DOCUMENT NO.: KP1/13D/4/1/TSP/09/019-2

Kenya Power

SECURITY PADLOCKS.

Part 2: KEYED-DIFFERENT (KD) SYSTEM–SPECIFICATION

A Document of the Kenya Power & Lighting Company Plc

January 2025

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0.1 CIRCULATION LIST

COPY NO.	COPY HOLDER
1	Manager, Standards
2	Electronic copy (pdf) on Kenya Power server (http://172.16.1.40/dms/browse.php?fFolderId=23)

REVISION OF KPLC STANDARDS

In order to keep abreast of progress in the industry, KPLC standards shall be regularly reviewed. Suggestions for improvements to approved standards, addressed to the Manager, Standards Department, are welcome.

0.2 AMENDMENT RECORD

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
0	2026-01-15	New issue	Rotich Benard	Eng. Faith Gicugu

FOREWORD

This Specification has been prepared by the Standards Department in collaboration with Supply Chain and Logistics Division, both of The Kenya Power and Lighting Company Plc. (KPLC). It lays down the minimum requirements for Keyed-Different (KD) high-security padlocks intended for use in securing critical infrastructure and installations within the Company, including containers.

This specification sets out the minimum technical, mechanical, and security requirements for security padlocks supplied in a Keyed-Different system, whereby each padlock is operated by a unique key and no key shall operate any other padlock. The padlocks covered by this specification are intended for high-security applications and will therefore be subject to restricted access and elevated risk exposure.

The Supplier shall be responsible for ensuring that the proposed design, materials, keying system, and construction are of the highest quality and provide reliable, long-term service under the specified service conditions. Particular emphasis is placed on key uniqueness, non-interchangeability, and resistance to unauthorized access, consistent with the security needs of critical power infrastructure.

Users of this KPLC specification are responsible for its correct interpretation and application.

Other specifications in the series are:

KP1/13D/4/1/TSP/09/019-1 - Security Padlocks. Part 1: Keyed-Alike (KA) system - Specification

The following are members of the team that developed this specification:

Name	Division
Benard Angima	Supply Chain & Logistics
Rotich Benard	Institute of Energy Studies & Research
Benson Dianga	Institute of Energy Studies & Research

1. SCOPE

This specification covers the requirements for Long Shackle Security Padlocks supplied in a Keyed-Different (KD) system, where each padlock is operated by a unique key.

2. NORMATIVE REFERENCE

The following standards contain provisions, which through reference in this text constitute provisions of this specification. For dated editions, the cited edition will apply; for undated editions, the latest edition of the referenced document shall apply:

BS EN 12320:	Building Hardware. Padlock and Padlock Fittings: Requirements and Test Methods
ISO 9001:2015:	Quality Management Systems — Requirements
ISO 1085:	Functional Performance of tools
ASTM B117:	Spray Salt Fog Test

3. DEFINITIONS AND ABBREVIATIONS

For the purpose of this specification the definitions given in the reference standards shall apply, including the following:

Keyed-Different (KD): A locking system in which each padlock is supplied with a unique key, and no key shall operate any other padlock within the same supply batch.

4. REQUIREMENTS

4.1. SERVICE CONDITIONS

The Security Padlocks shall be suitable for use outdoors in tropical areas and harsh climatic conditions including areas exposed to:

a) Sea spray (along the coast);

b) Humidity of up to 95%;

c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C;

4.2. SPECIFIC REQUIREMENTS

4.2.1. The padlock shall be manufactured and supplied in a Keyed-Different (KD) configuration and shall be with the key-difference and non-interchangeability requirements in accordance BS EN 12320.

4.2.2. The shackle shall be made of hardened boron steel with a diameter of 8mm and a shackle height (h) of 50mm ≤ h ≤ 55mm.

