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Electricity Specification 309

Issue 4 October 2021

Locks for Substations and Associated Plant

Amendment Summary

ISSUE NO. DATE	DESCRIPTION
Issue 3 **June 2021**	Periodical review and new template applied. No Technical Changes. Prepared by: Matthew Kayes Approved by: Policy Approval Panel and signed on its behalf by Steve Cox, Engineering and Technical Director
Issue 4 **October 2021**	Appendix C diagram updated to make letters D. E and F clearer. Prepared by: Matthew Kayes Approved by: Policy Approval Panel and signed on its behalf by Steve Cox, Engineering and Technical Director

Contents

1 Introduction

A substation and plant locking system is essential for security reasons and to ensure that operational procedures can be applied. This electricity specification sets out the requirements for the locking hardware (software, programming devices, locks and keys) to be used within Electricity North West Limited (hereinafter referred to as Electricity North West). Electricity North West' policy on the locking of substations is provided in EPD603 - Substation Locking.

2 Scope

This specification covers the locking software and hardware requirements for substations and associated plant operating at LV, 6.6kV, 11kV, 33kV and 132kV. Purpose Safety locks are outside of the scope of this specification and are covered in CP606 - Operations Manual. However, the unique switchgear locks that also serve as safety locks in 132kV and 33kV substations are included.

3 Definitions

Approval	Sanction by the Electricity North West Plant Policy Manager that specified criteria have been satisfied.
Contractor	The person or person's firm or company, including personal representatives, successors and permitted assigns, who's Tender has been accepted by Electricity North West.
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.

4 General Requirements for Approvals and Testing

4.1 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.

4.2 Electricity North West Technical Approval

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.

Alternatively, technical reports and other data may be submitted that the Tenderer 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.

Approval shall be 'factory specific' and is not transferable to another factory without the written Approval of the Electricity North West Plant Policy Manager.

The Supplier and product shall comply with all the relevant requirements of Electricity North West documents CP311.

4.3 Quality Assurance

The Tenderer shall confirm whether or not Approval is held in accordance with a quality assurance scheme accredited under ISO 9000. If not, the Tenderer 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.

The right is reserved for the repeat of such tests, from time to time, that the Electricity North West Plant Policy Manager may deem to be reasonably necessary to demonstrate continued compliance with the Specification.

The Tenderer shall submit, with the 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.

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.

The right is reserved for inspections to be made of Tenderer's facilities, from time to time, as deemed reasonably necessary by the Electricity North West Plant Policy Manager to ensure compliance with this Specification and any Contract of which it forms a part.

The Tenderer shall submit, with the Tender, such details of product packaging disposal, as will enable Electricity North West to comply with the requirements of BS EN ISO 14001 - Environmental Management Systems.

4.4 Formulation

The Tenderer shall submit, with the 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 it is to remain confidential, and the Electricity North West Plant Policy Manager will, if requested, confirm agreement to this prior to receipt of the information.

4.5 Identification Markings

The Tenderer shall submit, with the 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.

The Tenderer shall submit, with the 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.

4.6 Minimum Life Expectancy

The minimum life expectancy of all products covered by this Specification is 20 years.

4.7 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.

5 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.

5.1 Requirement for Type Tests at Suppliers 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.

5.2 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.

5.3 Requirement for Site Tests

These will normally be included within the scope of onsite commissioning but may be included if appropriate.

6 Technical Requirements

6.1 General

All new locks and keys shall conform to this specification and only be obtained from Approved suppliers.

Where required, padlocks shall be tested in accordance with the appropriate clauses in BS EN 12320 and Euro Profile Cylinder locks shall be tested in accordance with the appropriate clauses in BS EN 1303.

It is important that locks and keys are fit for purpose. Essentially this means that they should be:

(a) Capable of providing the desired level of security

(b) Corrosion resistant

(c) Easy to use

(d) Reliable in service

(e) IP57 rated on the Electromechanical Locking.

The locking system shall have Patent Protection for at least 20 years from the date of purchase.

The locking system shall be able to operate in a Grand master suite locking hierarchy as detailed in Appendix B and EPD603. It shall operate in a top down level of operation and shall not be able to operate in the opposite direction.

