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Low-voltage switchgear and controlgear – Controller-device interfaces (CDIs) –
Part 3: DeviceNet

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Appareillage à basse tension – Interfaces appareil de commande-appareil (CDI) –
Partie 3: DeviceNet

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CONTENTS

| | |
|---|----|
| FOREWORD..... | 8 |
| INTRODUCTION..... | 10 |
| 1 Scope..... | 11 |
| 2 Normative references..... | 11 |
| 3 Terms, definitions, symbols and abbreviated terms..... | 12 |
| 3.1 Terms and definitions..... | 12 |
| 3.2 Symbols and abbreviated terms..... | 18 |
| 4 Classification..... | 18 |
| 4.1 General..... | 18 |
| 4.2 DeviceNet communication model..... | 19 |
| 4.3 DeviceNet, CAN and CIP™..... | 20 |
| 5 Characteristics..... | 21 |
| 5.1 DeviceNet connections..... | 21 |
| 5.1.1 General..... | 21 |
| 5.1.2 DeviceNet’s use of the CAN identifier field..... | 21 |
| 5.1.3 Connection establishment..... | 22 |
| 5.2 DeviceNet messaging protocol..... | 23 |
| 5.2.1 Explicit messaging..... | 23 |
| 5.2.2 Input/output messaging..... | 34 |
| 5.2.3 Fragmentation/reassembly..... | 35 |
| 5.2.4 Offline connection set..... | 39 |
| 5.2.5 Device heartbeat..... | 49 |
| 5.2.6 Device shutdown message..... | 50 |
| 5.2.7 Duplicate MAC ID detection protocol..... | 52 |
| 5.2.8 Quick connect..... | 53 |
| 5.3 DeviceNet communication object classes..... | 53 |
| 5.3.1 General..... | 53 |
| 5.3.2 Identity object class definition (class ID code: 0x01)..... | 53 |
| 5.3.3 Message router object class definition (class ID code: 0x02)..... | 54 |
| 5.3.4 DeviceNet object class definition (class ID code: 0x03)..... | 54 |
| 5.3.5 Connection object class definition (class ID code: 0x05)..... | 54 |
| 5.3.6 Acknowledge handler object class definition (class ID code: 0x2B)..... | 55 |
| 5.4 Link access state machine..... | 55 |
| 5.4.1 General..... | 55 |
| 5.4.2 State transition diagram and event matrix..... | 55 |
| 5.4.3 Duplicate MAC ID detection..... | 58 |
| 5.5 Predefined master/slave connection set..... | 58 |
| 5.5.1 General..... | 58 |
| 5.5.2 Predefined master/slave connection set messages..... | 59 |
| 5.5.3 DeviceNet object class specific services for the master/slave connection set..... | 61 |
| 5.5.4 Slave connection object characteristics..... | 68 |
| 5.5.5 Master connection object characteristics..... | 73 |
| 5.5.6 Bit-strobe command/response messages..... | 73 |
| 5.5.7 Poll command/response messages..... | 74 |
| 5.5.8 Multicast poll command/response messages..... | 75 |
| 5.5.9 Change of state/cyclic connections..... | 75 |

