SLOVENSKI STANDARD
oSIST prEN 61869-13:2019

01-april-2019

Merilni transformatorji - 13. del: Samostojni koncentrator

Instrument Transformers - Part 13: Standalone Merging Unit

Ta slovenski standard je istoveten z: **prEN IEC 61869-13:2019**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities

oSIST prEN 61869-13:2019 **en**

38/599/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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IEC TC 38 : INSTRUMENT TRANSFORMERS	
SECRETARIAT: Italy	SECRETARY: Mr Filippo Frugoni
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 13,TC 57,TC 85,TC 95	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☒ EMC ☐ ENVIRONMENT	☐ QUALITY ASSURANCE ☐ SAFETY
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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TITLE:

Instrument Transformers - Part 13: Standalone Merging Unit

PROPOSED STABILITY DATE: 2022

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSTRUMENT TRANSFORMERS –

Part 13: Stand-alone merging unit (SAMU)

FOREWORD

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International Standard IEC 61869-13 has been prepared by IEC technical committee 38: Instrument transformers.

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

FDIS	Report on voting
38/XX/FDIS	38/XX/RVD

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

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

This standard is Part 13 of IEC 61869, published under the general title *Instrument transformers*.

This document contains specific requirements for a stand-alone merging units having a digital output and is to be used with IEC 61869-9:2016, *Digital Interface for instrument transformers*, and the relevant specific requirements standard for the instrument transformer concerned. It is also to be read in conjunction with, and is based on, IEC 61869-6:2016, *Additional General requirements for low-power instrument transformers*, which in turn is based on IEC 61869-1:2007, *General requirements*.

This Part 13 follows the structure of IEC 61869-1:2007 and IEC 61869-6:2016 and supplements or modifies its corresponding clauses.

When a particular subclause of Part 1 or Part 6 is not mentioned in this Part 13, that subclause applies. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 or Part 6 is to be adapted accordingly.

For additional clauses, subclauses, figures, tables, annexes or note, the following numbering system is used:

– clauses, subclauses, tables, figures and notes that are numbered starting from 1301 are additional to those in Part 1 and Part 6;

– additional annexes are lettered 13A, 13B, etc.

An overview of the planned set of standards at the date of publication of this document is given below. The updated list of standards issued by IEC TC 38 is available at the website: www.iec.ch

PRODUCT FAMILY STANDARDS		PRODUCT STANDARD	PRODUCTS	OLD STANDARD
61869-1 GENERAL REQUIREMENTS FOR INSTRUMENT TRANSFORMERS		**61869-2**	ADDITIONAL REQUIREMENTS FOR CURRENT TRANSFORMERS	60044-1 60044-6
		61869-3	ADDITIONAL REQUIREMENTS FOR INDUCTIVE VOLTAGE TRANSFORMERS	60044-2
		61869-4	ADDITIONAL REQUIREMENTS FOR COMBINED TRANSFORMERS	60044-3
		61869-5	ADDITIONAL REQUIREMENTS FOR CAPACITOR VOLTAGE TRANSFORMERS	60044-5
	61869-6 ADDITIONAL GENERAL REQUIREMENTS FOR LOW-POWER INSTRUMENT TRANSFORMERS	**61869-7**	ADDITIONAL REQUIREMENTS FOR ELECTRONIC VOLTAGE TRANSFORMERS	60044-7
		61869-8	ADDITIONAL REQUIREMENTS FOR ELECTRONIC CURRENT TRANSFORMERS	60044-8
		61869-9	DIGITAL INTERFACE FOR INSTRUMENT TRANSFORMERS	
		61869-10	ADDITIONAL REQUIREMENTS FOR LOW-POWER PASSIVE CURRENT TRANSFORMERS	
		61869-11	ADDITIONAL REQUIREMENTS FOR LOW-POWER PASSIVE VOLTAGE TRANSFORMERS	60044-7
		61869-12	ADDITIONAL REQUIREMENTS FOR COMBINED ELECTRONIC INSTRUMENT TRANSFORMERS AND COMBINED STAND-ALONE INSTRUMENT TRANSFORMERS	
		61869-13	STAND-ALONE MERGING UNIT	
		61869-14	ADDITIONAL REQUIREMENTS FOR CURRENT TRANSFORMERS FOR DC APPLICATIONS	
		61869-15	ADDITIONAL REQUIREMENTS FOR VOLTAGE TRANSFORMERS FOR DC APPLICATIONS	

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The National Committees are requested to note that for this document the stability date is 2023 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

INTRODUCTION

General

This document is an IEC 61869 series product standard which defines additional requirements for a stand-alone merging unit (SAMU). The SAMU output may be used by many devices and is therefore of interest to multiple technical committees: in addition to TC 38, e.g.: TC 57: Power systems management and associated information exchange, TC 95: Measuring relays and protective equipment, TC 13: Electrical energy measurement and control, TC 85: Measuring equipment for electrical and electromagnetic quantities, and TC 17: High-voltage switchgear and controlgear as shown in Figure 1301.