The Mechanical Locks shall be operable using both the Mechanical and Electromechanical Keys. Electromechanical Differ Keys shall not be able to open any of Electricity North West Mechanical Locks; they

shall only open Mechanical Locks on the same Key Differ. The Electromechanical Locks shall be only operable by an Electromechanical Key.

6.2 Electromechanical Door and Gate Locks

Electromechanical locking shall be used on all Grid and Primary substations plus any Distribution sites of high priority or house primary style plant. This section sets out the requirements for Electromechanical locking. Appendix A demonstrates the preferred high-level system overview.

6.2.1 Software

This shall be dedicated software for the Electromechanical Locking System.

Electricity North West shall have the ability to operate the required software 'in house'. The Supplier shall provide software support where necessary. The Supplier will specify the required operating parameters and minimum programming PC specification.

The software shall be Microsoft Windows XP based as a minimum with the option to use Microsoft Windows 7 in the future.

The Tenderer shall submit details with their tender whether the Software uses a central management database and how the data is backed up. Where central management databases use web interfaces the Tenderer shall detail the browser requirements or whether executable 'fat client' software is required.

The Tenderer shall submit with their Tender all policies and procedures for security testing and approval and maintenance policies and procedures for third party software integrated in the Tenderer's system.

The Tenderer's system shall support use of anti-virus software and shall supply evidence of this with their Tender.

Components for which the installation of anti-virus software is not technically possible shall be listed in the Tender and other mitigating controls shall be documented and implemented to reduce the risk of infection.

The Tenderer shall review its patching policy at least annually to address new threats and vulnerabilities. The Tenderer shall submit this policy with the Tender.

The Tenderer shall qualify all relevant software patches and service packs for use on its system during its supported lifetime including security patches that are released by the manufacturer of the operating system and third-party software used on their system with the Tender.

The Tenderer's system shall provide the capability to remove or disable unused default system accounts; e.g., Vendor "back-door", "super-user" and "guest" accounts.

The Tenderer's system shall provide the capability to incorporate user authorisation as mandated by Electricity North West Policy i.e. ideally to integrate with Corporate Active Directory or if self-contained then password shall be 8 characters and complex with configurable expiry date.

The Tenderer's system shall provide the capability to enable role-based access features (e.g., separate passwords for administrators and operators).

6.2.1.1 High Level Design

The Tenderer shall provide Electricity North West with a High-Level Design as well as a overview description on how the system works and the interfaces required which shall include all component parts. This shall be provided for both 'in house' and any third party hosted solutions.

All Tenderers responses shall clearly state and detail the specific location of all servers, PCs and Programming Devices, the software, the hardware specification and operating systems required for both the in house and third party hosted solutions.

The Tenderer shall submit details on any third party hosted solutions and shall detail all security policies and standards implemented to provide Electricity North West with confidence that all data will be safe and secure from 'hackers' if it is hosted on third party servers.

The Tenderer shall ensure that the system shall have no single point of failure and have the capability to operate independently should key parts of the system suffer partial outages.

The High Level Design shall include the following information:-

(a) Deployment Options:- Including control machines / servers.

(b) Master Data: – Where the master data is stored.

(c) Data Replication and Synchronisation:- Including data replication between the application and remote terminals.

(d) Communication:- Including between the Programming PC and Programming Devices etc. This shall detail all protocols and data flows.

(e) High Availability and Resilience:- Clearly detailing how resilience is achieved and how the system will operate during scenarios such as partial outage and loss of primary data as a minimum.

(f) Disaster Recovery:- Clearly detailing how the system recovers from total loss of data, how the system maintains usability by the end user, whether manual override of the electromechanical locking is possible and how the data is replicated.

(g) Security:- This includes data and communications as a minimum.

(h) Revocation and disabling of Electromechanical Keys:- should they be lost or stolen.

(i) Flexibility and Expansion:- This shall include whether the system could be expanded at a later date and include building access control.

(j) The Tenderer shall detail how they meet service level agreements and operating level agreements.

6.2.1.1 High Level Design

The Tenderer shall provide Electricity North West with timely information about cyber security vulnerabilities in the Tenderer's supplied systems and services.

The Tenderer shall provide Electricity North West with timely support and advice to the Electricity North West in the event of cyber security incidents involving the Tenderer's systems or services.