4.2.3. The body of the padlock shall be made of brass with satin chrome coating.

4.2.4. The padlock shall comply with Security Grade 4 of BS EN 12320 and shall be resistant to pulling, twisting, cutting, and drilling of the shackle and body, in accordance with the performance requirements specified in Table 1 below:

Table 1: Performance Requirements

NO.	Parameter		Unit	Requirement
1.	Key retained in open position		-	Yes
2.	Minimum number of effective key differs		Number	5000
3.	Non-interpassing of keys with just one interval differ – Torque on key		Nm	1.5
4.	Resistance to force on cylinder plug or locking mechanism		kN	5
5.	Resistance to torque on cylinder plug or locking mechanism		Nm	15
6.	Resistance to pulling of shackle and staple		kN	30
7.	Resistance to twisting of shackle and staple		Nm	600
8.	Resistance to cutting of shackle and staple		kN	45
9.	Resistance to impact on padlock body, shackle and staple at low temperature	Temperature of product for impact testing	°C	-20
		Drop mass for impact testing	g	3050
		Height through which weight is dropped	mm	1000
10.	Resistance to drilling of padlock body, shackle and staple	Drilling resistance time	minutes	2
11.	Resistance to sawing of padlock body, shackle and staple	Sawing resistance time	minutes	2
12.	Manual attack resistance time		minutes	3

4.2.5. The padlocks shall meet Corrosion Resistance Grade 3 as per BS EN 12320, and ASTM B117 suitable for unprotected outdoor use under severe weather conditions, including high-salinity coastal locations and chemically polluted environments.

4.2.6. All internal moving components of the padlock, including tumblers, springs, pins, and shackle interfaces, shall be factory-lubricated with a non-gumming, non-hardening, moisture- and corrosion-resistant lubricant to ensure smooth, non-jamming operation in accordance with the functional requirements of ISO 1085.

4.2.7. The surface treatment shall provide comprehensive corrosion resistance for both the external visible surfaces and all internal mechanical components.

4.2.8. All component parts of the padlock shall be engineered to resist wear, ingress of dirt, moisture, and corrosion to ensure operational longevity in harsh environments.

4.2.9. The padlock shall utilize a dual ball-bearing locking mechanism and the design shall eliminate the use of tension springs or sensitive components prone to jamming or mechanical fatigue.

4.2.10. The high-security lock cylinders shall be configured for a Keyed-Different (KD) system.

4.2.11. Keys shall be heavy-duty, constructed from high-strength Nickel Silver with an ergonomic black plastic key head, ensuring smooth, reliable operation and long-term durability.

4.2.12. Each padlock supplied under the Keyed-Different system shall be accompanied by four (4) identical keys unique to that specific unit. No key shall be capable of operating any other padlock within the supplied batch.

5. TESTS REQUIREMENTS

The Security Padlocks shall be inspected and tested as per the requirements of BS EN 12320 and this specification.

6. MARKING AND PACKING

6.1. The following information shall be marked legibly and in a permanent manner on each Security Padlock:

a) The manufacturer's name or trademark;

b) The type reference number;

c) Standard of Manufacture;

d) The seven digits classification;

e) The letters "**KPLC**".

6.2. The Security Padlocks shall be packed in a manner so as to protect them from damage during transportation and storage.

APPENDICES

APPENDIX A: TESTS AND INSPECTION (Normative)

A.1. It shall be the responsibility of the supplier to test or to have all the relevant tests performed.

A.2. Copies of previous test certificates by the relevant National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 accredited independent laboratory) shall be submitted with the offer for evaluation (all in English Language).

A.3. Quality Certificates for the Security Padlocks to be supplied shall be submitted to KPLC for approval before shipment/delivery of the goods.

A.4. On receipt of the Security Padlocks, KPLC will inspect and may perform any of the relevant tests in order to verify compliance with the specification. The supplier shall replace without charge to KPLC materials, which upon examination, test or use fail to meet any or all of the requirements in this specification.

APPENDIX B: QUALITY MANAGEMENT SYSTEM (Normative)

B.1. The Supplier shall submit a Quality Assurance Plan (QAP) that will be used to ensure that the design, material, workmanship, tests, service capability, maintenance and documentation, will fulfil the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfil the requirements of ISO 9001: 2015.

B.2. The Manufacturer's Declaration of Conformity to reference standards and copies of Quality Management Certifications including copy of valid and relevant ISO 9001:2015 Certificate shall be submitted with the tender for evaluation.

B.3. The bidder shall indicate the delivery time of padlocks, manufacturer's capacity and experience.

