Madalpingelised lülitus- ja juhtimisaparaadid. Kontrolleri ja seadme vahelised liidesed. Osa 7: Kommunikatsioonisüsteem CompoNet

Low-voltage switchgear and controlgear - Controller-device interfaces (CDIs) - Part 7: CompoNet (IEC 62026-7:2010, modified)

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62026-7:2013 sisaldab Euroopa standardi EN 62026-7:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 62026-7:2013 consists of the English text of the European standard EN 62026-7:2013.
Standard on jõustunud sellekohase teate avaldamisel 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 05.04.2013.	Date of Availability of the European standard is 05.04.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.130.20, 33.200

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62026-7

April 2013

ICS 29.130.20; 33.200

English version

Low-voltage switchgear and controlgear - Controller-device interfaces (CDIs) - Part 7: CompoNet

(IEC 62026-7:2010, modified)

Appareillage à basse tension - Interfaces appareil de commande-appareil (CDI) - Partie 7: CompoNet (CEI 62026-7:2010, modifiée)

Niederspannungsschaltgeräte - Steuerung-Geräte-Netzwerke (CDIs) - Teil 7: CompoNet (IEC 62026-7:2010, modifiziert)

This European Standard was approved by CENELEC on 2012-12-03. 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.

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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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 62026-7:2013 E

Foreword

This document (EN 62026-7:2013) consists of the text of IEC 62026-7:2010 prepared by IEC/SC 17B "Low-voltage switchgear and controlgear" of IEC/TC 17 "Switchgear and controlgear", together with the common modifications prepared by CLC/TC 17B "Low-voltage switchgear and controlgear".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-12-03
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-12-03

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62026-7:2010 are prefixed "Z".

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

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive 2004/108/EC, see informative Annex ZZ, which is an integral part of this document.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 62026-7:2010 was approved by CENELEC as a European Standard with agreed common modifications.

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

IEC 61000-4-11	NOTE	Harmonised as EN 61000-4-11.
IEC 61158 series	NOTE	Harmonised in EN 61158 series.
IEC 62026-3:2008	NOTE	Harmonised as EN 62026-3:2009 (not modified).

COMMON MODIFICATIONS

9.2.8.1 General

Add the following note at the end of 9.2.8.1:

NOTE The criteria are those listed in the specifications of 8.7.2 “Immunity".

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

Publication	Year	Title	EN/HD	Year
CISPR 11 (mod)	2009	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement	EN 55011	2009
IEC 60512-1	-	Connectors for electronic equipment - Tests and measurements - Part 1: General	EN 60512-1	2001
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May + A1	1991 1993 2000
IEC 61000-4-2	-	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	2009
IEC 61000-4-3	-	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3 + A1 + A2	2006 2008 2010
IEC 61000-4-4	-	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4 + A1	2004 2010
IEC 61000-4-5	-	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2006
IEC 61000-4-6	-	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	2009
IEC 61076-2-101	-	Connectors for electronic equipment - Product requirements - Part 2-101: Circular connectors - Detail specification for M12 connectors with screw-locking	EN 61076-2-101	2008
IEC 61131-2	-	Programmable controllers - Part 2: Equipment requirements and tests	EN 61131-2	2007

Publication	Year	Title	EN/HD	Year
IEC 61158-5-2	2007	Industrial communication networks - Fieldbus specifications - Part 5-2: Application layer service definition - Type 2 elements	EN 61158-5-2 [1)]	2008
IEC 61158-6-2	2007	Industrial communication networks - Fieldbus specifications - Part 6-2: Application layer protocol specification - Type 2 elements	EN 61158-6-2 [2)]	2008
IEC 61918	2010	Industrial communication networks - Installation of communication networks in industrial premises	-	-
IEC 62026-1	-	Low-voltage switchgear and controlgear - Controller-device interfaces (CDIs) - Part 1: General rules	EN 62026-1	2007
ISO/IEC 7498-1	-	Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model	EN ISO/IEC 7498-1	-

1) EN 61158-5-2 is superseded by EN 61158-5-2:2012, which is based on IEC 61158-5-2:2010.

2) EN 61158-6-2 is superseded by EN 61158-6-2:2012, which is based on IEC 61158-6-2:2010.

Annex ZZ
(informative)

Coverage of Essential Requirements of EU Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Article 1 of Annex I of Directive 2004/108/EC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

CONTENTS

NOTE This page was inserted to preserve the even/odd alignment of the following pages.

INTRODUCTION

CompoNet™ is intended for use in, but is not limited to, industrial automation applications. These applications may include devices such as limit switches, proximity sensors, electro-pneumatic valves, relays, motor starters, operator interface panels, analogue inputs, analogue outputs and controllers.

