

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Industrial communication networks – Fieldbus specifications –
Part 4-2: Data-link layer protocol specification – Type 2 elements**

**Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 4-2: Spécification du protocole de la couche liaison de données –
Éléments de type 2**



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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 4-2: Data-link layer protocol specification – Type 2 elements

FOREWORD

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NOTE Combinations of protocol types are specified in IEC 61784-1 and IEC 61784-2.

International Standard IEC 61158-4-2 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial process measurement, control and automation.

This third edition cancels and replaces the second edition published in 2010. This edition constitutes a technical revision.

The main changes with respect to the previous edition are listed below.

- Addition of conventions in 3.6
- Updates of ControlNet object in 7.2
- Addition of missing V/NV attribute characteristic in 7.5, 7.6, 7.7
- Extensions and clarifications of TCP/IP interface object in 7.5
- Extensions and clarifications of Ethernet Link object in 7.6
- Extensions and clarifications of CCO object in 7.8
- Extensions and updates of DLR object in 7.9
- Updates of QoS object in 7.10
- Addition of Port object in 7.11
- Updates to DL state machines in 8.1 and 9.2
- Extensions and updates of DLR protocol in Clause 10
- Update of indicator behaviour in A.2.2 and A.2.3
- Miscellaneous editorial corrections

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

FDIS	Report on voting
65C/762/FDIS	65C/772/RVD

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

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INTRODUCTION

This part of IEC 61158 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 standard 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 standard is concerned, in particular, with the communication and interworking of sensors, effectors and other automation devices. By using this standard together with other standards positioned within the OSI or fieldbus reference models, otherwise incompatible systems may work together in any combination.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents given in several subclauses as indicated in the table below. These patents are held by their respective inventors under license to ODVA, Inc:

US 5,400,331	[ODVA]	Communication network interface with screeners for incoming messages	Subclause 3.4, Clauses 4 to 9
US 5,471,461	[ODVA]	Digital communication network with a moderator station election process	
US 5,491,531	[ODVA]	Media access controller with a shared class message delivery capability	
US 5,493,571	[ODVA]	Apparatus and method for digital communications with improved delimiter detection	
US 5,537,549	[ODVA]	Communication network with time coordinated station activity by time slot and periodic interval number	
US 5,553,095	[ODVA]	Method and apparatus for exchanging different classes of data during different time intervals	
US 8,244,838	[ODVA]	Industrial controller employing the network ring topology	Clause 10

IEC takes no position concerning the evidence, validity and scope of these patent rights.