APPENDIX C: DOCUMENTATION (Normative)

C.1 The bidder shall submit its tender complete with technical documents for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:

a) Fully filled clause by clause Guaranteed Technical Particulars (GTP) signed by the manufacturer.

b) Drawings and catalogues

c) Sales records for the last five years and at least four customer reference letters,

d) Details of manufacturing capacity and the manufacturer's experience.

e) Copies of required type test certificates and type test reports by a third-party testing laboratory accredited to ISO/IEC 17025,

f) Copy of accreditation certificate to ISO/IEC 17025 for the third-party testing laboratory,

g) Manufacturer's warranty.

h) Manufacturer's letter of authorization, copy of the manufacturer's ISO 9001:2015 certificate

C.2. The successful bidder (supplier) shall submit the following documents/details to KPLC for approval before manufacture:

a) Fully filled clause-by-clause Guaranteed Technical Particulars (GTP) stamped and signed by the manufacturer.

b) Drawings

c) Marking details and method of marking,

d) Packaging details (including packaging materials).

APPENDIX D: GUARANTEED TECHNICAL PARTICULARS (Normative)

*To be filled and signed by the **Supplier** and submitted together with relevant copies of technical data, sales records for previous five years, four customer reference letters, details of suppliers' capacity and experience; and copies of complete water analysis reports for tender evaluation)*

Tender No. .....

Clause number	Item Description		Bidder's offer
	Bidder's Name and address		Specify
	Manufacturer's Name, address and country		Specify
1.	Scope		Specify
2.	Normative references		Specify
3.	Definitions and abbreviations		Specify
4.	**Requirements**		
4.1	Service Conditions		Specify
4.2	**Specific Requirements**		
4.2.1	Key configuration		State
	Standard of manufacture		State
4.2.2	Shackle material		State
	Shackle diameter		State
	Shackle height		State
4.2.3	Material of body of padlock		State
4.2.4	Security grade of padlock offered		State
	Performance Requirements		
	Parameter	**Unit**	**Requirement**
	Key retained in open position	-	State
	Minimum number of effective key differs	Number	State
	Non-interpassing of keys with just one interval differ – Torque on key	Nm	State
	Resistance to force on cylinder plug or locking mechanism	kN	State
	Resistance to torque on cylinder plug or locking mechanism	Nm	State
	Resistance to pulling of shackle and staple	kN	State
	Resistance to twisting of shackle and staple	Nm	State

Clause number	Item Description			Bidder's offer
	Resistance to cutting of shackle and staple		kN	State
	Resistance to impact on padlock body, shackle and staple at low temperature	Temperature of product for impact testing	°C	State
		Drop mass for impact testing	g	State
		Height through which weight is dropped	mm	State
	Resistance to drilling of padlock body, shackle and staple	Drilling resistance time	minutes	State
	Resistance to sawing of padlock body, shackle and staple	Sawing resistance time	minutes	State
	Manual attack resistance time		minutes	State
4.2.5	Padlock Corrosion Resistance Grade			State
4.2.6	Lubrication requirements			State
4.2.7	Surface treatment			Specify
4.2.8	Component's parts resistance to wear, dirt, moisture, and corrosion			State compliance
4.2.9	Locking mechanism			Specify
4.2.10	Configuration of the high security lock cylinders			Specify
4.2.11	Key construction and durability			State
	Key head design			Specify
4.2.12	No of identical keys supplied with each padlock			State
5	Test Requirements			State
6	**Marking and packing**			
6.1	Marking			Specify
6.2	Packing			Specify
	APPENDICES			
A	**Test and inspection**			
A.1	Test standards and responsibility of carrying out tests			State
A.2	Copies of previous test certificates			Provide

Clause number	Item Description	Bidder's offer
A.3	Quality Certificates for the Security Padlocks to be supplied shall be submitted to KPLC for approval before shipment/delivery of the goods	State compliance
A.4	Replacement of rejected padlocks	Specify
B	**Quality Management System**	
	Quality Assurance Plan	Provide
	Copy of valid and relevant ISO 9001:2015	Provide
	Manufacturer's declaration of conformity	Provide
	Delivery time	State
	Manufacturer's experience	State
	Manufacturer's Capacity	State
C	**Documentation**	
C.1	Documents submitted with tender	Provide
C.2	Documents to be submitted by supplier to KPLC for approval before manufacture	List
	Statement of compliance to specification (indicate deviations if any & supporting documents)	State compliance

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Manufacturer's Name, Signature, Stamp and Date