

INTERNATIONAL STANDARD



**Electricity metering – Payment systems –
Part 41: Standard transfer specification (STS) – Application layer protocol for
one-way token carrier systems**

IEC 62055-41:2014

<https://standards.iteh.ai/catalog/standards/iec/62055-41/2ae4b-d663-4ab2-8b4e-51f6ce3b2f35/iec-62055-41-2014>



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 21 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC 62055-41:2014

<https://standards.iteh.ai/catalog/standards-iec/6412ae4b-d663-4ab2-8b4e-51f6ce3b2f35/iec-62055-41-2014>

INTERNATIONAL STANDARD



**Electricity metering – Payment systems –
Part 41: Standard transfer specification (STS) – Application layer protocol for
one-way token carrier systems**

<https://standards.iteh.ai/catalog/standards/iec/62055-41:2014>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 17.220.20; 35.100.70; 91.140.50

ISBN 978-2-8322-1614-9

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	8
INTRODUCTION.....	2
1 Scope.....	13
2 Normative references	13
3 Terms, definitions and abbreviations	14
3.1 Terms and definitions.....	14
3.2 Abbreviations.....	15
3.3 Notation and terminology	18
4 Numbering conventions	18
5 Reference model for the standard transfer specification	19
5.1 Generic payment meter functional reference diagram.....	19
5.2 STS protocol reference model.....	20
5.3 Dataflow from the POSApplicationProcess to the TokenCarrier.....	21
5.4 Dataflow from the TokenCarrier to the MeterApplicationProcess.....	22
5.5 MeterFunctionObjects / companion specifications.....	23
5.6 ISO transaction reference numbers.....	23
6 POSToTokenCarrierInterface application layer protocol.....	23
6.1 APDU: ApplicationProtocolDataUnit.....	23
6.1.1 Data elements in the APDU	23
6.1.2 MeterPAN: MeterPrimaryAccountNumber	25
6.1.3 TCT: TokenCarrierType.....	26
6.1.4 DKGA: DecoderKeyGenerationAlgorithm	27
6.1.5 EA: EncryptionAlgorithm.....	27
6.1.6 SGC: SupplyGroupCode.....	28
6.1.7 TI: TariffIndex.....	28
6.1.8 KRN: KeyRevisionNumber	29
6.1.9 KT: KeyType.....	29
6.1.10 KEN: KeyExpiryNumber	29
6.1.11 DCE: DateOfExpiry.....	29
6.2 Tokens.....	30
6.2.1 Token definition format	30
6.2.2 Class 0: TransferCredit.....	30
6.2.3 Class 1: InitiateMeterTest/Display	31
6.2.4 Class 2: SetMaximumPowerLimit	31
6.2.5 Class 2: ClearCredit	31
6.2.6 Class 2: SetTariffRate	31
6.2.7 Class 2: Set1stSectionDecoderKey.....	32
6.2.8 Class 2: Set2ndSectionDecoderKey.....	32
6.2.9 Class 2: ClearTamperCondition	32
6.2.10 Class 2: SetMaximumPhasePowerUnbalanceLimit.....	32
6.2.11 Class 2: SetWaterMeterFactor.....	32
6.2.12 Class 2: Reserved for STS use.....	33
6.2.13 Class 2: Reserved for Proprietary use	33
6.2.14 Class 3: Reserved for STS use.....	33

6.3	Token data elements	33
6.3.1	Data elements used in tokens	33
6.3.2	Class: TokenClass	34
6.3.3	SubClass: TokenSubClass	34
6.3.4	RND: RandomNumber	35
6.3.5	TID: TokenIdentifier	36
6.3.6	Amount: TransferAmount	37
6.3.7	CRC: CyclicRedundancyCode	39
6.3.8	Control: InitiateMeterTest/DisplayControlField	39
6.3.9	MPL: MaximumPowerLimit	40
6.3.10	MPPUL: MaximumPhasePowerUnbalanceLimit	40
6.3.11	Rate: TariffRate	40
6.3.12	WMFactor: WaterMeterFactor	40
6.3.13	Register: RegisterToClear	40
6.3.14	NKHO: NewKeyHighOrder	40
6.3.15	NKLO: NewKeyLowOrder	40
6.3.16	KENHO: KeyExpiryNumberHighOrder	40
6.3.17	KENLO: KeyExpiryNumberLowOrder	41
6.3.18	RO: RolloverKeyChange	41
6.4	TCDUGeneration functions	41
6.4.1	Definition of the TCDU	41
6.4.2	Transposition of the Class bits	41
6.4.3	TCDUGeneration function for Class 0,1 and 2 tokens	42
6.4.4	TCDUGeneration function for Set1stSectionDecoderKey token	42
6.4.5	TCDUGeneration function for Set2ndSectionDecoderKey token	45
6.5	Security functions	46
6.5.1	General requirements	46
6.5.2	Key attributes and key changes	46
6.5.3	DecoderKey generation	54
6.5.4	STA: EncryptionAlgorithm07	59
6.5.5	DEA: EncryptionAlgorithm09	63
7	TokenCarrierToMeterInterface application layer protocol	63
7.1	APDU: ApplicationProtocolDataUnit	63
7.1.1	Data elements in the APDU	63
7.1.2	Token	64
7.1.3	AuthenticationResult	64
7.1.4	ValidationResult	64
7.1.5	TokenResult	65
7.2	APDUExtraction functions	66
7.2.1	Extraction process	66
7.2.2	Extraction of the 2 Class bits	66
7.2.3	APDUExtraction function for Class 0 and Class 2 tokens	67
7.2.4	APDUExtraction function for Class 1 tokens	68
7.2.5	APDUExtraction function for Set1stSectionDecoderKey and Set2ndSectionDecoderKey tokens	68

