

**NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD**

**CEI  
IEC  
870-6-502**

Première édition  
First edition  
1995-12

---

---

**Matériels et systèmes de téléconduite –**

**Partie 6:**

Protocoles de téléconduite compatibles avec  
les normes ISO et les recommandations de l'UIT-T –  
Section 502: Définitions du protocole TASE.1

**Telecontrol equipment and systems –**

**Part 6:**

Telecontrol protocols compatible with ISO standards  
and ITU-T recommendations –  
Section 502: TASE.1 Protocol definitions



Numéro de référence  
Reference number  
CEI/IEC 870-6-502: 1995

## Numéros des publications

Depuis le 1<sup>er</sup> janvier 1997, les publications de la CEI sont numérotées à partir de 60000.

## Publications consolidées

Les versions consolidées de certaines publications de la CEI incorporant les amendements sont disponibles. Par exemple, les numéros d'édition 1.0, 1.1 et 1.2 indiquent respectivement la publication de base, la publication de base incorporant l'amendement 1, et la publication de base incorporant les amendements 1 et 2.

## Validité de la présente publication

Le contenu technique des publications de la CEI est constamment revu par la CEI afin qu'il reflète l'état actuel de la technique.

Des renseignements relatifs à la date de reconfirmation de la publication sont disponibles dans le Catalogue de la CEI.

Les renseignements relatifs à des questions à l'étude et des travaux en cours entrepris par le comité technique qui a établi cette publication, ainsi que la liste des publications établies, se trouvent dans les documents ci-dessous:

- «Site web» de la CEI\*
- **Catalogue des publications de la CEI**  
Publié annuellement et mis à jour régulièrement (Catalogue en ligne)\*
- **Bulletin de la CEI**  
Disponible à la fois au «site web» de la CEI\* et comme périodique imprimé

## Terminologie, symboles graphiques et littéraux

En ce qui concerne la terminologie générale, le lecteur se reportera à la CEI 60050: *Vocabulaire Electrotechnique International* (VEI).

Pour les symboles graphiques, les symboles littéraux et les signes d'usage général approuvés par la CEI, le lecteur consultera la CEI 60027: *Symboles littéraux à utiliser en électrotechnique*, la CEI 60417: *Symboles graphiques utilisables sur le matériel. Index, relevé et compilation des feuilles individuelles*, et la CEI 60617: *Symboles graphiques pour schémas*.

\* Voir adresse «site web» sur la page de titre.

## Numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series.

## Consolidated publications

Consolidated versions of some IEC publications including amendments are available. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

## Validity of this publication

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology.

Information relating to the date of the reconfirmation of the publication is available in the IEC catalogue.

Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is to be found at the following IEC sources:

- **IEC web site\***
- **Catalogue of IEC publications**  
Published yearly with regular updates (On-line catalogue)\*
- **IEC Bulletin**  
Available both at the IEC web site\* and as a printed periodical

## Terminology, graphical and letter symbols

For general terminology, readers are referred to IEC 60050: *International Electrotechnical Vocabulary* (IEV).

For graphical symbols, and letter symbols and signs approved by the IEC for general use, readers are referred to publications IEC 60027: *Letter symbols to be used in electrical technology*, IEC 60417: *Graphical symbols for use on equipment. Index, survey and compilation of the single sheets* and IEC 60617: *Graphical symbols for diagrams*.

\* See web site address on title page.

NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD

CEI  
IEC  
870-6-502

Première édition  
First edition  
1995-12

---

---

**Matériels et systèmes de téléconduite –**

**Partie 6:**

Protocoles de téléconduite compatibles avec  
les normes ISO et les recommandations de l'UIT-T –  
Section 502: Définitions du protocole TASE.1

**Telecontrol equipment and systems –**

**Part 6:**

Telecontrol protocols compatible with ISO standards  
and ITU-T recommendations –  
Section 502: TASE.1 Protocol definitions

© CEI 1995 Droits de reproduction réservés — Copyright — all rights reserved

Aucune partie de cette publication ne peut être reproduite ni  
utilisée sous quelque forme que ce soit et par aucun pro-  
cédé, électronique ou mécanique, y compris la photocopie et  
les microfilms, sans l'accord écrit de l'éditeur.

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 the publisher.

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembe Genève, Suisse

---

---



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

U

Pour prix, voir catalogue en vigueur  
For price, see current catalogue

# SOMMAIRE

	Pages
AVANT-PROPOS.....	4
Articles	
1 Domaine d'application et objet.....	6
2 Références normatives .....	8
3 Définitions du modèle de référence .....	10
3.1 Définitions du modèle de référence.....	10
3.2 Définitions des conventions de services.....	10
3.3 Définitions du service de présentation .....	10
3.4 Définitions du contrôle d'association.....	10
3.5 Définitions des opérations à distance.....	10
3.6 Définitions des services de TASE.1 .....	12
3.7 Définitions de la spécification de protocole TASE.1.....	12
4 Abréviations.....	12
5 Conventions.....	14
6 Généralités sur le protocole.....	14
6.1 Service fourni.....	14
6.2 Utilisation des services.....	14
6.3 Modèle pour les services de TASE.1 .....	16
7 Eléments de procédure .....	16
7.1 Conventions descriptives.....	16
7.2 Correspondance avec les services ACSE et ROSE.....	16
7.3 Entrer et sortir de l'environnement TASE.1 .....	20
7.4 Exploitation dans l'environnement TASE.1 .....	26
8 Définition de syntaxe abstraite .....	42
9 Conformité .....	42
9.1 Enoncé des besoins .....	44
9.2 Exigences statiques .....	44
9.3 Exigences dynamiques.....	44
9.4 Déclaration de conformité d'implémentation du protocole (PICS).....	44
Annexe A – TASE.1 en ASN.1.....	47

## CONTENTS

	Page
FOREWORD.....	5
Clause	
1 Scope and object .....	7
2 Normative references .....	9
3 Definitions.....	11
3.1 Reference model definitions .....	11
3.2 Service conventions definitions.....	11
3.3 Presentation service definitions .....	11
3.4 Association control definitions .....	11
3.5 Remote operations definitions.....	11
3.6 TASE.1 service definitions.....	13
3.7 TASE.1 protocol specification definitions .....	13
4 Abbreviations .....	13
5 Conventions.....	15
6 Overview of the protocol.....	15
6.1 Service provided .....	15
6.2 Use of services .....	15
6.3 Model for TASE.1 services .....	17
7 Elements of procedure .....	17
7.1 Descriptive conventions.....	17
7.2 Mapping to ACSE and ROSE services .....	17
7.3 Entering and leaving the TASE.1 environment .....	21
7.4 Operating in the TASE.1 environment.....	27
8 Abstract syntax definition .....	43
9 Conformance .....	43
9.1 Statement requirements .....	45
9.2 Static requirements .....	45
9.3 Dynamic requirements.....	45
9.4 Protocol implementation conformance statement (PICS) .....	45
Annex A – TASE.1 in ASN.1 .....	47

# COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

## MATÉRIELS ET SYSTÈMES DE TÉLÉCONDUITE –

### Partie 6: Protocoles de téléconduite compatibles avec les normes ISO et les recommandations de l'UIT-T –

#### Section 502: Définitions du protocole TASE.1

##### AVANT-PROPOS

- 1) La CEI (Commission Electrotechnique Internationale) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de la CEI). La CEI a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. A cet effet, la CEI, entre autres activités, publie des Normes Internationales. Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec la CEI, participent également aux travaux. La CEI collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
- 2) Les décisions ou accords officiels de la CEI concernant les questions techniques, représentent, dans la mesure du possible un accord international sur les sujets étudiés, étant donné que les Comités nationaux intéressés sont représentés dans chaque comité d'études.
- 3) Les documents produits se présentent sous la forme de recommandations internationales. Ils sont publiés comme normes, rapports techniques ou guides et agréés comme tels par les Comités nationaux.
- 4) Dans le but d'encourager l'unification internationale, les Comités nationaux de la CEI s'engagent à appliquer de façon transparente, dans toute la mesure possible, les Normes Internationales de la CEI dans leurs normes nationales et régionales. Toute divergence entre la recommandation de la CEI et la norme nationale correspondante doit être indiquée en termes clairs dans cette dernière.
- 5) La CEI n'a fixé aucune procédure concernant le marquage comme indication d'approbation et sa responsabilité n'est pas engagée quand un matériel est déclaré conforme à l'une de ses normes.
- 6) L'attention est attirée sur le fait que certains des éléments de la présente Norme internationale peuvent faire l'objet de droits de propriété intellectuelle ou de droits analogues. La CEI ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de propriété et de ne pas avoir signalé leur existence.

La Norme internationale CEI 870-6-502 a été établie par le comité d'études 57 de la CEI: Conduite des systèmes de puissance et communications associées.

Le texte de cette norme est issu des documents suivants:

FDIS	Rapport de vote
57/223/FDIS	57/259/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

L'annexe A fait partie intégrante de cette norme.

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## TELECONTROL EQUIPMENT AND SYSTEMS –

## Part 6: Telecontrol protocols compatible with ISO standards and ITU-T recommendations –

## Section 502: TASE.1 Protocol definitions

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 870-6-502 has been prepared by IEC technical committee 57: Power system control and associated communications.

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

FDIS	Report on voting
57/223/FDIS	57/259/RVD

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

Annex A forms an integral part of this standard.

## MATÉRIELS ET SYSTÈMES DE TÉLÉCONDUITE –

### Partie 6: Protocoles de téléconduite compatibles avec les normes ISO et les recommandations de l'UIT-T –

#### Section 502: Définitions du protocole TASE.1

##### 1 Domaine d'application et objet

Cette section de la CEI 870-6 spécifie le protocole pour les services fournis par l'élément de service d'application – TASE (Telecontrol Application Service Element) numéro 1 – pour supporter l'échange de données de processus entre systèmes de téléconduite.

Les principaux objectifs de la définition de ces services sont:

- simplicité;
- adaptabilité;
- indépendance des couches basses de l'architecture;
- extensibilité;
- efficacité;
- performance;
- maintenabilité.

Les services de TASE.1 sont:

- services pour définir, modifier, supprimer et examiner des groupes d'informations;
- services pour gérer le transfert de groupes d'informations et de blocs d'informations à partir de différents groupes;
- services pour les contrôles de supervision.

La présente section de la CEI 870-6 spécifie le protocole (syntaxe abstraite) et les procédures TASE (Elément de Service d'Application de Téléconduite). Les services de TASE.1 sont fournis en conjonction avec les services de ROSE (Remote Operations Service Element = Eléments de Service d'Opérations à Distance) (ISO/IEC 9072-1) les protocoles ROSE (ISO/IEC 9072-2), ainsi que les services de ACSE (Association Control Service Element = Elément de Service de Contrôle d'Association) (ISO 8649) et les protocoles ACSE (ISO 8650).

Les procédures TASE.1 sont définies en termes:

- a) d'interactions entre des protocoles de machines TASE.1 homologues grâce aux services de ROSE;
- b) d'interactions entre les protocoles de machines TASE.1 et leurs services utilisateurs.

Le domaine du protocole est limité à l'interconnexion de systèmes. Il ne peut ni spécifier ni restreindre les implémentations possibles d'interfaces dans un système de téléconduite.

## TELECONTROL EQUIPMENT AND SYSTEMS –

### Part 6: Telecontrol protocols compatible with ISO standards and ITU-T recommendations –

#### Section 502: TASE.1 Protocol definitions

##### 1 Scope and object

This section of IEC 870-6 specifies the protocol for the services provided by an application-service-element – the Telecontrol Application Service Element no. 1 (TASE.1) – to support the exchange of process data between telecontrol systems.