| | | |
|--------|--|-----|
| 5.5.10 | Group 2 only devices | 77 |
| 5.6 | CIP Safety™ on DeviceNet..... | 78 |
| 5.6.1 | General | 78 |
| 5.6.2 | Use of CAN identifiers for CIP Safety on DeviceNet | 78 |
| 5.7 | Physical layer | 78 |
| 5.7.1 | General | 78 |
| 5.7.2 | Transceiver..... | 80 |
| 5.7.3 | Grounding..... | 81 |
| 5.7.4 | Isolation..... | 81 |
| 5.7.5 | Transmission medium | 83 |
| 5.7.6 | Topology..... | 83 |
| 5.7.7 | Link power | 84 |
| 6 | Product information | 85 |
| 7 | Normal service, mounting and transport conditions..... | 85 |
| 7.1 | Normal service conditions | 85 |
| 7.1.1 | General | 85 |
| 7.1.2 | Ambient air temperature | 85 |
| 7.1.3 | Altitude | 86 |
| 7.1.4 | Climatic conditions | 86 |
| 7.2 | Conditions during transport and storage | 86 |
| 7.3 | Mounting..... | 86 |
| 8 | Constructional and performance requirements..... | 86 |
| 8.1 | Indicators and configuration switches | 86 |
| 8.2 | DeviceNet cable..... | 87 |
| 8.2.1 | Overview..... | 87 |
| 8.2.2 | Cable profile template..... | 87 |
| 8.2.3 | Thick cable profile..... | 88 |
| 8.2.4 | Thin cable profile | 92 |
| 8.2.5 | Flat cable profile | 95 |
| 8.3 | Terminating resistors..... | 98 |
| 8.4 | Connectors | 98 |
| 8.4.1 | General specifications..... | 98 |
| 8.4.2 | Connector profile template | 98 |
| 8.4.3 | Open connector profile..... | 99 |
| 8.4.4 | Sealed mini connector profile | 102 |
| 8.4.5 | Sealed micro connector profile | 103 |
| 8.4.6 | Flat trunk connector profile..... | 104 |
| 8.5 | Device taps and power taps..... | 107 |
| 8.5.1 | Device taps..... | 107 |
| 8.5.2 | Power taps..... | 108 |
| 8.6 | Link powered devices | 109 |
| 8.7 | Miswiring protection | 109 |
| 8.8 | Power supplies..... | 109 |
| 8.9 | Electromagnetic compatibility (EMC)..... | 110 |
| 8.9.1 | General | 110 |
| 8.9.2 | Immunity..... | 110 |
| 8.9.3 | Emissions | 111 |
| 8.10 | Additional functional safety requirements related to EMC | 112 |
| 9 | Tests..... | 112 |

| | | |
|--------|---|-----|
| 9.1 | General..... | 112 |
| 9.2 | Electrical and EMC testing | 112 |
| 9.2.1 | Test of the DeviceNet power supply..... | 112 |
| 9.2.2 | Device peak current consumption | 113 |
| 9.2.3 | Power ON behaviour | 113 |
| 9.2.4 | Reverse connection of V+ and V-..... | 114 |
| 9.2.5 | Disconnection of V- | 115 |
| 9.2.6 | Differential input impedance test | 115 |
| 9.2.7 | Transmit levels | 115 |
| 9.2.8 | Acknowledge delay | 116 |
| 9.2.9 | CDI tests | 117 |
| 9.2.10 | Electromagnetic compatibility testing..... | 118 |
| 9.3 | Logical testing..... | 120 |
| 9.3.1 | General | 120 |
| 9.3.2 | Duplicate MAC ID check test | 120 |
| 9.3.3 | UCMM | 121 |
| 9.3.4 | Allocation of predefined master/slave connection set – Explicit messaging connection..... | 122 |
| 9.3.5 | Allocation of predefined master/slave connection set – I/O messaging connection..... | 122 |
| 9.3.6 | Logical testing of safety products..... | 123 |
| | Bibliography | 124 |
| | Figure 1 – Typical DeviceNet controller-device interfaces | 19 |
| | Figure 2 – DeviceNet protocol architecture compared with the OSI reference model..... | 20 |
| | Figure 3 – DeviceNet’s use of the CAN identifier field..... | 21 |
| | Figure 4 – Explicit message CAN data field use..... | 23 |
| | Figure 5 – Explicit message data field format..... | 23 |
| | Figure 6 – Explicit message header format..... | 24 |
| | Figure 7 – Service field format | 24 |
| | Figure 8 – Open explicit messaging connection request format | 26 |
| | Figure 9 – Open explicit messaging connection response format..... | 28 |
| | Figure 10 – Close connection request format..... | 30 |
| | Figure 11 – Close connection response format | 30 |
| | Figure 12 – Non-fragmented explicit request message format, values 0 – 3..... | 32 |
| | Figure 13 – Non-fragmented explicit request message format, value 4 | 33 |
| | Figure 14 – Non-fragmented success response message format | 33 |
| | Figure 15 – Error response message..... | 34 |
| | Figure 16 – Data field of an I/O message..... | 34 |
| | Figure 17 – Format of DeviceNet fragmentation protocol..... | 35 |
| | Figure 18 – I/O message fragment format..... | 36 |
| | Figure 19 – Explicit message fragment format | 36 |
| | Figure 20 – Acknowledgement message format | 38 |
| | Figure 21 – Establishing the offline ownership | 40 |
| | Figure 22 – Multicast nature of the offline ownership | 41 |
| | Figure 23 – Offline ownership request message..... | 42 |