7.3	Security functions	69
7.3.1	Key attributes and key changes	69
7.3.2	DKR: DecoderKeyRegister.....	69
7.3.3	STA: DecryptionAlgorithm07.....	70
7.3.4	DEA: DecryptionAlgorithm09	72
7.3.5	TokenAuthentication	73
7.3.6	TokenValidation.....	74
7.3.7	TokenCancellation	74
8	MeterApplicationProcess requirements	75
8.1	General requirements	75
8.2	Token acceptance/rejection	75
8.3	Display indicators and markings.....	76
8.4	TransferCredit tokens	77
8.5	InitiateMeterTest/Display tokens	77
8.6	SetMaximumPowerLimit tokens.....	77
8.7	ClearCredit tokens	78
8.8	SetTariffRate tokens	78
8.9	Set1stSectionDecoderKey tokens	78
8.10	Set2ndSectionDecoderKey tokens	78
8.11	ClearTamperCondition tokens.....	78
8.12	SetMaximumPhasePowerUnbalanceLimit tokens	79
8.13	SetWaterMeterFactor.....	79
8.14	Class 2: Reserved for STS use tokens	79
8.15	Class 2: Reserved for Proprietary use tokens	79
8.16	Class 3: Reserved for STS use tokens	79
9	KMS: KeyManagementSystem generic requirements	79
10	Maintenance of STS entities and related services.....	80
10.1	General.....	80
10.2	Operations	82
10.2.1	Product certification maintenance	82
10.2.2	DSN maintenance	82
10.2.3	RO maintenance.....	82
10.2.4	TI maintenance.....	82
10.2.5	TID maintenance	83
10.2.6	SpecialReservedTokenIdentifier maintenance.....	83
10.2.7	MfrCode maintenance.....	83
10.2.8	Substitution tables maintenance	83
10.2.9	Permutation tables maintenance.....	83
10.2.10	SGC maintenance	83
10.2.11	VendingKey maintenance	83
10.2.12	KRN maintenance.....	83
10.2.13	KT maintenance	83
10.2.14	KEN maintenance.....	84
10.2.15	KEK maintenance	84
10.2.16	CC maintenance	84
10.2.17	UC maintenance	84
10.2.18	KMCID maintenance.....	84
10.2.19	CMID maintenance	84
10.2.20	CMAC maintenance.....	84

