



NSAI
Standards

Irish Standard
I.S. EN 50325-1:2019

Industrial communications subsystem based on ISO 11898 (CAN) for controller- device interfaces - Part 1: General requirements

I.S. EN 50325-1:2019

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 50325-1:2019

Published:

2019-12-20

This document was published under the authority of the NSAI and comes into effect on:

2020-01-08

ICS number:

43.180

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN 50325-1:2019 is the adopted Irish version of the European Document EN 50325-1:2019, Industrial communications subsystem based on ISO 11898 (CAN) for controller-device interfaces - Part 1: General requirements

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD

EN 50325-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2019

ICS 43.180

Supersedes EN 50325-1:2002 and all of its amendments
and corrigenda (if any)

English Version

Industrial communications subsystem based on ISO 11898 (CAN) for controller-device interfaces - Part 1: General requirements

Sous-système de communications industriel basé sur l'ISO
11898 (CAN) pour les interfaces des dispositifs de
commande - Partie 1: Prescriptions générales

Industrielles Kommunikationssystem basierend auf ISO
11898 (CAN) - Teil 1: Allgemeine Anforderungen

This European Standard was approved by CENELEC on 2019-11-01. 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, Turkey 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

Contents	Page
Introduction	5
1 Scope	6
2 Normative references	7
3 Terms and definitions	7
4 Classifications	9
5 Characteristics	9
5.1 General	9
5.2 Components of the network	9
5.3 Network interfaces	9
5.4 Topology	10
5.5 Information exchanges	10
5.6 Network attributes	10
6 Product information	11
6.1 Instructions for installation, operation and maintenance	11
6.2 Marking	11
7 Normal service, transport and mounting conditions	11
7.1 Normal service conditions	11
7.1.1 General	11
7.1.2 Ambient air temperature	11
7.1.3 Altitude	11
7.1.4 Humidity	11
7.1.5 Pollution degree	11
7.1.6 Sealed connectors	12
7.2 Conditions during transport and storage	12
7.3 Mounting	12
8 Constructional and performance requirements	12
8.1 General	12
8.2 Electromagnetic compatibility (EMC)	12
9 Tests	13
Bibliography	14

European foreword

This document (EN 50325-1:2019) has been prepared by the CLC/TC 65X, "Industrial-process measurement, control and automation".

The following dates are fixed:

- latest date by which this document has (dop) 2020-11-01 to be implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national (dow) 2022-11-01 standards conflicting with this document have to be withdrawn

This document supersedes EN 50325-1:2002 and all of its amendments and corrigenda (if any).

This European standard is divided into five parts:

Part 1 General requirements

Part 2 withdrawn

Part 3 withdrawn

Part 4 CANopen

Part 5 Functional safety communication based on EN 50325-4

The specifications for CANopen and Functional safety communication based on EN 50325-4 are based on ISO 11898 *Controller area network (CAN) for high-speed communication*, a broadcast-oriented communications protocol. However, ISO 11898 specifies only part of a complete communication system, and additional specifications are needed for other layers to ensure precise data exchange functionality and support of inter-operating devices. The DeviceNet and SDS specifications build on ISO 11898 to describe a complete industrial communication system.

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

Further attention is drawn to the Standard EN 50325-4 (CANopen) and the possibility that some of the elements of those European Standards may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights

If during the application of those Standards Intellectual Property Rights may appear and will not be made available on reasonable and non discriminatory terms and conditions to anyone wishing to obtain such a license, applying the rules of CEN/CENELEC Memorandum 8, this fact shall be brought to the attention of CENELEC Central Secretariat for further action.

EN 50325-1:2019 (E)

Information on conformance testing services are offered by the following companies/institutions:

EN 50325-4:

CAN in Automation (CiA) GmbH

Am Weichselgarten 26,

D-91058 Erlangen, Germany

www.can-cia.org.

Introduction

The controller-device interfaces described in this standard utilize a common base protocol to provide solutions to users in industrial environments who have a need for simple communications and diagnostics. The application layer of each network has been created to meet specific performance and market requirements.

The objective of the interface user is a gain in productivity that may be realized through reduced wiring, reduced start up time, improved quality of output and reduced down time. The interfaces described provide low-cost connectivity between low-voltage switchgear, controlgear, control circuit devices, switching elements and controlling devices (e.g. programmable controllers, personal computers, etc.) and eliminate expensive hardwiring. The direct connectivity provides improved communication between devices as well as important device-level diagnostics not easily accessible or available through hardwired I/O interfaces.

The interfaces described are based on a broadcast-oriented communications protocol - Controller Area Network (CAN). The CAN protocol was originally developed by Robert Bosch GmbH for the European automotive market for replacing expensive, wire harnesses with low cost network cable on vehicles. As a result, the CAN protocol has fast response and high reliability and the protocol has been standardized as ISO 11898. Chips are available in a variety of packages with temperature and noise immunity ratings well suited to the industrial automation market. Demand for CAN is the key driver in the "low price with high performance" characteristic of CAN chips.

As a result of the common use of CAN, the interfaces described provide a common set of capabilities that are ideally targeted to applications which include simple devices, limited distance and limited amount of data per transmission.

EN 50325-1:2019 (E)

1 Scope

This document applies to controller-device interfaces that provide defined interfaces between low-voltage switchgear, controlgear, control circuit devices, switching elements and controlling devices (e.g. programmable controllers, personal computers, etc.). It may also be applied for the interfacing of other devices and elements to a controller-device interface.

This document specifies requirements for controllers and devices utilizing these interfaces, including not only the communication protocol specification, but also associated relevant electrical and mechanical characteristics. It also specifies the electrical and EMC tests required to verify the performance of each controller-device interface when connected to the appropriate controllers and devices.

This document establishes a consistent terminology and format for the subsequent interfaces. It also harmonises requirements of a general nature in order to reduce the need for testing to different standards, increase understanding and facilitate comparisons of controller-device interface standards. Those requirements of the various controller-device interface standards that can be considered as general have therefore been gathered in this document.

In addition to meeting the specific requirements stated in this document, the controller-device interfaces included in this standard

- are documented in the English language in accordance with the requirements specified in this part 1,
- are already in use in commercial products and running in industrial plants,
- are available in quantity and at low price,
- are available from several sources and commercialised openly,
- to satisfy the tests specified, amongst others, in EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, and EN 61000-4-6 against the test levels specified in EN 50082-2,
- have appropriate mechanisms for transmission error detection,
- are open, widely accepted, well documented, stable and support inter-operability,
- are complete and describe the necessary interfaces in sufficient detail to enable error-free implementation,
- are free of any restriction related to testing the implementation.

For each controller-device interface only two documents are necessary to determine all requirements and tests:

- the general requirements of this standard, referred to as “part 1” in the relevant parts covering the various types of controller-device interfaces;
- the relevant controller-device interface standard hereinafter referred to as the “relevant controller-device interface standard” or “controller-device interface standard”.

The solutions described in this standard have been used for many years by industry to solve application requirements involving low-voltage switchgear and controlgear. They are characterized by:

- their ability to power connected devices directly from the network;
- their ability to operate in harsh environments typified by those encountered at the machine level by controls in industrial applications;
- usage of the sophisticated medium access rules of CAN which allows both organization of traffic based on user-assigned priorities and efficient resolution of occasional access conflict;

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-