The main goals for the design of these services are:

- simplicity;
- adaptability;
- independence of lower layer architecture;
- extensibility;
- efficiency;
- performance;
- maintainability.

The services of TASE.1 are:

- services for defining, changing, deleting and inspecting groups of information;
- services for managing the transfer of information groups and blocks of information from different groups;
- services for supervisory control.

This section of IEC 870-6 specifies the protocol (abstract syntax) and the procedures for the Telecontrol Application Service Element (TASE). The TASE.1 services are provided in conjunction with the Remote Operations Service Element (ROSE) services (ISO/IEC 9072-1) and the ROSE protocol (ISO/IEC 9072-2), and the Association Control Element (ACSE) services (ISO 8649) and the ACSE protocol (ISO 8650).

The TASE.1 procedures are defined in terms of:

- a) the interactions between peer TASE.1 protocol machines through the use of ROSE services;
- b) the interactions between the TASE.1 protocol machine and its service-user.

The scope of the protocol is limited to the interconnection of systems. It does not specify or restrict the possible implementation of interfaces within a telecontrol system.

## 2 Références normatives

Les documents normatifs suivants contiennent des dispositions qui, par suite de la référence qui y est faite, constituent des dispositions valables pour la présente section de la CEI 870-6. Au moment de la publication, les éditions indiquées étaient en vigueur. Tout document normatif est sujet à révision et les parties prenantes aux accords fondés sur la présente section de la CEI 870-6 sont invitées à rechercher la possibilité d'appliquer les éditions les plus récentes des documents normatifs indiqués ci-après. Les membres de la CEI et de l'ISO possèdent le registre des Normes internationales en vigueur.

CEI 870-6-501: 1995, *Matériels et systèmes de téléconduite – Partie 6: Protocoles de téléconduite compatibles avec les normes ISO et les recommandations de l'UIT-T – Section 501: Définitions des services TASE.1*

ISO/IEC 8824: 1990, *Technologies de l'information – Interconnexion de systèmes ouverts – Spécification de la notation de syntaxe abstraite numéro 1 (ASN.1)*

ISO/IEC 8825: 1990, *Technologies de l'information – Interconnexion de systèmes ouverts – Spécification de règles de base pour coder la notation de syntaxe abstraite numéro 1 (ASN.1)*

ISO/IEC 9072-1: 1989, *Systèmes de traitement de l'information – Communication de texte – Opérations à distance – Partie 1: Modèle, notation et définition du service*

ISO/IEC 9072-2: 1989, *Systèmes de traitement de l'information – Communication de texte – Opérations à distance – Partie 2: Spécification du protocole*

ISO/DIS 8825-2\*, *Technologies de l'information – Interconnexion de systèmes ouverts (OSI) – Spécification de règles de base pour coder la notation de syntaxe abstraite numéro 1 (ASN.1) – Partie 2: Règles de codage compacté*

ISO 7498: 1984, *Systèmes de traitement de l'information – Interconnexion de systèmes ouverts – Modèle de référence de base*

ISO/TR 8509: 1987, *Systèmes de traitement de l'information – Interconnexion de systèmes ouverts – Conventions de service*

ISO 8649: 1988, *Systèmes de traitement de l'information – Interconnexion de systèmes ouverts – Définition du service pour l'élément de service de contrôle d'association*

ISO 8650: 1988, *Systèmes de traitement de l'information – Interconnexion de systèmes ouverts – Spécification du protocole pour l'élément de service de contrôle d'association*

ISO 8822: 1994, *Systèmes de traitement de l'information – Interconnexion de systèmes ouverts – Définition du service de présentation en mode connexion*

ISO 8859-1: 1987, *Traitement de l'information – Jeu de caractères graphiques codés sur un seul octet – Partie 1: Alphabet latin n° 1*

---

\* Actuellement au stade de projet de norme internationale.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 870-6. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 870-6 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 870-6-501: 1995, *Telecontrol equipment and systems – Part 6: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – Section 501: TASE.1 service definitions*

ISO/IEC 8824: 1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*

ISO/IEC 8825: 1990, *Information technology – Open Systems Interconnection – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*

ISO/IEC 9072-1: 1989, *Information processing systems – Text communication – Remote Operations – Part 1: Model, notation and service definition*

ISO/IEC 9072-2: 1989, *Information processing systems – Text communication – Remote Operations – Part 2: Protocol specification*

ISO/DIS 8825-2\*, *Information technology – Open Systems Interconnection – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1) – Part 2: Packed encoding rules*

ISO 7498: 1984, *Information processing systems – Open Systems Interconnection – Basic Reference Model*

ISO/TR 8509: 1987, *Information processing systems – Open Systems Interconnection – Service conventions*

ISO 8649: 1988, *Information processing systems – Open Systems Interconnection – Service definition for the Association Control Service Element*

ISO 8650: 1988, *Information processing systems – Open Systems Interconnection – Protocol specification for the Association Control Service Element*

ISO 8822: 1994, *Information technology – Open Systems Interconnection – Presentation service definition*

ISO 8859-1: 1987, *Information processing – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

---

\* At present at the stage of Draft International Standard.

### 3 Définitions

Pour les besoins de la présente section de la CEI 870-6, les définitions suivantes s'appliquent.

#### 3.1 Définitions du modèle de référence (termes définis dans l'ISO 7498)

- a) Couche application = application layer
- b) Unité de données de protocole application = application-protocol-data-unit
- c) Information de contrôle de protocole d'application = application-protocol-control-information
- d) Entité application = application-entity
- e) Processus d'application = application-process
- f) Élément de service d'application = application-service-element
- g) Élément de service = service-element
- h) Élément utilisateur = user-element

#### 3.2 Définitions des conventions de services (termes définis dans l'ISO/TR 8509)

- a) Service utilisateur = service-user
- b) Service confirmé = confirmed service
- c) Service non confirmé = non-confirmed service
- d) Service initialisé par le prestataire = provider-initiated service
- e) Primitive
- f) Demande = request
- g) Indication
- h) Réponse
- i) Confirmation = confirm

#### 3.3 Définitions du service de présentation (termes définis dans l'ISO 8822)

- a) Syntaxe abstraite = abstract syntax
- b) Nom de la syntaxe abstraite = abstract syntax name
- c) Nom de la syntaxe de transfert = transfer syntax name

#### 3.4 Définitions du contrôle d'association (termes définis dans l'ISO 8649)

- a) Association d'application = application-association; association
- b) Contexte d'application = application-context
- c) Élément de service de contrôle d'application = Application Control Service Element

#### 3.5 Définitions des opérations à distance (termes définis dans l'ISO 9072)

- a) Utilisateur ACSE = ACSE-user
- b) Utilisateur ROSE = ROSE-user
- c) Associer = BIND
- d) Séparer = UNBIND
- e) Opérations à distance = Remote Operations
- f) Notation RO = RO-notation
- g) Élément de service d'opération à distance = Remote Operation Service Element

### 3 Definitions

For the purpose of this section of IEC 870-6, the following definitions apply.

#### 3.1 *Reference model definitions* (defined in ISO 7498)

- a) Application layer
- b) Application-protocol-data-unit
- c) Application-protocol-control-information
- d) Application-entity
- e) Application-process
- f) Application-service-element
- g) Service-element
- h) User-element

#### 3.2 *Service conventions definitions* (defined in ISO/TR 8509)

- a) Service-user
- b) Confirmed service
- c) Non-confirmed service
- d) Provider-initiated service
- e) Primitive
- f) Request
- g) Indication
- h) Response
- i) Confirm

#### 3.3 *Presentation service definition* (defined in ISO 8822)

- a) Abstract syntax
- b) Abstract syntax name
- c) Transfer syntax name

#### 3.4 *Association control definitions* (defined in ISO 8649)

- a) Application-association; association
- b) Application-context
- c) Application Control Service Element

#### 3.5 *Remote operations definitions* (defined in ISO 9072)

- a) ACSE-user
- b) ROSE-user
- c) BIND
- d) UNBIND
- e) Remote Operations
- f) RO-notation
- g) Remote Operation Service Element

3.6 *Définitions des services de TASE.1* (termes définis dans la CEI 870-6-501)

- a) Initiateur = initiator
- b) Répondeur = responder

3.7 *Définitions de la spécification de protocole TASE.1*

3.7.1 **état inactif** = idle state: Entité connectée attendant un événement à venir.

3.7.2 **entité initialisatrice** = initiating entity: Entité application dans l'état inactif qui reçoit un événement "demande" de l'utilisateur de service des couches supérieures.

3.7.3 **entité répondeuse** = responding entity: Entité application dans l'état inactif qui reçoit un événement entrant de son prestataire de service des couches inférieures.

3.7.4 **DCUT1**: Horloge utilisée par le processus application pour superviser l'utilisateur de service application (application-service-user).

3.7.5 **DCLT1**: Horloge utilisée par le processus application pour superviser l'entité homologue éloignée.

3.7.6 **protocole de machine TASE** = TASE-protocol-machine: Le protocole de machine pour TASE.1 spécifié dans cette section.

4 **Abréviations**

ACSE	Association Control Service Element = élément de service de contrôle d'association
AE	Application-entity = entité application
APCI	Application Protocol Control Information = information de contrôle de protocole application
APDU	Application Protocol Data Unit = unité de données de protocole application
OSIE	Open Systems Interconnection Environment = environnement d'interconnexion de systèmes ouverts
PDU	Protocol Data Unit = unité de données de protocole
ROSE	Remote Operations Service Element = élément de service d'opérations à distance
TASE	Telecontrol Application Service Element = élément de service d'application de téléconduite
TPM	Telecontrol Protocol Machine = protocole de machine de téléconduite.

### 3.6 TASE.1 service definitions (defined in IEC 870-6-501)

- a) Initiator
- b) Responder

### 3.7 TASE.1 protocol specification definitions

3.7.1 **idle state:** Connected entity waiting for an incoming event.

3.7.2 **initiating entity:** Application entity in idle state that receives a request event from the upper service-user.

3.7.3 **responding entity:** Application entity in idle state that receives an incoming event from its lower service-provider.

3.7.4 **DCUT1:** Timer used by the application-process for supervision of the application-service-user.

3.7.5 **DCLT1:** Timer used by the application-process for supervision of the remote peer entity.

3.7.6 **TASE-protocol-machine:** The protocol machine for the TASE.1 specified in this section of the TASE.1 standard.

## 4 Abbreviations

ACSE	Association Control Service Element
AE	Application-entity
APCI	Application Protocol Control Information
APDU	Application Protocol Data Unit
OSIE	Open Systems Interconnection Environment
PDU	Protocol Data Unit
ROSE	Remote Operations Service Element
TASE	Telecontrol Application Service Element
TPM	Telecontrol Protocol Machine.

## 5 Conventions

Dans la présente section de la CEI 870-6, on utilise les conventions suivantes:

- a) les définitions de syntaxe abstraites de l'annexe A sont définies à l'aide de la notation de syntaxe abstraite définie dans l'ISO/IEC 8824;
- b) les macros opérations à distance (notation RO) les éléments de service d'application et les macros de contexte d'application sont définis dans l'ISO 9072-1.

## 6 Généralités sur le protocole

### 6.1 Service fourni

Le protocole spécifié dans cette partie de la norme TASE.1 fournit les services TASE.1 définis dans la définition des services de TASE.1. Ces services sont énumérés dans le tableau 1.