The Tenderer shall document the system hardening requirements for its system in a distributable hardening guide with their Tender, which includes at least the following:

(a) Removal or non-installation of software and functionality that is not required by the Electricity North West, nor for the intended functional purpose of the system.

(b) Protection of physical and logical access to diagnostic and configuration ports.

(c) Disabling all unused ports on switches and routers to assist in preventing unauthorized access to the network infrastructure.

(d) Proper maintenance processes to maintain the system-hardened state during the system lifetime.

6.2.2 Hardware

6.2.2.1 Programming PC

This will be supplied by Electricity North West which shall have the System Software installed.

The Tenderer shall detail the minimum specification to run the system software as per Section 6.2.1.

6.2.2.2 Master Programming Devices (PD)

The Supplier shall provide a minimum of two programming devices with every Tender.

The Master PD shall connect to the Programming PC using a standard USB connection.

The Master PD can be mains powered or self powered from the USB connection.

A Control Key or similar shall be used in conjunction with the Master PD and Master Programming Control Key to be programmed to prevent non-authorised programming.

6.2.2.3 Wall Mounted Programming Devices

Wall Mounted PDs are required in all of Electricity North West Depots and Offices.

No data shall be stored on the Wall Mounted PD and high level encryption shall be utilised to connect with the remote server.

The Wall Mounted PD shall be either mains powered or powered by Power over Ethernet (PoE).

The Wall Mounted PD shall be loaded with a secure certificate and hard coded into the locking system.

The Supplier shall detail the Wall Mounted PD mounting details with the Tender.

6.2.2.4 Mobile Programming Devices

The Supplier shall provide details of Mobile PDs that can be used with the locking system.

No data shall be stored on the Mobile PD and high level encryption shall be utilised and security enforced at all times when connected with the remote server to eliminate cyber security risks and vulnerabilities.

The Mobile PD shall be powered by “AA” or “AAA” batteries.

The Mobile PD shall be able to link to the GSM Network via a Bluetooth Connection to a Mobile Phone with a Unique Bluetooth Personal Identification Number.

6.2.2.5 Master Programming Control Key

Only one Master Programming Control Key shall exist on the system.

The Master Programming Control Key shall be primarily used to create new Programming Control Keys only.

The Master Programming Control Key shall be used with the Master Programming Device to access the Programming Software on the Programming PC.

The Master Programming Control Key shall be able to retrieve audit trails from all Electromechanical Padlocks and Cylinders.

A battery change device shall be provided to enable ease of changing the battery.

Key marking shall be as per Section 6.4.

6.2.2.6 Programming Control Key

The Programming Control Key shall be used with the Master Programming Device to access the Programming Software on the Programming PC. The access level shall be set by the Master Programming Control Key.

A maximum of 99 Programming Control Keys shall be permitted on the system allowing a wide area of administration if required.

The Programming Control Key shall be able to retrieve audit trails from all Electromechanical Padlocks and Cylinders.

A battery change device shall be provided to enable ease of changing the battery.

Key marking shall be as per Section 6.4.

6.2.2.7 Programmable Users Key

This shall be an Electromechanical type allowing the operation of both Electronic and Mechanical Padlocks.

The Users Key shall be programmable to be specific lock(s) and time specific. It shall have 50 weekly time periods as a minimum and collect 1800 recent audit trails from the cylinders and padlocks as a minimum.

The keys shall be long life lithium battery powered and the battery shall last for at least 20000 operations or 2 years as a minimum.

The keys shall produce an audible sound when the battery reaches a minimum number of operations (100).

A battery change device shall be provided to enable ease of changing the battery.

The keys shall be IP57 rated as a minimum.

It shall be possible to open all Mechanical Locks including all Mechanical differ locks.

Key marking shall be as per Section 6.4.

6.2.2.8 Programmable Users Differ Key

This shall be an Electromechanical type allowing the operation of both Electronic and Mechanical Padlocks on the same Key Differ. It shall not be possible to open any of Electricity North West owned locks.

The Users Key shall be programmable to be lock(s) and time specific. It shall have 50 weekly time periods as a minimum and collect 1800 recent audit trails from the cylinders and padlocks as a minimum.