10.3	Standardisation.....	85
10.3.1	IIN maintenance	85
10.3.2	TCT maintenance	85
10.3.3	DKGA maintenance	85
10.3.4	EA maintenance	85
10.3.5	TokenClass maintenance.....	85
10.3.6	TokenSubClass maintenance.....	85
10.3.7	InitiateMeterTest/DisplayControlField maintenance.....	86
10.3.8	RegisterToClear maintenance.....	86
10.3.9	STS base date maintenance	86
10.3.10	Rate maintenance.....	86
10.3.11	WMFactor maintenance	86
10.3.12	MFO maintenance	87
10.3.13	FOIN maintenance.....	87
10.3.14	Companion specification maintenance	87
Annex A (informative)	Guidelines for a KeyManagementSystem (KMS).....	88
Annex B (informative)	Entities and identifiers in an STS-compliant system.....	91
Annex C (informative)	Code of practice for the implementation of STS-compliant systems.....	95
C.1	Maintenance and support services provided by the STS Association.....	95
C.2	Key management.....	95
C.2.1	Key management services.....	95
C.2.2	SupplyGroupCode and VendingKey distribution	95
C.2.3	CryptographicModule distribution	96
C.2.4	Key expiry	97
C.3	MeterPAN	97
C.3.1	General practice	97
C.3.2	IssuerIdentificationNumbers	97
C.3.3	ManufacturerCodes	97
C.3.4	DecoderSerialNumbers.....	98
C.4	SpecialReservedTokenIdentifier.....	98
C.5	Permutation and substitution tables for the STA.....	99
C.6	EA codes	99
C.7	TokenCarrierType codes.....	99
C.8	MeterFunctionObject instances / companion specifications	99
C.9	TariffIndex	99
C.10	STS-compliance certification.....	100
C.10.1	IEC certification services	100
C.10.2	Products	100
C.10.3	Certification authority.....	100
C.11	Procurement options for users of STS-compliant systems.....	100
C.12	Management of TID Rollover.....	104
C.12.1	Introduction	104
C.12.2	Overview	105
C.12.3	Impact analysis.....	107
C.12.4	Base dates	108
C.12.5	Implementation	108
Bibliography	110

Figure 1 – Functional block diagram of a generic single-part payment meter.....	19
Figure 2 – STS modelled as a 2-layer collapsed OSI protocol stack.....	20
Figure 3 – Dataflow from the POSApplicationProcess to the TokenCarrier.....	21
Figure 4 – Dataflow from the TokenCarrier to the MeterApplicationProcess.....	22
Figure 5 – Composition of ISO transaction reference number.....	23
Figure 6 – Transposition of the 2 Class bits.....	41
Figure 7 – TCDUGeneration function for Class 0, 1 and 2 tokens.....	42
Figure 8 – TCDUGeneration function for Set1stSectionDecoderKey token.....	43
Figure 9 – TCDUGeneration function for Set2ndSectionDecoderKey token.....	45
Figure 10 – DecoderKey changes – state diagram.....	51
Figure 11 – DecoderKeyGenerationAlgorithm01.....	56
Figure 12 – DecoderKeyGenerationAlgorithm02.....	57
Figure 13 – DecoderKeyGenerationAlgorithm03.....	58
Figure 14 – STA: EncryptionAlgorithm07.....	59
Figure 15 – STA encryption substitution process.....	60
Figure 16 – STA encryption permutation process.....	61
Figure 17 – STA encryption DecoderKey rotation process.....	61
Figure 18 – STA encryption worked example for TransferCredit token.....	62
Figure 19 – DEA: EncryptionAlgorithm09.....	63
Figure 20 – APDUExtraction function.....	66
Figure 21 – Extraction of the 2 Class bits.....	67
Figure 22 – STA DecryptionAlgorithm07.....	70
Figure 23 – STA decryption permutation process.....	70
Figure 24 – STA decryption substitution process.....	71
Figure 25 – STA decryption DecoderKey rotation process.....	72
Figure 26 – STA decryption worked example for TransferCredit token.....	72
Figure 27 – DEA DecryptionAlgorithm09.....	73
Figure A.1 – KeyManagementSystem and interactive relationships between entities.....	88
Figure B.1 – Entities and identifiers deployed in an STS-compliant system.....	91
Figure C.1 – System overview.....	106
Table 1 – Data elements in the APDU.....	24
Table 2 – Data elements in the IDRecord.....	24
Table 3 – Data elements in the MeterPAN.....	25
Table 4 – Data elements in the IAIN / DRN.....	26
Table 5 – Token carrier types.....	27
Table 6 – DKGA codes.....	27
Table 7 – EA codes.....	28
Table 8 – SGC types and key types.....	28
Table 9 – DOE codes for the year.....	30
Table 10 – DOE codes for the month.....	30
Table 11 –Token definition format.....	30
Table 12 – Data elements used in tokens.....	33