**Tableau 1 – Sommaire des services de TASE.1**

Service	Type
TASE Bind	Confirmé
TASE Unbind	Confirmé
TASE Abort	Initié par le fournisseur de Service
Group Management	Confirmé
Define Group	Confirmé
Get Group	Confirmé
Requested Data Transfer	Confirmé
Unsolicited Data Transfer Management	Confirmé
Send Non-Confirmed Data	Non confirmé
Send Confirmed Data	Confirmé
Send Mixed Data	Non confirmé
Command Transfer	Confirmé
Test Association	Confirmé

### 6.2 Utilisation des services

Le protocole TASE.1 utilise les services sous-jacents comme on les décrit ci-dessous.

#### 6.2.1 Utilisation du service ROSE

Le protocole de machine de TASE.1 (TPM) utilise les services RO-INVOKE (invocation), RO-RESULT (résultat), RO-ERROR (erreur), RO-REJECT-U (rejet U) et RO-REJECT-P (rejet P) de ROSE.

Les opérations à distance de TASE.1 sont des opérations de classe 2 (asynchrone, compte-rendu de succès ou d'échec). Les exceptions à cette règle générale sont les deux services non confirmés Send Non-confirmed Data (envoi de données non confirmé) et Send Mixed Data (envoi de données mélangées) qui sont des opérations de classe 5 (asynchrone, seulement compte-rendu d'échec s'il y a lieu). Les restrictions d'usage des opérations par l'initiateur ou par le répondeur sont définies dans l'article 7.

## 5 Conventions

This section of IEC 870-6 makes use of the following conventions:

- a) the abstract syntax definitions in annex A are defined using the abstract syntax notation defined in ISO/IEC 8824;
- b) the remote operation macros (RO-notation), and the application-service-element and application-context macros are defined in ISO 9072-1.

## 6 Overview of the protocol

### 6.1 Service provided

The protocol specified in this section of the TASE.1 standard provides the TASE.1 services defined in the TASE.1 service definition. These services are listed in table 1.

**Table 1 – Summary of TASE.1 services**

Service	Type
TASE Bind	Confirmed
TASE Unbind	Confirmed
TASE Abort	Provider-Initiated
Group Management	Confirmed
Define Group	Confirmed
Get Group	Confirmed
Requested Data Transfer	Confirmed
Unsolicited Data Transfer Management	Confirmed
Send Non-Confirmed Data	Non-confirmed
Send Confirmed Data	Confirmed
Send Mixed Data	Non-confirmed
Command Transfer	Confirmed
Test Association	Confirmed

### 6.2 Use of services

The TASE.1 protocol makes use of the underlying services as described below.

#### 6.2.1 Use of the ROSE Service

The TASE.1 protocol machine (TPM) uses the RO-INVOKE, RO-RESULT, RO-ERROR, RO-REJECT-U and RO-REJECT-P services of the ROSE.

The remote operations of the TASE.1 are class 2 (asynchronous, reporting success or failure) operations. Excepted from this general rule are the two non-confirmed services, Send Non-Confirmed Data and Send Mixed Data services, which are class 5 operations (asynchronous, outcome not reported). The restrictions on the use of the operations by the initiator and responder are defined in clause 7.

Les associations d'applications de TASE.1 sont des associations de classe 3, dans lesquelles l'initiateur et le répondeur peuvent chacun invoquer des opérations.

Les services de TASE.1 sont définis au moyen de la notation RO et de la notation de syntaxe abstraite (ASN.1) définie dans l'ISO 8824.

### 6.2.2 Utilisation du service ACSE

ACSE pourvoit au contrôle des associations d'applications (mise en place, libération, abandon) entre entités application.

Les macros de ROSE Bind (associer) et Unbind (séparer) sont les seuls utilisateurs des services A-ASSOCIATE (association) et A-RELEASE (libération) de ACSE en mode normal. Le protocole de machine TASE.1 (TPM) est l'utilisateur des services de ACSE A-P-ABORT et A-ABORT.

### 6.3 Modèle pour les services de TASE.1

Le protocole de machine de TASE.1 (TPM) communique avec son utilisateur de service au moyen de primitives définies dans définitions des services de TASE.1 (voir CEI 870-6-501).

Le TPM est dirigé par des primitives de demande de service de TASE.1 de son utilisateur de services et par des primitives indication des services ROSE. En retour, le TPM émet des primitives indication vers son utilisateur de services et des primitives demande vers les services de ROSE utilisés.

## 7 Eléments de procédure

### 7.1 Conventions descriptives

Les paragraphes 7.3 et 7.4 définissent la machine protocolaire de TASE.1 (TPM) en utilisant un mécanisme descriptif de diagramme d'état. Tous les diagrammes illustrent le point de vue du prestataire de service TASE.1.

Les diagrammes d'état ne constituent pas une description formelle de la TPM. Ils sont inclus pour fournir une spécification plus précise des éléments de procédure des services de TASE.1 définis dans la norme de Définition du Service de TASE.1 (voir CEI 870-6-501).

La notation utilisée pour les diagrammes d'état est la même que celle utilisée pour la Spécification du Protocole ROSE, annexe A. De ce fait, elle reprend les mêmes conventions (voir ISO 9072-2).

### 7.2 Correspondance avec les services ACSE et ROSE

Ce paragraphe définit comment TPM (protocole de machine de téléconduite) utilise les services de ACSE (élément de service de contrôle d'association) et ROSE (élément de service d'opérations à distance). Toute utilisation de ACSE et de ROSE, autre que celle qui est décrite dans ce paragraphe doit être considérée comme une erreur de protocole.

Le protocole TASE.1 se place au sein de l'OSIE (Open Systems Interconnection Environment = environnement des systèmes ouverts) dans la Couche Application. En tant que ASE (application-service-element = élément de service d'application), TASE.1 utilise les services correspondants de ACSE et de ROSE. L'utilisateur TASE.1 peut être un élément d'un processus d'application ou un autre ASE.

The application-associations of TASE.1 are association class 3, by which both initiator and responder entities can invoke operations.

The TASE.1 services are defined by means of RO-notation and the abstract syntax notation (ASN.1) defined in ISO 8824.

### 6.2.2 Use of the ACSE service

The ACSE provides for the control (establishment, release, abort) of application-associations between application-entities.

The ROSE Bind and Unbind macros are the sole users of the A-ASSOCIATE and A-RELEASE services of ACSE in normal mode. The TASE.1 protocol-machine (TPM) is the user of the A-P-ABORT and A-ABORT services of the ACSE.

### 6.3 Model for TASE.1 services

The TASE.1 protocol-machine (TPM) communicates with its service-user by means of primitives defined in the TASE.1 service definition (see IEC 870-6-501).

The TPM is driven by TASE.1 service request primitives from its service-user, and by indication primitives of the ROSE services. The TPM, in turn, issues indication primitives to its service-user, and request primitives on the used ROSE services.

## 7 Elements of procedure

### 7.1 Descriptive conventions

Paragraphs 7.3 and 7.4 define a TASE.1 Protocol Machine (TPM) using state table descriptive mechanism. All tables are shown from the viewpoint of the TASE.1 service-provider.

The state tables do not constitute a formal definition of the TPM. They are included to provide a more precise specification of the elements of procedure for the TASE.1 services defined in the TASE.1 Service Definition (see IEC 870-6-501).

The notation used in the state tables is the same as used in ROSE Protocol Specification, annex A, and thus follows the same conventions (see ISO 9072-2).

### 7.2 Mapping to ACSE and ROSE services

This subclause defines how the Association Control Service Element (ACSE) and the Remote Operation Service Element (ROSE) services are used by the Telecontrol Protocol Machine (TPM). Any use of the ACSE or ROSE services other than described in this subclause shall constitute a protocol error.

The TASE.1 protocol is positioned within the Open Systems Interconnection Environment (OSIE) within the application layer. As an application-service-element (ASE), TASE.1 makes use of and maps onto the services and service primitives of ACSE and ROSE. The TASE.1-user may be elements within the application-process or another ASE.

7.2.1 Correspondance des primitives de service de TASE.1

Toutes les primitives de service de TASE.1 doivent correspondre aux primitives de service de ROSE et ACSE. La correspondance est décrite dans le tableau 2 ci-dessous.

**Tableau 2 – Correspondance des primitives de service de TASE.1 avec les primitives de service de ROSE et de ACSE**

Primitive de service TASE1	Primitives de service ACSE ou ROSE	Invoqué par
TASE Bind request	A-ASSOCIATE request, indication	Initiateur
TASE Bind response	A-ASSOCIATE response, confirm	Répondeur
TASE Unbind request	A-RELEASE request, indication	Initiateur
TASE Unbind response	A-RELEASE response, confirm	Répondeur
TASE Abort indication	A-ABORT indication	Fournisseur du service ACSE
Group Management request	RO-INVOKE request, indication	Initiateur
Group Management response	RO-RESULT request, indication or RO-ERROR request, indication	Répondeur
Define Group request	RO-INVOKE request, indication	Initiateur
Define Group response	RO-RESULT request, indication or RO-ERROR request, indication	Répondeur
Get Group request	RO-INVOKE request, indication	Initiateur
Get Group response	RO-RESULT request, indication or RO-ERROR request, indication	Répondeur
Requested Data Transfer request	RO-INVOKE request, indication	Initiateur
Requested Data Transfer response	RO-RESULT request, indication or RO-ERROR request, indication	Répondeur
Unsolicited Data Transfer Management request	RO-INVOKE request, indication	Initiateur
Unsolicited Data Transfer Management response	RO-RESULT request, indication or RO-ERROR request, indication	Répondeur
Send Non-Confirmed Data request	RO-INVOKE request, indication	Répondeur
Send Confirmed Data request	RO-INVOKE request, indication	Répondeur
Send Confirmed Data response	RO-RESULT request, indication or RO-ERROR request, indication	Initiateur
Send Mixed Data request	RO-INVOKE request, indication	Répondeur
Command Transfer request	RO-INVOKE request, indication	Initiateur
Command Transfer response	RO-RESULT request, indication or RO-ERROR request, indication	Répondeur
Test Association request	RO-INVOKE request, indication	Initiateur
Test Association response	RO-RESULT request, indication or RO-ERROR request, indication	Répondeur

### 7.2.1 Mapping of TASE.1 service primitives

All TASE.1 service primitives shall be mapped on ACSE or ROSE services primitives. The mapping is described in table 2 below.

**Table 2 – Mapping of TASE.1 services onto ROSE and ACSE service primitives**

TASE.1 service primitive	ACSE or ROSE service primitives	Invoked by
TASE Bind request	A-ASSOCIATE request, indication	Initiator
TASE Bind response	A-ASSOCIATE response, confirm	Responder
TASE Unbind request	A-RELEASE request, indication	Initiator
TASE Unbind response	A-RELEASE response, confirm	Responder
TASE Abort indication	A-ABORT indication	ACSE service provider
Group Management request	RO-INVOKE request, indication	Initiator
Group Management response	RO-RESULT request, indication or RO-ERROR request, indication	Responder
Define Group request	RO-INVOKE request, indication	Initiator
Define Group response	RO-RESULT request, indication or RO-ERROR request, indication	Responder
Get Group request	RO-INVOKE request, indication	Initiator
Get Group response	RO-RESULT request, indication or RO-ERROR request, indication	Responder
Requested Data Transfer request	RO-INVOKE request, indication	Initiator
Requested Data Transfer response	RO-RESULT request, indication or RO-ERROR request, indication	Responder
Unsolicited Data Transfer Management request	RO-INVOKE request, indication	Initiator
Unsolicited Data Transfer Management response	RO-RESULT request, indication or RO-ERROR request, indication	Responder
Send Non-Confirmed Data request	RO-INVOKE request, indication	Responder
Send Confirmed Data request	RO-INVOKE request, indication	Responder
Send Confirmed Data response	RO-RESULT request, indication or RO-ERROR request, indication	Initiator
Send Mixed Data request	RO-INVOKE request, indication	Responder
Command Transfer request	RO-INVOKE request, indication	Initiator
Command Transfer response	RO-RESULT request, indication or RO-ERROR request, indication	Responder
Test Association request	RO-INVOKE request, indication	Initiator
Test Association response	RO-RESULT request, indication or RO-ERROR request, indication	Responder

Les services ACSE A-P-ABORT et A-ABORT correspondent directement aux services Abort (abandon) de TASE, en conséquence TASE.1 ne définit pas de Abort PDU.