The keys shall be long life lithium battery powered and the battery shall last for at least 20000 operations or 2 years as a minimum.

The keys shall produce an audible sound when the battery reaches a minimum number of operations (100).

A battery change device shall be provided to enable ease of changing the battery.

The keys shall be IP57 rated as a minimum.

6.2.2.9 Electromechanical Padlocks

All Electromechanical Padlocks shall be manufactured from either Boron Alloy or Stainless Steel.

The Electromechanical Padlocks shall be Weatherproof and IP57 as a minimum.

The Electromechanical padlocks shall be self locking, fully re-keyable, 6 disc cylinder type as a minimum.

The Electromechanical Mechanism shall take its power from the Users Key.

The Padlocks for use on all Grid and Primary Gates shall have a minimum BS EN 12320 Grade 5 Security Rating as a minimum.

The Padlocks for use on all Distribution Substations and Primary Substation Door Hasp Arrangement shall have a BS EN 12320 Grade 4 Security Rating as a minimum.

The Electromechanical Padlocks shall be operated by keys in Grand Master suite and shall have the ability to operate on a Key Differ system as per the Grand Master Suite Locking hierarchy diagram in Appendix B and EPD603.

Electromechanical Padlock marking shall be as per Section 6.4.

The Electromechanical Padlock shackle dimensions shall be as per Appendix C. The body dimensions shall be as close to the dimensions in Appendix C as possible.

6.2.2.10 Electromechanical Euro Profile Cylinders Locks

All Electromechanical Euro Profile Cylinders shall be manufactured from either Boron Alloy or Stainless Steel.

The Euro Profile Cylinder locks shall be Weatherproof and IP57 as a minimum.

The Electromechanical Mechanism shall take its power from the Users Key.

The Euro Profile locks for use on all Grid and Primary Doors shall have a minimum BS EN 1303 Grade 6 Security Rating and Grade 2 for Resistance to Attack as a minimum.

The Euro Profile locks for use on all Distribution Substation Doors shall have a minimum BS EN 1303 Grade 6 Security Rating and Grade 2 for Resistance to Attack as a minimum.

Electromechanical Euro Profile Cylinder Locks shall be operated by keys in Grand Master suite and shall have the ability to operate on a Key Differ system as per the Grand Master Suite Locking hierarchy diagram in Appendix B and EPD603.

Electromechanical Euro Profile Cylinder Lock marking shall be as per Section 6.4.

6.3 Distribution Substation Mechanical Door and Gate Locks

Mechanical locking shall be used on all Distribution substations however any Distribution sites of high priority or house primary style plant shall use Electromechanical Locking per section 6.2. This section sets out the requirements for mechanical locking.

6.3.1 Padlocks

Open shackle Boron Alloy or Stainless Steel weatherproof padlock for use on security applications

The Padlocks for use on all Distribution Substations shall have a BS EN 12320 Grade 4 Security Rating as a minimum.

Operated by keys in Grand Master Suite Locking hierarchy diagram in Appendix B and EPD603.

Mechanical Padlock marking shall be as per Section 6.4.

Ability to include Key Differs as required by Electricity North West.

6.3.1.1 Features

Self-locking, disc cylinder padlock type.

Snaplocking, key to unlock, 2 point self locking arrangement.

Fully re-keyable 6 disc cylinder as a minimum.

Boron Alloy or Stainless Steel sprung shackle.

6.3.1.2 Dimensions

See Appendix C for the dimensions.

6.3.2 Euro Profile Cylinder Locks

The Euro Profile locks for use on all Distribution Substation Doors shall have a minimum BS EN 1303 Grade 6 Security Rating and Grade 2 for Resistance to Attack as a minimum.

Shall be operated by keys in Grand Master suite and shall have the ability to operate on a Key Differ system as per the Grand Master suite locking hierarchy diagram in Appendix B and EPD603.

Euro Profile Cylinder Lock marking shall be as per Section 6.4.

6.3.3 Keys

The Mechanical locks shall be opened by either the Electromechanical or Mechanical Keys as per the Grand Master suite locking hierarchy diagram in Appendix B and EPD603.

Key marking shall be as per Section 6.4.

6.3.4 Mechanical Differ Keys

Mechanical Differ Keys shall only be able to open Mechanical Locks on the same differ suite.