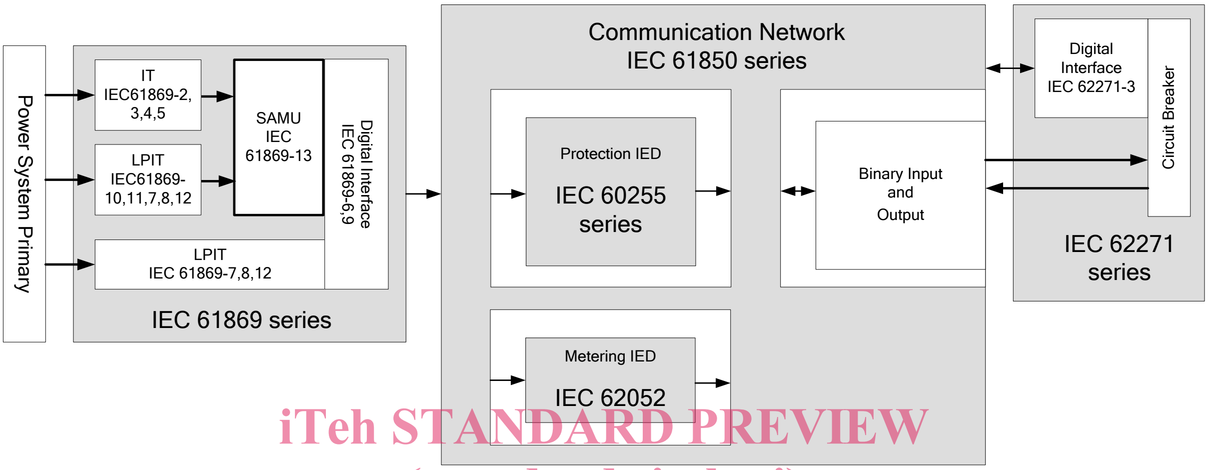

Figure 1301 SAMU position in relation to other devices in the functional chain

Position of this document in relation to TC57 IEC 61850 (all parts)

IEC 61850 (all parts) is a standard series used to define various aspects of power utility communications. Its applicability to this document is inherited through IEC 61869-9 which defines applicable sample rates and a digital interface in accordance with IEC 61850-9-2 and related standards.

Position of this document in relation to TC 95 IEC 60255 (all parts)

IEC 60255 (all parts) standardizes the design and performance aspects applicable to measuring relays and protection equipment used in the various fields of electrical engineering. Since the SAMU is an integral part of the digital substation-based protection system, its EMC performance and environmental aspects are considered for harmonization with IEC 60255-1, IEC 60255-26 and safety aspects defined in IEC 60255-27.

Position of this document in relation to TC 13 IEC 62052 (all parts) and IEC 62053 (all parts)

IEC 62052 (all parts) and IEC 62053 (all parts) provide standardization in the field of AC and DC electrical energy measurement and control. Since the SAMU digital output may be used as input to energy measurement devices its accuracy and EMC performance aspects should be considered; but are not fully defined in this edition.

Position of this document in relation to TC 17 IEC 62271 (all parts)

IEC 62271 (all parts) applies to AC switchgear and controlgear designed for indoor and/or outdoor installation and for operation at service frequencies up to and including 60 Hz on systems having rated voltages above 1 000 V. Similar to IEC 62271-3 which defines the switchgear interface based on IEC 61850, this document defines the SAMU which may be installed inside the same switchgear cabinet and is therefore subject to the same environmental stress.

INSTRUMENT TRANSFORMERS –

Part 13: Stand-alone Merging Unit (SAMU)

1 Scope

Clause 1 of IEC 61869-1:2007 is applicable, with the following addition:

This part of IEC 61869 is a product standard and covers only additional requirements for stand-alone merging units (SAMUs) used for AC applications having rated frequencies from 15 Hz to 100 Hz. The digital output format specification is not covered by this document. It is standardized in IEC 61869-9 as an application of IEC 61850, which specifies the power utility communication architecture.

This document covers SAMUs having standardized analogue inputs (for example: 1 A, 5 A, 3,25 V / √3 or 100 V / √3) provided by instrument transformers compliant with relevant product standards (both valid and withdrawn e.g., IEC 61869-2 to IEC 61869-5, IEC 61869-10, IEC 61869-11, IEC 60044-1 to IEC 60044-6, IEC 60185, IEC 60186, IEEE C57.13), and aims to convert them to the digital output compliant with IEC 61869-9. Other input and output types are out of the scope of this document. Appropriate SAMU functionality can be combined with switchgear controller functionality defined in IEC 62271-3 or other IED functionality defined in IEC 60255 (all parts).

