STS EDITION 2

Simple ▸ Trusted ▸ Secure

STS ASSOCIATION
Standard Transfer Specification

BROCHURE

INTRODUCTION TO **STS EDITION 2**

The STS specification has been in use for over 20 years in the prepayment market. Over this time it has demonstrated its use for over 500 utilities worldwide, in over 40 countries.

It is a stated objective of the STS Association to ensure that the specification adopts state of the art advanced cryptographic algorithms. It has therefore become necessary to revise the security levels of IEC 62055-41 so as to reflect the state of the art best practices, for deployment of new systems having a useful life expectancy of at least the next 30 years. Similarly, smart metering systems with payment functionality have evolved to employ tariff functions in the meter, thus raising the need to provide for the transfer of currency units to the meter instead of service (kWh) units.

The latest edition of the specification, STS EDITION 2, not only maintains backward compatibility to the current systems in use, but more importantly, it enables the use of the latest state of the art cryptographic algorithms, while also introducing many new features in order to keep abreast with modern metering technologies.

THE ONLY GLOBALLY PROVEN
OPEN STANDARD FOR PREPAYMENT SYSTEMS

STS EDITION 2

STATE OF THE ART FEATURES

- Misty1 Algorithm (128 Bit)
- High Security Key Encryption (192 Bit)
- Key Revocation and Key Expiry
- New Decoder Key Generation Algorithm (DKGA04)
- Transfer of SGC via Key Change Token
- State of the art Key Management System
- Provision for DLMS/ COSEM as a Virtual Token Carrier Type
- Currency Transfer Tokens for all Utility Types
- Withdrawal of older algorithms

ABOUT **STS**

The STS Association, as the custodian of the STS prepayment metering technology standard was founded in 1997. The key operational objectives of the association are to maintain the necessary infrastructure; promote the technology internationally and further develop the standard to meet emerging international demands for additional functionality.

The Association ensures interoperability between system components from different manufactures of prepayment meter and vending systems by accrediting and maintaining a list of test laboratories that ensure compliance to STS standards. The Association manages the availability of encrypted vending keys to manufacturing members via its key management centres, and ensures consistent use of manufacturer identity codes as well as meter serial numbers.

The Standard Transfer Specification (STS) has become recognised as the only globally accepted open standard for prepayment systems, ensuring interoperability between system components from different manufacturers of prepayment systems. The application of the technology is licensed through the STS Association, thus ensuring that the appropriate encryption key management practices are applied to protect the security of the prepayment transactions of utilities operating STS systems.

The tried and tested STS prepayment specification, has over the years established itself as a preferred and renowned standard globally and is now also being used for water and gas prepayment, initially in South Africa and subsequently in many developed and emerging economies.

Developed originally for prepayment electricity meters in Africa – via an IEC TC13 WG 15 D-type liaison with the STS Association. This IEC Standard now serves more users in Asia than Africa, with a total of approximately 50 million meters operated by 500 utilities in 94 countries. Management of the technology has been administered by the STS Association in fulfilment of its role as the IEC appointed Registration Authority

ROLE OF THE **STS ASSOCIATION**

The mission of the STS Association is to develop, facilitate the implementation and promote the use of the Standard Transfer Specification (STS). In order to do so, it focuses its efforts in the following areas:

- Developing and maintaining the standard, in liaison with international standards bodies;
- Encouraging stakeholders to participate in the activities of technical Project Teams and Working Groups;
- Facilitating the implementation of successful STS systems through the provision of:
  - product certification services;
  - key management services;
  - registration services for the issuing and management of relevant data entities, numbering schemes etc.; and
- Promoting the standard through a variety of marketing activities targeted at potential users around the world.

STS SUCCESS

- It is simple, trusted and secure;
- It is internationally recognised, having been published in 2007 as an international standard;
- It is an open standard, allowing STS-compliant equipment from any number of suppliers to be integrated into an electricity, water or gas sales system;
- It is a secure standard - the encryption technology used has proved to be extremely robust;
- It is supported by complementary specifications and standards, for prepayment meters and vending systems;
- It offers a certification scheme to test for compliance to **IEC 62055-41**.

