DIN EN 62056-6-2/A1

DIN

ICS 91.140.50

Entwurf

Einsprüche bis 2015-06-03
Vorgesehen als Änderung von
DIN EN 62056-6-2:2014-10

Datenkommunikation der elektrischen Energiemessung – DLMS/COSEM – Teil 6-2: COSEM Interface-Klassen (IEC 13/1573/CDV:2014); Englische Fassung EN 62056-6-2:2013/FprA1:2014

Electricity Metering Data Exchange –
The DLMS/COSEM suite –
Part 6-2: COSEM interface classes
(IEC 13/1573/CDV:2014);
English version EN 62056-6-2:2013/FprA1:2014

Anwendungswarnvermerk

Dieser Norm-Entwurf mit Erscheinungsdatum 2015-04-03 wird der Öffentlichkeit zur Prüfung und Stellungnahme vorgelegt.

Weil die beabsichtigte Norm von der vorliegenden Fassung abweichen kann, ist die Anwendung dieses Entwurfes besonders zu vereinbaren.

Stellungnahmen werden erbeten

- vorzugsweise online im Norm-Entwurfs-Portal des DIN unter www.entwuerfe.din.de bzw. für Norm-Entwürfe der DKE auch im Norm-Entwurfs-Portal der DKE unter www.entwuerfe.normenbibliothek.de, sofern dort wiedergegeben;
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- oder in Papierform an die DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE, Stresemannallee 15, 60596 Frankfurt am Main.

Die Empfänger dieses Norm-Entwurfs werden gebeten, mit ihren Kommentaren jegliche relevanten Patentrechte, die sie kennen, mitzuteilen und unterstützende Dokumentationen zur Verfügung zu stellen.

Gesamtumfang 166 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE

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Nationales Vorwort

Die Englische Fassung des europäischen Dokuments EN 62056-6-2:2013/FprA1:2014 „Datenkommunikation der elektrischen Energiemessung – DLMS/COSEM – Teil 6-2: COSEM Interface-Klassen“ (Entwurf in der Umfrage) ist unverändert in diesen Norm-Entwurf übernommen worden.

Die Internationale Elektrotechnische Kommission (IEC) und das Europäische Komitee für Elektrotechnische Normung (CENELEC) haben vereinbart, dass ein auf IEC-Ebene erarbeiteter Entwurf für eine Internationale Norm zeitgleich (parallel) bei IEC und CENELEC zur Umfrage (CDV-Stadium) und Abstimmung als FDIS (en: Final Draft International Standard) bzw. Schluss-Entwurf für eine Europäische Norm gestellt wird, um eine Beschleunigung und Straffung der Normungsarbeit zu erreichen. Dem entsprechend ist das internationale Dokument IEC 13/1573/CDV:2014 „Electricity Metering Data Exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes“ unverändert in den Entwurf EN 62056-6-2:2013/FprA1:2014 übernommen worden.

Das internationale Dokument wurde vom TC 13 „Equipment for electrical energy measurement and load control“ der Internationalen Elektrotechnischen Kommission (IEC) erarbeitet.

Bei der Abstimmung zu dem Europäischen Schluss-Entwurf bei CENELEC und dem Internationalen Schluss-Entwurf bei IEC [Final Draft International Standard (FDIS)] sind jeweils nur „JA/NEIN“-Entscheidungen möglich, wobei „NEIN“-Entscheidungen fundiert begründet werden müssen. Dokumente, die bei CENELEC als Europäische Norm angenommen und ratifiziert werden, sind unverändert als Deutsche Normen zu übernehmen.

Für dieses Dokument ist das nationale Arbeitsgremium K 461 „Elektrizitätszähler“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE (www.dke.de) zuständig.

Für den Fall einer undatierten Verweisung im normativen Text (Verweisung auf eine Norm ohne Angabe des Ausgabedatums und ohne Hinweis auf eine Abschnittsnummer, eine Tabelle, ein Bild usw.) bezieht sich die Verweisung auf die jeweils neueste gültige Ausgabe der in Bezug genommenen Norm.

Für den Fall einer datierten Verweisung im normativen Text bezieht sich die Verweisung immer auf die in Bezug genommene Ausgabe der Norm.

Der Zusammenhang der zitierten Normen mit den entsprechenden Deutschen Normen ergibt sich, soweit ein Zusammenhang besteht, grundsätzlich über die Nummer der entsprechenden IEC-Publikation. Beispiel: IEC 60068 ist als EN 60068 als Europäische Norm durch CENELEC übernommen und als DIN EN 60068 ins Deutsche Normenwerk aufgenommen.

Das Präsidium des DIN hat mit Präsidialbeschluss 1/2004 festgelegt, dass DIN-Normen, deren Inhalt sich auf internationale Arbeitsergebnisse der Informationsverarbeitung gründet, unter bestimmten Bedingungen allein in englischer Sprache veröffentlicht werden dürfen. Diese Bedingungen sind für die vorliegende Norm erfüllt.

Da sich die Benutzer des vorliegenden Normentwurfs der englischen Sprache als Fachsprache bedienen, wird die englische Fassung der EN 62056-6-2:2013/FprA1:2014 veröffentlicht. Dieser Normentwurf steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

Es ist vorgesehen, auch bei der entsprechenden zukünftigen Deutschen Norm auf die deutsche Sprachfassung zu verzichten und diese in der englischsprachigen Fassung zu veröffentlichen.

Das Original-Dokument enthält Bilder in Farbe, die in der Papierversion in einer Graustufen-Darstellung wiedergegeben werden. Elektronische Versionen dieses Dokuments enthalten die Bilder in der originalen Farbdarstellung.

Es wird auf die Möglichkeit hingewiesen, dass einige Elemente dieses Dokuments Patentrechte berühren können. ISO [und/oder] IEC sind nicht dafür verantwortlich, einige oder alle diesbezüglichen Patentrechte zu identifizieren.

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Nationaler Anhang NA
(informativ)

Die deutschen Übersetzungen haben Empfehlungscharakter und können nur die ungefähre Begrifflichkeit in Deutsch wiedergeben. Unter Experten wird empfohlen, ausschließlich die englischen Fachbegriffe zu verwenden, um die Gefahr von Missverständnissen zu reduzieren.

1 Anwendungsbereich

Diese Änderung 1 von IEC 62056-6-2 legt COSEM-Schnittstellenklassen zur Modellierung neuer Funktionalitäten für die intelligente Messung sowie die Verknüpfung dieser Schnittstellenklassen mit OBIS fest.

Des Weiteren wurden einige Änderungen an den vorhandenen Schnittstellenklassen vorgenommen.

3 Begriffe und Abkürzungen

IEC 62056-6-2:2013, 5.3.4.2 ist hier mit den nachfolgenden Änderungen einzufügen.

3.1 Begriffe im Zusammenhang mit dem Abbildübertragungsprozess (siehe 5.3.6)

3.1.1
Image
(de: Abbild)
Binärdaten einer bestimmten Größe

Anmerkung 1 zum Begriff: Ein „Image“ kann als Container betrachtet werden. Es kann aus einem oder mehreren Elementen bestehen („image_to_activate“), die zusammen übertragen, überprüft oder aktiviert werden.

3.1.2
ImageSize
(de: Abbildgröße)
Größe des gesamten zu übertragenden „Images“

Anmerkung 1 zum Begriff: Die „ImageSize“ wird in Oktetten ausgedrückt.

3.1.3
ImageBlock
(de: Abbildblock)
Teil des „Images“ mit einer bestimmten „ImageBlockSize“

Anmerkung 1 zum Begriff: Das „Image“ wird in Form von „ImageBlocks“ übertragen. Jeder Block ist durch seine „Image BlockNumber“ gekennzeichnet.

3.1.4
ImageBlockSize
(de: Abbildblockgröße)
Größe des „ImageBlocks“, ausgedrückt in Oktetten

3.1.5
ImageBlockNumber
(de: Abbildblocknummer)
Kennung eines „ImageBlocks“. „ImageBlocks“ werden fortlaufend nummeriert, beginnend bei 0

Die Bedeutung der oben genannten Begriffe ist in Bild 1 veranschaulicht.

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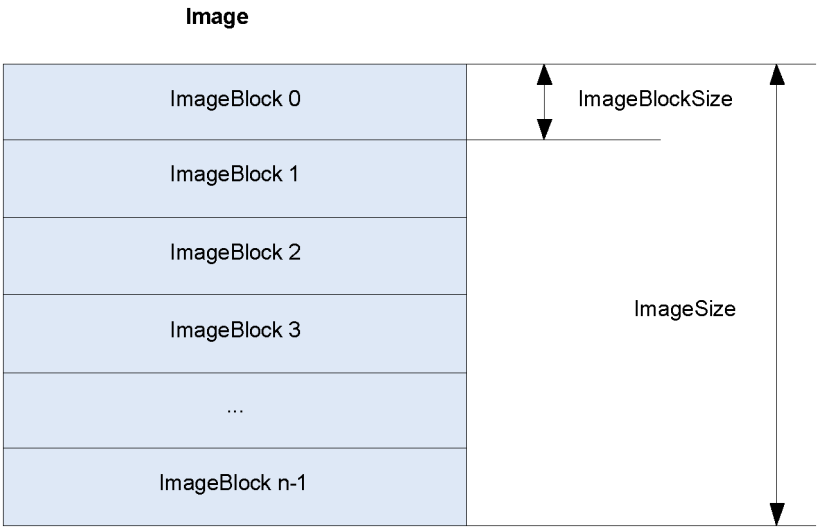

Bild 1 – Die Bedeutung der Begriffe im Hinblick auf das „Image“

3.2 Begriffe im Zusammenhang mit den S-FSK-PLC-Einrichtungsklassen (siehe 5.8)

IEC 62056-6-2:2013, 5.8.2.1 ist an diese Stelle hier zu verschieben.