La correspondance de la notation de syntaxe abstraite de TASE.1 avec les services de ROSE et de ACSE est définie dans l'ISO/IEC 9072-1.

Une implémentation d'un prestataire de service TASE.1 peut supporter des primitives de service d'utilisateurs agissant uniquement en tant qu'initiateur, ou uniquement en tant que répondeur, ou des primitives de service d'un utilisateur agissant à la fois en tant qu'initiateur et répondeur.

### 7.3 Entrer et sortir de l'environnement TASE.1

Les services TASE Bind et TASE Unbind fournissent les mécanismes pour entrer et sortir de l'environnement TASE.1. Le modèle de ces services est décrit dans l'article 9 de la CEI 870-6-501. Deux invocations d'AE entrent dans l'environnement TASE.1 quand elles ont défini toutes les deux le même contexte d'application TASE.1 et que chaque invocation AE a identifié son contexte pour l'invocation AE homologue.

**Tableau 3 – Liste des événements entrants**

Nom abrégé	Origine	Nom et description
TBreq	TASE.1-user	TASE Bind request primitive
TBRE+	TPM-peer	TASE Bind response (result = "accepted") as user data on a A-ASSOCIATE confirm primitive
TBRE-	TPM-peer	TASE Bind response (result = "rejected") as user data on a A-ASSOCIATE confirm primitive
A-ASCnf-	AC-provider	A-ASSOCIATE confirm primitive (result = "rejected (permanent)" or result = "rejected (transit)")
TBrsp+	TASE.1-user	TASE Bind response primitive (result = "accepted")
TBrsp-	TASE.1-user	TASE Bind response primitive (result = "rejected")
TBRQ	TPM-peer	TASE Bind request as user data on a A-ASSOCIATE request primitive
TUBreq	TASE.1-user	TASE Unbind request primitive
TUBrsp+	TASE.1-user	TASE Unbind response primitive (result = "ok")
TUBrsp-	TASE.1-user	TASE Unbind response primitive (result = "error")
TUBRQ	TPM-peer	TASE Unbind request as user data on a A-RELEASE indication primitive
TUBRE+	TPM-peer	TASE Unbind response (result = "ok") as user data on a A-RELEASE confirm primitive
TUBRE-	TPM-peer	TASE Unbind response (result = "error") as user data on a A-RELEASE confirm primitive
A-ABRind	AC-provider	A-ABORT indication primitive

The ACSE A-P-ABORT and A-ABORT services are mapped directly to the TASE Abort service, and hence TASE.1 does not define an Abort PDU.

The mapping of the abstract-syntax notation of the TASE.1 onto ROSE and ACSE services is as defined in ISO/IEC 9072-1.

An implementation of the TASE.1 service-provider can support service primitives for users acting only as Initiators, or only as Responders, or service primitives for users acting as both Initiators and Responders.

### 7.3 Entering and leaving the TASE.1 environment

The TASE Bind and TASE Unbind services provide the mechanism for entering and leaving the TASE.1 environment. The model for these services is described in clause 9 of IEC 870-6-501. Two AE-invocations enter the TASE.1 environment when they both have defined the same TASE.1 application context and each AE-invocation has identified its context for the peer AE-invocation.

**Table 3 – Incoming event list**

Abbreviated name	Source	Name and description
TBreq	TASE.1-user	TASE Bind request primitive
TBRE+	TPM-peer	TASE Bind response (result = "accepted") as user data on a A-ASSOCIATE confirm primitive
TBRE-	TPM-peer	TASE Bind response (result = "rejected") as user data on a A-ASSOCIATE confirm primitive
A-ASCnf-	AC-provider	A-ASSOCIATE confirm primitive (result = "rejected (permanent)" or result = "rejected (transit)")
TBrsp+	TASE.1-user	TASE Bind response primitive (result = "accepted")
TBrsp-	TASE.1-user	TASE Bind response primitive (result = "rejected")
TBRQ	TPM-peer	TASE Bind request as user data on a A-ASSOCIATE request primitive
TUBreq	TASE.1-user	TASE Unbind request primitive
TUBrsp+	TASE.1-user	TASE Unbind response primitive (result = "ok")
TUBrsp-	TASE.1-user	TASE Unbind response primitive (result = "error")
TUBRQ	TPM-peer	TASE Unbind request as user data on a A-RELEASE indication primitive
TUBRE+	TPM-peer	TASE Unbind response (result = "ok") as user data on a A-RELEASE confirm primitive
TUBRE-	TPM-peer	TASE Unbind response (result = "error") as user data on a A-RELEASE confirm primitive
A-ABRind	AC-provider	A-ABORT indication primitive

**Tableau 4 – Liste des événements sortants**

Nom abrégé	Cible	Nom et description
A-ASCreq	AC-provider	A-ASSOCIATE request primitive with TASE Bind request as user data
A-ASCrsp+	AC-provider	A-ASSOCIATE response primitive with TASE Bind response (result="accepted") as user data
A-ASCrsp-	AC-provider	A-ASSOCIATE response primitive with TASE Bind response (result="rejected") as user data
TBind	TASE.1-user	TASE Bind indication
TBcnf+	TASE.1-user	TASE Bind confirm primitive (result="accepted")
TBcnf-	TASE.1-user	TASE Bind confirm primitive (result="rejected")
TABRind	TASE.1-user	TASE Abort indication primitive
A-RELreq	AC-provider	A-RELEASE request primitive
A-RELrsp+	AC-provider	A-RELEASE response primitive (result="ok")
A-RELrsp-	AC-provider	A-RELEASE response primitive (result="error")
TUind	TASE.1-user	TASE Unbind indication primitive
TUBcnf+	TASE.1-user	TASE Unbind confirm primitive (result="ok")
TUBcnf-	TASE.1-user	TASE Unbind confirm primitive (result="error")

**Tableau 5 – Etats de TPM**

Nom abrégé	Nom et description
STC0	Idle, unassociated
STC1	Awaiting TASE Bind Response (TBRE)
STC2	Awaiting TASE Unbind Response (TUBRE)
STC3	Awaiting TASE Bind response primitive (TBrsp)
STC4	Awaiting TASE Unbind response primitive (TUBrsp)
STC10	Associated

**Table 4 – Outgoing event list**

Abbreviated name	Destination	Name and description
A-ASCreq	AC-provider	A-ASSOCIATE request primitive with TASE Bind request as user data.
A-ASCrsp+	AC-provider	A-ASSOCIATE response primitive with TASE Bind response (result="accepted") as user data.
A-ASCrsp-	AC-provider	A-ASSOCIATE response primitive with TASE Bind response (result="rejected") as user data.
TBind	TASE.1-user	TASE Bind indication
TBcnf+	TASE.1-user	TASE Bind confirm primitive (result="accepted")
TBcnf-	TASE.1-user	TASE Bind confirm primitive (result="rejected")
TABRind	TASE.1-user	TASE Abort indication primitive
A-RELreq	AC-provider	A-RELEASE request primitive
A-RELrsp+	AC-provider	A-RELEASE response primitive (result="ok")
A-RELrsp-	AC-provider	A-RELEASE response primitive (result="error")
TUind	TASE.1-user	TASE Unbind indication primitive
TUBcnf+	TASE.1-user	TASE Unbind confirm primitive (result="ok")
TUBcnf-	TASE.1-user	TASE Unbind confirm primitive (result="error")

**Table 5 – TPM states**

Abbreviated name	Name and description
STC0	Idle, unassociated
STC1	Awaiting TASE Bind Response (TBRE)
STC2	Awaiting TASE Unbind Response (TUBRE)
STC3	Awaiting TASE Bind response primitive (TBrsp)
STC4	Awaiting TASE Unbind response primitive (TUBrsp)
STC10	Associated

**Tableau 6 – Table d'états de TPM**

State Event	STC0 Idle, unassociated	STC1 Awaiting TBRE	STC2 Awaiting TUBRE	STC3 Awaiting TBrsp	STC4 Awaiting TUBrsp	STC10 Associated
TBreq	A-ASCreq STC1					
TBRE+		TBcnf+ STC10				
TBRE-		TBcnf- STC0				
A-ASCcnf-		TBcnf- STC0				
A-ABRind			TABRind STC0	TABRind STC0	TABRind STC0	TABRind STC0
TBRQ	TBind STC3					
TBrsp+				A-ASCrsp+ STC10		
TBrsp-				A-ASCrsp- STC0		
TUBreq						A-RELreq STC2
TUBRE+			TUBcnf+ STC0			
TUBRE-			TUBcnf- STC0			
TUBRQ						TUBind, STC4
TUBrsp+					A-RELRsp+ STC0	
TUBrsp-					A-RELRsp- STC0	

Table 6 – TPM state table

State Event	STC0 Idle, unassociated	STC1 Awaiting TBRE	STC2 Awaiting TUBRE	STC3 Awaiting TBrsp	STC4 Awaiting TUBrsp	STC10 Associated
TBreq	A-ASCreq STC1					
TBRE+		TBcnf+ STC10				
TBRE-		TBcnf- STC0				
A-ASCcnf-		TBcnf- STC0				
A-ABRind			TABRind STC0	TABRind STC0	TABRind STC0	TABRind STC0
TBRQ	TBind STC3					
TBrsp+				A-ASCrsp+ STC10		
TBrsp-				A-ASCrsp- STC0		
TUBreq						A-RELreq STC2
TUBRE+			TUBcnf+ STC0			
TUBRE-			TUBcnf- STC0			
TUBRQ						TUBind, STC4
TUBrsp+					A-RELrsp+ STC0	
TUBrsp-					A-RELrsp- STC0	

#### 7.4 Exploitation dans l'environnement TASE.1

Une fois entré dans l'environnement TASE.1 et pour une association d'applications particulière, il ne peut y avoir à tout instant qu'un seul service utilisé. Ce service doit être totalement terminé avant l'utilisation d'un autre service. Cette spécification décrit séparément le diagramme d'état pour de tels cas. Le modèle de ces services est décrit dans l'article 9 de la CEI 870-6-501.