Table 13 – Token classes	34
Table 14 – Token sub-classes	35
Table 15 – TID calculation examples	36
Table 16 – Units of measure for electricity	37
Table 17 – Units of measure for other applications	37
Table 18 – Bit allocations for the TransferAmount	38
Table 19 – Maximum error due to rounding	38
Table 20 – Examples of TransferAmount values for credit transfer	38
Table 21 – Example of a CRC calculation	39
Table 22 – Permissible control field values	39
Table 23 – Selection of register to clear	40
Table 24 – Classification of vending keys	47
Table 25 – Classification of decoder keys	48
Table 26 – Permitted relationships between decoder key types	52
Table 27 – Definition of the PANBlock	54
Table 28 – Data elements in the PANBlock	54
Table 29 – Definition of the CONTROLBlock	55
Table 30 – Data elements in the CONTROLBlock	55
Table 31 – Range of applicable decoder reference numbers	55
Table 32 – List of applicable supply group codes	56
Table 33 – Sample substitution tables	60
Table 34 – Sample permutation table	61
Table 35 – Data elements in the APDU	64
Table 36 – Possible values for the AuthenticationResult	64
Table 37 – Possible values for the ValidationResult	65
Table 38 – Possible values for the TokenResult	65
Table 39 – Values stored in the DKP	69
Table 40 – Sample permutation table	70
Table 41 – Sample substitution tables	71
Table 42 – Entities/services requiring maintenance service	81
Table A.1 – Entities that participate in KMS processes	88
Table A.2 – Processes surrounding the payment meter and DecoderKey	89
Table A.3 – Processes surrounding the CryptographicModule	89
Table A.4 – Processes surrounding the SGC and VendingKey	90
Table B.1 – Typical entities deployed in an STS-compliant system	92
Table B.2 – Identifiers associated with the entities in an STS-compliant system	93
Table C.1 – Data elements associated with a SGC	96
Table C.2 – Data elements associated with the CryptographicModule	97
Table C.3 – Items that should be noted in purchase orders and tenders	100

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICITY METERING – PAYMENT SYSTEMS –**Part 41: Standard transfer specification (STS) –
Application layer protocol for one-way token carrier systems**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

International Standard IEC 62055-41 has been prepared by IEC technical committee 13: Electrical energy measurement and control.

This second edition cancels and replaces the first edition issued in 2007. It constitutes a technical revision. The main technical changes with regard to the previous edition are as follows:

- Class 2 token is extended to include credit transfer for gas and water with associated extensions in the display/test tokens.
- MfrCode is extended from 2 to 4 digits.
- Three token identifier base dates are defined to provide for more frequent key changes with TID roll-over procedures.
- A code of practice for the management of TID roll-over key changes in association with the revised set of base dates.
- Some clarifications and additional examples have been added.

The text of this standard is based on the following documents:

CDV	Report on voting
13/1530/CDV	13/1553/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

A list of all parts in the IEC 62055 series, published under the general title *Electricity metering – Payment systems*, can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The IEC 62055 series covers payment systems, encompassing the customer information systems, point of sale systems, token carriers, payment meters and the respective interfaces that exist between these entities. At the time of preparation of this standard, IEC 62055 comprised the following parts, under the general title, *Electricity metering – Payment systems*:

Part 21: Framework for standardization

Part 31: Particular requirements – Static payment meters for active energy (classes 1 and 2)

Part 41: Standard transfer specification – Application layer protocol for one-way token carrier systems

Part 51: Standard transfer specification – Physical layer protocol for one-way numeric and magnetic card token carriers

Part 52: Standard transfer specification – Physical layer protocol for a two-way virtual token carrier for direct local connection

Part 4x series specify application layer protocols and Part 5x series specify physical layer protocols.

The standard transfer specification (STS) is a secure message protocol that allows information to be carried between point of sale (POS) equipment and payment meters and it caters for several message types such as credit, configuration control, display and test instructions. It further specifies devices and codes of practice that allow for the secure management (generation, storage, retrieval and transportation) of cryptographic keys used within the system.

~~The national electricity utility in South Africa (Eskom) first developed and published the STS in 1993 and transferred ownership to the STS Association in 1998 for management and further development. It is currently the only open system for one-way payment meters and to date there are more than 4 million STS payment meters in the field, being used by approximately 400 utilities in 28 countries. The STS has been stable for 10 years, is the *de facto* industry standard at national and international level and hence has been developed as an IEC standard with the appropriate reformatting to comply with WG15 work. The primary application of the STS has been for use with payment meters without a tariff employing energy-based tokens, but it could be applied to currency-based token systems.~~

~~Prior to the development of the STS a variety of proprietary payment meters and POS equipment had been developed, which were, 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 payment meter and POS equipment had to be operated simultaneously. A standard transfer specification was developed that would allow for the application and inter-operability of payment meters and POS equipment from multiple manufacturers in a payment metering installation.~~

~~Two encryption algorithms are in this standard. The STA is used in existing systems, while the DEA may be considered for future systems.~~

The token carrier, which is not specified in this part of IEC 62055, is the physical device or medium used to transport the information from the POS equipment to the payment meter. Three types of token carriers are currently specified in IEC 62055-51 and IEC 62055-52; the magnetic card, the numeric token carrier and a virtual token carrier, which have been approved by the STS Association. New token carriers can be proposed as new work items through the National Committees or through the STS Association.