Es ist der folgende neue Unterabschnitt hinzuzufügen:

3.3 Begriffe im Zusammenhang mit den Einrichtungs-ICs für PRIME-NB-OFDM-PLC (siehe 6.2.24)

Begriffe im Zusammenhang mit der Bitübertragungsschicht

3.3.1
Basisknoten
Masterknoten, der die Ressourcen eines Teilnetzes steuert und verwaltet

[QUELLE: ITU-T G.9904:2012, 3.2.1]

3.3.2
Beacon-Slot
Stelle der Beacon-PDU innerhalb eines Rahmens

[QUELLE: ITU-T G.9904:2012, 3.2.2]

3.3.3
Knoten
jedes Element eines Teilnetzes, das Daten an andere Teilnetzelemente übertragen und Daten von diesen empfangen kann

[QUELLE: ITU-T G.9904:2012, 3.2.9]

3.3.4
Registrierung
Prozess, durch den ein Dienstknoten als Teilnehmer des Teilnetzes akzeptiert und ihm eine LNID zugewiesen wird

[QUELLE: ITU-T G.9904:2012, 3.2.12]

3.3.5
Dienstknoten
jeder Knoten eines Teilnetzes, der kein Basisknoten ist

[QUELLE: ITU-T G.9904:2012, 3.2.13]

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3.3.6
Teilnetz
Menge von Elementen, die durch Einhaltung dieser Spezifikation kommunizieren können und einen einzigen Basisknoten gemeinsam nutzen

[QUELLE: ITU-T G.9904:2012, 3.2.15]

Begriffe im Zusammenhang mit der MAC-Schicht

3.3.7
Zustand „Getrennt“ (eines Dienstknotens)
anfänglicher funktionaler Zustand aller Dienstknoten. Im Zustand „Getrennt“ kann ein Dienstknoten keine Daten übermitteln oder Daten anderer Knoten weitergeben; seine Hauptfunkion besteht darin, ein Teilnetz in Reichweite zu suchen und sich in diesem Netz zu registrieren

[QUELLE: ITU-T G.9904:2012, 8.1]

3.3.8
Zustand „Endgerät“ (eines Dienstknotens)
in diesem funktionalen Zustand kann ein Dienstknoten Verbindungen aufbauen und Daten übermitteln; er kann aber keine Daten anderer Knoten weitergeben

[QUELLE: ITU-T G.9904:2012, 8.1]

3.3.9
Zustand „Schalter“ (eines Dienstknotens)
in diesem funktionalen Zustand kann ein Dienstknoten alle Funktionen eines Endgerätes ausführen. Zusätzlich kann er Daten an andere und von anderen Knoten in demselben Teilnetz weiterleiten. Er bildet einen Zweigpunkt in der Baumstruktur

[QUELLE: ITU-T G.9904:2012, 8.1]

3.3.10
Beförderung
Prozess, durch den ein Dienstknoten die Berechtigung erhält, Datenverkehr von anderen Knoten umzulenken (zu wiederholen, weiterzuleiten) und als Zweigpunkt in der Baumstruktur des Teilnetzes zu agieren. Eine erfolgreiche Beförderung stellt den Übergang vom Zustand „Endgerät“ in den Zustand „Schalter“ dar. Befindet sich ein Dienstknoten im Zustand „Getrennt“, kann er nicht direkt in den Zustand „Schalter“ übergehen

[QUELLE: ITU-T G.9904:2012, 8.1]

3.3.11
Herabstufung
Prozess, durch den ein Dienstknoten die Berechtigung, ein Zweigpunkt in der Baumstruktur des Teilnetzes zu sein, verliert. Eine erfolgreiche Herabstufung stellt den Übergang vom Zustand „Schalter“ in den Zustand „Endgerät“ dar

[QUELLE: ITU-T G.9904:2012, 8.1]

Es ist der folgende neue Unterabschnitt hinzuzufügen:

3.4 Begriffe im Zusammenhang mit ZigBee® (siehe 5.12)

ANMERKUNG Begriffe, die mit „*“ gekennzeichnet sind, entstammen der Zigbee®-Spezifikation.

3.4.1
CAD
(en: Consumer Access Device)
Kundenzugangsgerät; ZigBee®-Gateway-Gerät, das innerhalb des ZigBee®-Netzes als IHD agiert, aber über eine zusätzliche Verbindung zu einem anderen Netz (d. h. WiFi) verfügt

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3.4.2
IHD
(en: In-Home Display)
Heimanzeige; Gerät mit einem Bildschirm zur Anzeige von Energie-Informationen für den Kunden

3.4.3
Installationscode
vorkonfigurierter Verbindungsschlüssel (PCLK) mit Hash (über MMO), der einem Trust-Center über bandexterne Kommunikation bereitgestellt wird. Ein neues Gerät, das dem Netz beitreten möchte, muss diesen Installationscode an das Trust-Center senden, damit dieses den Beitrittsprozess ausführen kann, wobei der Installationscode als Teil der Sicherheitsinformationen verwendet wird

3.4.4
Verbindungsschlüssel*
hierbei handelt es sich um einen Schlüssel, der exklusiv von zwei – und ausschließlich von diesen zwei – Entitäten der Anwendungsschicht innerhalb eines PAN gemeinsam genutzt wird

3.4.5
MAC-Adresse/IEEE-Adresse
diese Benennungen werden synonym verwendet und repräsentieren den EUI-64-Code, der dem ZigBee®-Funkgerät zugewiesen ist

3.4.6
ZigBee®
ZigBee® ist eine Spezifikation für eine Reihe von Kommunikationsprotokollen höherer Schichten, die eingesetzt werden, um persönliche Netzwerke von kleinen digitalen Funkgeräten mit geringer Sendeleistung ausgehend aufzubauen. ZigBee® setzt auf der Norm IEEE 802.15 auf. Trotz der geringen Sendeleistung übertragen ZigBee®-Geräte oft Daten über größere Entfernungen hinweg, indem sie die Daten über Zwischengeräte weiterleiten, um weiter entfernte Geräte zu erreichen und auf diese Weise ein Maschennetz aufzubauen

3.4.7
ZigBee®-Client
entspricht in etwa der Rolle des DLMS/COSEM-Clients. Zum besseren Verständnis der Interaktion zwischen Client und Server sollte die ZigBee®-PRO-Spezifikation gelesen werden

3.4.8
ZigBee®-Koordinator*
PAN-Koordinator nach IEEE 802.15.4-2003, der als Hauptsteuereinheit eines auf IEEE 802.15.4-2003 basierenden Netzes für den Netzaufbau verantwortlich ist. Der PAN-Koordinator muss ein Gerät mit voller Funktionalität (FFD) sein

3.4.9
ZigBee®-Cluster
Satz von Nachrichtentypen für eine bestimmte Gerätefunktion (z. B. Messung, Strombegrenzung)

3.4.10
ZigBee®-Spiegel
Gerät, das die von einem batteriebetriebenen ZigBee®-Gerät veröffentlichten Daten wiederholt, damit andere Netzteilnehmer Daten erhalten können, wenn das batteriebetriebene Gerät aufgrund des Energiesparmodus nicht verfügbar ist

3.4.11
ZigBee® PRO
alternativer Name für das ZigBee®-2007-Protokoll. ZigBee® 2007, das aktuelle Stack-Release, umfasst zwei Stackprofile: Stackprofil 1 (ZigBee®) für die private und geringe gewerbliche Nutzung und Stackprofil 2 (ZigBee® PRO). ZigBee® PRO stellt mehr Funktionen bereit, z. B. Multicasting, Many-To-One-Routing und Hochsicherheit durch SKKE (en: Symmetric-Key Key Exchange), während ZigBee® (Stackprofil 1) einen geringen Funktionsumfang in Bezug auf RAM und Flash bietet. Beide Stackprofile stellen die volle Maschennetzbildung bereit und sind mit allen ZigBee®-Anwendungsprofilen einsetzbar

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3.4.12
ZigBee®-Router*
FFD nach IEEE 802.15.4-2003 in einem ZigBee®-Netz, das nicht als ZigBee®-Koordinator, aber möglicherweise als Koordinator nach IEEE 802.15.4-2003 innerhalb seiner Netzausdehnung agiert und Nachrichten zwischen Geräten und unterstützenden Assoziationen weiterleiten kann

3.4.13
ZigBee®-Server
entspricht in etwa der Rolle des DLMS/COSEM-Servers

ANMERKUNG Zum besseren Verständnis der Interaktion zwischen Client und Server sollte die ZigBee®-PRO-Spezifikation gelesen werden.

3.4.14
ZigBee®-Trust-Center*
Gerät, das von anderen Geräten innerhalb eines ZigBee®-Netzes dazu ermächtigt wurde, Schlüssel zum Zweck der Verwaltung des Netzes und der Anwendungskonfiguration zwischen Endpunkten zu verteilen

Die Abkürzungen in IEC 62056-6-2:2013, Abschnitt 3 sind durch die folgenden zu ersetzen. Die neuen Abkürzungen sind markiert.

3.5 Abkürzungen

Abkürzung	Erklärung
6LoWPAN	IPv6 over Low-Power Wireless Personal Area Network
AA	Anwendungsassoziation
AARE	A-Associate Response – eine APDU des ACSE
AARQ	A-Associate Request – eine APDU des ACSE
ACSE	Assoziationssteuerungs-Dienstelement (en: Association Control Service Element)
ADP	primäre Stationsadresse
ADS	sekundäre Stationsadresse
AGA	American Gas Association
AGA 8	Verfahren zur Berechnung der Kompressibilität (Gasmessung)
AGC	automatische Verstärkungsregelung (en: Automatic Gain Control)
AL	Anwendungsschicht (en: Application Layer)
AP	Anwendungsprozess
APDU	Protokolldateneinheit der Anwendungsschicht (en: Application Protocol Data Unit)
APS	Anwendungsunterstützungs-Teilschicht (ZigBee®-Begriff) (en: Application Support Sublayer)
ASE	Anwendungsdienstelement (en: Application Service Element)
A-XDR	Adapted Extended Data Representation (IEC 61334-6)
base_name	„short_name“ (de: Kurzname) zum ersten Attribut („logical_name“) eines COSEM-Objekts
BCD	binär codierte Dezimalzahlen

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Abkürzung	Erklärung
BER	Bitfehlerquote
CBCP	CallBack Control Protocol (PPP)
CC	Current-Credit (S-FSK-PLC-Profil)
CENELEC	Europäisches Komitee für elektrotechnische Normung
CHAP	Challenge Handshake Authentication Protocol
CIASE	Anwendungsdienstelement zur Initiierung der Konfiguration (S-FSK-PLC-Profil) (en: Configuration Initiation Application Service Element)
class_id	Identifikationscode der Schnittstellenklasse
CLI	Rufnummernanzeige (en: Calling Line Identity)
COSEM	Firmenspezifikation für die Gebührenerfassung des Energieverbrauchs (en: COmpanion Specification for Energy Metering)
COSEM-Objekt	Instanz einer COSEM-Schnittstellenklasse
CRC	zyklische Redundanzprüfung (en: Cyclic Redundancy Check)
CSD	Circuit Switched Data
CSMA	Carrier Sense Multiple Access
CtoS	Anforderung vom Client an den Server (en: Client To Server Challenge)
CU	aktuell nicht genutzt (en: Currently Unused)
DC	Delta-Credit (S-FSK-PLC-Profil)
DHCP	Dynamic Host Control Protocol
DIB	Dateninformationsblock (M-Bus)
DIF	Dateninformationsfeld (M-Bus)
DL	Sicherungsschicht (en: Data Link)
DLMS	standardisierte Sprache für die Zählerkommunikation (en: Device Language Message Specification)
DLMS UA	DLMS User Association
DNS	Domänennamen-Server
DSCP	Differentiated Services Code Point
DSSID	direkte Schalterkennung (en: Direct Switch ID)
EAP	Extensible Authentication Protocol
EDGE	Enhanced Data rates for GSM Evolution
EUI-48	erweiterte eindeutige Kennung (en: Extended Unique Identifier) mit einer Länge von 48 Bit
EUI-64	erweiterte eindeutige Kennung (en: Extended Unique Identifier) mit einer Länge von 64 Bit
FCC	Federal Communications Commission

