

**Open Data Communication in Building Automation,  
Controls and Building Management - Control Network  
Protocol - Part 2: Twisted Pair Communication**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 14908-2:2014 sisaldab Euroopa standardi EN 14908-2:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 14908-2:2014 consists of the English text of the European standard EN 14908-2:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 30.04.2014.	Date of Availability of the European standard is 30.04.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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ICS 35.240.99, 91.140.01, 97.120

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English Version

**Open Data Communication in Building Automation, Controls and  
Building Management - Control Network Protocol - Part 2:  
Twisted Pair Communication**

Réseau ouvert de communication de données pour  
l'automatisation, la régulation et la gestion technique du  
bâtiment - Protocole de contrôle du réseau - Partie 2 :  
Communication par paire torsadée

Offene Datenkommunikation für die Gebäudeautomation  
und Gebäudemanagement - Gebäude-Netzwerk-Protokoll -  
Teil 2: Kommunikation über verdrehte Zweidrahtleitungen

This European Standard was approved by CEN on 12 April 2013.

CEN 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 CEN 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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 14908-2:2014) has been prepared by Technical Committee CEN/TC 247 "Building Automation, Controls and Building Management", the secretariat of which is held by SNV.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2014 and conflicting national standards shall be withdrawn at the latest by October 2014.

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

This document supersedes EN 14908-2:2005.

This European Standard is part of a series of standards for open data transmission in building automation, control and in building management systems. The content of this European Standard covers the data communications used for management, automation/control and field functions.

EN 14908-2 is part of a series of European Standards under the general title *Control Network Protocol (CNP)*, which comprises the following parts:

Part 1: *Protocol stack*;

Part 2: *Twisted pair communication*;

Part 3: *Power line channel specification*;

Part 4: *IP-Communication*;

Part 5: *Implementation*;

Part 6: *Application elements*.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

This European Standard has been prepared to provide mechanisms through which various vendors of building automation, control, and building management systems may exchange information in a standardised way. It defines communication capabilities.

This European Standard will be used by all involved in design, manufacture, engineering, installation and commissioning activities.

## 1 Scope

This European Standard specifies the control network protocol (CNP) free-topology twisted-pair channel for networked control systems in commercial Building Automation, Controls and Building Management and is used in conjunction with EN 14908-1:2014. The channel supports communication at 78,125 kbit/s between multiple nodes, each of which consists of a transceiver, a protocol processor, an application processor, a power supply, and application electronics.

This European Standard covers the complete physical layer (OSI Layer 1), including the interface to the Media Access Control (MAC) sub-layer and the interface to the medium. Parameters that are controlled by other layers but control the operation of the physical layer are also specified.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14908-1:2014, *Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 1: Protocol Stack*

EN 50173-1, *Information technology — Generic cabling systems— Part 1: General requirements*

## 3 Network overview

The CNP free-topology twisted-pair channel supports up to 128 nodes on a single network segment with an optional link power source that supplies DC power to the nodes on the network. The channel is specified to support free-topology wiring, and will accommodate bus, star, loop, or any combination of these topologies. The total network length and number of nodes may be extended by use of CNP channel physical layer repeaters, or CNP compliant routers. The channel data rate is 78,125 kbit/s. Nodes can be either locally powered or link powered. A link-powered node derives its power from the network. The power is delivered on the same two conductors that carry data. Nodes are polarity-insensitive with respect to data as well as DC power. A locally powered node derives its power from a local source. The data is transmitted using Differential Manchester encoding, which is polarity-insensitive.

## 4 System specifications

### 4.1 General aspects

This sub-clause specifies the cable type used, terminations required with bus or free topology, maximum node counts and distances for link and locally powered schemes, and the maximum steady state power that can be drawn from the link power supply.

### 4.2 Cable

The cable shall conform to EN 50173-1.

### 4.3 Topology

#### 4.3.1 Free or bus topology

The network may use either a singly-terminated free topology or a doubly-terminated bus topology.