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Supplementary requirements for intelligent assemblies

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SUPPLEMENTARY REQUIREMENTS FOR INTELLIGENT ASSEMBLIES

FOREWORD

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IEC TS 63290 has been prepared by subcommittee 121B: Low-voltage switchgear and controlgear assemblies, of IEC technical committee 121: Switchgear and controlgear and their assemblies for low voltage. It is a Technical Specification.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
121B/202/DTS	121B/203/RVDTS

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

The language used for the development of this Technical Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This document references IEC 61439-1. The provisions of the general rules dealt with in IEC 61439-1 are only applicable to this document insofar as they are specifically cited.

The reader's attention is drawn to the fact that Annex J lists all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this document.A list of all parts of the IEC 61439 series, under the general title *Low-voltage switchgear and controlgear assemblies*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The drive for sustainability is prompting significant changes to the role of low-voltage switchgear and controlgear assemblies. Rather than being a manually and locally operated type of equipment, increasingly they are at the centre of an automated energy management system requiring intelligence and communications within/out of the assemblies. These functions are in addition to the conventional electromechanical features of assemblies and require supplementary considerations. Low-voltage assemblies are evolving from electromechanical constructions to assemblies including a multitude of digital functions. The low-voltage assemblies can provide the intelligence to manage different functions, for example, remote monitoring, remote control, local intelligence, or interaction with other systems, to bring a well-adapted solution to the customer.

This document gives the requirements for intelligent assemblies to enable it to form an integral part of a connected network (see Figure 1).

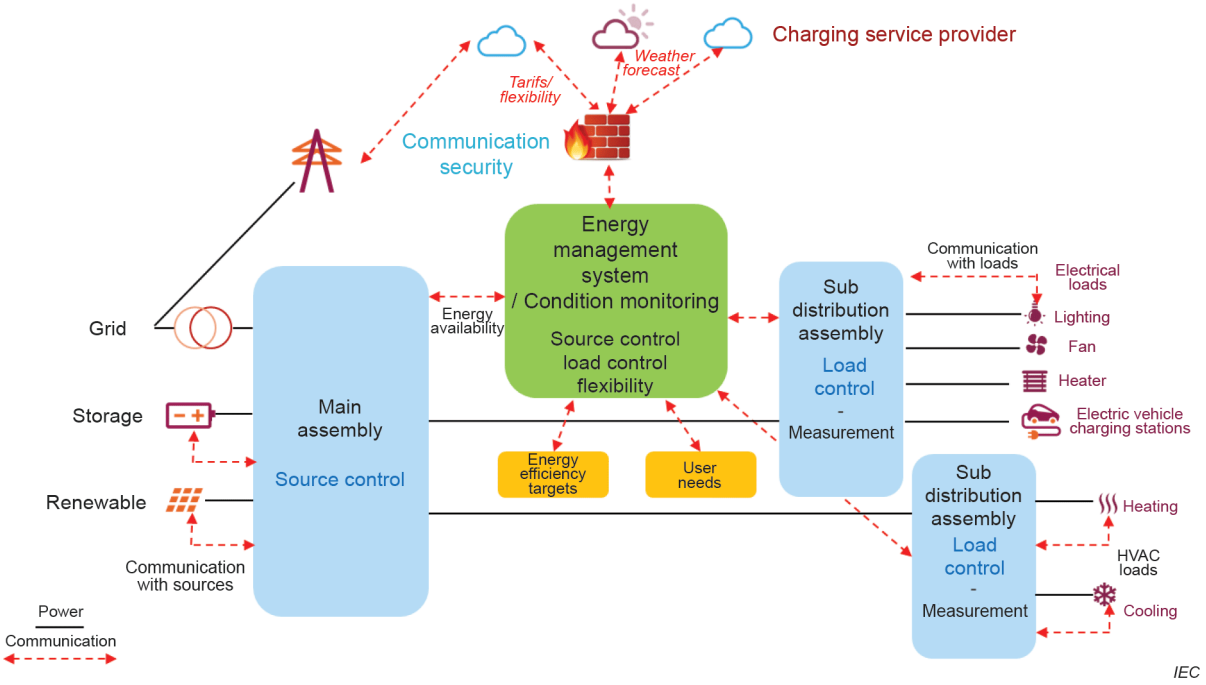

Figure 1 – Example of a connected environment

SUPPLEMENTARY REQUIREMENTS FOR INTELLIGENT ASSEMBLIES

1 Scope

This document provides additional requirements for assemblies in accordance with the product standards of the IEC 61439 series (Part 2 onwards) that incorporate digital functions and communication, in addition to the conventional electromechanical features of assemblies to reflect what is defined within this document as intelligence. It specifies the definitions, service conditions, constructional requirements, technical characteristics and verification requirements that can be carried out in addition to the IEC 61439 series for intelligent low-voltage switchgear and controlgear assemblies.

NOTE Throughout this document, the term assembly is used for low-voltage switchgear and controlgear assembly.

Intelligence within an assembly takes many forms and ranges from the measurement of electrical values with analysis to full automation and monitoring for process, energy management, condition monitoring, etc.

This document is applicable to intelligent assemblies for which the rated voltage does not exceed 1 000 V AC or 1 500 V DC; and designed for a nominal frequency of the incoming supply or supplies not exceeding 1 000 Hz.

This document does not apply to electrical equipment of machines (which is covered by the IEC 60204 series), and also does not apply to electrical equipment for measurement, control, and laboratory use (which is covered by the IEC 61010-2 series).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60255 (all parts), *Measuring relays and protection equipment*

IEC 60364-8-1:2019, *Low-voltage electrical installations – Part 8-1: Functional aspects – Energy efficiency*

IEC 60664-1, *Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests*

IEC 60947 (all parts), *Low-voltage switchgear and controlgear*

IEC 61010 (all parts), *Safety requirements for electrical equipment for measurement, control and laboratory use*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61158 (all parts), *Industrial communication networks – Fieldbus specifications*

IEC 61439 (all parts), *Low-voltage switchgear and controlgear assemblies*

IEC 61439-1:2020, *Low-voltage switchgear and controlgear assemblies – Part 1: General rules*

IEC 61557-12, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 12: Power metering and monitoring devices (PMD)*

IEC 61643-12, *Low-voltage surge protective devices – Part 12: Surge protective devices connected to low-voltage power systems – Selection and application principles*

IEC 61784 (all parts), *Industrial communication networks – Profiles*

IEC 62052 (all parts), *Electricity metering equipment – General requirements, tests and test conditions*

IEC 62053 (all parts), *Electricity metering equipment – Particular requirements*

IEC 62591, *Industrial networks – Wireless communication network and communication profiles – WirelessHART™*

IEC 62601, *Industrial networks – Wireless communication network and communication profiles – WIA-PA*

IEC 62734, *Industrial networks – Wireless communication network and communication profiles – ISA 100.11a*

IEC 62948, *Industrial networks – Wireless communication network and communication profiles – WIA-FA*

IEC TS 63208:2020, *Low-voltage switchgear and controlgear – Security aspects*

IEEE 802.3, *Ethernet LAN*

IEEE 802.11, *Wireless LAN*

IEEE 802.15, *Personal Area Network*