The general block diagram showing a typical SAMU application example is given in Figure 1302.

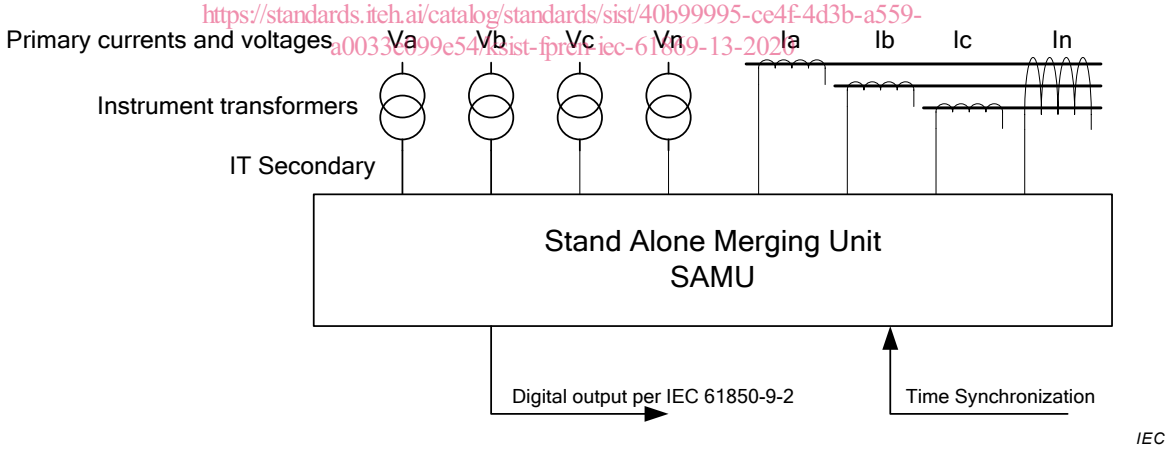

Figure 1302 – Stand-alone merging unit (concept example)

An application example showing a three-phase dead tank circuit breaker equipped with bushing type current transformers and a stand-alone merging unit mounted inside the breaker control cabinet is shown in Figure 1303.

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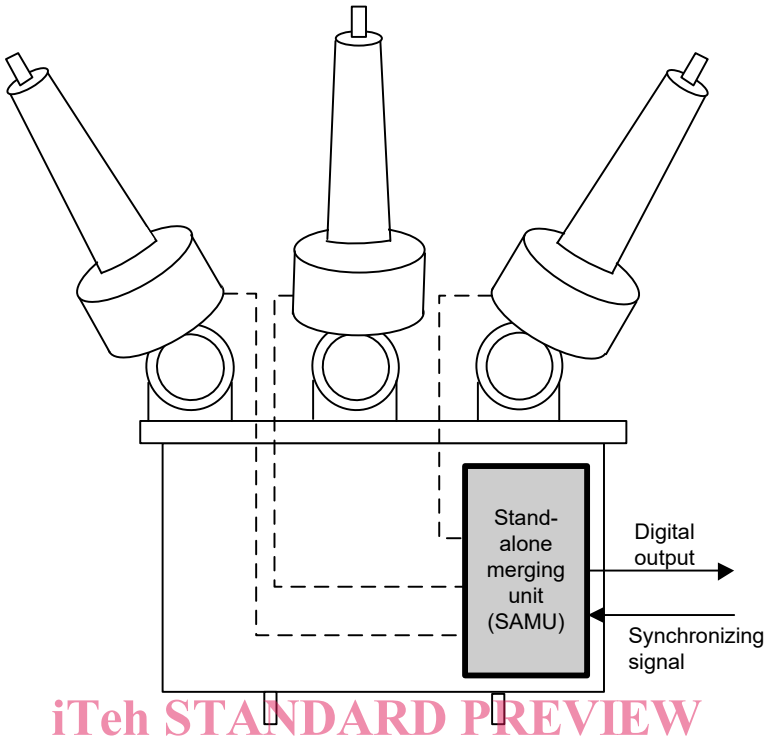

331 **Figure 1303 – Stand-alone merging unit application example**

332 ## 2 Normative reference

333 Clause 2 of IEC 61869-1:2007 is applicable with the following additions:

334 IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

335 IEC 60255-1, *Measuring relays and protection equipment – Part 1: Common requirements*

336 IEC 60255-21-1, *Electrical relays – Part 21: Vibration, shock, bump and seismic tests on*
337 *measuring relays and protection equipment – Section One: Vibration tests (sinusoidal)*

