KNX Hardware Requirements and Tests

4

Overview

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Summary

This document gives an overview of the complete Volume 4 and contains a list of all standards quoted in Volume 4

This document is part of the KNX Specifications v2.1.

Version 01.02.01 is a KNX Approved Standard.

Document Updates

Version	Date	Description
1.1	2008.06	Creation of document after entire approval of restructured Volume 4
1.2	2011.10	Integration of AN 126 - Update EN 50090-2-2 to EN 50491
01.02.01	2013.10.17	Editorial updates for the publication of KNX Specifications 2.1.

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Contents

1 Overview of Volume 4 Hardware Requirements

Volume 4 consists of two parts listing hardware requirements (Part 1 and 4). Part 2 and 3 are informative. They are intended as support during development and test.

The entire product shall meet the hardware requirements, even if it incorporates an already certified basic or system component/device.

Transitional periods for the applicability of a standard are given in the quoted standards themselves.

4/1 Hardware Requirements for KNX devices

This part lays down hardware requirements to be met for KNX certification. The requirements are based on European standardisation and fix the obligatory use for hardware certification of the European family standard for Home and Building Electronic Systems EN 50491 series in conjunction with an appropriate product standard. This handbook Part also lists such requirements as quality management system, useful life, power consumption, reliability/failure rates and material recycling.

4/2 Safety and Environmental Requirements EMC Test Set-up

This part is intended as a further elucidation of the EN 50491 series and a support for manufacturers while testing compliance of bus products to the EMC requirements of Part 1.

4/3 Assessment and Test of Electrical Safety

This part is intended to support the manufacturer while assessing the compliance of developed bus products to electrical safety requirements. This handbook part amongst others provides a test report form for electrical safety and guidelines for execution of the high voltage tests.

4/4 Installation Safety Requirements

This part lays down requirements which have to be taken into account when installing a (Twisted Pair) bus system and covers such aspects as the use of protective impedance, the use of the second pair of the TP1 cable, overvoltage protection, installation in special locations,etc.

2 Summary of the standards quoted in Volume 4

The following standards are quoted in Volume 4. Some of them are informative, some are normative. For undated references the latest edition of the publication applies.

- EN 45012 General requirements for bodies operating assessment and certification/registration of quality systems.
- EN 50090-9-1 Home and Building Electronic Systems (HBES) - Part 9-1: Installation requirements - Generic cabling for HBES Class 1 Twisted Pair.
- EN 50065 Signalling on low voltage electrical installations in the frequency range 3 kHz to 148,5 kHz Part 1 : General requirements, frequency bands and electromagnetic disturbances Class 116 (general use) or Class 134 (specific use; can be industry).
- EN 50065-2-1 Signalling on low voltage electrical installations in the frequency range 3 kHz to 148,5 kHz Part 2-1: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in residential, commercial and light industrial environments.
- EN 50065-2-2 Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz - Part 2-2: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in industrial environments.
- EN 50178 Electronic equipment for use in power installations.
- EN 50491 General Requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS).
  - Part 2 Environmental conditions.
  - Part 3 Electrical safety requirements.
  - Part 4-1 General functional safety requirements for products intended to be integrated in HBES/BACS.
  - Part 5-1 EMC requirements, conditions and test set-up.
  - Part 5-2 EMC requirements for HBES/BACS used in residential, commercial and light industry environment.
  - Part 5-3 EMC requirements for HBES/BACS used in industry environment.
- EN 55022 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.
- IEC 60050 International Electrotechnical Vocabulary.
- EN 60068 Basic environmental testing procedures. Part 2 Tests.
- EN 60529 Degrees of protection provided by enclosures (IP Code).
- EN 60664 (HD625) Insulation co-ordination for equipment within low-voltage systems [Basic Safety Publication].
- EN 60669 Switches for household and similar fixed installations.
- EN 60730 Automatic electrical controls for Household and similar use.
- IEC 60754 parts 1 and 2 Test on Gases Evolved During Combustion of Materials from Cables – Part 1: Determination of the Amount of Halogen Acid Gas; Part 2: Determination of Degree of Acidity of Gases Evolved During the Combustion of Materials Taken from Electric Cables by Measuring pH and Conductivity.

- EN 60950 Safety of information technology equipment.
- EN 61000-4-2 Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test.
- EN 61000-4-3 Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test.
- EN 61000-4-4 Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test.
- EN 61000-4-5 Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test.
- EN 61000-4-6 Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields.
- EN 61000-4-8 Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test.
- EN 61000-4-11 Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests.
- EN 61000-6-1 Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments.
- EN 61000-6-2 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments.
- EN 61000-6-3 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments.
- EN 61000-6-4 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments.
- EN 61140 Protection against electric shock - Common aspects for installation and equipment.
- EN 61558-1 respectively EN 61558-2-6 Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers.
- EN 61643-11 Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems - Requirements and tests.
- EN 61643-12 Low-voltage surge protective devices – Part 12: Surge protective devices connected to low-voltage power systems - Selection and application principles.
- EN 61643-21 Low voltage surge protective devices -- Part 21: Surge protective devices connected to telecommunications and signalling networks - Performance requirements and testing methods.
- EN 61643-22 Low-voltage surge protective devices -- Part 22: Surge protective devices connected to telecommunications and signalling networks - Selection and application principles.
- EN 62305-4 Protection against lightning -- Part 4: Electrical and electronic systems within structures.
- ETSI EN 300220-1 Electromagnetic compatibility and radio spectrum matters (ERM); short range devices (SRD); radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW, P1: Technical characteristics and Test methods.
- ETSI EN 300220-2 Electromagnetic compatibility and radio spectrum matters (ERM); short range devices (SRD); radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; P2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.

- ETSI EN 301489-3 Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Electromagnetic Compatibility (EMC) Standard for Radio Equipment and Services; Part 3: Specific Conditions for Short-Range Devices (SRD) Operating on Frequencies between 9 KHz and 40 GHz.
- ETSI EN 301489-1 Compatibility and Radio Spectrum Matters (ERM); Electromagnetic Compatibility (EMC) Standard for Radio Equipment and Services; Part 1: Common technical requirements.
- CISPR 16 Specification for radio disturbance and immunity measuring apparatus and methods.
- CISPR 22 Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement - amendment 4/FDIS Class A.
- EEC EMC directives (today 89-336-EEC, modified by 92/31/EEC and 93/68/EEC).
- ISO 8402 Quality Management and Quality Assurance – Vocabulary.
- ISO 9001 Requirements: this sets out the criteria you will need to meet if you wish to operate in accordance with the standard and gain certification.
- ISO 11469 Plastics -- Generic identification and marking of plastics products.
- IEC 60364-5-54 Low-voltage electrical installations - Part 5-54: Selection and erection of electrical equipment - Earthing arrangements, protective conductors and protective bonding conductors.
- IEC 60364-7-701 Low-voltage electrical installations - Part 7-701: Requirements for special installations or locations - Locations containing a bath or shower.