



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN IEC 61784-2-19:2023

Industrial networks - Profiles - Part 2-19: Additional real-time fieldbus profiles based on ISO/IEC/IEEE 8802-3 - CPF 19

Industrielle Kommunikationsnetze -
Profile - Teil 2-19: Zusätzliche Echtzeit-
Feldbusprofile basierend auf ISO/IEC/
IEEE 8802-3 - CPF 19

Réseaux industriels – Profils – Partie 2-19:
Profils de bus de terrain supplémentaires
pour les réseaux en temps réel fondés sur
l'ISO/IEC/IEEE 8802-3 - CPF 19

National Foreword

This European Standard EN IEC 61784-2-19:2023 was adopted as Luxembourgish Standard ILNAS-EN IEC 61784-2-19:2023.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

**NORME EUROPÉENNE
EUROPÄISCHE NORM**

April 2023

ICS 33.020

Supersedes EN IEC 61784-2:2019 (partially)

English Version

**Industrial networks - Profiles - Part 2-19: Additional real-time
fieldbus profiles based on ISO/IEC/IEEE 8802-3 - CPF 19
(IEC 61784-2-19:2023)**

Réseaux industriels - Profils - Partie 2-19: Profils de bus de terrain supplémentaires pour les réseaux en temps réel fondés sur l'ISO/IEC/IEEE 8802-3 - CPF 19
(IEC 61784-2-19:2023)

Industrielle Kommunikationsnetze - Profile - Teil 2-19:
Zusätzliche Echtzeit-Feldbusprofile basierend auf
ISO/IEC/IEEE 8802-3 - CPF 19
(IEC 61784-2-19:2023)

This European Standard was approved by CENELEC on 2023-04-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 65C/1210/FDIS, future edition 1 of IEC 61784-2-19, prepared by SC 65C "Industrial networks" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61784-2-19:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2024-01-11 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2026-04-11 document have to be withdrawn

This document, together with other parts of the same series, partially supersedes EN IEC 61784-2:2019 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61784-2-19:2023 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

- IEC 61158-1 NOTE Approved as EN IEC 61158-1
IEC 61158-3 (series) NOTE Approved as EN 61158-3 (series)
IEC 61158-4 (series) NOTE Approved as EN 61158-4 (series)
IEC 61158-5 (series) NOTE Approved as EN 61158-5 (series)
IEC 61158-6 (series) NOTE Approved as EN 61158-6 (series)
IEC 61784-1 (series) NOTE Approved as EN IEC 61784-1 (series)¹
IEC 61784-2 (series) NOTE Approved as EN IEC 61784-2 (series)²
IEC 61918 NOTE Approved as EN IEC 61918

¹ To be published. Stage at the time of publication: FprEN IEC 61784-1-X:2023.

² To be published. Stage at the time of publication: FprEN IEC 61784-2-X:2023.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61158	series	Industrial communication networks - Fieldbus specifications	EN IEC 61158	series
IEC 61158-2	-	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	EN IEC 61158-2	-
IEC 61158-3-24	2023	Industrial communication networks - Fieldbus specifications - Part 3-24: Data-link layer service definition - Type 24 elements	EN IEC 61158-3-24	2023
IEC 61158-4-24	2023	Industrial communication networks - Fieldbus specifications - Part 4-24: Data-link layer protocol specification - Type 24 elements	EN IEC 61158-4-24	— ³
IEC 61158-5-24	2023	Industrial communication networks - Fieldbus specifications - Part 5-24: Application layer service definition - Type 24 elements	EN IEC 61158-5-24	2023
IEC 61158-5-27	2023	Industrial communication networks - Fieldbus specifications - Part 5-27: Application layer service definition - Type 27 elements	EN IEC 61158-5-27	2023
IEC 61158-6-24	2023	Industrial communication networks - Fieldbus specifications - Part 6-24: Application layer protocol specification - Type 24 elements	EN IEC 61158-6-24	— ⁴
IEC 61158-6-27	2023	Industrial communication networks - Fieldbus Specifications Part 6-27: Application layer protocol specification - Type 27 elements	EN IEC 61158-6-27	2023

³ To be published. Stage at the time of publication: prEN IEC 61158-4-24:2023.