Key marking shall be as per Section 6.4.

6.4 Markings and Colour Codes

6.4.1 Keys

Keys shall be marked by a unique system number issued by the Manufacturer. The unique mark shall include the key access level number.

Keys shall also have a sequential issue number starting at 00001 to allow Electricity North West to register and record who has been issued the key.

Keys shall also contain a coloured key bow insert to provide visual identification for its level of operation. An example of acceptable colouring is shown below:-

LEVEL OF OPERATION	KEY BOW INSERT COLOUR
1	Green
2	Orange
3	Yellow
4	Purple
5	Brown

6.4.2 Differ Keys

Differ Keys shall be marked by a unique differ system number issued by the Manufacturer. The unique mark shall include the key access level and differ number.

Keys shall also have a sequential issue number starting at 00001 to allow Electricity North West to register and record who has been issued the differ key.

Keys shall also contain a coloured key bow insert to provide visual identification for its level of operation as per Section 6.4.1.

6.4.3 Padlock Marking

Each Padlock shall be marked on the side and base of the padlock body with its level of operation as detailed in the grand master suite hierarchy.

Each Padlock shall have a unique number for Electricity North West to allocate to a specific location.

6.4.4 Euro Profile Cylinder Marking

Each Euro Profile Cylinder shall be marked on the face of the cylinder with its level of operation as detailed in the grand master suite hierarchy.

Each Euro Profile Cylinder shall have a unique number for Electricity North West to allocate to a specific location.

6.4.5 Differ Padlock Markings

Each Padlock shall be marked on the side and base of the padlock body with the operational level as detailed in the grand master suite hierarchy and the differ number.

Each Padlock shall have a unique number for Electricity North West to know the locks specific location.

6.4.6 Differ Euro Profile Cylinder Markings

Each Euro Profile Cylinder shall be marked on the face of the cylinder with the operational level as detailed in the grand master suite hierarchy and the differ number.

Each Euro Profile Cylinder shall have a unique number for Electricity North West to know the locks specific location.

6.5 Other Types of Substation Locks

Electricity North West has a variety of historic substation door locks such as Rim Cylinders and Deadlocking Rim Locks. The Tenderer shall submit details of both Mechanical and Electromechanical variants which are available to prevent doors being replaced. The operation and marking of these locks shall be as per the appropriate sections above.

6.6 Switchgear Locks

6.6.1 Description

Open shackle Boron Alloy or Stainless Steel weatherproof padlock for use on security applications.

Operated by a single common key.

6.6.2 Features

Self-locking, pin-tumbler cylinder padlock type.

Snaplocking, key to unlock.

Non-key retaining.

Boron Alloy or Stainless Steel shackle.

Lock reference to be stamped on base in 3mm text.

6.6.3 Dimensions

See Appendix C for typical dimensions.

Alternative shackle sizes 25mm and 38mm.

6.7 Maintenance

The Locking system shall require minimum maintenance. The Tenderer shall submit with his Tender the recommended maintenance intervals and procedures.

6.8 Spares

The Tenderer shall submit with his tender the recommended spares and associated costs in order for Electricity North West to maintain a robust and reliable locking system.

6.9 Training

The Tenderer shall supply Electricity North West with all of the appropriate training required to install, programme and operate the system correctly. The Tenderer shall detail all of the training that will be required and the location(s) the training can take place. The Training shall be at the Tenderer's Expense.

6.10 Key and Lock Control

All Keys and Locks including all Differs shall be under the control of Electricity North West. The Supplier shall only manufacture and dispatch keys and padlocks when an official order is placed from an appointed person(s) within Electricity North West. The Keys and Padlocks will be dispatched to the appointed person(s) only.

The Tenderer shall submit details with their tender on how they will achieve this requirement and how any attempted orders by a non-appointed person(s) will be dealt with.

6.11 Licences and Certificates

The Tenderer shall include in his response details of any specific software licences and certificates which are required and highlight those that need to be renewed on an annual basis.

6.12 Data Protection Act 1998

The Tenderer shall include in his response details of how the Electromechanical Locking System complies with the Data Protection Act 1998.