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 IEC 62026-3:2014

| | |
|---|-----|
| Figure 24 – Offline ownership response message protocol..... | 42 |
| Figure 25 – Communication faulted request message – Multicast protocol..... | 43 |
| Figure 26 – Communication faulted request message – Point-to-point protocol..... | 44 |
| Figure 27 – Identify communication faulted request message – Multicast protocol | 45 |
| Figure 28 – Communication faulted identify response message..... | 46 |
| Figure 29 – Identify communication faulted request message – Point-to-point protocol | 46 |
| Figure 30 – Who communication faulted request message | 47 |
| Figure 31 – Who response message..... | 48 |
| Figure 32 – Change MAC ID communication faulted request message | 48 |
| Figure 33 – Device heartbeat message..... | 49 |
| Figure 34 – Device shutdown message | 51 |
| Figure 35 – Duplicate MAC ID check CAN identifier field..... | 52 |
| Figure 36 – Duplicate MAC ID check message data field format..... | 52 |
| Figure 37 – Link access state transition diagram | 56 |
| Figure 38 – Allocation choice byte contents | 61 |
| Figure 39 – Allocate_master/slave_connection_set request message..... | 62 |
| Figure 40 – Success response to allocate_master/slave_connection_set request | 63 |
| Figure 41 – Parent explicit messaging connection logic | 65 |
| Figure 42 – Release choice byte contents | 66 |
| Figure 43 – Release_master/slave_connection_set request message | 66 |
| Figure 44 – Success response to release_master/slave_connection_set request..... | 67 |
| Figure 45 – Predefined master/slave I/O connection state transition diagram | 69 |
| Figure 46 – Predefined master/slave explicit messaging connection state transition diagram | 71 |
| Figure 47 – Physical layer block diagram..... | 79 |
| Figure 48 – Device containing a non-isolated physical layer..... | 82 |
| Figure 49 – Device containing an isolated physical layer..... | 83 |
| Figure 50 – DeviceNet medium topology | 84 |
| Figure 51 – Thick cable: physical configuration..... | 91 |
| Figure 52 – Thick cable: current available on the DeviceNet power bus..... | 91 |
| Figure 53 – Thin cable: physical configuration | 94 |
| Figure 54 – Thin cable: current available on the DeviceNet power bus | 94 |
| Figure 55 – Flat cable: physical configuration | 97 |
| Figure 56 – Flat cable: current available on the DeviceNet power bus | 97 |
| Figure 57 – Open connector pinout | 101 |
| Figure 58 – Open connector geometry..... | 101 |
| Figure 59 – Mini connector pinout | 103 |
| Figure 60 – Micro connector pinout | 104 |
| Figure 61 – Flat trunk connector layout – Part 1 | 106 |
| Figure 62 – Flat trunk connector layout – Part 2 | 107 |
| Figure 63 – Power supply rise time test circuit..... | 112 |
| Figure 64 – Current consumption test circuit..... | 113 |
| Figure 65 – Power ON test circuit..... | 114 |