##### 7.4.1 Gestion des groupes et du transfert de données non sollicité

**Tableau 7 – Evénements entrants pour la gestion des groupes et du transfert de données non sollicité**

Nom abrégé	Source	Nom et description
GMreq	TASE.1-user	Group management request primitive
GMRE	TPM-peer	Group management response as user data on a RO-RESULT indication primitive
GMRQ	TPM-peer	Group management request as user data on a RO-INVOKE indication primitive
GMrsp	TASE.1-user	Group management response primitive
GGreq	TASE.1-user	Get group request primitive
GGRE	TPM-peer	Get Group response as user data on a RO-RESULT indication primitive
GGRQ	TPM-peer	Get Group request as user data on a RO-INVOKE indication primitive
GGrsp	TASE.1-user	Get group response primitive
DGreq	TASE.1-user	Define group request primitive
DGRE	TPM-peer	Define Group response as user data on a RO-RESULT indication primitive
DGRQ	TPM-peer	Define Group request as user data on a RO-INVOKE indication primitive
DGrsp	TASE.1-user	Define group response primitive
UDTMreq	TASE.1-user	Unsolicited Data Transfer Management request primitive
UDTMRE	TPM-peer	Unsolicited Data Transfer Management response as user data on a RO-RESULT indication primitive
UDTMRQ	TPM-peer	Unsolicited Data Transfer Management request as user data on a RO-INVOKE indication primitive
UDTMrsp	TASE.1-user	Unsolicited Data Transfer Management response primitive
RO-RJUind	RO-provider	RO-REJECT-U indication primitive
RO-RJPind	RO-provider	RO-REJECT-P indication primitive
RO-ERRind	RO-provider	RO-ERROR indication primitive
LUTexp	TPM-local	Expiry of timer for local TASE.1-user
PUTexp	TPM-local	Expiry of timer for peer TASE.1-user

#### 7.4 Operating in the TASE.1 environment

Once in the TASE.1 environment and for a particular application-association, there may only be one service outstanding at any instance of time. This service must be fully completed before performing any other service. This specification describes the state table for such request instances independently. The model for these services is described in clause 9 of IEC 870-6-501.

##### 7.4.1 Group- and unsolicited data transfer management

**Table 7 – Incoming events for group- and unsolicited data transfer management**

Abbreviated name	Source	Name and description
GMreq	TASE.1-user	Group management request primitive
GMRE	TPM-peer	Group management response as user data on a RO-RESULT indication primitive
GMRQ	TPM-peer	Group management request as user data on a RO-INVOKE indication primitive
GMrsp	TASE.1-user	Group management response primitive
GGreq	TASE.1-user	Get group request primitive
GGRE	TPM-peer	Get Group response as user data on a RO-RESULT indication primitive
GGRQ	TPM-peer	Get Group request as user data on a RO-INVOKE indication primitive
GGrsp	TASE.1-user	Get group response primitive
DGreq	TASE.1-user	Define group request primitive
DGRE	TPM-peer	Define Group response as user data on a RO-RESULT indication primitive
DGRQ	TPM-peer	Define Group request as user data on a RO-INVOKE indication primitive
DGrsp	TASE.1-user	Define group response primitive
UDTMreq	TASE.1-user	Unsolicited Data Transfer Management request primitive
UDTMRE	TPM-peer	Unsolicited Data Transfer Management response as user data on a RO-RESULT indication primitive
UDTMRQ	TPM-peer	Unsolicited Data Transfer Management request as user data on a RO-INVOKE indication primitive
UDTMrsp	TASE.1-user	Unsolicited Data Transfer Management response primitive
RO-RJUind	RO-provider	RO-REJECT-U indication primitive
RO-RJPind	RO-provider	RO-REJECT-P indication primitive
RO-ERRind	RO-provider	RO-ERROR indication primitive
LUTexp	TPM-local	Expiry of timer for local TASE.1-user
PUTexp	TPM-local	Expiry of timer for peer TASE.1-user

**Tableau 8 – Événements sortants pour la gestion des groupes et du transfert de données non sollicité**

Nom abrégé	Cible	Nom et description
GMind	TASE.1-user	Group management indication primitive
GMcnf+	TASE.1-user	Group management confirm primitive (result="ok")
GMcnf-	TASE.1-user	Group management confirm primitive (result="error")
DGind	TASE.1-user	Define Group indication primitive
DGcnf+	TASE.1-user	Define Group confirm primitive (result="ok")
DGcnf-	TASE.1-user	Define Group confirm primitive (result="error")
GGind	TASE.1-user	Get group indication primitive
GGcnf+	TASE.1-user	Get group confirm primitive (result="ok")
GGcnf-	TASE.1-user	Get group confirm primitive (result="error")
RO-INVreq	RO-provider	RO-INVOKE request primitive
RO-RESreq	RO-provider	RO-RESULT request primitive
RO-ERRreq	RO-provider	RO-ERROR request primitive
LUTsrt	TPM-local	Start (or restart) timer for local TASE.1-user
LUTstp	TPM-local	Stop timer for local TASE.1-user
PUTsrt	TPM-local	Start (or restart) timer for peer TASE.1-user
PUTstp	TPM-local	Stop timer for peer TASE.1-user

**Tableau 9 – Etats de TPM pour la gestion des groupes et du transfert de données non sollicité**

Nom abrégé	Nom et description
ST0	Idle, associated
ST10	Awaiting Group management response (GMRE)
ST11	Awaiting Group management response primitive (GMrsp)
ST12	Awaiting Define Group response (DGRE)
ST13	Awaiting Define Group response primitive (DGrsp)
ST14	Awaiting Get Group response (GGRE)
ST15	Awaiting Get Group response primitive (GGrsp)
ST16	Awaiting Unsolicited Data Transfer Management response (UDTMRE)
ST17	Awaiting Unsolicited Data Transfer Management response primitive (UDTMrsp)

**Table 8 – Outgoing events for group- and unsolicited data transfer management**

Abbreviated name	Destination	Name and description
GMind	TASE.1-user	Group management indication primitive
GMcnf+	TASE.1-user	Group management confirm primitive (result="ok")
GMcnf-	TASE.1-user	Group management confirm primitive (result="error")
DGind	TASE.1-user	Define Group indication primitive
DGcnf+	TASE.1-user	Define Group confirm primitive (result="ok")
DGcnf-	TASE.1-user	Define Group confirm primitive (result="error")
GGind	TASE.1-user	Get group indication primitive
GGcnf+	TASE.1-user	Get group confirm primitive (result="ok")
GGcnf-	TASE.1-user	Get group confirm primitive (result="error")
RO-INVreq	RO-provider	RO-INVOKE request primitive
RO-RESreq	RO-provider	RO-RESULT request primitive
RO-ERRreq	RO-provider	RO-ERROR request primitive
LUTsrt	TPM-local	Start (or restart) timer for local TASE.1-user
LUTstp	TPM-local	Stop timer for local TASE.1-user
PUTsrt	TPM-local	Start (or restart) timer for peer TASE.1-user
PUTstp	TPM-local	Stop timer for peer TASE.1-user

**Table 9 – TPM states for group- and unsolicited data transfer management**

Abbreviated name	Name and description
ST0	Idle, associated
ST10	Awaiting Group management response (GMRE)
ST11	Awaiting Group management response primitive (GMrsp)
ST12	Awaiting Define Group response (DGRE)
ST13	Awaiting Define Group response primitive (DGrsp)
ST14	Awaiting Get Group response (GGRE)
ST15	Awaiting Get Group response primitive (GGrsp)
ST16	Awaiting Unsolicited Data Transfer Management response (UDTMRE)
ST17	Awaiting Unsolicited Data Transfer Management response primitive (UDTMrsp)

**Tableau 10 – Prédicats de TPM pour la gestion des groupes et du transfert de données non sollicité**

Nom abrégé	Nom et description
p1	Sub Connection State = STS1
p2	Sub Connection State = STS2

**Tableau 11 – Gestion des tables d'états de TPM Group**

State	ST0	ST10	ST11
Event	Idle, associated	Awaiting GMRE	Awaiting GMrsp
GMreq	RO-INVreq p1: LUTsrt PUTsrt ST10		
GMRE		GMcnf+ p1: PUTsrt ^p1: PUTstp ST0	
RO-ERRind RO-RJUind RP-RJPind		GMcnf- PUTstp ST0	
PUTexp		GMcnf- ST0	
GMRQ	GMind p2: PUTsrt LUTsrt ST11		
GMrsp			RO-RESreq p2: LUTsrt ^p2: LUTstp ST0
LUTexp			RO-ERRreq ST0

**Table 10 – TPM predicates for group- and unsolicited data transfer management**

Abbreviated name	Name and description
p1	Sub Connection State = STS1
p2	Sub Connection State = STS2

**Table 11 – TPM Group management state table**

State	ST0	ST10	ST11
Event	Idle, associated	Awaiting GMRE	Awaiting GMrsp
GMreq	RO-INVreq p1: LUTsrt PUTsrt ST10		
GMRE		GMcnf+ p1: PUTsrt ^p1: PUTstp ST0	
RO-ERRind RO-RJUind RP-RJPind		GMcnf- PUTstp ST0	
PUTexp		GMcnf- ST0	
GMRQ	GMind p2: PUTsrt LUTsrt ST11		
GMrsp			RO-RESreq p2: LUTsrt ^p2: LUTstp ST0
LUTexp			RO-ERRreq ST0

**Tableau 12 – Tables d'états de TPM Define Group**

State Event	ST0 Idle, associated	ST12 Awaiting DGRE	ST13 Awaiting DGrsp
DGreq	RO-INVreq p1: LUTsrt PUTsrt ST12		
DGRE		DGcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		DGcnf- PUTstp ST0	
PUTexp		DGcnf- ST0	
DGRQ	DGind p2: PUTsrt LUTsrt ST13		
DGrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

**Tableau 13 – Tables d'états de TPM Get Group**

State Event	ST0 Idle, associated	ST14 Awaiting GGRE	ST15 Awaiting GGrsp
GGreq	RO-INVreq p1: LUTsrt PUTsrt ST14		
GGRE		GGcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		GGcnf- PUTstp ST0	
PUTexp		GGcnf- ST0	
GGRQ	GGind p2: PUTsrt LUTsrt ST15		
GGrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

**Table 12 – TPM Define Group state table**

State Event	ST0 Idle, associated	ST12 Awaiting DGRE	ST13 Awaiting DGrsp
DGreq	RO-INVreq p1: LUTsrt PUTsrt ST12		
DGRE		DGcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		DGcnf- PUTstp ST0	
PUTexp		DGcnf- ST0	
DGRQ	DGind p2: PUTsrt LUTsrt ST13		
DGrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

**Table 13 – TPM Get Group state table**

State Event	ST0 Idle, associated	ST14 Awaiting GGRE	ST15 Awaiting GGrsp
GGreq	RO-INVreq p1: LUTsrt PUTsrt ST14		
GGRE		GGcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		GGcnf- PUTstp ST0	
PUTexp		GGcnf- ST0	
GGRQ	GGind p2: PUTsrt LUTsrt ST15		
GGrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

**Tableau 14 – Table d'états de gestion TPM de transfert de données non sollicité**

State Event	ST0 Idle, associated	ST16 Awaiting UDTMRE	ST17 Awaiting UDTMrsp
UDTMreq	RO-INVreq p1: LUTsrt PUTsrt ST16		
UDTMRE		UDTMcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		UDTMcnf- PUTstp ST0	
PUTexp		UDTMcnf- ST0	
UDTMRQ	UDTMind p2: PUTsrt LUTsrt ST17		
UDTMrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

**Table 14 – TPM Unsolicited Data Transfer Management state table**

State Event	ST0 Idle, associated	ST16 Awaiting UDTMRE	ST17 Awaiting UDTMrsp
UDTMreq	RO-INVreq p1: LUTsrt PUTsrt ST16		
UDTMRE		UDTMcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		UDTMcnf- PUTstp ST0	
PUTexp		UDTMcnf- ST0	
UDTMRQ	UDTMind p2: PUTsrt LUTsrt ST17		
UDTMrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