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Abkürzung	Erklärung
FFD	Gerät mit voller Funktionalität (en: Full-Function Device)
FIFO	First-In, First-Out
FTP	File Transfer Protocol
GCM	Galois/Counter Mode; Algorithmus für die authentifizierte Verschlüsselung mit assoziierten Daten
GMT	mittlere Greenwich-Zeit (en: Greenwich Mean Time). Ersetzt durch die koordinierte Weltzeit (UTC)
GPRS	General Packet Radio Service
GPS	globales Positionsbestimmungssystem
GSM	Global System for Mobile Communications
HART	Highway Addressable Remote Transducer; siehe „http://www.hartcomm.org/“ (im Zusammenhang mit der Sensormanager-Schnittstellenklasse)
HDLC	High-level Data Link Control
HES	Kopfstellensystem (en: Head End System)
HLS	Authentifizierung mit hohem Sicherheitsniveau (en: High Level Security Authentication)
HSDPA	High-Speed Downlink Packet Access
IANA	Internet Assigned Numbers Authority
IB	Informationsdatenbank (en: Information Base)
IC	Schnittstellenklasse (COSEM) (en: Interface Class)
IC	Initial-Credit (S-FSK-PLC-Profil)
IEC	Internationale Elektrotechnische Kommission
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IPCP	Internet Protocol Control Protocol
IPv4	Internet Protocol, Version 4
IPv6	Internet Protocol, Version 6
ISO	Internationale Normungsorganisation
ISP	Internetdienstanbieter (en: Internet Service Provider)
IT	Informationstechnik
ITU-T	Internationale Fernmeldeunion – Sektor „Telekommunikation“
KEK	Key Encryption Key
LA	Aufenthaltsbereich (en: Local Area)

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Abkürzung	Erklärung
LAC	Aufenthaltsbereichskennzahl (en: Local Area Code)
LCID	lokale Verbindungskennung (en: Local Connection Identifier)
LCP	Link Control Protocol
LDN	logischer Gerätename (en: Logical Device Name)
LLC	logische Verbindungssteuerung (Teilschicht) (en: Logical Link Control)
LLS	niedriges Sicherheitsniveau (en: Low Level Security)
LN	logischer Name
LNID	lokale Knotenkennung (en: Local Node Identifier)
LOADng	6LoWPAN Ad Hoc On-Demand Distance Vector Routing Next Generation
LQI	Verbindungsqualitätsindikator (ZigBee®-Begriff) (en: Link Quality Indicator)
LSB	niedrigstwertiges Bit (en: Least Significant Bit)
LSID	lokale Schalterkennung (en: Local Switch Identifier)
LTE	Long Term Evolution (drahtlose Kommunikation)
m	obligatorisch (en: mandatory)
MAC	Medium Access Control
M-Bus	Zählerbus
MD5	Message Digest Algorithm 5
MIB	Management-Informationsdatenbank (S-FSK-PLC-Profil) (en: Management Information Base)
MID	Richtlinie 2004/22/EG des Europäischen Parlaments und des Rates über Messgeräte
MMO	Matyas-Meyer-Oseas-Hashfunktion (ZigBee®-Begriff)
MPAN	Großbritannien: Meter Point Access Number (entspricht in etwa der Zählpunktnummer in Deutschland) – Verweis auf den Punkt des Stromzählers im Stromversorgungsnetz
MPDU	MAC-Protokolldateneinheit
MSB	höchstwertiges Bit (en: Most Significant Bit)
MSDU	MAC-Dienstdateneinheit (en: MAC Service Data Unit)
MT	Anrufzustellung (en: Mobile Termination)
NB	Schmalband (en: Narrow-band)

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Abkürzung	Erklärung
ND	Erkennung von Nachbarn (en: Neighbour Discovery)
NTP	Network Time Protocol
o	optional
OBIS	OBject Identification System
OFDM	orthogonales Frequenzmultiplexverfahren (en: Orthogonal Frequency Division Multiplexing)
OTA	Over the Air – bezieht sich auf Firmware-Upgrades unter Verwendung von ZigBee®
PAN	persönliches Netzwerk (Begriff, der im Zusammenhang mit G3-NB-OFDM-PLC[1)] und ZigBee® verwendet wird) (en: Personal Area Network)
Pad	Padding
PAP	Password Authentication Protocol
PCLK	vorkonfigurierter Verbindungsschlüssel (ZigBee®-Begriff) (en: Pre-Configured Link Key)
PDU	Protokolldateneinheit (en: Protocol Data Unit)
PhL, PHY	Bitübertragungsschicht (en: Physical Layer)
PIB	PLC-Informationsdatenbank (en: PLC Information Base)
PIN	Persönliche Identifikationsnummer
PLC	Trägerfrequenzanlage (en: Power Line Carrier)
PLMN	öffentliches landgestütztes Mobilfunknetz (en: Public Land Mobile Network)
PNPDU	Promotion-Needed-PDU
POS	Netzausdehnung (en: Personal Operating Space)
PPDU	Protokolldateneinheit der Bitübertragungsschicht (en: Physical Protocol Data Unit)
PPP	Point-to-Point Protocol
PSTN	öffentliches Wählnetz (en: Public Switched Telephone Network)
REJ PDU	Reject-Protokolldateneinheit
RFC	Request for Comments; von der Internet Engineering Task Force veröffentlichtes Dokument
RFD	Gerät mit eingeschränkter Funktionalität (en: Reduced Function Device)
ROHC	robuste Headerkompression (en: Robust Header Compression)
RREP	Route Reply
RREQ	Route Request

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Abkürzung	Erklärung
RRER	Route Error
RSSI	Indikator für Empfangsfeldstärke (ZigBee®-Begriff) (en: Receive Signal Strength Indication)
SAP	Dienstzugangspunkt (en: Service Access Point)
SAS	Attributsatz für die Konfiguration (ZigBee®-Begriff) (en: Startup Attribute Set)
SCP	Shared Contention Period
SE	Smart Energy
SEP	Smart-Energy-Profil (ZigBee®-Begriff)
S-FSK	Spread Frequency Shift Keying
SGERG88	Verfahren zur Berechnung der Kompressibilität (Gasmessung)
SHA-1	sicherer Hash-Algorithmus
SID	Schalterkennung (en: Switch Identifier)
SMS	Kurznachrichtendienst (en: Short Message Service)
SMTP	Simple Mail Transfer Protocol
SN	Kurzname (en: Short Name)
SNA	Teilnetzadresse (en: Subnetwork Address)
SSCS	dienstspezifische Konvergenzschicht (en: Service Specific Convergence Layer)
StoC	Anforderung vom Server an den Client (en: Server To Client Challenge)
TAB	Im Falle der EURIDIS-Profile ohne DLMS und ohne DLMS/COSEM: Datencode. Im Falle von Profilen, die DLMS oder DLMS/COSEM verwenden: Wert, der für die Erkennung des Geräts verwendet wird
TABi	Liste des TAB-Feldes
TCC	Transmission Control Code (IPv4)
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TOU	Zeitpunkt der Nutzung (en: Time Of Use)
TTL	Lebenszeit (en: Time To Live)
UDP	User Datagram Protocol
UMTS	Universal Mobile Telecommunications System
UNC	unkonfiguriert (S-FSK-PLC-Profil)
UTC	Koordinierte Weltzeit

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Abkürzung	Erklärung
VIB	Wertinformationsblock (M-Bus) (en: Value Information Block)
VIF	Wertinformationsfeld (M-Bus) (en: Value Information Field)
VZ	Vorwertzähler (siehe DIN 43863-3)
wake-up	löst aus, dass sich der Zähler mit dem Kommunikationsnetz verbindet, um für einen Client (z. B. HES) verfügbar zu sein
ZTC	ZigBee®-Trust-Center
ANMERKUNG Im Fall der G3-NB-OFDM-PLC-Technologie kann „PAN“ als PLC-Netzwerk verstanden werden.	

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –

Part 6-2: COSEM interface classes – Amendment 1

FOREWORD

This amendment has been prepared by IEC technical committee 13: Electrical energy measurement and control

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

Revision Report	Report on voting
13/1566/RR	

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

The committee has decided that the contents of this amendment and the base 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.

The National Committees are requested to note that for this publication the stability date is 2015.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

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ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –

Part 6-2: COSEM interface classes – Amendment 1

INTRODUCTION

IEC 62056-62, specifying COSEM interface classes has been published first in 2002. A second edition has been published in 2006.

A new edition has been published as IEC 62056-6-2 Ed.1.0:2013 *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes* in May 2013.

The DLMS User Association, maintaining a D-Type liaison with IEC TC13 WG 14, continuously develops and extends the DLMS/COSEM specification in order to meet new market needs. The results of this work are regularly offered to the IEC for international standardization.

This Amendment includes new interface classes and other amendments published by the DLMS UA in Blue Book Edition 11 in August 2013. The Blue Book is available for the members of the DLMS User Association. An excerpt is publicly available at http://dlms.com/documentation/index.html.

With the present amendment IEC 62056-6-2 will be fully in line with Blue Book Edition 11.

IEC 62056-6-2 shall be read together with IEC 62056-5-3 and IEC 62056-6-1.

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1 Scope

This Amendment 1 to IEC 62056-6-2 specifies COSEM interface classes modelling new functionality for smart metering as well as the relationship of these interface classes to OBIS.

Additionally, some amendments to the existing interface classes are included.

2 Normative references

Replace IEC 62056-6-2:2013 Clause 2 by the following:

NOTE Existing references have been retained to avoid broken cross references. New references have been added; these are highlighted.

IEC 61334-4-32:1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 32: Data link layer – Logical link control (LLC)*

IEC 61334-4-41:1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 41: Application protocols – Distribution line message specification*

IEC 61334-4-511:2000, *Distribution automation using distribution line carrier systems – Part 4-511: Data communication protocols – Systems management – CIASE protocol*

IEC 61334-4-512:2001, *Distribution automation using distribution line carrier systems – Part 4-512: Data communication protocols – System management using profile 61334-5-1 – Management Information Base (MIB)*

IEC 61334-5-1:2001, *Distribution automation using distribution line carrier systems – Part 5-1: Lower layer profiles – The spread frequency shift keying (S-FSK) profile*

IEC/TR 62051:1999, *Electricity metering – Glossary of terms*

IEC/TR 62051-1:2004, *Electricity metering – Data exchange for meter reading, tariff and load control – Glossary of terms – Part 1: Terms related to data exchange with metering equipment using DLMS/COSEM*

IEC 62056-21:2002, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange*

IEC 62056-31:1999, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 31: Using local area networks on twisted pair with carrier signalling*

NOTE This Edition is referenced in the interface class “IEC twisted pair (1) setup” (class_id: 24, version: 0)

IEC 62056-3-1:2013, *Electricity metering data exchange – The DLMS/COSEM suite – Part 3-1: Use of local area networks on twisted pair with carrier signalling*

NOTE This Edition is referenced in the interface class “IEC twisted pair (1) setup” (class_id: 24, version: 1)

IEC 62056-46:2002, Electricity metering – Data exchange for meter reading, tariff and load control – Part 46: Data link layer using HDLC protocol Amendment 1:2006

IEC 62056-5-3, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*

NOTE A reference to the undated edition means a reference to the edition 2013 as amended by its Amendment 1.

IEC 62056-5-3:2013, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*

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IEC 62056-5-3 Amd.1:—, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*[1]

IEC 62056-6-1, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object identification system (OBIS)*

NOTE A reference to the undated edition means a reference to the edition 2013 as amended by its Amendment 1.

IEC 62056-6-1:2013, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object identification system (OBIS)*

IEC 62056-6-1 Amd. 1: —, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object identification system (OBIS)* [1]

IEC 62056-6-2:2013, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*

IEC 62056-9-7:2013, Electricity metering data exchange - the DLMS/COSEM suite – Part 9-7: Communication profile for TCP-UDP/IP networks

ISO/IEC 8802-2:1998, *Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 2: Logical link control*

IEEE 802.15.4-2006, *Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 15.4: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for Low-Rate Wireless Personal Area Networks (WPANs)*

NOTE This standard is also available as ISO/IEC/IEEE FDIS 8802-15-4:2010

ISO/IEC/IEEE 60559:2011, *Information technology – Microprocessor Systems – Floating-Point arithmetic*

ITU-T G.9901:2012, *SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS – Access Networks – In premises networks – Narrow-band orthogonal frequency division multiplexing power line communication transceivers – Power spectral density specification*

ITU-T G.9901, Amendment 1:2013*: SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS – Access networks – In premises networks – Narrow-band orthogonal frequency division multiplexing power line communication transceivers – Power spectral density specification*

ITU-T G.9903:2013, *SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS – Access networks – In premises networks – Narrowband orthogonal frequency division multiplexing power line communication transceivers for G3-PLC networks*

ITU-T G.9904:2012, *SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS – Access networks – In premises networks – Narrow-band orthogonal frequency division multiplexing power line communication transceivers for PRIME networks*

EN 13757-2:2004, *Communication system for meters and remote reading of meters – Part 2: Physical and Link layer*

EN 13757-3:2004, *Communication system for meters and remote reading of meters – Part 3: Dedicated application layer*

———————

[1] To be published simultaneously with this Amendment.

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NOTE This Edition is referenced in the interface class M-Bus client (class_id: 72, version: 0)

EN 13757-3:2013, *Communication systems for and remote reading of meters – Part 3: Dedicated application layer*

NOTE This Edition is referenced in the interface class M-Bus client (class_id: 72, version: 1)

EN 13757-5:2008, *Wireless meter readout – Communication system for meters and remote reading of meters – Part 5: Relaying*

CLC/FprTS 52056-8-4:—, *Electricity metering data exchange – The DLMS/COSEM suite – Part 8-4: The narrow-band OFDM PLC profiles for PRIME networks* [2]

CLC/FprTS 52056-8-5:—, *Electricity metering data exchange – The DLMS/COSEM suite –Part 8-5: The narrow-band OFDM PLC profile for G3-PLC networks* [2]

ANSI C12.19:1997, IEEE 1377:1997, *Utility industry end device data tables*

ZigBee® 053474 *ZigBee® Specification*. *The specification can be downloaded free of charge from http://www.zigbee.org/Standards/ZigBeeSmartEnergy/Specification.aspx*

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[2] In enquiry stage

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3 Terms, Definitions and Abbreviations

Bring here IEC 62056-6-2:2013 clause 5.3.4.2 amended as below.

3.1 Definitions related to the Image transfer process (see 5.3.6)

3.1.1
Image
binary data of a specified size

NOTE 1 to entry: An Image can be seen as a container. It may consist of one or multiple elements (*image_to_activate*) which are transferred, verified and activated together.

3.1.2
ImageSize
size of the whole Image to be transferred

NOTE 1 to entry: ImageSize is expressed in octets.

3.1.3
ImageBlock
part of the Image of size ImageBlockSize

NOTE1 to entry: The Image is transferred in ImageBlocks. Each block is identified by its ImageBlockNumber.

3.1.4
ImageBlockSize
size of ImageBlock expressed in octets

3.1.5
ImageBlockNumber
identifier of an ImageBlock. ImageBlocks are numbered sequentially, starting from 0.

The meaning of the definitions above is illustrated in Figure 1.

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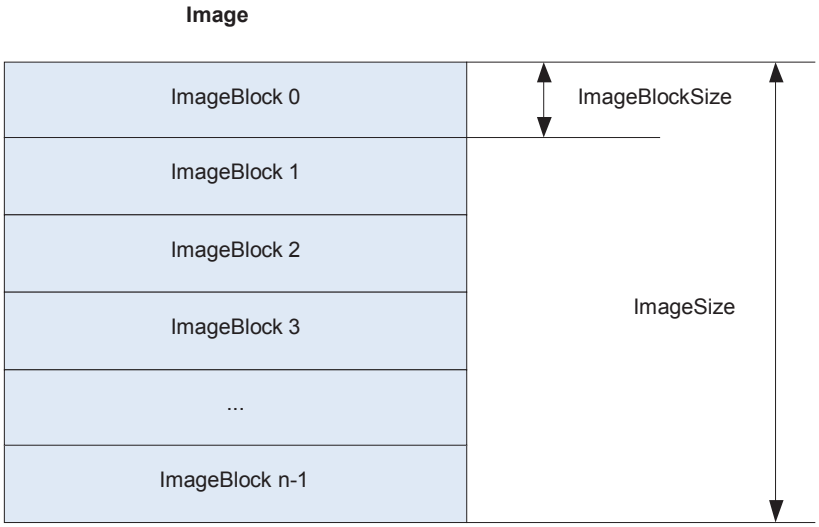

Figure 1 – The meaning of the definitions concerning the Image

3.2 Terms related to the S-FSK PLC setup classes (see 5.8)

Move IEC 62056-6-2:2013 clause 5.8.2.1 here.

Add the following new subclause:

3.3 Terms related to the PRIME NB OFDM PLC setup ICs (see 6.2.24)

Definitions related to the physical layer

3.3.1
base node
the master node, which controls and manages the resources of a subnetwork

[SOURCE: ITU-T G.9904:2012 3.2.1]

3.3.2
beacon slot
the location of the beacon PDU within a frame [SOURCE: ITU-T G.9904:2012 3.2.2]

3.3.3
node
any one element of a subnetwork, which is able to transmit to and receive from other subnetwork elements [SOURCE: ITU-T G.9904:2012 3.2.9]

3.3.4
registration
the process by which a service node is accepted as member of the subnetwork and allocated a LNID [SOURCE: ITU-T G.9904:2012 3.2.12]

3.3.5
service node
any one node of a subnetwork, which is not a base node

[SOURCE: ITU-T G.9904:2012 3.2.13]

3.3.6
subnetwork
a set of elements that can communicate by complying with this specification and share a single base node [SOURCE: ITU-T G.9904:2012 3.2.15]

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Definitions related to the MAC layer

3.3.7
disconnected state (of a service node)
this is the initial functional state for all service nodes. When disconnected, a service node is not able to communicate data or switch other nodes' data; its main function is to search for a subnetwork within its reach and try to register on it [SOURCE: ITU-T G.9904:2012 8.1]

3.3.8
terminal state (of a service node)
when in this functional state a service node is able to establish connections and communicate data, but it is not able to switch other nodes' data [SOURCE: ITU-T G.9904:2012 8.1]

3.3.9
switch state (of a service node)
when in this functional state a service node is able to perform all Terminal functions. Additionally, it is able to forward data to and from other nodes in the same subnetwork. It is a branch point on the tree structure [SOURCE: ITU-T G.9904:2012 8.1]

3.3.10
promotion
the process by which a service node is qualified to switch (repeat, forward) data traffic from other nodes and act as a branch point on the subnetwork tree structure. A successful promotion represents the transition between Terminal and Switch state. When a service node is in the Disconnected state, it cannot directly transition to Switch state

[SOURCE: ITU-T G.9904:2012 8.1]

3.3.11
demotion
the process by which a service node ceases to be a branch point on the subnetwork tree structure. A successful demotion represents the transition between Switch and Terminal state [SOURCE: ITU-T G.9904:2012 8.1]

Add the following new sub-clause:

3.4 Terms related to ZigBee® (see 5.12)

NOTE Terms marked with * are from the ZigBee® Specification.

3.4.1
CAD
Consumer Access Device; a ZigBee® gateway device that acts like an IHD within the ZigBee® network, but has an additional connection to a different network (i.e. WiFi)

3.4.2
IHD
in Home Display; a device that has a screen for the displaying of Energy information to the consumer

3.4.3
install code
a Hashed (via MMO) Pre-Configured Linked Key (PCLK) that is provided to a trust centre via out-of-band communications. A new device wishing to join the network would need to send this install code to the Trust Centre, which would allow the trust centre to execute the joining process, using this install code as part of the security information

3.4.4
link key *
this is a key that is shared exclusively between two, and only two, peer application-layer entities within a PAN

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3.4.5
MAC address/IEEE address
these are used synonymously to represent the EUI-64 code allocated to the ZigBee® Radio

3.4.6
ZigBee®
ZigBee® is a specification for a suite of high level communication protocols used to create personal area networks built from small, low-power digital radios. ZigBee® is based on an IEEE 802.15 standard. Though low-powered, ZigBee® devices often transmit data over longer distances by passing data through intermediate devices to reach more distant ones, creating a mesh network

3.4.7
ZigBee® client
this is similar to the role of the DLMS/COSEM Client. For a greater understanding of the interaction between the client and server the ZigBee® PRO specification should be read

3.4.8
ZigBee® coordinator *
an IEEE 802.15.4-2003 PAN coordinator that is the principal controller of an IEEE 802.15.4-2003-based network that is responsible for network formation. The PAN coordinator must be a full function device (FFD)

3.4.9
ZigBee® cluster
a set of message types related to a certain device function (e.g. metering, ballast control)

3.4.10
ZigBee® mirror
a device which echoes data being published by a battery operated ZigBee® device, allowing other network actors to obtain data while the battery operated device is unavailable due to power saving

3.4.11
ZigBee® PRO
An alternative name for the ZigBee® 2007 protocol. ZigBee® 2007, now the current stack release, contains two stack profiles, stack profile 1 (simply called ZigBee®), for home and light commercial use, and stack profile 2 (called ZigBee® PRO). ZigBee® PRO offers more features, such as multi-casting, many-to-one routing and high security with Symmetric-Key Key Exchange (SKKE), while ZigBee® (stack profile 1) offers a smaller footprint in RAM and flash. Both offer full mesh networking and work with all ZigBee® application profiles

3.4.12
ZigBee® router *
an IEEE 802.15.4-2003 FFD participating in a ZigBee® network, which is not the ZigBee® coordinator but may act as an IEEE 802.15.4-2003 coordinator within its personal operating space, that is capable of routing messages between devices and supporting associations

3.4.13
ZigBee® server
this is similar to the role of the DLMS/COSEM Server.

NOTE For a greater understanding of the interaction between the client and server the ZigBee® PRO specification should be read.

3.4.14
ZigBee® Trust Center *
the device trusted by devices within a ZigBee® network to distribute keys for the purpose of network and end-to-end application configuration management

Replace the abbreviations in IEC 62056-6-2:2013 clause 3 with the following. The new abbreviations are highlighted.

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3.5 Abbreviations

Abbreviation	Explanation
6LoWPAN	IPv6 over Low-Power Wireless Personal Area Network
AA	Application Association
AARE	A-Associate Response – an APDU of the ACSE
AARQ	A-Associate Request – an APDU of the ACSE
ACSE	Association Control Service Element
ADP	Primary Station Address
ADS	Secondary Station Address
AGA	American Gas Association
AGA 8	Method for calculation of compressibility (Gas metering)
AGC	Automatic Gain Control
AL	Application layer
AP	Application process
APDU	Application Protocol Data Unit
APS	Application Support Sublayer (ZigBee® term)
ASE	Application Service Element
A-XDR	Adapted Extended Data Representation (IEC 61334-6)
base_name	The short_name corresponding to the first attribute (“logical_name”) of a COSEM object
BCD	Binary Coded Decimal
BER	Bit Error Rate
CBCP	CallBack Control Protocol (PPP)
CC	Current Credit (S-FSK PLC profile)
CENELEC	European Committee for Electrotechnical Standardization
CHAP	Challenge Handshake Authentication Protocol
CIASE	Configuration Initiation Application Service Element (S-FSK PLC profile)
class_id	Interface class identification code
CLI	Calling Line Identity
COSEM	Companion Specification for Energy Metering
COSEM object	An instance of a COSEM interface class
CRC	Cyclic Redundancy Check
CSD	Circuit Switched Data
CSMA	Carrier Sense Multiple Access
CtoS	Client to Server challenge
CU	Currently Unused
DC	Delta credit (S-FSK PLC profile)
DHCP	Dynamic Host Control Protocol
DIB	Data Information Block (M-Bus)
DIF	Data Information Field (M-Bus)
DL	Data Link
DLMS	Device Language Message Specification
DLMS UA	DLMS User Association
DNS	Domain Name Server
DSCP	Differentiated Services Code Point

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Abbreviation	Explanation
DSSID	Direct Switch ID
EAP	Extensible Authentication Protocol
EDGE	Enhanced Data rates for GSM Evolution
EUI-48	48-bit Extended Unique Identifier
EUI-64	64-bit Extended Unique Identifier
FCC	Federal Communications Commission
FFD	Full-Function Device
FIFO	First-In-First-Out
FTP	File Transfer Protocol
GCM	Galois/Counter Mode, an algorithm for authenticated encryption with associated data
GMT	Greenwich Mean Time. Replaced by Coordinated Universal Time (UTC).
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Global System for Mobile Communications
HART	Highway Addressable Remote Transducer see http://www.hartcomm.org/ (in relation with the Sensor manager interface class)
HDLC	High-level Data Link Control
HES	Head End System
HLS	High Level Security Authentication
HSDPA	High-Speed Downlink Packet Access
IANA	Internet Assigned Numbers Authority
IB	Information Base
IC	Interface Class (COSEM)
IC	Initial credit (S-FSK PLC profile)
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IPCP	Internet Protocol Control Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISO	International Organization for Standardization
ISP	Internet Service Provider
IT	Information Technology
ITU-T	International Telecommunication Union - Telecommunication
KEK	Key Encryption Key
LA	Local Area
LAC	Local Area Code
LCID	Local Connection Identifier
LCP	Link Control Protocol
LDN	Logical Device Name
LLC	Logical Link Control (sublayer)
LLS	Low Level Security
LN	Logical Name

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Abbreviation	Explanation
LNID	Local Node Identifier
LOADng	6LoWPAN Ad Hoc On-Demand Distance Vector Routing Next Generation (LOADng)
LQI	Link Quality Indicator (ZigBee ® term)
LSB	Least Significant Bit
LSID	Local Switch Identifier
LTE	Long Term Evolution (Wireless communication)
m	mandatory
MAC	Medium Access Control
M-Bus	Meter Bus
MD5	Message Digest Algorithm 5
MIB	Management Information Base (S-FSK PLC profile)
MID	Measuring Instruments Directive 2004/22/EC of the European Parliament and of the Council
MMO	Matyas-Meyer-Oseas hash (ZigBee ® term)
MPAN	(UK term) Meter Point Access Number – reference of the location of the Electricity meter on the electricity distribution network.
MPDU	MAC Protocol Data Unit
MSB	Most Significant Bit
MSDU	MAC Service Data Unit
MT	Mobile Termination
NB	Narrow-band
ND	Neighbour Discovery
NTP	Network Time Protocol
o	optional
OBIS	OBject Identification System
OFDM	Orthogonal Frequency Division Multiplexing
OTA	Over the Air – Refers to Firmware Upgrade using ZigBee ®
PAN	Personal Area Network (Term used in relation to G3 NB OFDM PLC [1)] and ZigBee ®
Pad	Padding
PAP	Password Authentication Protocol
PCLK	Pre-Configured Link Key (ZigBee® term)
PDU	Protocol Data Unit
PhL, PHY	Physical Layer
PIB	PLC Information Base
PIN	Personal Identity Number
PLC	Power Line Carrier
PLMN	Public Land Mobile Network
PNPDU	Promotion Needed PDU
POS	Personal Operating Space
PPDU	Physical Protocol Data Unit
PPP	Point-to-Point Protocol
PSTN	Public Switched Telephone Network
REJ PDU	Reject Protocol Data Unit
RFC	Request for Comments; a document published by the Internet Engineering Task Force

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Abbreviation	Explanation
RFD	Reduced Function Device
ROHC	Robust Header Compression
RREP	Route Reply
RREQ	Route Request
RRER	Route Error
RSSI	Receive Signal Strength Indication (ZigBee® term)
SAP	Service Access Point
SAS	Startup Attribute Set (ZigBee® term)
SCP	Shared Contention Period
SE	Smart Energy
SEP	Smart Energy Profile (ZigBee® term)
S-FSK	Spread - Frequency Shift Keying
SGERG88	Method for calculation of compressibility (Gas metering)
SHA-1	Secure Hash Algorithm
SID	Switch identifier
SMS	Short Message Service
SMTP	Simple Mail Transfer Protocol
SN	Short Name
SNA	Subnetwork Address
SSCS	Service Specific Convergence Layer
StoC	Server to Client Challenge
TAB	In the case of the EURIDIS profiles without DLMS and without DLMS/COSEM: data code. In the case of profiles using DLMS or DLMS/COSEM: value at which the equipment is programmed for Discovery
TABi	List of TAB field
TCC	Transmission Control Code (IPv4)
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TOU	Time of use
TTL	Time To Live
UDP	User Datagram Protocol
UMTS	Universal Mobile Telecommunications System
UNC	Unconfigured (S-FSK PLC profile)
UTC	Coordinated Universal Time
VIB	Value Information Block (M-Bus)
VIF	Value Information Field (M-Bus)
VZ	Billing period counter (Form *Vorwertzähler* in German, see DIN 43863-3)
wake-up	trigger the meter to connect to the communication network to be available to a client (e.g. HES)
ZTC	ZigBee® Trust Center
NOTE 1) In the case of the G3 NB OFDM PLC technology, PAN may be defined as PLC Area Network.	

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4 Basic principles

4.1 General

The text of IEC 62056-6-2:2013 4.1 as it is.

IEC 62056-6-2:2013 Figure 1

Figure 2 – An interface class and its instances

4.2 Referencing methods

The text of IEC 62056-6-2:2013 4.2 as it is.

4.3 Reserved base_names for special COSEM objects

The text of IEC 62056-6-2:2013 4.3 as it is.

Table 1 – Reserved base_names for SN referencing

IEC 62056-6-2:2013 Table 1

4.4 Class description notation

Amend the elements Class name, Attribute(s) and Specific methods as shown below:

Class name	Describes the interface class (e.g. “Register”, “Clock”, “Profile generic”...). NOTE 1 Interface classes names are mentioned in quotation marks.
	....
Attribute(s)	Specifies the attribute(s) that belong to the IC. *(dyn.)* Classifies an attribute that carries a process value, which is updated by the meter itself. *(static)* Classifies an attribute, which is not updated by the meter itself (for example configuration data). NOTE 2 There are some attributes which may be either static or dynamic depending on the application. In these cases this property is not indicated. NOTE 3 Attribute names use the underscore notation. When mentioned in the text they are in *italic*. Example: *logical_name*
	...
Specific method(s)	Provides a list of the specific methods that belong to the object. Method Name () The method has to be described in the subsection "Method description". NOTE 4 Method names use the underscore notation. When mentioned in the text they are in *italic*. Example: *add_object*.

Attribute description

The text of IEC 62056-6-2:2013 4.3 as it is.

Method description

The text of IEC 62056-6-2:2013 4.3 as it is.

Selective access

Amend the text as follows:

The xDLMS attribute-related services typically reference the entire attribute. However, for certain attributes selective access to just a part of the attribute may be provided. The part of

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the attribute is identified by specific selective access parameters. These are defined as part of the attribute specification.

4.5 Common data types

In Table 2, amend the specification of the following elements:

Table 2 – Common data types

enum	[22]	The elements of the enumeration type are defined in the *Attribute description* or *Method description* section of a COSEM IC specification.	0…255
-- complex data types			
array	[1]	The elements of the array are defined in the *Attribute* or *Method description* section of a COSEM IC specification.	
structure	[2]	The elements of the structure are defined in the *Attribute or Method description* section of a COSEM IC specification.	
compact array	[19]	Provides an alternative, compact encoding of complex data.	

4.6 Data formats

Replace subclause 4.6.1 with the following. The changes compared to the existing text are highlighted.

4.6.1 Date and time formats

Date and time information may be represented using the data type *octet-string*.

NOTE 1 In this case the encoding includes the tag of the data type *octet-string*, the length of the octet-string and the elements of *date*, *time* and /or *date-time* as applicable.

Date and time information may be also represented using the data types *date, time* and *date-time*.

NOTE 2 In these cases, the encoding includes sonly the tag of the data types *date*, *time* or *date-time* as applicable and the elements of date, time or date-time.

NOTE 3 The (SIZE ( )) specifications are applicable only when date, time or date time are represented by the data types *date*, *time* or *date-time*.

date	OCTET STRING (SIZE(5))
	{
	year highbyte,
	year lowbyte,
	month,
	day of month,
	day of week
	}
	Where:
	year: interpreted as long-unsigned
	range 0…big
	0xFFFF = not specified
	year highbyte and year lowbyte represent the 2 bytes of the long-unsigned
	
	month: interpreted as unsigned
	range 1…12, 0xFD, 0xFE, 0xFF
	1 is January
	0xFD = daylight_savings_end
	0xFE = daylight_savings_begin
	0xFF = not specified
	
	dayOfMonth: interpreted as unsigned
	range 1…31, 0xFD, 0xFE, 0xFF
	0xFD = 2nd last day of month
	0xFE = last day of month

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	0xE0 to 0xFC = reserved 0xFF = not specified dayOfWeek: interpreted as unsigned range 1…7, 0xFF 1 is Monday 0xFF = not specified For repetitive dates, the unused parts shall be set to “not specified”.

The elements dayOfMonth and dayOfWeek shall be interpreted together:

- if last dayOfMonth is specified (0xFE) and dayOfWeek is wildcard, this specifies the last calendar day of the month;
- if last dayOfMonth is specified (0xFE) and an explicit dayOfWeek is specified (for example 7, Sunday) then it is the last occurrence of the weekday specified in the month, i.e. the last Sunday;
- if the year is not specified (FFFF), and dayOfMonth and dayOfWeek are both explicitly specified, this shall be interpreted as the dayOfWeek on, or following dayOfMonth;
- if the year and month are specified, and both the dayOfMonth and dayOfWeek are explicitly specified but the values are not consistent it shall be considered as an error.

Examples:

1) year = 0xFFFF, month = FF, dayOfMonth = 0xFE, dayofWeek = 0xFF: last day of the month in every year and month;
2) year = 0xFFFF, month = FF, dayOfMonth = 0xFE, dayofWeek = 0x07: last Sunday in every year and month;
3) year = 0xFFFF, month = 0x03, dayOfMonth = 0xFE, dayofWeek = 0x07: last Sunday in March in every year;
4) year = 0xFFFF, month = 0x03, dayOfMonth = 0x01, dayofWeek = 0x07: first Sunday in March in every year;
5) year = 0xFFFF, month = 0x03, dayOfMonth = 0x16, dayofWeek = 0x05: fourth Friday in March in every year;
6) year = 0xFFFF, month = 0x0A, dayOfMonth = 0x16, dayofWeek = 0x07: fourth Sunday in October in every year;

year = 0x07D9, month = 0x01, dayOfMonth = 0x13, dayofWeek = 0x01: 2009.01.19, Monday;

7) year = 0x07D9, month = 0x01, dayOfMonth = 0x13, dayofWeek = 0x02: error, as the dayOfMonth and dayOfWeek in the given year and month do not match.

time	OCTET STRING (SIZE(4))
	{
	hour,
	minute,
	second,
	hundredths
	}
	Where:
	hour: interpreted as unsigned
	range0…23, 0xFF,
	minute: interpreted as unsigned
	range0…59, 0xFF
	second: interpreted as unsigned
	range0…59, 0xFF,
	hundredths: interpreted as unsigned
	range0…99, 0xFF
	
	For hour, minute, second and hundredths: 0xFF = not specified.
	
	For repetitive times the unused parts shall be set to “not specified”.

date-time	OCTET STRING (SIZE(12)) { year highbyte, year lowbyte, month,

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	day of month, day of week, hour, minute, second, hundredths of second, deviation highbyte, deviation lowbyte, clock status } The elements of *date* and *time* are encoded as defined above. Some may be set to “not specified” as defined above. In addition: deviation: interpreted as long range -720…+720 in minutes of local time to UTC 0x8000 = not specified Deviation highbyte and deviation lowbyte represent the 2 bytes of the long. clock_status interpreted as unsigned. The bits are defined as follows: bit 0 (LSB): invalid [a] value, bit 1: doubtful [b] value, bit 2: different clock base [c], bit 3: invalid clock status [d], bit 4: reserved, bit 5: reserved, bit 6: reserved, bit 7 (MSB): daylight saving active [e] 0xFF = not specified

[a] Time could not be recovered after an incident. Detailed conditions are manufacturer specific (for example after the power to the clock has been interrupted). For a valid status, bit 0 shall not be set if bit 1 is set.

[b] Time could be recovered after an incident but the value cannot be guaranteed. Detailed conditions are manufacturer specific. For a valid status, bit 1 shall not be set if bit 0 is set.

[c] Bit is set if the basic timing information for the clock at the actual moment is taken from a timing source different from the source specified in clock_base.

[d] This bit indicates that at least one bit of the clock status is invalid. Some bits may be correct. The exact meaning shall be explained in the manufacturer’s documentation.

[e] Flag set to true: the transmitted time contains the daylight saving deviation (summer time).
Flag set to false: the transmitted time does not contain daylight saving deviation (normal time).

4.6.2 Floating point number formats

The text of IEC 62056-6-2:2013 4.6.2 as it is.

4.7 The COSEM server model

The text of IEC 62056-6-2:2013 4.7 as it is.

IEC 62056-6-2:2013 Figure 2.

Figure 3 – The COSEM server model

IEC 62056-6-2:2013 Figure 3.

Figure 4 – Combined metering device

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4.8 The COSEM logical device

4.8.1 General

The text of IEC 62056-6-2:2013 4.8.1 as it is.

4.8.2 COSEM logical device name

Amend the footnote to read:

Administered by the DLMS User Association, in cooperation with the FLAG Association.

4.8.3 The “association view” of the logical device

In the second bullet point, replace “authentication context*” by “*authentication mechanism*”.*

Add a sentence at the end of the penultimate paragraph “Depending on the AA established:….”

Access right may also stipulate required cryptographic protection.

4.8.4 Mandatory contents of a COSEM logical device

The text of IEC 62056-6-2:2013 4.8.4 as it is.

4.8.5 Management logical device

The text of IEC 62056-6-2:2013 4.8.5 as it is.

4.9 Data security

The text of IEC 62056-6-2:2013 4.9 as it is.

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5 The COSEM interface classes

5.1 Overview

Add the following NOTE 3 and replace Figure 4 with Figure 5 and Figure 5 with Figure 6 below.

NOTE 3 On these Figures the interface classes are presented in each group by increasing class_id. In the clauses specifying the various groups of interface classes, the new interface classes are put at the end of the relevant clause.

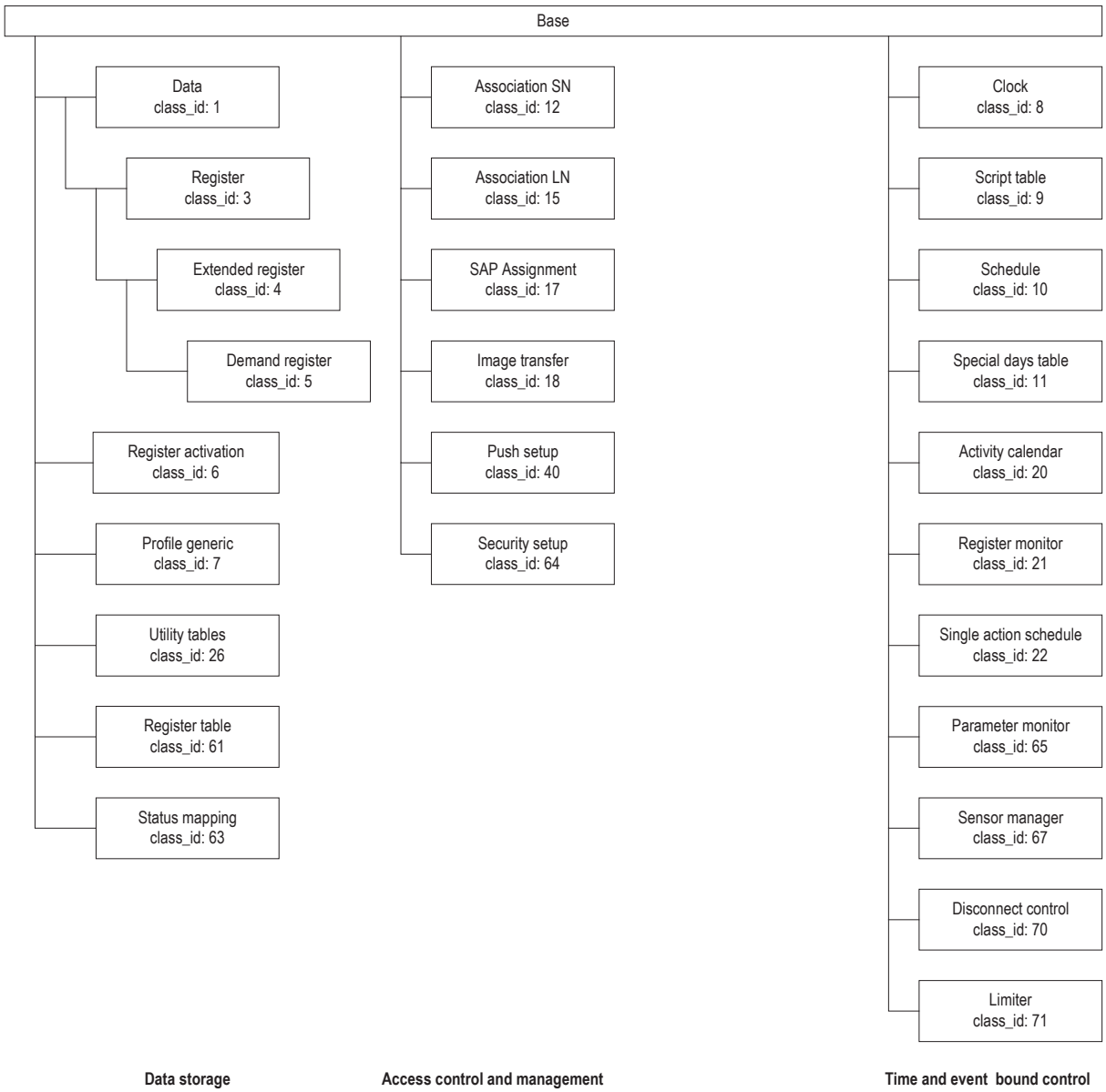

Figure 5 – Overview of the interface classes – Part 1

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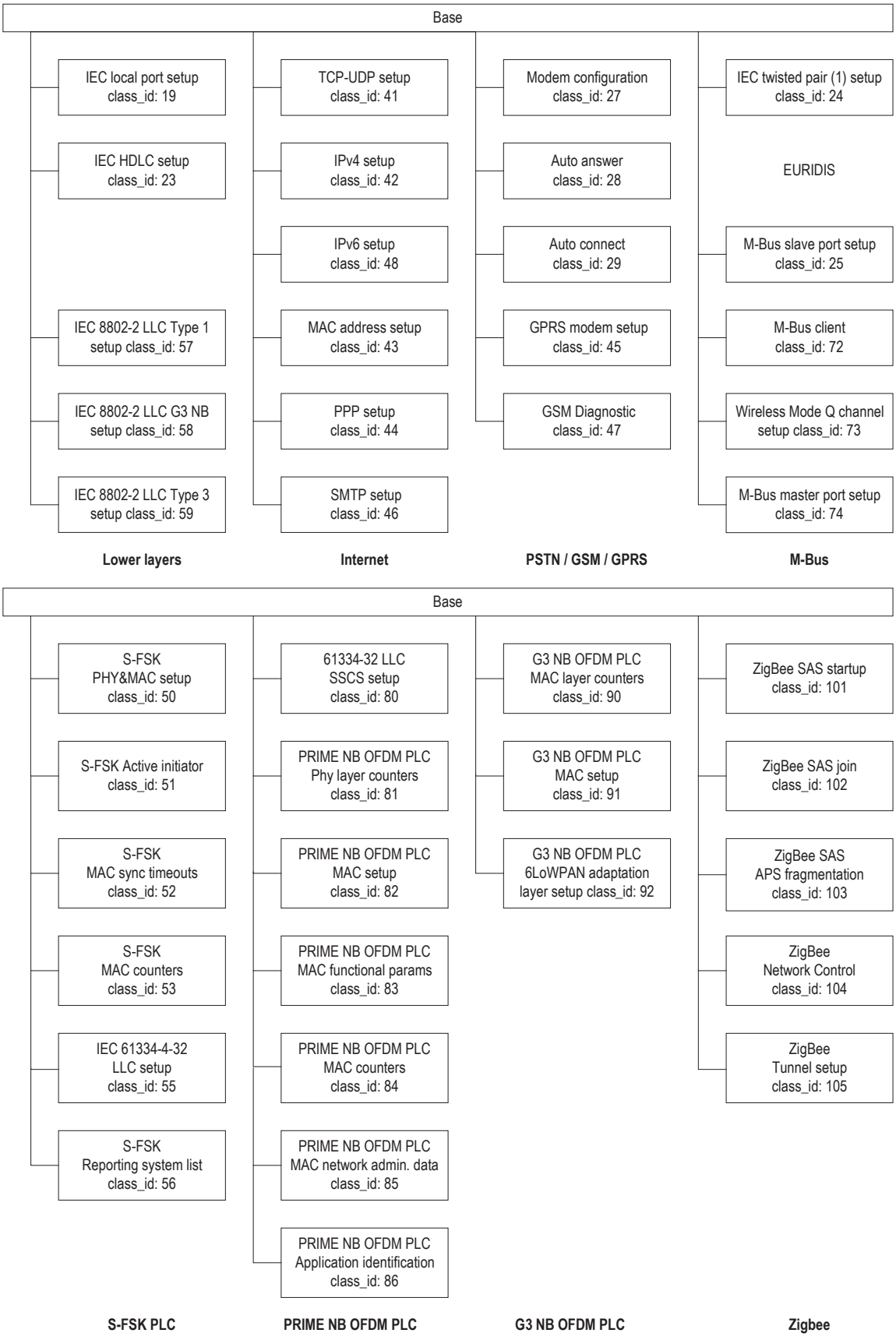

Figure 6 – Overview of the interface classes – Part 2

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5.2 Interface classes for parameters and measurement data

5.2.1 Data (class_id: 1, version: 0)

The text of IEC 62056-6-2:2013 5.2.1 as it is.

5.2.2 Register (class_id: 3, version: 0)

In Table 3 add the following items:

Table 3 – Enumerated values for physical units

unit ::= enum	Unit	Quantity	Unit name	SI definition (comment)
....		...		
(71)	dbµV	Signal strength, dB microvolt		
(72)	dB	Logarithmic unit that expresses the ratio between two values of a physical quantity		

5.2.3 Extended register (class_id: 4, version: 0)

Add the specification of the value and scaler_unit attributes to Attribute description:

Attribute description	
logical_name	Identifies the “Extended register” object instance. See Clause 6.3.1.
value	See the specification of the IC "Register" in 5.2.2.
scaler_unit	See the specification of the IC "Register" in 5.2.2.
status	Provides “Extended register” specific .....
...	...

5.2.4 Demand register (class_id: 5, version: 0)

IEC 62056-6-2:2013 Figure 6.

Figure 7 – The time attributes when measuring sliding demand

IEC 62056-6-2:2013 Figure 7.

Figure 8 – The attributes in the case of sliding demand (number of periods = 3)

Add the specification of the scaler_unit attribute:

Attribute description	
logical_name	Identifies ....
current_average_value	Provides...
last_average_value	Provides
scaler_unit	See the specification of IC “Register” in 5.2.2.
status	Provides....
....	....

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5.2.5 Register activation (class_id: 6, version: 0)

Amend the specification of the register_assignment attribute:

logical_name	Identifies…

register_ assignment	Specifies an ordered list of COSEM objects assigned to the "Register activation" object. The list may contain different kinds of COSEM objects, for example instances of "Register", "Extended register" or "Demand register".
	array object_definition
	
	object_definition ::= structure
	{
	class_id: long-unsigned,
	logical_name: octet-string
	}

mask_list	Specifies…
….	…..

5.2.6 Profile generic (class_id: 7, version: 1)

*In the specification of the **buffer** attribute, replace the second sentence (omit the text between the brackets).*

Current text:

Each entry contains values of the captured objects (as they would be returned to a GET.request or Read. request).

Amended text:

Each entry contains values of the captured objects.

*In the specification of the **capture_objects** attribute, in the first list dash, replace the first sentence:*

Current text:

- where attribute_index is a pointer to the attribute within the object.

Amended text:

- where attribute_index is a pointer to the attribute within the object identified by its class_id and logical_name.

*In the specification of the **reset (data)** method amend the text to read:*

Clears the *buffer*. It has no valid entries afterwards; *entries_in_use* is zero after this call. This call does not trigger any additional operations on the capture objects. Specifically, it does not reset any attributes captured.

5.2.7 Utility tables (class_id: 26, version: 0)

The text of IEC 62056-6-2:2013 5.2.7 as it is.

5.2.8 Register table (class_id: 61, version: 0)

*In the specification of the **table_cell_definition** attribute, replace the specification of the structure:*

Original text:

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```
structure
{
        class_id:           long-unsigned,
        logical_name:       octet-string,
        group_E_values:     array cell_identifier,
        {
        cell_identifier: unsigned
        }
        attribute_index: integer
}
```

Amended text:

```
structure
{
        class_id:           long-unsigned,
        logical_name:       octet-string,
        group_E_values:     array unsigned,
        attribute_index:    integer
}
```

In the third list dash following the structure, add "of type unsigned", to read:

- group_E_values contain the list of cell identifiers, of type unsigned, as defined in the respective table of IEC 62056-6-1.

5.2.9 Status mapping (class_id: 63, version: 0)

The text of IEC 62056-6-2:2013 5.2.9 as it is.

5.3 Interface classes for access control and management

Add the following new subclauses (the numbering of the subclauses that follow will change):

5.3.1 Overview

Interface classes in this category model the logical structure of the DLMS/COSEM server, allow configuring and managing access to its resources, updating the firmware and managing security:

- the "Association SN" class – see 5.3.3 – and the "Association LN" class – see 5.3.4 – model AAs. Their instances, the Association objects provide the list of objects accessible in each AA, manage and control access rights to their attributes and methods. They also manage the authentication of the communicating partners;
- the "SAP Assignment" class – see 5.3.5 – models the logical structure of the server;
- the "Image transfer" class – see 5.3.6 – models the firmware update process;
- the Security setup class – see 5.3.7 – models the elements of the security context. "Security setup" objects are referenced from the "Association" objects and allow configuring security suites and security policies and managing security material.

5.3.2 Client user identification

This new feature enables the server to distinguish between different users on the client side and to log their activities accessing the meter.

Each AA established between a client and a server can be used by several users on the client side. The properties of the AA are configured in the server, using the "Association" and the "Security setup" objects. All users of an AA on the client side use these same properties.

NOTE 1 The security keys are known by the client and the server but they need not to be known by the users of the client.

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The list of users – identified by their user_id and user_name – is known both by the client and the server. In the server it is held by the *user_list* attribute of the "Association" objects.

NOTE 2 The way a client authenticates a user to log into a client system is outside the scope of this specification.

During AA establishment, the user_id – belonging to the user_name – is carried by the calling-AE-invocation-id field of the AARQ APDU. If the user_id provided is on the *user_list*, the AA can be established – provided that all other conditions are met – and the *current_user* attribute is updated. The value of this attribute can be logged.

If the server does not "know" the user, the AA shall not be established. The server may silently discard the request to establish the AA or it may send back an appropriate error message.

The user identification process is optional: if the *user_list* is empty – i.e. it is an array of 0 elements – the function is disabled.

5.3.3 Association SN (class_id: 12, version: 3)

Replace version 2 with the new version 3 that includes the new attributes user_list and current_user as well as the new methods add_user and remove_user. Move version 2 to 7.5.

NOTE 1 This new version 3 of the "Association SN" IC supports the client user identification process, see 5.3.2.

COSEM logical devices able to establish AAs within a COSEM context using SN referencing, model the AAs using instances of the "Association SN" IC. A COSEM logical device may have one instance of this IC for each AA the device is able to support.

The **short_name** of the "Association SN" object itself is fixed within the COSEM context. See 4.3.

Association SN		**0...n**	**class_id = 12, version = 3**			
Attributes		***Data type***	***Min.***	***Max.***	***Def.***	**Short name**
1. logical_name	(static)	octet-string				x
2. object_list	(static)	objlist_type				x + 0x08
3. access_rights_list	(static)	access_rights_type				x + 0x10
4. security_setup_reference	(static)	octet-string				x + 0x18
5. user_list	(static)	array				x + 0x20
6. current_user		structure				x + 0x28
Specific methods		***m/o***				
1. *reserved from previous versions*		o				
2. *reserved from previous versions*		o				
3. read_by_logicalname (data)		o				x + 0x30
4. *reserved from previous versions*		o				
5. change_secret (data)		o				x + 0x40
6. *reserved from previous versions*		o				
7. *reserved from previous versions*						
8. reply_to_HLS_authentication (data)		o				x + 0x58
9. add_user (data)		o				x + 0x60
10. remove_user (data)		o				x + 0x68

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Attribute description	
logical_name	Identifies the “Association SN” object instance. See 6.2.27.

object_list	Contains the list of all objects with their base_name (short_name), class_id, version and *logical_name*. The base_name is the DLMS objectName of the first attribute (*logical_name).*
	objlist_type ::= array objlist_element
	
	objlist_element ::= structure
	{
	base_name: long,
	class_id: long-unsigned,
	version: unsigned,
	logical_name: octet-string
	}
	
	selective access (see 4.4) to the attribute *object_list* may be available. The access selector values and their parameters are as defined below.

access_right_ list	Contains the access rights to attributes and methods.
	The link between the *object_list* and the *access_rights_list* is the base_name, present in both the objlist_element structure and the access_right_element structure. Therefore, the base_names on the two lists shall be the same. The number – and preferably, the order – of the elements in the array of objlist_element and the array of access_right_element shall also be the same.
	access_rights_type ::= array access_rights_element
	
	access_rights_element ::= structure
	{
	base_name: long,
	attribute_access: attribute_access_descriptor,
	method_access: method_access_descriptor
	}
	
	attribute_access_descriptor ::= array attribute_access_item
	
	attribute_access_item ::= structure
	{
	attribute_id: integer,
	access_mode: enum,
	{
	(0) no_access,
	(1) read_only,
	(2) write_only,
	(3) read_and_write,
	(4) authenticated_read_only,
	(5) authenticated_write_only,
	(6) authenticated_read_and_write
	}
	access_selectors: CHOICE
	{
	null-data,
	array of integer
	}
	}

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	method_access_descriptor ::= array method_access_item
	method_access_item ::= structure
	{
	method_id: integer,
	access_mode: enum
	{
	(0) no_access,
	(1) access,
	(2) authenticated_access
	}
	}
	selective access (see 4.4) to the attribute *access_rights_list* may be available (optional). The access selector values and their parameters are as defined below.

security_setup _ reference	References the “Security setup” object by its *logical_name*. The referenced object manages security for a given “Association SN” object instance.

user_list	Contains the list of users allowed to use the AA managed by the given instance of the Association SN / Association LN class.
	array user_list_entry
	
	user_list_entry ::= structure
	{
	user_id: unsigned,
	user_name visible-string
	}
	where:
	- user_id is the identifier of the user (this value is carried by the calling-AE-invocation-id field of the AARQ);
	- user_name is the name of the user.
	If the user_list attribute is empty – i.e. it is an array of 0 elements – any user can use the AA, i.e. the calling-AE-invocation-id field of the AARQ is ignored.
	If the user_list attribute is not empty then only the users in the list can establish the AA, i.e. the calling-AE-invocation-id field of the AARQ shall be present and its value shall match one of user_ids in the user_list or else, the AA is not established.

current_user	Holds the identifier of the current user. current_user ::= user_list_entry (see above) If the user_list is empty, then current_user shall be a structure {user_id: unsigned 0, user_name: visible string of 0 elements}

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Parameters for selective access to the *object_list* and *access_rights_list* attribute

Access selector value	Parameter	Available with attribute	Comment
1	class_id: long-unsigned	2	Delivers the subset of the object_list for a specific class_id. For the response: data ::= objlist_type

2	structure
	{
	class_id: long-unsigned,
	logical_name: octet-string
	}
		2	Delivers the entry of the object_list for a specific class_id and *logical_name*.
			For the response: data ::= objlist_element

3	base_name: long	2, 3	In the case of attribute 2, delivers the entry of the object_list for a specific base_name. For the response: data ::= objlist_element In the case of attribute 3, delivers the entry of the access_rights_list for a specific base_name. For the response: data ::=access_rights_element

Method description	

read_by_ logicalname (data)	Reads attributes for selected objects. The objects are specified by their class_id and their *logical_name*. With this method, the parameterized access feature can also be used.
	data ::= array attribute_identification
	
	attribute_identification ::= structure
	{
	class_id: long-unsigned,
	logical_name: octet-string,
	attribute_index: integer
	}
	where attribute_index is a pointer (i.e. offset) to the attribute within the object.
	attribute_index 0 delivers all attributes; attribute_index 1 delivers the first attribute (i.e. *logical_name*), etc.).
	For the response: data is according to the type of the attribute.
	NOTE 2 If at least one attribute has no read access right under the current association, then a *read_by_logicalname* () to attribute index 0 reveals the error message “scope-of-access-violated”, see IEC 61334-4-41:1996, p.221.

change_secret (data)	Changes the LLS or HLS secret (for example password). data ::= octet-string new secret NOTE 3 The structure of the “new secret” depends on the security mechanism implemented. The “new secret” may contain additional check bits and it may be encrypted. NOTE 4 In the case of HLS with GMAC, the (HLS_) secret is held by the “Security setup“ object referenced in attribute
reply_to_HLS_ authentication (data)	The remote invocation of this method delivers to the server the result of the secret processing by the client of the server’s challenge to the client, f(StoC), as the data service parameter of the Read.request primitive invoked with parameterised access. data ::= octet-string client’s response to the challenge If the authentication is accepted, then the response (Read.confirm primitive) contains Result == OK and the result of the secret processing by the server of the client’s challenge to the server, f(CtoS) in the data service parameter of the Read.response service.

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	data ::= octet-string server's response to the challenge If the authentication is not accepted, then the result parameter in the response shall contain a non-OK value, and no data shall be sent back.
add_user (data)	Adds a user to the user_list. data ::= user_list_entry (see above)
remove_user (data)	Removes a user from the user_list. data ::= user_list_entry (see above)

5.3.4 Association LN (class_id: 12, version: 2)

Replace version 1 with the new version 2 that includes the new attributes user_list and current_user as well as the new methods add_user and remove_user and move version 1 to 7.7.

NOTE 1 This new version 2 of the "Association LN" IC supports the client user identification process, see 5.3.2.

COSEM logical devices able to establish AAs within a COSEM context using LN referencing, model the AAs through instances of the "Association LN" IC. A COSEM logical device has one instance of this IC for each AA the device is able to support.

Association LN		**0...MaxNbofAss.**	**class_id = 15, version = 2**			
Attributes		***Data type***	***Min.***	***Max.***	***Def.***	**Short name**
1. logical_name	(static)	octet-string				x
2. object_list	(static)	object_list_type				x + 0x08
3. associated_partners_id		associated_partners_type				x + 0x10
4. application_context_name		application_context_name				x + 0x18
5. xDLMS_context_info		xDLMS_context_type				x + 0x20
6. authentication_mechanism_name		mechanism_name				x + 0x28
7. secret		octet-string				x + 0x30
8. association_status		enum				x + 0x38
9. security_setup_reference	(static)	octet-string				x + 0x40
10. user_list	(static)	array				x + 0x48
11. current_user		structure				x + 0x50
Specific methods		***m/o***				
1. reply_to_HLS_authentication (data)		o				x + 0x60
2. change_HLS_secret (data)		o				x + 0x68
3. add_object (data)		o				x + 0x70
4. remove_object (data)		o				x + 0x78
5. add_user (data)		o				x + 0x80
6. remove_user (data)		o				x + 0x88

Attribute description	
logical_name	Identifies the "Association LN" object instance. See 6.2.27.
object_list	Contains the list of visible COSEM objects with their class_id, version, *logical_name* and the access rights to their attributes and methods within the given AA. object_list_type ::= array object_list_element

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```
object_list_element ::= structure
{
        class_id:               long-unsigned,
        version:                unsigned,
        logical_name:           octet-string,
        access_rights:          access_right
}

access_right ::= structure
{
        attribute_access:       attribute_access_descriptor,
        method_access:          method_access_descriptor
}

attribute_access_descriptor ::= array      attribute_access_item

attribute_access_item ::=       structure
{
        attribute_id:           integer,
        access_mode:    enum
                        {
                                (0)     no_access,
                                (1)     read_only,
                                (2)     write_only,
                                (3)     read_and_write,
                                (4)     authenticated_read_only,
                                (5)     authenticated_write_only,
                                (6)     authenticated_read_and_write
                        }
        access_selectors:       CHOICE
        {
                null-data,
                array of integer
        }
}

method_access_descriptor ::= array      method_access_item

method_access_item ::= structure
{
        method_id:      integer,
        access_mode:    enum
                        {
                                (0)     no_access,
                                (1)     access,
                                (2)     authenticated_access
                        }
}
```

Where:

- the attribute_access_descriptor and the method_access_descriptor elements always contain all implemented attributes or methods;
- access_selectors contain a list of the supported selector values.

selective access (see 4.4) to the attribute *object_list* may be available

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	(optional). The selective access parameters are as defined below.

associated_ partners_ id	Contains the identifiers of the COSEM client and server (logical device) APs within the physical devices hosting these APs, which belong to the AA modelled by the “Association LN” object.
	associated_partners_type ::= structure
	{
	client_SAP: integer,
	server_SAP: long-unsigned
	}
	The range for the client_SAP is 0…0x7F.
	The range for the server_SAP is 0x0000…0x3FFF.
	The SAPs shall be in the range allowed by the data type and the media.

application_ context_name	In the COSEM environment, it is intended that an application context pre-exists and is referenced by its name during the establishment of an AA. This attribute contains the name of the application context for that association.
	CHOICE
	{
	structure [2],
	octet-string [9]
	}
	The application context name is specified as OBJECT IDENTIFIER in IEC 62056-5-3 7.2.2.2. The *application_context_name* attribute includes the arc labels of the OBJECT IDENTIFIER. In this case:
	application_context_name ::= structure
	{
	joint-iso-ctt-element: unsigned,
	country-element: unsigned,
	country-name-element: long-unsigned,
	identified-organization-element: unsigned,
	DLMS-UA-element: unsigned,
	application-context-element: unsigned,
	context-id-element: unsigned
	}
	For existing implementations, the attribute may hold the value of the OBJECT IDENTIFIER encoded in BER, as an octet string. See IEC 62056-5-3 B.4. In this case:
	application_context_name ::= octet-string
	// holds the value of the OBJECT identifier encoded in BER
	Examples:
	In the case of context_id(1) the A-XDR encoding as a structure (all values are hexadecimal): 02 07 11 02 11 10 12 02 F4 11 05 11 08 11 01 11 01.
	The A-XDR encoding as an octet-string, holding the value of the OBJECT IDENTIFIER encoded in BER (all values are hexadecimal): 09 07 60 85 74 05 08 01 01.

xDLMS_ context info	Contains all the necessary information on the xDLMS context for the given association. xDLMS_context_type ::= structure { conformance: bit-string, max_receive_pdu_size: long-unsigned, max_send_pdu_size: long-unsigned, dlms_version_number: unsigned, quality_of_service: integer, cyphering_info: octet-string

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