Patent declaration

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of the following patents owned by OMRON Corporation:

JP Patent Number 4023342	DUPLICATE MAC. ADDRESS DETECTING METHOD, SLAVE AND MASTER IN FIELD BUS SYSTEM, AND FIELD BUS
JP Patent Number 4107110	FIELD BUS SYSTEM, CONNECTION CONFIRMING METHOD AND MASTER
JP Patent Number 3293089	REMOTE I/O SYSTEM FOR PLC AND EXECUTION METHOD THEREOF
JP Patent Number 3925660 and its counterpart patents in other countries	STARTING CONTROL METHOD OF COMMUNICATION MASTER
JP Patent Number 4006605 and its counterpart patents in other countries	COMMUNICATION SYSTEM REDUCED IN INFLUENCE OF REPEATER DELAY
JP Application Number 2004-059864	COMMUNICATION DEVICE AND NETWORK SYSTEM
JP Application Number 2004-022243	CONNECTOR FOR CONNECTION CABLE
JP Application Number 2007-167281	COMMUNICATION SYSTEM REDUCED IN INFLUENCE OF REPEATER DELAY
JP Application Number 2005-252414	NETWORK REPEATING WITH FILTERING FUNCTION
JP Application Number 2005-252758	A EVENT COMMUNICATION METHOD FOR PROGRAMABLE CONTROLLER SYSTEMS
JP Application Number 2005-203496	GETTING NETWORK CONFIGURATION INFORMATION IN PLC SYSTEMS
JP Application Number 2002-334265	A I/O MAPPING METHOD FOR NETWORK SYSTEMS AND CONTROLLERS
JP Application Number 2005-252682	A SCHEDULING METHOD FOR EVENT COMMUNICATIONS
JP Application Number 2005-105543 and its counterpart patents in other countries	RECEIVED DATA COMPENSATION DEVICE

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

The holder of this patent right has assured the IEC that he/she is willing to negotiate licences 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:

ODVA, Inc.
2370 E. Stadium Boulevard #1000
Ann Arbor, Michigan U.S.A. 48104

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://www.iec.ch/tctools/patent_decl.htm) 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.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR – CONTROLLER-DEVICE INTERFACES (CDIs) –

Part 7: CompoNet

1 Scope

This part of IEC 62026 specifies an interface system providing bit-level and word-level communication between a controller and control circuit devices such as sensors, actuators, and switching elements. The interface system uses cabling with round or flat profiles containing a two conductor signalling pair and optionally a two conductor power supply pair. This part establishes requirements for the interchangeability of components with such interfaces.

This part of IEC 62026 specifies the following particular requirements for CompoNet™ [1)]:

– requirements for interfaces between a controller and control circuit devices;
– normal service conditions for devices;
– constructional and performance requirements;
– tests to verify conformance to requirements.

These particular requirements apply in addition to the general requirements of IEC 62026-1.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60512-1, *Connectors for electronic equipment – Tests and measurements – Part 1: General*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

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1) CompoNet™ is a trade name of Open DeviceNet Vendor Association, Inc. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this standard does not require use of the trade name CompoNet™. Use of the trade name CompoNet™ requires permission of Open DeviceNet Vendor Association, Inc.

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61076-2-101, *Connectors for electronic equipment – Product requirements – Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking*

IEC 61131-2, *Programmable controllers – Part 2: Equipment requirements and tests*

IEC 61158-5-2:2007, *Industrial communication networks – Fieldbus specifications – Part 5-2: Application layer service definition – Type 2 elements*

IEC 61158-6-2:2007, *Industrial communication networks – Fieldbus specifications – Part 6-2: Application layer protocol specification – Type 2 elements*

IEC 61918:2010, *Industrial communication networks – Installation of communication networks in industrial premises*

IEC 62026-1, *Low-voltage switchgear and controlgear – Controller-device interfaces (CDIs) – Part 1: General rules*

CISPR 11:2009, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*

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

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions

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

3.1.1
BEACON
frame generated by the master to notify slaves and repeaters of the present transmission speed and network connection information

3.1.2
bit slave
I/O device working with data lengths not more than 4 bits

3.1.3
branch
a piece of cable making a T connection to a trunk or sub-trunk

3.1.4
CDI status indicator
visual indication reporting the status of the communication link at a CompoNet device

3.1.5
circuit speed
baud rate
communication rate in signalling symbols or marks/s on the transmission medium

NOTE Each CompoNet bit is Manchester encoded using two marks so a circuit speed of 6 Mmarks/s gives a transmission speed or data rate of 3 Mbits/s.