6.13 Electromagnetic Compatibility

The Tenderer shall include in his response details that there are no electromagnetic compatibility issues interfering with the Electromechanical locks and keys given the close proximity to large electricity substations. The Tenderer shall submit details of all electromagnetic compatibility testing which has been completed on the Electromechanical Locking System.

7 Documents Referenced

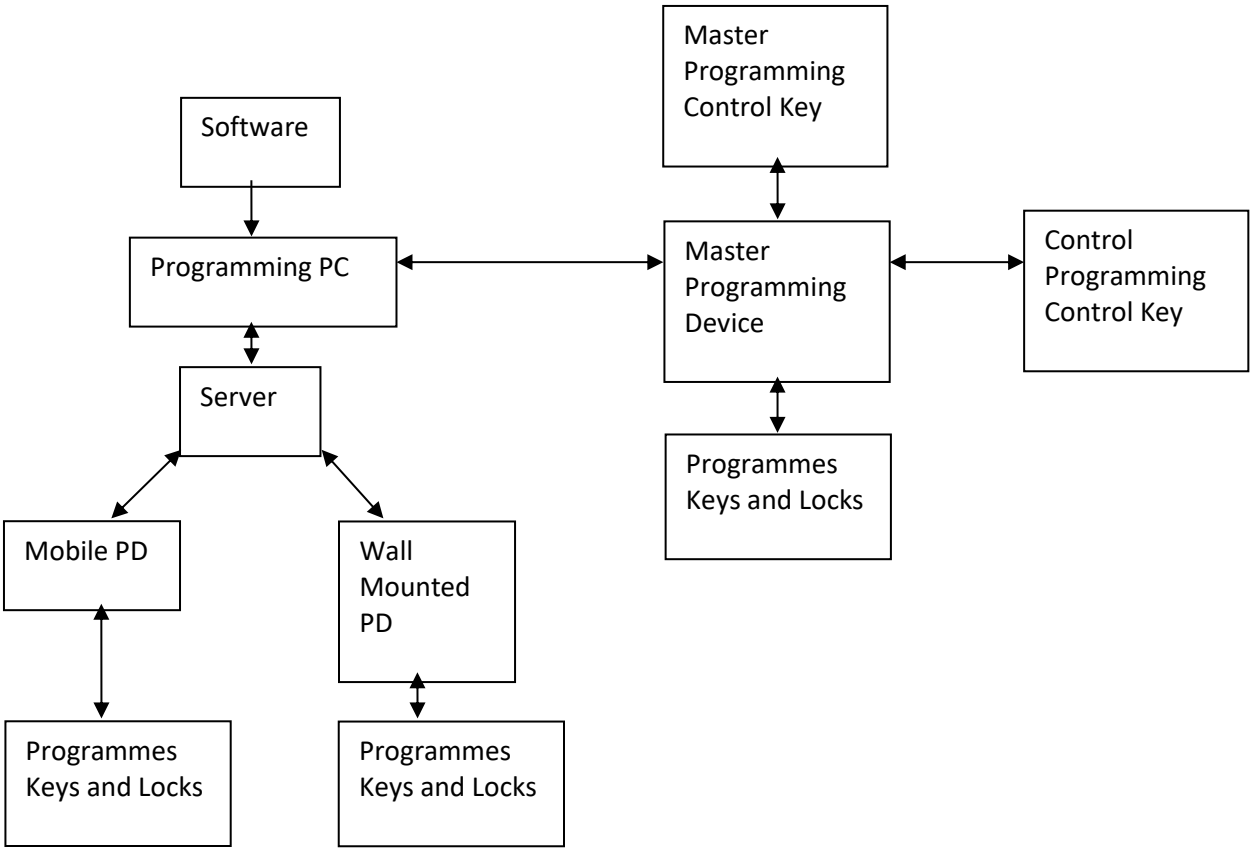
DOCUMENTS REFERENCED	
Data Protection Act 1998	
Health and Safety at Work Act 1974	
Control of Substances Hazardous to Health Regulations 2002	
Health and Safety Manual Handling Operation Regulations 1992	
BS EN ISO 14001:2015	Environmental Management Systems
BS EN 12320	Padlocks and Padlock Fittings. Requirements and Test Methods.
BS EN 1303	Building Hardware. Cylinders for Locks. Requirements and Test Methods.
EPD603	Substation Locking
CP606	Operations Manual

8 Keywords

Operation; Plant; Security; Substation.

