CP311 Equipment Approval Process

09/01/17

13. KEYWORDS

Automation; Plant; Overhead; Network; Protection; Switchgear

APPENDIX A

SCHEDULE A

LIST OF SUB-CONTRACTORS (TO BE COMPLETED BY TENDERER)

Name of Sub-Contractor	Item to be Supplied

Name of Tenderer:

SCHEDULE B

TECHNICAL SCHEDULE (TO BE COMPLETED BY THE TENDERER)

1. State Notice of Conformity or Approval Notice/Reports Nos. held for the equipment
2. What evidence is available to show the equipment is suitable for use on a 21.9kA system?

APPENDIX B

SELF CERTIFICATION CONFORMANCE DECLARATION

CLAUSE BY CLAUSE CONFORMANCE WITH THIS ES

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/service
- C1 = The product/service conforms fully with the requirements of this clause
- C2 = The product/service conforms partially with the requirements of this clause
- C3 = The product/service does not conform to the requirements of this clause
- C4 = The product/service does not currently conform to the requirements of this clause, but the manufacturer proposes to modify and test the product in order to conform.

Manufacturer:

Product/Service Description

Product /Service Reference:

Assessor

Name:	Company s	Signature	Date
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Clause/Sub- Clause		Requirement	Conformance Code	Remarks (Must be completed if Conformance Code is not C1)
3	1	Product not to be changed		
3	2	Electricity North West Technical Approval		
3	3	Quality Assurance		
3	4	Formulation		
3	5	Identification Marking		
3	6	Minimum Life Expectancy		
3	7	Manufacturers already Approved		
3	8	Product Conformity		
4	1	Requirement for Type Tests at the Suppliers' Premises		
4	2	Requirement for Routine Tests at the Suppliers' Premise		
4	3	Requirement for On Site Tests		
5		Standards and Performance Requirements		
5	1	Variations		

Clause/Sub-Clause		Requirement	Conformance Code	Remarks (Must be completed if Conformance Code is not C1)
5	2	Equipment Ratings		
5	3	Operating Temperature Range		
6	1	Arc Interruption Medium		
6	2	Mounting		
6	3	Batteries		
6	4	Mechanism		
6	5	Operational Safety Padlocking		
6	6	Voltage Gradient and Protection from System Overvoltages		
6	7	Current Transformers		
6	8	Protection		
6	9	Controls		
6	10	Protection and Control Facilities		
6	11	Pole Mounted Control Cubicles		
6	11.1	Design and Construction		

Clause/Sub- Clause		Requirement	Conformance Code	Remarks (Must be completed if Conformance Code is not C1)
6	11.2	Provisions for Electricity North West Communications Modules		
6	11.3	Earthing		
6	12	Remote Control		
6	13	Umbilical Cables		
6	14	Terminations		
6	15	Electromagnetic Compatibility		
6	16	Handling of SF ₆ and Decontamination Procedures		
7		Technical Support and Training		
8		Drawings and Maintenance Instructions		
9		Disposal of Switchgear and/or its components		
10		Manual Handling		
11		Failure Modes, Effect and Cause Analysis (FMECA)		
Schedule A		List of Sub-Contractors		
Schedule B		Technical Schedule		

Additional Notes: