

Edition 1.0 2019-04

INTERNATIONAL STANDARD

Industrial communication networks—Fieldbus specifications —
Part 4-25: Data-link layer protocol specification — Type 25 elements

(Standards.iten.ar)

<u>IEC 61158-4-25:2019</u> https://standards.iteh.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220-a8d69b55b0ca/iec-61158-4-25-2019





THIS PUBLICATION IS COPYRIGHT PROTECTED Copyright © 2019 IEC, Geneva, Switzerland

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

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

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

About the IEC

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

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

IEC publications search - webstore.iec.ch/advsearchform

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 It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublishedStay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore iec ch/csc If you wish to give us your feedback on this publication or

need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC 61158-4-25:2019

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

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

https://standards.iteh.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220a8d69b55b0ca/iec-61158-4-25-2019



Edition 1.0 2019-04

INTERNATIONAL STANDARD

Industrial communication networks — Fieldbus specifications — Part 4-25: Data-link layer protocol specification — Type 25 elements

<u>IEC 61158-4-25:2019</u> https://standards.iteh.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220-a8d69b55b0ca/iec-61158-4-25-2019

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 25.040.40; 35.100.20; 35.110

ISBN 978-2-8322-6780-6

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

CONTENTS

F	DREWC	PRD	5
IN	TRODU	JCTION	7
1	Scop	ve	8
	1.1	General	8
	1.2	Specifications	8
	1.3	Procedures	8
	1.4	Applicability	9
	1.5	Conformance	9
2	Norm	native references	9
3	Term	ns, definitions, symbols, abbreviations and conventions	9
	3.1	Reference model terms and definitions	10
	3.2	Service convention terms and definitions	11
	3.3	Terms and definitions	
	3.4	Symbols and abbreviations	13
	3.5	Common conventions	14
	3.6	Additional Type 25 conventions	
	3.6.1		
	3.6.2	State machine conventions view of the DL-protocol ANDARD PREVIEW	16
4	Over		
	4.1	General (standards.iteh.ai)	17
	4.2	Overview of the medium access control	17
	4.2.1	<u>1110 01100 1 1011017</u>	
	4.2.2	Network/topologyeh.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220-	18
	4.2.3	•	
	4.2.4	, , ,,	
	4.2.5		
	4.3	Service assumed from PhL	
	4.4	DL Layer architecture	
	4.5	Local parameters and variables	
	4.5.1		
	4.5.2	Variables, parameter, counter and timer	23
5		eral structure and encoding of PhPDUs and DLPDU and related elements of edure	24
	5.1	Overview	
	5.2	Common MAC frame structure, encoding and elements of procedure	
	5.2.1		
	5.2.2		
6	DLPI	OU-specific structure, encoding and elements of procedure	
	6.1	General	
	6.2	Structure of the RCL DLPDU	
	6.2.1		
7	DLE	elements of procedure	
	7.1	Overview	
	7.2	RCL communication control (RCLC)	
	7.2.1	,	
	7.2.2		

7.2.3 RCLC state machine	32
7.2.4 Function of RCLC	48
7.3 Real-time communication control (RTC)	
7.3.1 General	
7.3.2 Primitive definitions	
7.3.3 RTC state machine	
7.3.4 Function of RTC	
7.4 Transmit/Receive control (TRC)	
7.4.1 General	
7.4.3 TRC state machine	
7.4.4 Function of TRC	
7.5 DLL management protocol (DLM)	
7.5.1 Overview	
7.5.2 Primitive definitions	58
7.5.3 DLM state machine (DLM_SM)	59
Bibliography	61
Figure 1 – Relationships of DLSAPs, DLSAP-addresses and group DL-addresses	16
Figure 2 – Ring control in Type 25 network	18
Figure 3 – Ring control in Type 25 network	19
Figure 4 – Priority control with VLAN of Type 25 network	20
Figure 5 – The mechanism of transmission delay in a node	20
Figure 6 – The maximum delay in Type 25 network. https://standards.tich.arcatalog/standards/sist/b115a7e5-9734-4ef8-8220-	21
Figure 7 – Data-Link layer internat architecture 61158-4-25-2019	22
Figure 8 – Type 25 fieldbus DLPDU frame format	
Figure 9 – RCL frame format	
Figure 10 – State transition diagram of RHE_SM-A	
Figure 11 – State transition diagram of RHE_SM-B	
Figure 12 – The state diagram of RCLNode_SM	
Figure 13 – The state diagram of RCLTR_SM	
Figure 14 – The state diagram of RTTR_SM	
Figure 15 – The state diagram of TRC_SM	
Figure 16 – The state diagram of DLM_SM	
Figure 16 – The state diagram of DLM_SM	
Table 1 State transition descriptions	16
Table 1 – State transition descriptions	
Table 2 – Descriptions of state machine elements	
Table 3 – Conventions used in state machine	
Table 4 – Characteristics of the node states	
Table 5 – Characteristic of the frame classes	
Table 6 – VLAN priority mapping of Type 25 network	
Table 7 – Data-link layer components	
Table 8 – Destination address format	
Table 9 – VLAN tag format	26
Table 10 – Types and classes of RCI frames	27

Table 11 – Structure of RCL header	28
Table 12 – Class field format	28
Table 13 – Destination address field format	28
Table 14 – Source address field format	29
Table 15 – CMD field format	29
Table 16 – The primitives and parameters for DLS-user interface	30
Table 17 – Parameters used with primitives exchanged between RCLC and DLS-user	30
Table 18 – The primitives and parameters for TRC interface	31
Table 19 – Parameters used with primitives exchanged between RCLC and TRC	31
Table 20 – The primitives and parameters for DLM interface	32
Table 21 – Parameters used with primitives exchanged between RCLC and DLM	32
Table 22 – Transitions of RHE_SM-A at RCL communication	33
Table 23 – Transitions of RHE_SM-B at RCL communication	36
Table 24 – Transitions of RCLNode_SM at RCL communication	39
Table 25 – Transitions of RCLTR_SM at RCL communication	47
Table 26 – RCLC function table	48
Table 27 – The primitives and parameters for DLS-user interface	49
Table 28 – Parameters used with primitives exchanged between RTC and DLS-user	49
Table 29 – The primitives and parameters for TRC interface	49
Table 30 - Parameters used with primitives exchanged between RTC and TRC	50
Table 31 – The primitives and parameters for DLM interface	50
Table 32 – Parameters used with primitives exchanged between RTC and DLM	50
Table 33 – Transitions of RTTR_SM at RT communication 2019	51
Table 34 – RTC function table	51
Table 35 – The primitives and parameters for DLM interface	52
Table 36 – Parameters used with primitives exchanged between TRC and DLM	52
Table 37 – Transitions of TRC_SM	53
Table 38 – TRC function table	57
Table 39 – Primitives exchanged between DLM and DLS-user	58
Table 40 – Parameters used with primitives exchanged between DLM and DLS-user	59
Table 41 – Transitions of DLM SM	60

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 4-25: Data-link layer protocol specification – Type 25 elements

FOREWORD

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

International Standard IEC 61158-4-25 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
65C/946/FDIS	65C/955/RVD

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

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

A list of all parts in the IEC 61158 series, published under the general title *Industrial* communication networks – Fieldbus specifications, can be found on the IEC website.

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

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

A bilingual version of this publication may be issued at a later date.

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>IEC 61158-4-25:2019</u> https://standards.iteh.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220-a8d69b55b0ca/iec-61158-4-25-2019

INTRODUCTION

This document is one of a series produced to facilitate the interconnection of automation system components. It is related to other standards in the set as defined by the "three-layer" fieldbus reference model described in IEC 61158-1.

The data-link protocol provides the data-link service by making use of the services available from the physical layer. The primary aim of this document is to provide a set of rules for communication expressed in terms of the procedures to be carried out by peer data-link entities (DLEs) at the time of communication. These rules for communication are intended to provide a sound basis for development in order to serve a variety of purposes:

- a) as a guide for implementers and designers;
- b) for use in the testing and procurement of equipment;
- c) as part of an agreement for the admittance of systems into the open systems environment;
- d) as a refinement to the understanding of time-critical communications within OSI.

This document is concerned, in particular, with the communication and interworking of sensors, effectors and other automation devices. By using this document together with other standards positioned within the OSI or fieldbus reference models, otherwise incompatible systems may work together in any combination.

NOTE Use of some of the associated protocol types is restricted by their intellectual-property-right holders. In all cases, the commitment to limited release of intellectual-property-rights made by the holders of those rights permits a particular data-link layer protocol type to be used with physical layer and application layer protocols in Type combinations as specified explicitly in the profile parts. Use of the various protocol types in other combinations may require permission from their respective intellectual-property-right holders.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning Type 25 elements and possibly other types given in this document as follows:

JP4074631 [HI]	Transmission line switching method
JP4653800 [HI]	Transmission line system, frame transmission apparatus, method and program for switching transmission line in transmission line system
JP4944986 [HI]	Transmission line system and transmission line construction method
CN1964307 [HI]	Transfer path system and frame transfer device in same system, transfer path handover method and system
CN101515887 [HI]	Transmission line system, frame transmitter therein, transmission line switching method and program

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

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

[HI] Hitachi, Ltd. Intellectual Property Division 20-2, Saiwai-cho 1-chome, Hitachi-shi, Ibaraki-ken, 317-0073 Japan

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

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

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 4-25: Data-link layer protocol specification – Type 25 elements

1 Scope

1.1 General

The data-link layer provides basic time-critical messaging communications between devices in an automation environment.

This protocol provides communication opportunities to all participating data-link entities

- a) in a synchronously-starting cyclic manner, according to a pre-established schedule, and
- b) in a cyclic or acyclic asynchronous manner, as requested each cycle by each of those data-link entities.

Thus this protocol can be characterized as one which provides cyclic and acyclic access asynchronously but with a synchronous restart of each cycle.

1.2 Specifications

(standards.iteh.ai)

This document specifies

IEC 61158-4-25:2019

- a) procedures for the timely transfer of data and control information from one data-link user entity to a peer user entity, and among the data-link entities forming the distributed datalink service provider;
- b) procedures for giving communications opportunities to all participating DL-entities, sequentially and in a cyclic manner for deterministic and synchronized transfer at cyclic intervals up to one millisecond;
- c) procedures for giving communication opportunities available for time-critical data transmission together with non-time-critical data transmission without prejudice to the time-critical data transmission;
- d) procedures for giving cyclic and acyclic communication opportunities for time-critical data transmission with prioritized access;
- e) procedures for giving communication opportunities based on ISO/IEC/IEEE 8802-3 medium access control, with provisions for nodes to be added or removed during normal operation;
- f) the structure of the fieldbus DLPDUs used for the transfer of data and control information by the protocol of this document, and their representation as physical interface data units.

1.3 Procedures

The procedures are defined in terms of

- a) the interactions between peer DL-entities (DLEs) through the exchange of fieldbus DLPDUs;
- b) the interactions between a DL-service (DLS) provider and a DLS-user in the same system through the exchange of DLS primitives;
- c) the interactions between a DLS-provider and a Ph-service provider in the same system through the exchange of Ph-service primitives.

1.4 Applicability

These procedures are applicable to instances of communication between systems which support time-critical communications services within the data-link layer of the OSI or fieldbus reference models, and which require the ability to interconnect in an open systems interconnection environment.

Profiles provide a simple multi-attribute means of summarizing an implementation's capability, and thus its applicability to various time-critical communications needs.

1.5 Conformance

This document also specifies conformance requirements for systems implementing these procedures. This document does not contain tests to demonstrate compliance with such requirements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE All parts of the IEC 61158 series, as well as IEC 61784-1 and IEC 61784-2 are maintained simultaneously. Cross-references to these documents within the text therefore refer to the editions as dated in this list of normative references.

(Standards.iteh.ai)

ISO/IEC 7498-1, Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model

IEC 61158-4-25:2019

https://standards.itch.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220-ISO/IEC 7498-3, Information technology_bucalpeg_lystems_Unterconnection — Basic Reference Model: Naming and addressing

ISO/IEC/IEEE 8802-3:2017, Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Standard for Ethernet

ISO/IEC 10731, Information technology – Open Systems Interconnection – Basic Reference Model – Conventions for the definition of OSI services

IEEE Std 802.1D, IEEE Standard for Local and metropolitan area networks – Media access Control (MAC) Bridges, available at http://www.ieee.org [viewed 2018-09-17]

IEEE Std 802.1Q, *IEEE Standard for Local and metropolitan area networks – Bridges and Bridged Networks*, available at http://www.ieee.org [viewed 2018-09-17]

3 Terms, definitions, symbols, abbreviations and conventions

For the purposes of this document, the following terms, definitions, symbols, abbreviations and conventions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1 Reference model terms and definitions

This document is based in part on the concepts developed in ISO/IEC 7498-1 and ISO/IEC 7498-3, and makes use of the following terms defined therein:

3.1.1	DL-address	[ISO/IEC 7498-3]
3.1.2	DL-address-mapping	[ISO/IEC 7498-1]
3.1.3	called-DL-address	[ISO/IEC 7498-3]
3.1.4	calling-DL-address	[ISO/IEC 7498-3]
3.1.5	centralized multi-end-point-connection	[ISO/IEC 7498-1]
3.1.6	DL-connection	[ISO/IEC 7498-1]
3.1.7	DL-connection-end-point	[ISO/IEC 7498-1]
3.1.8	DL-connection-end-point-identifier	[ISO/IEC 7498-1]
3.1.9	DL-connection-mode transmission	[ISO/IEC 7498-1]
3.1.10	DL-connectionless-mode transmission	[ISO/IEC 7498-1]
3.1.11	correspondent (N)-entities correspondent DL-entities (N=2) correspondent Ph-entities (N=1)	[ISO/IEC 7498-1]
3.1.12	DL-duplex-transmission	[ISO/IEC 7498-1]
3.1.13	(N)-entity DL-entity (N=2) eh STANDARD PREVIEW Ph-entity (N=1)	[ISO/IEC 7498-1]
3.1.14	DL-facility (standards.iteh.ai)	[ISO/IEC 7498-1]
3.1.15	flow control	[ISO/IEC 7498-1]
3.1.16	(N)-layer https://standards.iteh.ai/catalog/standards/sist/b115a7e5-9734-4ef8-822 DL-layer (N=2) a8d69b55b0ca/iec-61158-4-25-2019 Ph-layer (N=1)	
3.1.17	layer-management	[ISO/IEC 7498-1]
3.1.18	DL-local-view	[ISO/IEC 7498-3]
3.1.19	DL-name	[ISO/IEC 7498-3]
3.1.20	naming-(addressing)-domain	[ISO/IEC 7498-3]
3.1.21	peer-entities	[ISO/IEC 7498-1]
3.1.22	primitive name	[ISO/IEC 7498-3]
3.1.23	DL-protocol	[ISO/IEC 7498-1]
3.1.24	DL-protocol-connection-identifier	[ISO/IEC 7498-1]
3.1.25	DL-protocol-data-unit	[ISO/IEC 7498-1]
3.1.26	DL-relay	[ISO/IEC 7498-1]
3.1.27	reset	[ISO/IEC 7498-1]
3.1.28	responding-DL-address	[ISO/IEC 7498-3]
3.1.29	routing	[ISO/IEC 7498-1]
3.1.30	segmenting	[ISO/IEC 7498-1]
3.1.31	(N)-service DL-service (N=2) Ph-service (N=1)	[ISO/IEC 7498-1]
3.1.32	(N)-service-access-point DL-service-access-point (N=2) Ph-service-access-point (N=1)	[ISO/IEC 7498-1]

3.1.33	DL-service-access-point-address	[ISO/IEC 7498-3]
3.1.34	DL-service-connection-identifier	[ISO/IEC 7498-1]
3.1.35	DL-service-data-unit	[ISO/IEC 7498-1]
3.1.36	DL-simplex-transmission	[ISO/IEC 7498-1]
3.1.37	DL-subsystem	[ISO/IEC 7498-1]
3.1.38	systems-management	[ISO/IEC 7498-1]
3.1.39	DLS-user-data	[ISO/IEC 7498-1]

3.2 Service convention terms and definitions

This document also makes use of the following terms defined in ISO/IEC 10731 as they apply to the data-link layer:

- 3.2.1 acceptor
- 3.2.2 asymmetrical service
- 3.2.3 confirm (primitive); requestor.deliver (primitive)
- 3.2.4 deliver (primitive)
- 3.2.5 **DL-confirmed-facility**
- 3.2.6 **DL-facility**
- DL-local-viewTeh STANDARD PREVIEW 3.2.7
- 3.2.8 **DL-mandatory-facility**
- DL-non-confirmed-facility and ards.iteh.ai) 3.2.9
- DL-provider-initiated-facility <u>EC 61158-4-25:2019</u> 3.2.10
- 3.2.11 DL-provider-optional-facilityalog/standards/sist/b115a7e5-9734-4ef8-8220-
- DL-service-primitive; a8d69b55b0ca/iec-61158-4-25-2019 3.2.12 primitive
- 3.2.13 DL-service-provider
- 3.2.14 DL-service-user
- 3.2.15 DLS-user-optional-facility
- 3.2.16 indication (primitive); acceptor.deliver (primitive)
- 3.2.17 multi-peer
- 3.2.18 request (primitive); requestor.submit (primitive)
- 3.2.19 requestor
- 3.2.20 response (primitive); acceptor.submit (primitive)
- 3.2.21 submit (primitive)
- 3.2.22 symmetrical service
- Terms and definitions 3.3

3.3.1

blocking

port state which does not participate in frame communication

3.3.2

class

identifiers that designate communication range of the RCL frame and the other frames

3.3.3

control communication

non-real-time acyclic data communication for higher priority applications and node control communication

3.3.4

cyclic communication

periodic data communication for real-time communication

DLCEP-address

DL-address which designates either

- a) one peer DL-connection-end-point, or
- b) one multi-peer publisher DL-connection-end-point and implicitly the corresponding set of subscriber DL-connection-end-points where each DL-connection-end-point exists within a distinct DLSAP and is associated with a corresponding distinct DLSAP-address.

3.3.6

DLSAP

distinctive point at which DL-services are provided by a single DL-entity to a single higherlayer entity

3.3.7

DL(SAP)-address iTeh STANDARD PREVIEW either an individual DLSAP-address, designating a single DLSAP of a single DLS-user, or a group DL-address potentially designating multiple DLSAPs each of a single DLS-user

Note 1 to entry: This terminology is chosen because ISO/IEC 7498-3 does not permit the use of the term DLSAPaddress to designate more than a single DLSAP at a single DLS-user. https://standards.itch.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220-

a8d69b55b0ca/iec-61158-4-25-2019 3.3.8

(individual) DLSAP-address

DL-address that designates only one DLSAP within the extended link

Note 1 to entry: A single DL-entity may have multiple DLSAP-addresses associated with a single DLSAP.

3.3.9

extended link

DL-subnetwork, consisting of the maximal set of links interconnected by DL-relays, sharing a single DL-name (DL-address) space, in which any of the connected DL-entities may communicate, one with another, either directly or with the assistance of one or more of those intervening DL-relay entities

3.3.10

frame

denigrated synonym for DLPDU

3.3.11

group DL-address

DL-address that potentially designates more than one DLSAP within the extended link

Note 1 to entry: A single DL-entity may have multiple group DL-addresses associated with a single DLSAP. A single DL-entity also may have a single group DL-address associated with more than one DLSAP.

3.3.12

information communication

non-real-time acyclic data communication for low priority applications

3.3.13

logical link down

link status at which the port is in a blocking state and does not communicate all kinds of frames except RCL frames

3.3.14

logical link up

link status at which the port communicates all kinds of frames

3.3.15

node

single DL-entity as it appears on one local link

3.3.16

physical link down

link status at which the port does not communicate the frames due to link down status defined in ISO/IEC/IEEE 8802-3

3.3.17

receiving DLS-user

DL-service user that acts as a recipient of DLS-user-data

Note 1 to entry: A DL-service user can be concurrently both a sending and receiving DLS-user.

3.3.18 iTeh STANDARD PREVIEW

ring control (RCL) communication

control communication of Type 25 DLL ring network using RCL frames and non-real-ime

3.3.19 <u>IEC 61158-4-25:2019</u>

sending DLS-userhttps://standards.iteh.ai/catalog/standards/sist/b115a7e5-9734-4ef8-8220-

DL-service user that acts as a source of DLS-user-data₂₅₋₂₀₁₉

3.3.20

station

synonym for node

3.3.21

station address

identifier address that designates the node of Type 25 network

3.4 Symbols and abbreviations

NOTE Many symbols and abbreviations are common to more than one protocol Type; they are not necessarily used by all protocol Types.

DL- Data-link layer (as a prefix)

DLC DL-connection

DLCEP DL-connection-end-point

DLE DL-entity (the local active instance of the data-link layer)

DLL DL-layer

DLM DL-management

DLME DL-management Entity (the local active instance of DL-management)

DLMS DL-management service

DLPCI DL-protocol-control-information

DLPDU DL-protocol-data-unit

DLS DL-service