7.4.2 Transfert d'informations et essai d'association

**Tableau 15 – Événements entrants pour le transfert d'informations et l'essai d'association**

Nom abrégé	Source	Nom et description
TAreq	TASE.1-user	Test Association request primitive
TARE	TPM-peer	Test Association response as user data on a RO-RESULT indication primitive
TARQ	TPM-peer	Test Association request as user data on a RO-INVOKE indication primitive
TArsp	TASE.1-user	Test Association response primitive
RDTrsq	TASE.1-user	Requested Data Transfer request primitive
RDTRE	TPM-peer	Requested Data Transfer request on a RO-RESULT indication primitive
RDTRQ	TPM-peer	Requested Data Transfer request on a RO-INVOKE indication primitive
RDTrsp	TASE.1-user	Requested Data Transfer response primitive
SCDreq	TASE.1-user	Send Confirmed Data request primitive
SCDRE	TPM-peer	Send Confirmed Data response on a RO-RESULT indication primitive
SCDRQ	TPM-peer	Send Confirmed Data request as user data on a RO-INVOKE indication primitive
SCDrsp	TASE.1-user	Send Confirmed Data response primitive
SNCDreq	TASE.1-user	Send Non-confirmed Data request primitive
SNCDRQ	TPM-peer	Send Non-confirmed Data request as user data on a RO-INVOKE indication primitive
SMDreq	TASE.1-user	Send Mixed Data request primitive
SMDRQ	TPM-peer	Send Mixed Data request as user data on a RO-INVOKE indication primitive
RO-RJUind	RO-provider	RO-REJECT-U indication primitive
RO-RJPind	RO-provider	RO-REJECT-P indication primitive
RO-ERRind	RO-provider	RO-ERROR indication primitive
LUTexp	TPM-local	Expiry of timer for local TASE.1-user
PUTexp	TPM-local	Expiry of timer for peer TASE.1-user

## 7.4.2 Information transfer and test association

**Table 15 – Incoming events for information transfer and test association**

Abbreviated name	Source	Name and description
TAreq	TASE.1-user	Test Association request primitive
TARE	TPM-peer	Test Association response as user data on a RO-RESULT indication primitive
TARQ	TPM-peer	Test Association request as user data on a RO-INVOKE indication primitive
TArsp	TASE.1-user	Test Association response primitive
RDTreq	TASE.1-user	Requested Data Transfer request primitive
RDTRE	TPM-peer	Requested Data Transfer request on a RO-RESULT indication primitive
RDTRQ	TPM-peer	Requested Data Transfer request on a RO-INVOKE indication primitive
RDTrsp	TASE.1-user	Requested Data Transfer response primitive
SCDreq	TASE.1-user	Send Confirmed Data request primitive
SCDRE	TPM-peer	Send Confirmed Data response on a RO-RESULT indication primitive
SCDRQ	TPM-peer	Send Confirmed Data request as user data on a RO-INVOKE indication primitive
SCDrsp	TASE.1-user	Send Confirmed Data response primitive
SNCDreq	TASE.1-user	Send Non-confirmed Data request primitive
SNCDRQ	TPM-peer	Send Non-confirmed Data request as user data on a RO-INVOKE indication primitive
SMDreq	TASE.1-user	Send Mixed Data request primitive
SMDRQ	TPM-peer	Send Mixed Data request as user data on a RO-INVOKE indication primitive
RO-RJUind	RO-provider	RO-REJECT-U indication primitive
RO-RJPind	RO-provider	RO-REJECT-P indication primitive
RO-ERRind	RO-provider	RO-ERROR indication primitive
LUTexp	TPM-local	Expiry of timer for local TASE.1-user
PUTexp	TPM-local	Expiry of timer for peer TASE.1-user

**Tableau 16 – Evénements sortant pour le transfert d’informations et l’essai d’association**

Nom abrégé	Cible	Nom et description
TAind	TASE.1-user	Test Association indication primitive
TAcnf+	TASE.1-user	Test Association confirm (result="ok")
TAcnf-	TASE.1-user	Test Association confirm (result="error")
RDTind	TASE.1-user	Requested Data Transfer indication primitive
RDTcnf+	TASE.1-user	Requested Data Transfer confirm primitive (result="ok")
RDTcnf-	TASE.1-user	Requested Data Transfer confirm primitive (result="error")
SCDind	TASE.1-user	Send Confirmed Data indication primitive
SCDcnf+	TASE.1-user	Send Confirmed Data confirm primitive (result="ok")
SCDcnf-	TASE.1-user	Send Confirmed Data confirm primitive (result="error")
SNCDind	TASE.1-user	Send Non-confirmed Data indication primitive
SMDind	TASE.1-user	Send Mixed Data indication primitive
RO-INVreq	RO-provider	RO-INVOKE request primitive
RO-RESreq	RO-provider	RO-RESULT request primitive
RO-ERRreq	RO-provider	RO-ERROR request primitive
LUTsrt	TPM-local	Start (or restart) timer for local TASE.1-user
LUTstp	TPM-local	Stop timer for local TASE.1-user
PUTsrt	TPM-local	Start (or restart) timer for peer TASE.1-user
PUTstp	TPM-local	Stop timer for peer TASE.1-user

**Tableau 17 – Etats de TPM pour le transfert d’informations et l’essai d’association**

Nom abrégé	Nom et description
ST0	Idle, associated
ST1	Awaiting Requested Data Transfer response (RDTRE)
ST2	Awaiting Requested Data Transfer response primitive (RDTrsp)
ST100	Awaiting Test Association response (TARE)
ST101	Awaiting Test Association response primitive (TArsp)

**Tableau 18 – Sous-états de TPM pour le transfert de données non sollicité**

Nom abrégé	Nom et description
STS0	Idle, associated
STS1	Awaiting Send Confirmed Data response (SCDRE)
STS2	Awaiting Send Confirmed Data response primitive (SCDrsp)

**Table 16 – Outgoing events for information transfer and test association**

Abbreviated name	Destination	Name and description
TAind	TASE.1-user	Test Association indication primitive
TAcnf+	TASE.1-user	Test Association confirm (result="ok")
TAcnf–	TASE.1-user	Test Association confirm (result="error")
RDTind	TASE.1-user	Requested Data Transfer indication primitive
RDTcnf+	TASE.1-user	Requested Data Transfer confirm primitive (result="ok")
RDTcnf–	TASE.1-user	Requested Data Transfer confirm primitive (result="error")
SCDind	TASE.1-user	Send Confirmed Data indication primitive
SCDcnf+	TASE.1-user	Send Confirmed Data confirm primitive (result="ok")
SCDcnf–	TASE.1-user	Send Confirmed Data confirm primitive (result="error")
SNCDind	TASE.1-user	Send Non-confirmed Data indication primitive
SMDind	TASE.1-user	Send Mixed Data indication primitive
RO-INVreq	RO-provider	RO-INVOKE request primitive
RO-RESreq	RO-provider	RO-RESULT request primitive
RO-ERRreq	RO-provider	RO-ERROR request primitive
LUTsrt	TPM-local	Start (or restart) timer for local TASE.1-user
LUTstp	TPM-local	Stop timer for local TASE.1-user
PUTsrt	TPM-local	Start (or restart) timer for peer TASE.1-user
PUTstp	TPM-local	Stop timer for peer TASE.1-user

**Table 17 – TPM states for information transfer and test association**

Abbreviated name	Name and description
ST0	Idle, associated
ST1	Awaiting Requested Data Transfer response (RDTRE)
ST2	Awaiting Requested Data Transfer response primitive (RDTrsp)
ST100	Awaiting Test Association response (TARE)
ST101	Awaiting Test Association response primitive (TARsp)

**Table 18 – TPM substates for unsolicited data transfer**

Abbreviated name	Name and description
STS0	Idle, associated
STS1	Awaiting Send Confirmed Data response (SCDRE)
STS2	Awaiting Send Confirmed Data response primitive (SCDrsp)

**Tableau 19 – Table d'états de TPM pour le transfert de données demandé**

State Event	ST0 Idle, associated	ST1 Awaiting RDTRE	ST2 Awaiting RDTrsp
RDTrsq	RO-INVreq p1: LUTsrt PUTsrt ST1		
RDTRE		RDTcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		RDTcnf- PUTstp ST0	
PUTexp		RDTcnf- ST0	
RDTRQ	RDTind p2: PUTsrt LUTsrt ST2		
RDTrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

**Tableau 20 – Table d'états de TPM pour le transfert de données non sollicité**

State Event	STS0 Idle, associated	STS1 Awaiting SCDRE	STS2 Awaiting SCDrsp
SCDreq	RO-INVreq p1: LUTsrt; PUTsrt STS1		
SCDRE		SCDcnf+ STS0	
SNCDreq	RO-INVreq STS0		
SMDreq	RO-INVreq STS0		
RO-ERRind RO-RJUind RP-RJPind		SCDcnf- PUTstp STS0	
PUTexp		SCDcnf- STS0	
SCDRQ	SCDind p2: PUTsrt LUTsrt STS2		
SCDrsp			RO-RESreq STS0
LUTexp			RO-ERRreq STS0

**Table 19 – TPM Requested Data Transfer state table**

State Event	ST0 Idle, associated	ST1 Awaiting RDTRE	ST2 Awaiting RDTrsp
RDTreq	RO-INVreq p1: LUTsrt; PUTsrt ST1		
RDTRE		RDTcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		RDTcnf- PUTstp ST0	
PUTexp		RDTcnf- ST0	
RDTRQ	RDTind p2: PUTsrt LUTsrt ST2		
RDTrsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

**Table 20 – TPM Unsolicited data transfer state table**

State Event	STS0 Idle, associated	STS1 Awaiting SCDRE	STS2 Awaiting SCDrsp
SCDreq	RO-INVreq p1: LUTsrt; PUTsrt STS1		
SCDRE		SCDcnf+ STS0	
SNCDreq	RO-INVreq STS0		
SMDreq	RO-INVreq STS0		
RO-ERRind RO-RJUind RP-RJPind		SCDcnf- PUTstp STS0	
PUTexp		SCDcnf- STS0	
SCDRQ	SCDind p2: PUTsrt LUTsrt STS2		
SCDrsp			RO-RESreq STS0
LUTexp			RO-ERRreq STS0

**Tableau 21 – Tables d'états de TPM pour les tests d'association**

State Event	ST0 Idle, associated	ST100 Awaiting TARE	ST101 Awaiting TArsp
TAreq	RO-INVreq p1: LUTsrt; PUTsrt ST100		
TARE		TAcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		TAcnf- PUTstp ST0	
PUTexp		TAcnf- ST0	
TARQ	TAind p2: PUTsrt LUTsrt ST101		
TArsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

## 8 Définition de syntaxe abstraite

TASE.1 est spécifié en une seule syntaxe abstraite, attribuée à un identificateur d'objets ASN.1:

```
{ iso standard tase1(870) part(6) version1(1) abstract-syntax(1) }
```

Cela définit l'APCI (application-protocol-control-information = information de contrôle de protocole application) qui, quand il est utilisé avec ROSE, définit un ensemble de APDU. Les APDU de TASE.1 sont définies par la syntaxe abstraite de TASE.1 et ROSE. Cela, plus la syntaxe abstraite de ACSE, constitue une définition complète des APDU utilisées pendant une association TASE.1.

Cette syntaxe abstraite doit être encodée à l'aide des Règles de base de l'encodage ASN.1 (voir ISO/IEC 8825) ou à l'aide des Règles d'encodage de paquets ASN.1 (voir ISO/DIS 8825-2).

La syntaxe abstraite de TASE.1 est définie dans un module ASN.1 indentifié par le nom TASE1-1 . Le dernier "1" identifie la version de TASE.1.

Le contexte d'application et l'élément de service d'application pour TASE.1 sont définis dans le même module ASN.1 à l'aide de macros de la notation RO définies dans l'ISO 9072-1.

L'annexe A contient la liste complète des modules ASN.1.

## 9 Conformité

Une implémentation se déclarant conforme à cette norme doit satisfaire aux spécifications des articles 6, 7 et 8 ainsi que de l'annexe A. La conformité est vue en termes d'actions visibles à l'extérieur du système.

**Table 21 – TPM Test Association state table**

State Event	ST0 Idle, associated	ST100 Awaiting TARE	ST101 Awaiting TArsp
TAreq	RO-INVreq p1: LUTsrt; PUTsrt ST100		
TARE		TAcnf+ ST0	
RO-ERRind RO-RJUind RP-RJPind		TAcnf- PUTstp ST0	
PUTexp		TAcnf- ST0	
TARQ	TAind p2: PUTsrt LUTsrt ST101		
TArsp			RO-RESreq ST0
LUTexp			RO-ERRreq ST0

## 8 Abstract syntax definition

The TASE.1 is specified in a single abstract-syntax, assigned to the ASN.1 object identifier:

```
{ iso standard tase1(870) part(6) version1(1) abstract-syntax(1) }
```

This defines the application-protocol-control-information (APCI) which, when used with the ROSE, defines a set of APDUs. The TASE.1 APDUs are defined by the abstract-syntax of the TASE.1 and ROSE. These plus the abstract-syntax of ACSE form a complete definition of APDUs used during a TASE.1 association.

These abstract syntaxes shall be encoded with the ASN.1 Basic Encoding Rules (see ISO/IEC 8825) or with the ASN.1 Packed Encoding Rules (see ISO/DIS 8825-2).

The abstract-syntax of the TASE.1 is defined in an ASN.1 module identified by the name TASE1-1. The last "1" identifies the version of TASE.1.

The application-context and application-service-element for TASE.1 are defined in the same ASN.1 module using the RO-notation macros defined in ISO 9072-1.

A complete listing of the ASN.1 module is given in annex A.

## 9 Conformance

An implementation claiming conformance to this standard shall comply with the specifications in clauses 6, 7, 8, and annex A. Conformance is viewed in terms of actions visible outside the system.

### 9.1 *Enoncé des besoins*

L'implémentation doit déclarer celui des rôles ci-dessous qu'elle est capable de jouer:

- initiateur et répondeur;
- répondeur seulement;
- initiateur seulement.

Les primitives de service invoquées respectivement par l'initiateur et le répondeur sont énumérées dans le tableau 2.

La déclaration que l'un des rôles indiqués ci-dessus a été implémenté implique que tous les services listés dans le tableau 2 pour ce rôle sont supportés.

L'implémenteur doit aussi déclarer s'il utilise les règles d'encodage de base ou les règles d'encodage de paquets.

### 9.2 *Exigences statiques*

Le système doit se conformer à la définition de syntaxe abstraite des APDU définie dans l'article 8 et dans l'annexe A.

### 9.3 *Exigences dynamiques*

Le système doit:

- a) se conformer aux éléments de procédure définis en 7.3 et 7.4;
- b) se conformer à la correspondance des services utilisés de ACSE et de ROSE, telle qu'elle est définie en 7.2;
- c) se conformer à la classe d'opération, au mode d'opération et à la classe d'opération définis en 6.2.1;
- d) se conformer à la syntaxe abstraite et au numéro de version de TASE.1 tel que défini en annexe A.

### 9.4 *Déclaration de conformité d'implémentation du protocole (PICS)*

La déclaration de conformité d'implémentation du protocole (PICS) accompagnant une implémentation se réclamant de la conformité à cette norme doit inclure des déclarations des informations énumérées dans le tableau ci-dessous.

**Tableau 22 – Informations PICS**

Nom du vendeur de l'implémentation	
Nom du modèle de l'implémentation	
Identificateur de révision de l'implémentation	
Nom de la machine et numéro de version	
Système d'exploitation	
Le système est capable d'opérer en tant que Répondeur	Oui/non
Le système est capable d'opérer en tant qu'Initiateur	Oui/non
Nom des règles d'encodage	

### 9.1 *Statement requirements*

The implementor shall state which of the following roles the system is capable of acting in:

- Initiator and Responder;
- Responder only;
- Initiator only.

The service primitives invoked by respectively Initiator and Responder are listed in table 2.

By stating that one of the above roles has been implemented implies that all services listed in table 2 for that role are supported.

The implementor shall also state whether Basic Encoding Rules or Packed Encoding Rules are used.

### 9.2 *Static requirements*

The system shall conform to the abstract syntax definition of APDUs defined in clause 8 and annex A.

### 9.3 *Dynamic requirements*

The system shall:

- a) conform to the elements of the procedure defined in 7.3 and 7.4;
- b) conform to the mapping to the used services of ACSE and ROSE as defined in 7.2;
- c) conform to the operation class, operation mode and association class defined in 6.2.1;
- d) conform to the TASE.1 abstract syntax and version number as defined in annex A.

### 9.4 *Protocol implementation conformance statement (PICS)*

The Protocol Implementation Conformance Statement (PICS) accompanying an implementation for which conformance to this standard is claimed shall include statements of the information listed in the table below.

**Table 22 – PICS information**

Implementation's vendor name	
Implementation's model name	
Implementation's revision identifier	
Machine name and version number	
Operating system	
The system is capable of acting as Initiator	yes / no
The system is capable of acting as Responder	yes / no
Name of encoding rules	

— Page blanche —

— Blank page —

**Annexe A**  
(normative)

**TASE.1 en ASN.1**

Cette annexe contient toutes les définitions de type et de toutes les valeurs contenues dans cette norme sous la forme d'un module ASN.1: TASE1-1.

**Annex A**  
(normative)

**TASE.1 in ASN.1**

This annex includes all ASN.1 type and value definitions contained in this standard in the form of one ASN.1 module: TASE1-1.

```

TASE1-1 { iso standard tase1(8706) section(502) version1(1) abstract-syntax(1) }
DEFINITIONS IMPLICIT TAGS ::=
BEGIN

EXPORTS
  tASEApplicationContext, tASEUserElement;

IMPORTS
  APPLICATION-SERVICE-ELEMENT, APPLICATION-CONTEXT, aCSE
    FROM Remote-Operations-Notation-extension {
      joint-iso-ccitt remote-operations(4) notation-extension(2)
    }

  OPERATION, ERROR, BIND, UNBIND
    FROM Remote-Operations-Notation {
      joint-iso-ccitt remote-operations(4) notation(0)
    }

  rOSE
    FROM Remote-Operations-APDUs {
      joint-iso-ccitt remote-operations(4) apdus(1)
    }

-- Application context

tASEApplicationContext APPLICATION-CONTEXT
  APPLICATION SERVICE ELEMENTS { aCSE }
  BIND                          TASEBind
  UNBIND                         TASEUnbind
  REMOTE OPERATIONS             { rOSE }
  OPERATIONS OF                 { tASEUserElement }
  ABSTRACT SYNTAXES {
    {joint-iso-ccitt association-control(2) abstract-syntax(1) apdus(0) version1(1)},
    tASE-abstract-syntax }
  ::= { iso standard tase1(8706) section(502) version1(1) application-context(2) }

```

-- Application service elements

**tASEUserElement APPLICATION-SERVICE-ELEMENT**

```

OPERATIONS {
    groupManagement,
    defineGroup,
    getGroup,
    unsolicitedDataTransferManagement,
    requestedDataTransfer,
    sendNonConfirmedData,
    sendConfirmedData,
    sendMixedData,
    commandTransfer,
    testAssociation
}
 ::= { iso standard tase1(8706) section(502) version1(1) application-service-element(3) }

```

-- Abstract syntaxes

```

tASE-abstract-syntax OBJECT IDENTIFIER ::= {
    iso standard tase1(8706) section(502) version1(1) abstract-syntax(1)
}

```

-- Remote operations

-- Bind and Unbind

**TASEBind ::= BIND**

```

ARGUMENT SEQUENCE {
    securityOption          [1] SecurityOption OPTIONAL,
    authenticationValue     [2] OCTET STRING OPTIONAL -- Locally defined authentication
value
}
RESULT SEQUENCE {
    securityOption          [1] SecurityOption OPTIONAL,
    restartMarking         [2] RestartMarking OPTIONAL,
    consistency             [3] Consistency OPTIONAL
}
BIND-ERROR TASEBindError

```

**SecurityOption ::= SEQUENCE {**

```

    securityClass INTEGER (0..3),
    securityUse BIT STRING {
        controldata(0),      -- Use authentication/encipherment for data in CommandTransfer
        data(1),            -- Use authentication/encipherment for data in SendNonConfirmedData,
                           -- SendConfirmedData and SendMixedData
        objects(2),         -- Use authentication/encipherment for objects in DefineGroup and
        authenticationexchange(3) -- One-way (=0) or two-way (=1) authentication exchange
    }
}

```

**RestartMarking ::= ENUMERATED {**

```

    noRestart(0),
    reserved(1),
    restartUnsolicitedDataTransferManagementLost(2),
    restartGroupConfigurationAndUnsolicitedDataTransferManagementLost(3)
}

```

```

TASEUnbind ::= UNBIND
ARGUMENT TASEUnbindArgument
UNBIND-ERROR TASEUnbindError

```

```

TASEUnbindArgument ::= ENUMERATED {
  orderlyTermination(1),
  invalidAuthenticationCodeReceived(2),
  deciphermentError(3)
}

```

-- *Group management operations*

-- Definition of size and type of groups

```

groupManagement OPERATION
ARGUMENT SEQUENCE {
  groupManagementFunction GroupManagementFunction,
  groupType GroupType,
  groupNumber GroupNumber,
  groupDescription GroupDescription
}
RESULT Consistency
ERRORS {
  groupTypeWrong,
  groupNumberWrong,
  maxObjectsSizeWrong,
  maxObjectIdentifierSizeWrong,
  noMemory,
  groupExists,
  groupNotDeleteable,
  priorityWrong,
  userUnavailable,
  misbehavingUser
}
::= 1

```

-- Definitions of objects within a group

```

defineGroup OPERATION
ARGUMENT SEQUENCE {
  groupType GroupType,
  groupNumber GroupNumber,
  lowerIndex IndexNumber, -- First element in group
  higherIndex IndexNumber, -- Last element in group
  objects SEQUENCE OF ObjectIdentifier
  -- Must match number and order of elements in specified subgroup
}
RESULT Consistency
ERRORS {
  multipleDefinitionProblem,
  userUnavailable,
  misbehavingUser
}
::= 2

```

-- Read group attributes

**getGroup OPERATION**

ARGUMENT SEQUENCE {

groupType	GroupType,
groupNumber	GroupNumber,
lowerIndex	IndexNumber, -- First element in group
higherIndex	IndexNumber -- Last element in group

}

RESULT SEQUENCE {

groupDescription	GroupDescription,
objects	SEQUENCE OF ObjectIdentifier

}

ERRORS {

groupTypeWrong,
groupNumberWrong,
indexWrong,
userUnavailable,
misbehavingUser

}

::= 3

-- Information transfer operations

-- Requested data groups

**requestedDataTransfer OPERATION**

ARGUMENT SEQUENCE {

dataTypeID	[1] DataTypeID,
groupNumber	[2] GroupNumber,
lowerIndex	[3] IndexNumber, -- First element in group
higherIndex	[4] IndexNumber, -- Last element in group
timeSeriesDefinition	[5] TimeSeriesDefinition OPTIONAL,
dataOrganization	[6] ENUMERATED {
sortedByObject(1),	
sortedByTime(2)	

} OPTIONAL

}

RESULT TimeSeriesDefinition

ERRORS {

groupTypeWrong,
groupNumberWrong,
indexWrong,
timeWrong,
timeSliceWrong,
userUnavailable,
misbehavingUser

}

LINKED {

requestedDataIncarnation

}

::= 5

**requestedDataIncarnation OPERATION**

ARGUMENT data SEQUENCE OF Data

::= 6

-- Start/stop of unsolicited data transmission

### **unsolicitedDataTransferManagement OPERATION**

```

ARGUMENT SEQUENCE {
    dataTypeID      DataTypeID,
    groupNumber     GroupNumber,
    function        BOOLEAN,    -- if false, this is a START command
    transmissionMode TransmissionMode,
    preferredService PreferredService
}
RESULT NULL -- ok
ERRORS {
    groupTypeWrong,
    groupNumberWrong,
    userUnavailable,
    misbehavingUser
}
 ::= 7

```

### **sendNonConfirmedData OPERATION**

```

ARGUMENT SEQUENCE {
    dataTypeID      DataTypeID,
    groupNumber     GroupNumber,
    lowerIndex      IndexNumber, -- First element in group
    higherIndex     IndexNumber, -- Last element in group
    data SEQUENCE OF Data,
    measuredAt      Time OPTIONAL
}
 ::= 8

```

### **sendConfirmedData OPERATION**

```

ARGUMENT SEQUENCE {
    dataTypeID      DataTypeID,
    groupNumber     GroupNumber,
    lowerIndex      IndexNumber, -- First element in group
    higherIndex     IndexNumber, -- Last element in group
    data SEQUENCE OF Data,
    measuredAt      Time OPTIONAL
}
RESULT NULL -- Received Data ok
ERRORS {
    groupNumberWrong,
    indexWrong,
    timeWrong,
    userUnavailable,
    misbehavingUser
}
 ::= 9

```

**sendMixedData OPERATION**

```

ARGUMENT SEQUENCE {
  mixedData SEQUENCE OF SEQUENCE {
    groupNumber GroupNumber,
    indexNumber IndexNumber,
    data Data,
    deltaTime INTEGER(0..32767) OPTIONAL -- milliseconds
  },
  baseTime Time OPTIONAL
}
 ::= 10

```

**commandTransfer OPERATION**

```

ARGUMENT SEQUENCE {
  dataTypeID DataTypeID,
  groupNumber GroupNumber,
  lowerIndex IndexNumber, -- First element in group
  higherIndex IndexNumber, -- Last element in group
  commandType CommandType,
  timeMode ENUMERATED {
    whenReady(0),
    beforeTime(1),
    atTime(2)
  },
  controlData SEQUENCE OF ControlData,
  executeAtTime Time OPTIONAL -- only on "before" or "at" modes
}
RESULT SEQUENCE {
  commandType CommandType,
  commandResultQualityCode CommandResultQualityCode,
  issuedAt Time OPTIONAL -- if the command was executed
}
ERRORS {
  groupNumberWrong,
  indexWrong,
  timeWrong,
  timeModeWrong,
  commandTypeWrong,
  timeModeNotSupported,
  commandTypeNotSupported,
  mismatchEXCtoCBXC,
  notReceivedCBXC,
  userUnavailable
}
 ::= 11

```

-- Miscellaneous operations

**testAssociation OPERATION**

```

ARGUMENT NULL
RESULT NULL
ERRORS {
  userUnavailable,
  misbehavingUser
}
 ::= 12

```

-- common arguments / results

-- Supervisory data

```
Data ::= CHOICE {
  realValue           [1]   RealValue,
  statusValue        [2]   StatusValue,
  discreteValue      [3]   DiscreteValue,
  logicalBreakerStatusValue [4] LogicalBreakerStatusValue,
  textMessageString [8]   TextMessageString
}
```

-- Control Data

```
ControlData ::= CHOICE {
  binaryCommandValue [5]   BinaryCommandValue,
  realSetPointValue  [6]   RealSetPointValue,
  digitalSetPointValue [7] DigitalSetPointValue
}
```

```
DataTypeID ::= ENUMERATED {
  realValue(1),
  statusValue(2),
  discreteValue(3),
  logicalBreakerStatusValue(4),
  textMessageString(8)
}
```

```
ControlDataID ::= ENUMERATED {
  binaryCommandValue(5),
  realSetPointValue(6),
  digitalSetPointValue(7)
}
```

```
QualityCode ::= INTEGER {
  measured(1),
  manuallyEntered(2),
  estimated(3),
  computed(4),
  held(5),           -- always combined with "notOK"
  rollOver(6),
  notOK(128),       -- summed together with one of the values above
  notOKmeasured(129),
  notOKestimated(131),
  notOKcomputed(132),
  notOKheld(133)   -- applied for measured values
} (0..255)
```

```
CommandResultQualityCode ::= INTEGER {
  ok(0),
  blocked(1),
  noConnection(2),
  commandillegal(3),
  notAuthorizedForControl(4)
} (0..255)
```

```
Status ::= INTEGER {
  between(0),
  off(1),
  on(2),
} (0..63)
```

```
RealValue ::= SEQUENCE {  
    QualityCode,  
    REAL ({-10,2,76}..{10,2,76}) -- 32 bit floating point, base 2 exponent  
}
```

```
StatusValue ::= SEQUENCE {  
    QualityCode,  
    Status  
}
```

```
DiscreteValue ::= SEQUENCE {  
    QualityCode,  
    INTEGER (-99999999..99999999)  
}
```

```
LogicalBreakerStatusValue ::= SEQUENCE {  
    QualityCode,  
    BITSTRING {  
        notbusbarA(0), busbarA(1),  
        notbusbarB(2), busbarB(3),  
        notbusbarC(4), busbarC(5),  
        notshortAtoB(6), shortAtoB(7),  
        notshortAtoC(8), shortAtoC(9),  
        notshortBtoC(10), shortBtoC(11)  
        -- both in a "pair" set to zero indicates "between"  
    } (SIZE(12..12)) -- always exactly 12 bits  
}
```

```
BinaryCommandValue ::= INTEGER {  
    off(0),  
    on(1)  
}
```

```
RealSetpointValue ::= REAL ({-10,2,76}..{10,2,76}) -- 32 bit floating point, base 2 exponent
```

```
DigitalSetpointValue ::= INTEGER (-32768..32767)
```

```
TextMessageString ::= OCTET STRING (SIZE(0..255)) -- Coding of text according to ISO LATIN-1  
(ISO 8859-1)
```

```
Datum ::= SEQUENCE {  
    year INTEGER(0..99),  
    month INTEGER(0..12),  
    day INTEGER(0..31)  
}
```

```
Time ::= SEQUENCE {  
    millisecond [1] INTEGER(0..86399999), -- 0 ms, 1 ms to 24 h - 1 ms  
    datum [2] Datum OPTIONAL,  
    timeZone [3] INTEGER(-12..12) OPTIONAL,  
    status [4] TimeStatus OPTIONAL  
}
```

```
TimeStatus ::= ENUMERATED {  
    timeOK(1),  
    timeNotOK(2)  
}
```

```
TimeSlice ::= SEQUENCE {
  timeUnit ENUMERATED {
    year(1),
    month(2),
    day(3),
    hour(4),
    minute(5),
    second(6),
    millisecond(7)
  },
  noOfUnits INTEGER(0..999)
}
```

```
TimeSeriesDefinition ::= SEQUENCE {
  startTime Time,
  timeSlice TimeSlice,
  groupCount INTEGER(1..32767)
}
```

```
TransmissionMode ::= ENUMERATED {
  spontaneous(1),
  periodic(2)
}
```

```
PreferredService ::= ENUMERATED {
  sendConfirmedData(1),
  sendNonconfirmedData(2),
  sendMixedData(3)
}
```

```
GroupNumber ::= INTEGER(0..32767)
```

```
IndexNumber ::= INTEGER(1..32767)
```

```
GroupType ::= CHOICE {
  dataTypeID DataTypeID,
  controlDataTypeID ControlDataTypeID
}
```

-- Data for command execution

```
CommandType ::= ENUMERATED {
  checkBeforeExecuteCommand(1),
  executeCommand(2),
  inhibitCommand(3),
  checkBackResponse(4),
  executeResponse(5),
  inhibitResponse(6),
  immediate(127)
}
```

-- Data for group management

```
GroupManagementFunction ::= ENUMERATED {
  create(1),
  change(2),
  delete(3),
  deleteAll(4)
}
```

```

Consistency ::= SEQUENCE {
  acceptedAt Time,
  checksum OCTETSTRING(SIZE(4..4)) -- Local checksum calculation on the internal
}

```

```

GroupDescription ::= SEQUENCE {
  persistent [1] BOOLEAN, -- true = group can not be deleted/
                           -- changed/redefined
  static [2] BOOLEAN, -- true = object set can not be defined/
                       -- redefined
  maxObjects [3] INTEGER(1..255), -- Number of object identifiers
  maxObjectIdentifierSize [4] INTEGER(1..255),
  priority [4] INTEGER (0..15) OPTIONAL
  -- spontaneous transmission: priority for responder output data queue ordering
  -- periodic transmission: period length indicator:
  -- 0 = period length chosen by responder UE
  -- 1-15 = interpreted by responder as index in table of supported period length values.
  -- not used for ControlData
}

```

```

ObjectIdentifier ::= VisibleString SIZE(0..255)

```

```

-- Errors

```

```

-- Problems with Bind/Unbind

```

```

TASEBindError ::= ERROR
  PARAMETER INTEGER {
    securityNotSupported(0),
    incompatibleSecurityOption(1),
    authenticationFailure(2)
  }

```

```

TASEUnbindError ::= ERROR
  PARAMETER INTEGER {
    collision(0)
  }

```

```

-- Detailed errors on PDU parameters

```

```

groupTypeWrong ERROR ::= 1
groupNumberWrong ERROR ::= 2
indexWrong ERROR ::= 3
timeWrong ERROR ::= 4
timeModeWrong ERROR ::= 5
timeSliceWrong ERROR ::= 6
commandTypeWrong ERROR ::= 8
maxObjectsSizeWrong ERROR ::= 9
maxObjectIdentifierSizeWrong ERROR ::= 10
groupExists ERROR ::= 11
groupNotDeleteable ERROR ::= 12
priorityWrong ERROR ::= 13

```

- Problem by group definition

```
multipleDefinitionProblem ERROR
PARAMETER SEQUENCE OF SEQUENCE {
  problemIndex INTEGER,
  -- number in request, numbered from 0
  problem INTEGER { -- these are all ERROR values
    groupTypeWrong(1),
    groupNumberWrong(2),
    indexWrong(3),
    objectIdentifierUnknown(22),
    objectIdentifierSizeWrong(23),
    configurationBufferOverflow(24),
    notReconfigurable(25)
  }
} ::= 14
```

-- Problem with performing the (syntactically legal) request

```
timeModeNotSupported ERROR ::= 20
commandTypeNotSupported ERROR ::= 21
objectIdentifierUnknown ERROR ::= 22
objectIdentifierSizeWrong ERROR ::= 23
configurationBufferOverflow ERROR ::= 24
notReconfigurable ERROR ::= 25
noMemory ERROR ::= 26
spontaneousTransferNotInitiated ERROR ::= 27
```

-- Problem with the application that should have responded

```
userUnavailable ERROR ::= 30
misbehavingUser ERROR ::= 31
```

-- Specific problem with CommandTransfer operation

```
mismatchEXCtoCBXC ERROR ::= 40
notReceivedCBXC ERROR ::= 41
END
```

LICENSED TO MECON Limited. - RANCHI/BANGALORE  
FOR INTERNAL USE AT THIS LOCATION ONLY, SUPPLIED BY BOOK SUPPLY BUREAU.

111  
111

LICENSED TO MECON Limited. - RANCHI/BANGALORE  
FOR INTERNAL USE AT THIS LOCATION ONLY, SUPPLIED BY BOOK SUPPLY BUREAU.

---

**ICS 33.200**

---