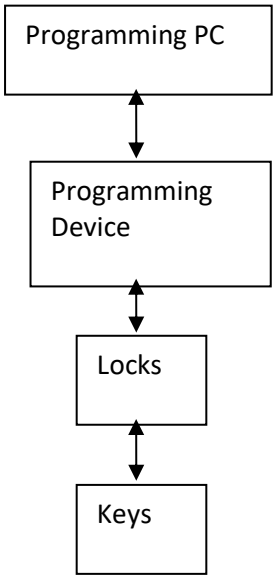
Appendix A

A1 Electromechanical Locking System Overview

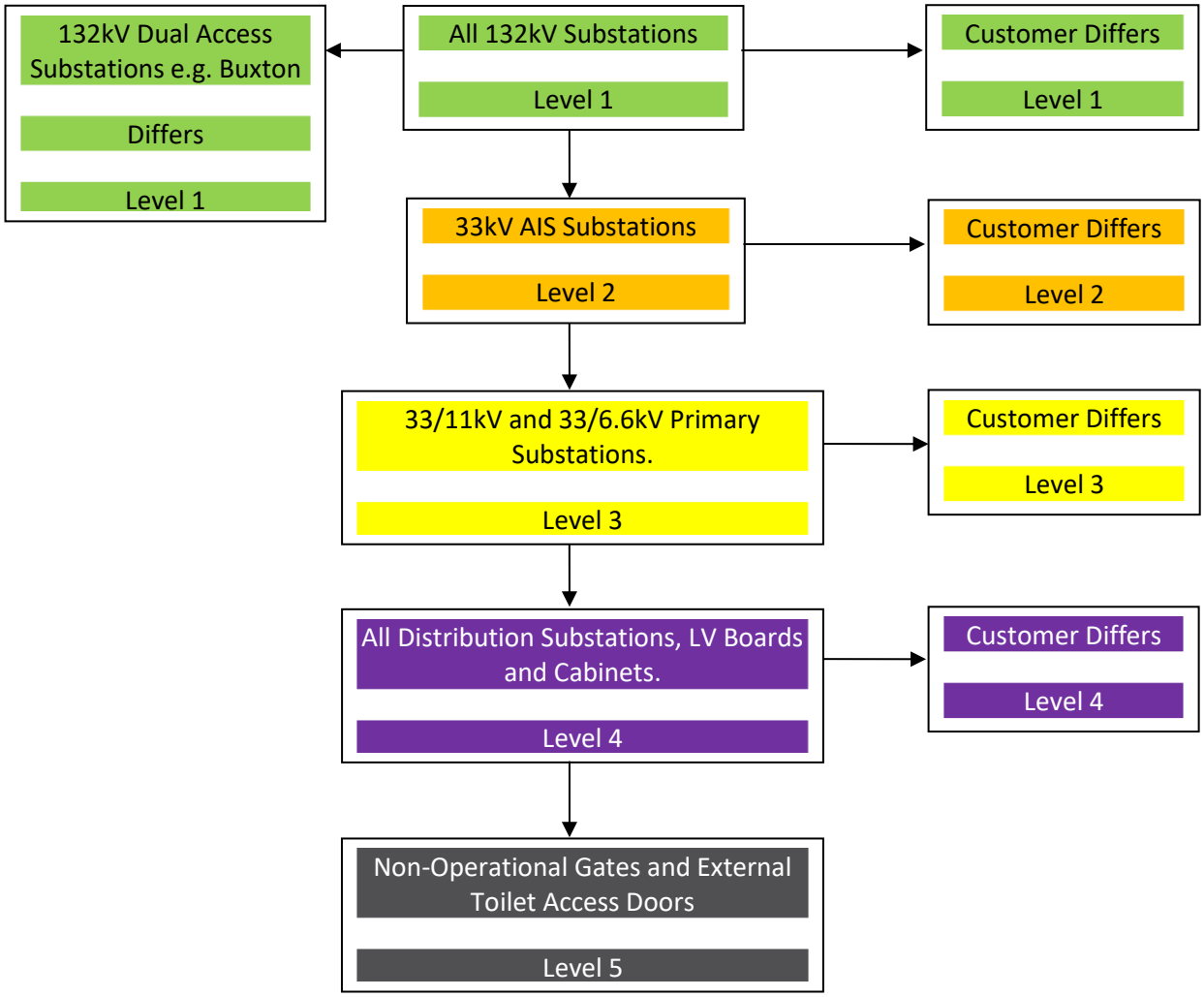


Note:- The arrows indicate direction of data flow.