Although the main implementation of the STS is in the electricity supply industry, it inherently provides for the management of other utility services such as water and gas. It should be noted that certain functionalities may not apply across all utility services, for example, MaximumPowerLimit in the case of a water meter. Similarly, certain terminology may not be appropriate in non-electrical applications, for example, Load Switch in the case of a gas meter. Future revisions of the STS may allow for other token carrier technologies like smart cards and memory keys with two-way functionality and to cater for a real-time clock and complex tariffs in the payment meter.

Not all the requirements specified in this standard are compulsory for implementation in a particular system configuration and as a guideline, a selection of optional configuration parameters are listed in Clause C.11.

~~The STS Association has established D-type liaison with working group 15 of IEC TC 13 for the development of standards within the scope of the STS and is thus responsible for the maintenance of any such IEC standards that might be developed as a result of this liaison.~~

The STS Association is registered with the IEC as a Registration Authority for providing maintenance services in support of the STS (see Clause C.1 for more information).

Publication of IEC 62055-41 Ed 1 in May 2007 resulted in its rapid adoption as the preferred global standard for prepayment meters in many IEC member countries and a majority of IEC affiliate member countries. Prepayment electricity meters and their associated Payment Systems are now produced, operated and maintained by an ecosystem of utilities, meter manufacturers, meter operators, vending system providers, vending agents, banking institutions and adjacent industries. Multi-stakeholder interests are served by the STS Association comprising of more than 130 organisations located in over 24 countries. Interoperability and conformance to the Standard Transfer System (STS) are guaranteed by Conformance test specifications developed and administered by the STS Association. A full list of the STS Association services can be found at <http://www.sts.org.za>.

Developed originally for prepayment electricity meters in Africa – via an IEC TC13 WG15 D-type liaison with the STS Association – this IEC standard now serves more users in Asia than Africa, with a total of approximately 35 million meters operated by 400 utilities in 30 countries. Management of the technology has been administered by the STS Association in fulfilment of its role as the IEC appointed Registration Authority.

Global success has brought about an urgent need to extend the range of the numerical elements contained in IEC 62055-41 tables. In particular, the range of manufacturer numbers need to be extended beyond the 99 numbers originally provided. Also, application of the standard has been extended to cater for multi-energy systems including gas and water meters. Accordingly, there is a need to ensure that the content of IEC 62055-41 is maintained to cater for this market growth and multi-energy extensions.

Several corrections and clarifications are also required to bring Ed 1 up to date with current practice. This was considered by TC13 WG15 at its meeting on the 20 September 2012 in London, where it was agreed that IEC 62055-41 should be revised.

Only the most urgently required revisions have been incorporated in Edition 2 due to timing constraints, but it is anticipated that Edition 3 will consider further revisions to incorporate the following functionalities:

- Currency transfer
- Enhanced security on par with contemporary industry practice
- Complex functions fully harmonized with DLMS/COSEM suite
- Decentralized key management system with distributed architecture
- Conformance certification test suite in conjunction with IEC CB scheme

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning special reserved token identifier given in 6.3.5.2.

IEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured the IEC that he/she is willing to negotiate licences either free of charge or under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from:

Address: Itron Measurement and Systems, P.O. Box 4059, TygerValley 7536, Republic of South Africa
Tel: +27 21 928 1700
Fax: +27 21 928 1701
Website: <http://www.itron.com>

Address: Conlog (Pty) Ltd, P.O. Box 2332, Durban 4000, Republic of South Africa
Tel: +27 31 2681141
Fax: +27 31 2087790
Website: <http://www.conlog.co.za>

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. IEC shall not be held responsible for identifying any or all such patent rights.

ISO (www.iso.org/patents) and IEC (<http://patents.iec.ch>) maintain on-line data bases of patents relevant to their standards. Users are encouraged to consult the data bases for the most up to date information concerning patents.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this International Standard may involve the use of a maintenance service concerning encryption key management and the stack of protocols on which the present International Standard IEC 62055-41 is based [see Clause C.1]. The IEC takes no position concerning the evidence, validity and scope of this maintenance service.

The provider of the maintenance service has assured the IEC that he is willing to provide services under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the provider of the maintenance service is registered with the IEC. Information may be obtained from:

Address: The STS Association, P.O. Box 868, Ferndale 2160, Republic of South Africa
Tel: +27 11 061 5000
Fax: +27 86 679 4500
Email: sts@vdw.co.za
Website: <http://www.sts.org.za>