338 IEC 60255-21-2, *Electrical relays – Part 21: Vibration, shock, bump and seismic tests on*
339 *measuring relays and protection equipment – Section Two: Shock and bump tests*

340 IEC 60255-21-3, *Electrical relays – Part 21: Vibration, shock, bump and seismic tests on*
341 *measuring relays and protection equipment – Section 3: Seismic tests*

342 IEC 60255-26, *Measuring relays and protection equipment – Part 26: Electromagnetic*
343 *compatibility requirements*

344 IEC 60255-27:2013, *Measuring relays and protection equipment – Part 27: Product safety*
345 *requirements*

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

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

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

353 IEC 61000-4-5:2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and*
354 *measurement techniques – Surge immunity test*

355 IEC 61000-4-6:2013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and*
356 *measurement techniques – Immunity to conducted disturbances, induced by radio-frequency*
357 *fields,* Corrigendum 1:2015

358 IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8 Testing and*
359 *measurement techniques – Power frequency magnetic field immunity test*

360 IEC 61000-4-9:2016, *Electromagnetic compatibility (EMC) – Part 4-9 Testing and*
361 *measurement techniques – Impulse magnetic field immunity test*

362 IEC 61000-4-10:2016, *Electromagnetic compatibility (EMC) – Part 4-10 Testing and*
363 *measurement techniques – Damped oscillatory magnetic field immunity test*

364 IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11 Testing and*
365 *measurement techniques – Voltage dips, short interruptions and voltage variations immunity*
366 *tests,* Amendment 1: 2017

367 IEC 61000-4-16:2015, *Electromagnetic compatibility (EMC) – Part 4-16 Testing and*
368 *measurement techniques – Test for immunity to conducted, common mode disturbances in*
369 *the frequency range 0 Hz to 150 kHz*

370 *IEC 61000-4-17:1999, Electromagnetic compatibility (EMC) – Part 4-17: Testing and*
371 *measurement techniques – Ripple on d.c. input power port immunity test, Amendment 1:2001,*
372 *Amendment 2:2008*

373 IEC 61000-4-18:2006, *Electromagnetic compatibility (EMC) – Part 4-18 Testing and*
374 *measurement techniques – Damped oscillatory wave immunity test,* Amendment 1:2010

375 IEC 61000-4-29:2000, *Electromagnetic compatibility (EMC) – Part 4-29 Testing and*
376 *measurement techniques – Voltage dips, short interruptions and voltage variations on d.c.*
377 *input power port immunity tests*

378 CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment - Emission requirements*

379 IEC 61869-1:2007, *Instrument transformers – Part 1: General requirements*

380 IEC 61869-2:2012, *Instrument transformers – Part 2: Additional requirements for current*
381 *transformers*

382 IEC 61869-6:2016, *Instrument transformers – Part 6: Additional general requirements for low-*
383 *power instrument transformers*

384 IEC 61869-9:2016, *Instrument transformers – Part 9: Digital interface for instrument*
385 *transformers*

IEC 61869-10:2017, *Instrument transformers – Part 10: Additional requirements for low-power passive current transformers*

IEC 61869-11:2017, *Instrument transformers – Part 11: Additional requirements for low-power passive voltage transformers*

3 Terms and definitions

Clause 3 of IEC 61869-1:2007, Clause 3 of IEC 61869-6:2016 and Clause 3 of IEC 61869-9:2016 apply with the following additions:

3.1 General terms and definitions

Port definitions given below are required for EMC testing terminology harmonization with IEC 60255-26.

3.1.1301
Port
access to SAMU where electromagnetic energy or signals may be supplied or received or where the SAMU variables may be observed or measured

[SOURCE: IEC 60050-321:1986, 131-12-60, modified – replaced "device or network" by “SAMU”]

3.1.1302
auxiliary power supply port
port which provides SAMU AC or DC auxiliary energizing input

3.1.1303
communication port
port which provides interface with a communication and/or control system and is permanently connected to the SAMU

EXAMPLE Ethernet based digital output port, 1 PPS port, etc.

3.1.1304
enclosure port
physical boundary of the SAMU through which electromagnetic fields may radiate or impinge

[SOURCE: IEC 60050-321:1986, 445-07-04, modified – replaced "time relay" by “SAMU”]

3.1.1305
functional earth port
port which provides SAMU connection to earth for purposes other than electrical safety

3.1.1306
input port
port through which the SAMU is energized or controlled in order to perform its function(s)

EXAMPLE Current and voltage transformer inputs, etc.

3.1.1307
output port
port through which the SAMU produces predetermined changes

EXAMPLE Binary alarm output connected to substation battery, etc.

3.1.1308
output stream
combination of multiple output channels brought together into a single digital message

Note 1 to entry: All channels in the stream share a common time stamp and a common sample rate in accordance with IEC 61869-9.