A2 Electromechanical Locking Operation Overview

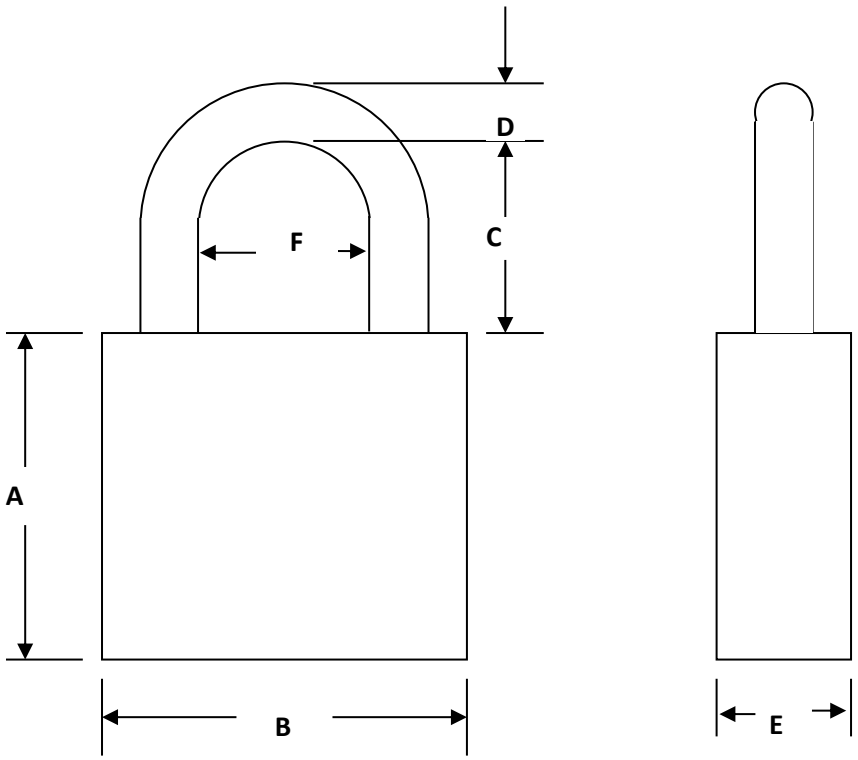


Appendix B – Grand Master Suite Locking Hierarchy



Appendix C

C1 Padlock Dimensions (Typical)



C2 Mechanical Padlock Dimensions

DIMENSION	GRID AND PRIMARY SUBSTATION GATE PADLOCK (mm)	DISTRIBUTION AND PRIMARY SUBSTATION DOOR/GATE PADLOCK (mm)	SWITCHGEAR PADLOCK (mm)
A	57.6	52.7	32
B	72	57	32
C	25	28	25 or 38
D	14	10	4.7
E	30	25	14
F	31	28	15

C3 Electromechanical Padlock Dimensions

DIMENSION	GRID AND PRIMARY SUBSTATION GATE PADLOCK (mm)	DISTRIBUTION AND PRIMARY SUBSTATION DOOR/GATE PADLOCK (mm)
A	64.9	69
B	72	61
C	25	25
D	14	10
E	30	30
F	31.1	28

Appendix D – Conformance Declaration

SECTION-BY-SECTION CONFORMANCE WITH SPECIFICATION

The Tenderer shall declare conformance or otherwise for each product/service or range of products/services, section-by-section, using the following 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:

Name:

Company:

Signature:

SECTION-BY-SECTION CONFORMANCE			
Section	**Section Topic**	**Conformance Declaration Code**	**Remarks * (must be completed if code is not C1)**
4.1	**Product not to be Changed**		
4.2	**Electricity North West Technical Approval**		
4.3	**Quality Assurance**		
4.4	**Formulation**		
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