

**Electricity metering –
Payment metering systems –
Part 41:
Standard Transfer Specification**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICITY METERING – PAYMENT METERING SYSTEMS –

Part 41: Standard Transfer Specification

FOREWORD

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A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public and established in an organization operating under given procedures.

IEC-PAS 62055-41 was submitted by the STS (Standard Transfer Specification) Association and has been processed by IEC technical committee 13: Equipment for electrical energy measurement and load control.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
13/1298/PAS	13/1301/RVD

Following publication of this PAS, the technical committee or subcommittee concerned will investigate the possibility of transforming the PAS into an International Standard.

An IEC-PAS licence of copyright and assignment of copyright has been signed by the IEC and the STS association and is recorded at the Central Office.

This PAS shall remain valid for no longer than 3 years starting from 2003-09. The validity may be extended for a single 3-year period, following which it shall be revised to become another type of normative document, or shall be withdrawn.



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NRS 009-6-6:2002

Edition 1.1

ISBN 0-626-14112-5

Edition 1: Incorporating Amendment No. 1:2002

Rationalized User Specification

ELECTRICITY SALES SYSTEMS

Part 6: Interface standards

Section 6: Standard transfer specification/Credit dispensing unit — electricity dispenser — Categories of token and transaction data fields

Requirements for applications in the
Electricity Supply
Industry



Gr 8



This Rationalized User Specification is
issued by the NRS Project
on behalf of the
User Group given in the foreword
and is not a standard as contemplated in the Standards Act, 1993 (Act 29 of 1993).

Rationalized user specifications allow user organizations to define the performance and quality requirements of relevant equipment.

Rationalized user specifications may, after a certain application period, be introduced as national standards.

Amendments issued since publication

Amdt No.	Date	Text affected
1	May 2002	Notice: Information added on STS compliance. Foreword.
		Clause 2: Normative references updated.
		Clause 3: Note added to clarify abbreviation "ED".
		4.3.2: Reference to NRS 009-4-2 changed to annex A of NRS 009-6-7.

Amendment 1 was compiled to aid understanding of the specification internationally, in preparation for its submission to the IEC, for consideration as an IEC PAS. This consolidated edition 1.1 is technically identical to, and replaces, NRS 009-6-6:1997, which is published by the SABS under ISBN 0-626-11656-2, for which the SABS holds publishing copyright.

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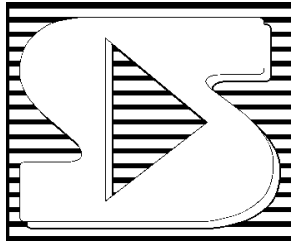
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NOTICE

Revised February 2003



TM

This section of NRS 009-6 specifies requirements that are part of the standard transfer specification (STS). The intellectual property rights of the STS are owned by the STS Association.¹

The cryptographic algorithms published in this section are those for existing installations and future releases shall make provision for a choice of several state of the art algorithms for implementation according to the strength of the security required in the target installation. It has to be noted that this specification already allows for such alternative algorithms by inference of the data element "Algorithm Code" (see NRS009-6-6 section 4.3.5).

Implementation of an STS compliant system will require access to encryption and decryption tables and the STS encryption keys, which are made available under license conditions through membership of the STS Association. Details of requirements to become a member of the STS Association can be obtained from the contact details given below.

Amdt 1

Suppliers who are to claim that their equipment complies with the STS are required to have the relevant equipment accredited by the STS Association or its agent. Such equipment will be permitted to carry a mark that signifies compliance with the STS.

Application for accreditation of equipment as compliant with the STS can be made to the STS Association:
email@sts.org.za

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Fax number +27(21) 914 3930

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South Africa

Further information concerning the STS Association can be obtained from its website:

<http://www.sts.org.za>**Amdt 1**

¹ A Section 21 "not for gain" company incorporated in the Republic of South Africa.



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WITHDRAWN



NRS 009-6-6:2002**2****Foreword**

This section of NRS 009-6 has been prepared on behalf of the Electricity Suppliers Liaison Committee (ESLC) and has been approved by it for use by supply authorities in South Africa.

Amendment 1 to this section of NRS 009-6 provides for direct cross-references to NRS 009-4-2, which is not part of the standard transfer specification. The requirements of NRS 009-4-2 that are relevant to this section of NRS 009-6 have been included in an annex to NRS 009-6-7.

Amdt 1

NRS 009 is based on Eskom specification MC114, *Requirements specification for a common vending system for electricity dispensing systems*, and consists of the following parts, under the general title *Electricity sales systems*:

Part 0: Standard transfer specification — Synopsis. (Under consideration.)

Part 1: Glossary and system overview. (Withdrawn, superseded by SABS 1524-0.)

Part 2: Functional and performance requirements.

Section 1: System master stations.

Section 2: Credit dispensing units.

Section 3: Security modules.

Section 4: Standard token translators.

Section 5: Error handling.

Part 3: Database format.

Part 4: National electricity meter cards and associated numbering standards.

Section 1: National electricity meter cards.

Section 2: National electricity meter numbers.

Part 5: Testing of subsystems.

Part 6: Interface standards.

Section 1: Credit dispensing unit — Standard token translator.

Section 2: System master station — main frame.

Section 3: System master station — Credit dispensing unit (previously NRS 009-3).

Section 4: Data transfer by physical media — System master station — Credit dispensing unit.