| | |
|---|-----|
| Figure 66 – Test circuit for reversal of V+ and V- and also V- interruption | 114 |
| Figure 67 – Differential impedance test circuit | 115 |
| Figure 68 – Transmit level test setup | 116 |
| Figure 69 – Transmit levels | 116 |
| Figure 70 – Timing test setup | 117 |
| Figure 71 – Timing | 117 |
| Figure 72 – CDI test configuration | 118 |
| Figure 73 – Test circuit for logical tests | 120 |
| | |
| Table 1 – Message body format values | 27 |
| Table 2 – Group select values | 27 |
| Table 3 – Source message ID in open explicit messaging connection request | 28 |
| Table 4 – Destination message ID in open explicit messaging connection response | 29 |
| Table 5 – UCMM error conditions/codes | 31 |
| Table 6 – Fragment type bit values | 35 |
| Table 7 – Ack status bit values | 38 |
| Table 8 – Offline connection set | 40 |
| Table 9 – Addresses reporting based upon mask | 44 |
| Table 10 – Device shutdown message shutdown code ranges | 51 |
| Table 11 – Device shutdown message "Open" shutdown codes | 52 |
| Table 12 – Link access state event matrix (1 of 2) | 56 |
| Table 13 – Predefined master/slave connection set identifier fields | 60 |
| Table 14 – Allocate_master/slave_connection_set request service data field parameters | 61 |
| Table 15 – Allocate_master/slave_connection_set response parameters | 62 |
| Table 16 – Release_master/slave_connection_set request service data field parameters | 66 |
| Table 17 – DeviceNet object specific additional error codes | 68 |
| Table 18 – Connection instance IDs for predefined master/slave connections | 69 |
| Table 19 – Predefined master/slave I/O connection state event matrix (1 of 2) | 70 |
| Table 20 – Predefined master/slave explicit messaging connection state event matrix | 72 |
| Table 21 – Predefined master/slave I/O connection object attribute access | 73 |
| Table 22 – General physical layer characteristics | 79 |
| Table 23 – Transmitter characteristics | 80 |
| Table 24 – Receiver characteristics | 81 |
| Table 25 – Load limits | 85 |
| Table 26 – Cable profile: data pair specifications | 87 |
| Table 27 – Cable profile: DC power pair specifications | 87 |
| Table 28 – Cable profile: general specifications | 88 |
| Table 29 – Cable profile: topology | 88 |
| Table 30 – Thick cable: data pair specifications | 89 |
| Table 31 – Thick cable: DC power pair specifications | 89 |
| Table 32 – Thick cable: general specifications | 90 |
| Table 33 – Thick cable: topology | 90 |

| | |
|---|-----|
| Table 34 – Thick cable: maximum current available (A) based on network length | 91 |
| Table 35 – Thin cable: data pair specifications | 92 |
| Table 36 – Thin cable: DC power pair specifications | 93 |
| Table 37 – Thin cable: general specifications | 93 |
| Table 38 – Thin cable: topology | 93 |
| Table 39 – Thin cable: maximum current available (A) based on network length | 94 |
| Table 40 – Flat cable: data pair specifications | 95 |
| Table 41 – Flat cable: DC power pair specifications | 96 |
| Table 42 – Flat cable: general specifications | 96 |
| Table 43 – Flat cable: topology | 96 |
| Table 44 – Flat cable: maximum current available (A) based on network length | 97 |
| Table 45 – Connector profile template | 99 |
| Table 46 – Open connector | 100 |
| Table 47 – Sealed mini connector | 102 |
| Table 48 – Sealed micro connector (1 of 2) | 103 |
| Table 49 – Flat trunk connector | 105 |
| Table 50 – Internal pass-through conductor specifications | 108 |
| Table 51 – Internal drop conductor specifications | 108 |
| Table 52 – Internal pass-through conductor specifications | 108 |
| Table 53 – Internal power drop conductor specifications | 109 |
| Table 54 – Voltage regulator specifications | 109 |
| Table 55 – DeviceNet power supply specifications | 110 |
| Table 56 – Immunity performance criteria | 111 |

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CONTROLLER-DEVICE INTERFACES (CDIs) –****Part 3: DeviceNet**

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This third edition of IEC 62026-3 cancels and replaces the second edition published in 2008. This third edition constitutes a technical revision.