⁴ To be published. Stage at the time of publication: prEN IEC 61158-6-24:2023.

IEC 61784-1-19	2023	Industrial networks - Profiles - Part 1-19: Fieldbus profiles - Communication Profile Family 19	EN IEC 61784-1-19	— ⁵
IEC 61784-2-0	2023	Industrial networks - Profiles - Part 2-0: Additional real-time fieldbus profiles based on ISO/IEC/IEEE 8802-3 - General concepts and terminology	EN IEC 61784-2-0	— ⁶
ISO/IEC/IEEE 8802-3 -		Telecommunications and exchange between information technology systems - Requirements for local and metropolitan area networks - Part 3: Standard for Ethernet	-	-
IEEE Std 802	2014	IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture	-	-
IEEE Std 802.1AB	2016	IEEE Standard for Local and metropolitan area networks - Station and Media Access Control Connectivity Discovery	-	-
IEEE Std 802.1AS	2020	IEEE Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive Applications	-	-
IEEE Std 802.1Q	2018	IEEE Standard for Local and Metropolitan Area Networks - Bridges and Bridged Networks	-	-
IETF RFC 768	1980	User Datagram Protocol	-	-
IETF RFC 791	1981	Internet Protocol	-	-
IETF RFC 792	1981	Internet Control Message Protocol	-	-
IETF RFC 793	1981	Transmission Control Protocol	-	-
TIA-485-A	1998	Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems	-	-

⁵ To be published. Stage at time of publication: FprEN IEC 61784-1-19:2023.

⁶ To be published. Stage at time of publication: FprEN IEC 61784-2-0:2023.



INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Industrial networks – Profiles –
Part 2-19: Additional real-time fieldbus profiles based on ISO/IEC/IEEE 8802-3 –
CPF 19**

**Réseaux industriels – Profils –
Partie 2-19: Profils de bus de terrain supplémentaires pour les réseaux en temps
réel fondés sur l'ISO/IEC/IEEE 8802-3 – CPF 19**

CONTENTS

FOREWORD	3
INTRODUCTION	5
1 Scope	6
2 Normative references	6
3 Terms, definitions, abbreviated terms, acronyms, and conventions	7
3.1 Terms and definitions	7
3.2 Abbreviated terms and acronyms	8
3.3 Symbols	8
3.4 Conventions	9
4 CPF 19 (MECHATROLINK) – RTE communication profiles	9
4.1 General overview	9
4.2 Profile 19/4 (MECHATROLINK-4)	10
4.2.1 Physical layer	10
4.2.2 Data link layer	10
4.2.3 Application layer	11
4.2.4 Performance indicator selection	16
Bibliography	22
 Figure 1 – Multi control domain system of M-4	19
Figure 2 – Concurrent I/O data exchange	20
Figure 3 – Sequential I/O data exchange	20
 Table 1 – CPF 19 symbols	8
Table 2 – CPF 19: Overview of profile sets (CP19/1 and CP19/2)	10
Table 3 – CPF 19: Overview of profile sets (CP19/3 and CP19/4)	10
Table 4 – CP 19/4: AL service selection	12
Table 5 – CP 19/4: AL protocol selection	13
Table 6 – CP 19/4: AL service selection	14
Table 7 – CP 19/4: AL protocol selection	15
Table 8 – CP 19/4: PI overview	16
Table 9 – CP 19/4: PI dependency matrix	16
Table 10 – CP 19/4: Consistent set of PIs with concurrent I/O data exchange	20
Table 11 – CP 19/4: Consistent set of PIs with sequential I/O data exchange	21