Section 5: Not allocated

Section 6: Standard transfer specification — Credit dispensing unit — Electricity dispenser — Categories of token and transaction data fields.

Section 7: Standard transfer specification — Credit dispensing unit — Electricity dispenser — Token encoding and data encryption and decryption.

Section 8: Standard transfer specification — Disposable magnetic token technology — Token encoding format and physical token definition.

Section 9: Standard transfer specification — Numeric token technology — Token encoding format and physical token definition.

Part 7: Standard transfer specification — The management of cryptographic keys.

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NRS 009-6-6:2002

An amendment to the first edition of this section of NRS 009-6 was submitted by the STS Association in 2002, which was endorsed by a Working Group that comprised the following members:

S J van den Berg (Chairman)	Mangaung Municipality
P A Johnson (Project leader)	NRS Project Management Agency
V Bissett	City of Cape Town
R Devparsad	eThekwini Electricity
J O'Kennedy	Eskom Distribution
V E Rengecas	SABS
M Singh	eThekwini Electricity
D W van Reenen	City Power Johannesburg
J Westenraad	City of Tshwane

The working group acknowledges the contribution of S Leigh, who compiled the standard transfer specification while with Conlog, under a contract to Eskom. The intellectual property rights to the STS have been ceded to the STS Association. See the notice at the front of this section of NRS 009-6.

A Manufacturers' Interest Group (MIG) was consulted on the amendment of this section of NRS 009-6. The MIG comprised the following members:

R Hill	Circuit Breaker Industries
S Leigh	Prism
R Lewis	Tellumat SA
F Pucci	Schneider (t/a Conlog)
A Stoner	Energy Measurements Limited
D Taylor	Actaris Measurements

The Working Group was appointed by the ESLC, which, for the approval of amendment 1, comprised the following members:

R Wienand(Chairman)	eThekwini Metropolitan Council, AMEU
M N Bailey	Distribution Technology, Eskom
A J Claasen	Electrical Engineering Standards, SABS
P Crowdy	Distribution Technology, Eskom
B de Jager	Mangaung Electricity, AMEU
W Dykman	City of Tshwane, AMEU
A H L Fortmann	AMEU
P A Johnson	Technology Standardization, Eskom
J Machinjike	Transmission, Eskom
D M Michie	Nelson Mandela Metropolitan Municipality, AMEU
S V Moodley	City Power Johannesburg (Pty) Ltd
R van der Riet	City of Cape Town, AMEU
J S van Heerden	SABS NETFA
D J van Wyk	uMhlathuze Electricity, AMEU

Recommendations for corrections, additions or deletions should be addressed to the NRS Project Manager, c/o SABS, Private Bag X191, Pretoria, 0001.



NRS 009-6-6:2002**4****Introduction**

A variety of proprietary electricity dispensers (EDs) and vending systems have been developed. The proprietary systems are however not compatible with each other. This gave rise to a definite need among the major users to move towards standardized solutions in addressing operational problems experienced where various types of ED and vending equipment have to be operated simultaneously. A standard transfer specification (STS) was developed that would allow for the application of EDs from any manufacturer in an electricity sales (vending) system. The STS is specified in sections 6 to 9 of NRS 009-6 and NRS 009-7.

Amdt 1

The physical device used to transport the information from the vending system to the ED is referred to as a token. The STS specifies the use of two types token. (see NRS 009-6-8 and NRS 009-6-9), namely the disposable magnetic token and the numeric token.

The STS is designed primarily for applications in prepayment electricity sales systems where a secure method for the transfer of purchased electricity units from the credit dispensing unit (CDU) to the ED is required. However, it also caters for the transfer of units of other utility types, for example water or gas.

An overview of the component parts of the STS, as specified in sections 6 to 9 of NRS 009-6, is given in figure 1.

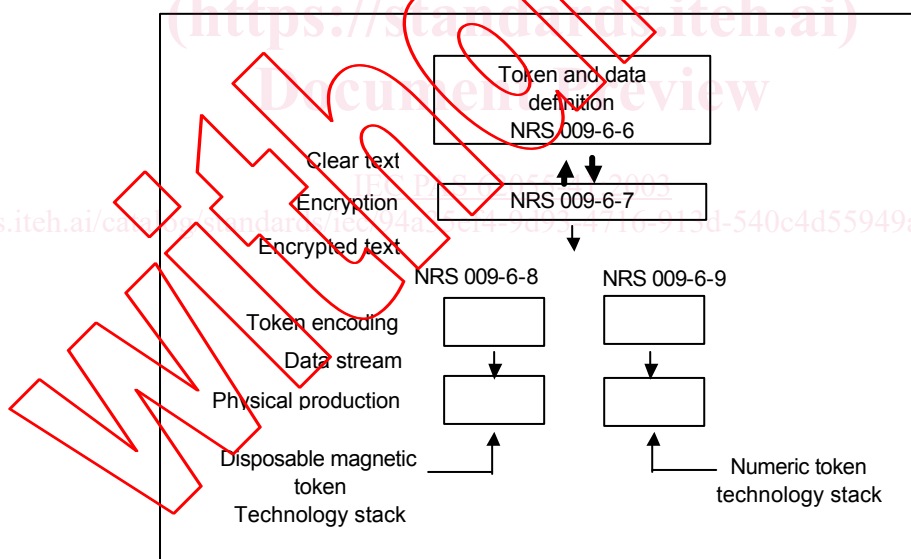


Figure 1 — An overview of the component parts of the STS