GLOBAL **MEMBERSHIP**

Standard Transfer Specification Association NPC / 95/08496/08

INTERNATIONAL RECOGNITION

The STS was published as an International Standard by IEC in 2007:

- **IEC 62055-41: Electricity metering – payment systems - Part 41:** Standard Transfer Specification – Application Layer Protocol for one-way token carrier systems;
- **IEC 62055-51: Electricity metering – payment systems - Part 51:** Standard Transfer Specification – Physical Layer Protocol for one-way numeric and magnetic card token carriers.

The STS Association has also been appointed by IEC as the Registration Authority for IEC 62055-41 and IEC 62055-51, giving the Association responsibility for the maintenance of various data entities, companion specifications etc.

INNOVATIVE **EDGE**

In keeping with the fast progressive technology, STS Association has established Working Groups for on-going standard enhancement projects.

Working Groups, comprising technical experts from STS Association member organizations and the industry are currently involved in a number of projects related to the ongoing maintenance of the standard, as well as new developments such as:

- Enhancements to the encryption key management system to allow for distributed key management using multiple key management centres worldwide;
- The definition of a currency token specification to handle a wide variety of currencies. This specification is now included in the latest revision of the IEC 62055-41
- The introduction of more secure encryption and decryption algorithms, as well as decoder key generation algorithms. These specifications are currently under development and will be introduced initially as companion specifications, and later added to Edition 3 of the IEC standard;
- The definition and publication of a code of practice for the Token ID rollover, along with the introduction of 3 distinct base dates;
- The publication of Edition 3 of the IEC 62055-41 standard containing revisions and added functionality;
- Harmonisation of the STS into the DLMS/COSEM protocols to allow the STS to be used in the Smart Meter markets;
- Preparation work for the introduction of future enhancements of the IEC standards.

STS ASSOCIATION
Standard Transfer Specification

TIME IS NOW

Simple ▸ Trusted ▸ Secure

TID ROLLOVER

TO BE COMPLETED BY

24 NOVEMBER 2024

Block A, Suite 10, Hurlingham Office Park, 59 Woodlands Ave (off Republic)
Hurlingham Manor, Sandton, South Africa, 2191

+27 11 061 5000 | info@sts.org.za | www.sts.org.za | www.tidrollover.com

THE TID ROLLOVER

FOR ALL UTILITIES, METER AND VENDING SYSTEMS MANUFACTURERS.

METER MANUFACTURERS

Meter manufacturers are required to change their production processes in order to cater for the new manufacturing hardware secure modules and key load files. They are also required to start manufacturing meters on the 2014 base date as will be specified by their customers when they have updated their vending systems.

VENDING SYSTEM MANUFACTURERS

Vending system manufacturers are required to update their vending system software to cater for the new hardware secure module API and key load files and associated rules. They are also required to contact all their customers to arrange for software upgrades to be performed in the field. In addition to this, contact details are to be made available for all sub-vendors that they have business dealings with so that they may be informed of the TID rollover requirements.

UTILITIES

Utilities are responsible for the roll-out plan for the key-changes to the 2014 base date. This program has to be set up and operated by the utilities themselves. This part of the project is naturally the most important and most difficult of the entire project and must be thought out thoroughly before implementation.

SUB-VENDORS

Sub-vendors are responsible for the rollout plan for the key-changes to the new base date for meters under their control. The STSA has embarked on a campaign to reach out to these vendors in order to make them aware of their responsibilities relating to the TID rollover program.

Refer to www.tidrollover.com | STS 1800-3 document for more information | email queries to francop@mweb.co.za

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Further information about the Standard Transfer Specification and the STS Association may be found on the Association's website www.sts.org.za or by contacting the Secretariat.

Secretariat: Mr. Jean Venter, c/o Van der Walt & Co.

P.O. Box 868, Ferndale, 2160, Johannesburg, South Africa.
Tel: +2711 061 5000
sts@vdw.co.za

Block A, Suite 10, Hurlingham Office Park, 59 Woodlands Ave (off Republic)
Hurlingham Manor, Sandton, South Africa, 2191

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