The main changes with respect to the previous edition are the followings:

- specification of group 4 messages (5.1.2);
- clarifications on messaging protocol (5.2);
- addition of I/O multicast poll messages (5.5.2 and 5.5.8);
- clarifications on slave behaviour (5.5.4 and 5.5.9);
- clarifications on physical layer (transceiver) in 5.7;

- miscellaneous corrections/clarifications on cable (8.2);
- clarifications on EMC testing (9.2.10) and logical testing (9.3).

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

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| FDIS | Report on voting |
| 17B/1814/FDIS | 121A/18/RVC |

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62026, under the general title *Low-voltage switchgear and controlgear – Controller-device interfaces (CDIs)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

DeviceNet™¹ 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.

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

Part 3: DeviceNet

1 Scope

This part of IEC 62026 specifies an interface system between single or multiple controllers, and control circuit devices or switching elements. The interface system uses two conductor pairs within one cable – one of these pairs provides a differential communication medium and the other pair provides power to the devices. This part establishes requirements for the interoperability of components with such interfaces.

This part of IEC 62026 specifies the following particular requirements for DeviceNet:

- requirements for interfaces between controllers and switching elements;
- 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

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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.

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD 1:1999
IEC 60529:1989/AMD 2:2013

IEC 60947-5-2:2007, *Low-voltage switchgear and controlgear – Part 5-2: Control circuit devices and switching elements – Proximity switches*
IEC 60947-5-2:2007/AMD 1:2012

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*
IEC 61000-4-3:2006/AMD 1:2007
IEC 61000-4-3:2006/AMD 2:2010

IEC 61000-4-4:2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2005, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6:2013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61158-4-2:2014, *Industrial communication networks – Fieldbus specifications – Part 4-2: Data-link layer protocol specification – Type 2 elements*

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(standards.iteh.ai)

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ANSI B93.55M-1981 (R1988), *Hydraulic Fluid Power – Solenoid Piloted Industrial Valves – Interface Dimensions for Electrical Connectors*

ASTM D 4566-942, *Standard Test Methods for Electrical Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the terms, definitions, symbols and abbreviations given in IEC 62026-1 as well as the following apply.

3.1 Terms and definitions

3.1.1

acknowledged fragmentation

fragmentation performed on an explicit message, in which the transmission of a fragment from the transmitting object is followed by the transmission of an acknowledgement by the receiving object

Note 1 to entry: The reception of each fragment is acknowledged by the receiving object.

² A newer version of this document exists (ASTM D4566-08e1), however the listed revision applies for this standard

3.1.2

ack status

field within an acknowledgement/response message format that indicates whether or not an error has been encountered by the receiver of a fragmented message

Note 1 to entry: This applies specifically to the DeviceNet fragmentation protocol.

3.1.3

application objects

set of object classes and their object instances that are available within the node

Note 1 to entry: These objects manage and provide the exchange of data and messages across DeviceNet controller-device interfaces (CDIs) and within the DeviceNet compliant node.

3.1.4

attribute

description of an externally accessible characteristic or feature of an object

Note 1 to entry: Attributes typically provide status information or govern the operation of an object.

3.1.5

bit-strobe

communication using strobing

3.1.6

broadcast

communication from one node to all other nodes

3.1.7

BOI attribute

bus-off interrupt attribute

attribute of the DeviceNet object that defines the behaviour of a device after encountering a bus-off event in the CAN chip

Note 1 to entry: See IEC 61158-4-2:2014, 7.7.4.4 for further details.

3.1.8

CAN

ISO specification that defines a generic physical layer and data link medium access procedure based on non-destructive bit-wise arbitration

Note 1 to entry: See ISO 11898-1 and ISO 11898-2.

Note 2 to entry: CAN is the abbreviation of “controller area network”.

3.1.9

CAN_H

positive half of the differential physical CAN signal

3.1.10

CAN_L

negative half of the differential physical CAN signal

3.1.11

client

(1) object which uses the services of another (server) object to perform a task;

(2) initiator of a message to which a server reacts

Note 1 to entry: See server (3.1.44).