IEC TR 62689-100

Edition 1.0 2016-10

TECHNICAL REPORT

colour inside

Current and voltage sensors or detectors, to be used for fault passage indication purposes –
Part 100: Requirements and proposals for the IEC 61850 series data model extensions to support fault passage indicators applications

IEC TR 62689-100:2016-10(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONTENTS

FOREWORD......6
INTRODUCTION......8
1 Scope......9
2 Normative references......9
3 Terms, definitions and abbreviated terms......9
3.1 Terms and definitions......9
3.2 Abbreviated terms......10
3.2.1 Generic abbreviated terms......10
3.2.2 Proposed specifically for the data model part of this document......11
3.2.3 Existing abbreviated terms used in IEC 61850 (all parts) data object names model......12
3.3 Fault classification definitions......22
4 Requirements and use cases......23
4.1 General......23
4.2 Common actors......24
4.3 Use cases: fault indication and report......33
4.3.1 Generic use case – Not fault type specific......33
4.3.2 Overcurrent non directional Fault Localization and Indication (F1C/NC)......51
4.3.3 Phase to earth faults, non directional fault detection (F2)......52
4.3.4 Overcurrent and phase to earth non directional faults detection (F3)......52
4.3.5 Overcurrent, directional and non directional, fault detection (F4)......53
4.3.6 Overcurrent, non directional, phase to earth faults, directional and non directional fault detection (F5)......53
4.3.7 Overcurrents and phase to earth faults, directional and non directional fault detection (F6)......53
4.4 Use cases related to “other functions”......53
4.4.1 Report on device health......53
4.4.2 Monitor substation environment......53
4.4.3 Monitor external communication......53
4.4.4 Monitor energy flow (energy flow related use cases)......53
4.4.5 Contribute to distributed automatic FLISR......59
4.4.6 Contribute to distributed automatic VVC......75
4.4.7 Contribute to distributed DER management......75
4.5 Use cases related to “Product life cycle”......75
4.5.1 IED configuration via CID file......75
5 Information Models......100
5.1 Mapping of requirements on LNs......100
5.1.1 General......100
5.1.2 Mapping of the requirements of Fault Identification and report......100
5.1.3 Mapping of the requirements of “other functions”......101
5.1.4 Mapping of the requirements of “product life cycle” (FieldComp remote configuration)......103
6 Logical node classes......103
6.1 General......103
6.2 Package LNGroupL......104
6.2.1 General......104
6.2.2 LICH LN......106

6.2.3 LN: Common LD Settings Name: LCLD 107
6.3 Package LNGroupM 108
6.3.1 General 108
6.3.2 LN: Energy Name: MMTNExt 109
6.3.3 LN: Energy Name: MMTRExt 111
6.3.4 LN: Measurement Name: MMXNExt 113
6.3.5 LN: Measurement Name: MMXUExt 114
6.4 Package LNGroupS 116
6.4.1 General 116
6.4.2 LN: Current presence monitoring Name: SCPI 117
6.4.3 LN: Fault Passage Indicator Name: SFPI 118
6.4.4 LN: Fault indicator statistic calculation Name: SFST 120
6.4.5 LN: Voltage presence indicator Name: SVPI 121
7 Data object name semantics and enumerations 123
7.1 Data semantics 123
7.2 Enumerated data attribute types 126
7.2.1 General 126
7.2.2 CIDHandlingResultKind enumeration 127
7.2.3 CIDHandlingStatusKind enumeration 128
7.2.4 CurrentTransformersArrangementKind enumeration 128
7.2.5 FaultConfirmationModeKind enumeration 128
7.2.6 FaultPermanenceKind enumeration 129
7.2.7 PwrFlwSignKind enumeration 129
8 SCL enumerations (from DOEnumsJAHWG51) 129
9 References 130
Annex A (informative) Interpretation of logical node tables 131
A.1 General interpretation of logical node tables 131
A.2 Conditions for element presence 131
Bibliography 134

Figure 1 – Actors global hierarchy 25
Figure 2 – System Actors SGAM positioning (function) 26
Figure 3 – System Actors SGAM positioning (not function related) 27
Figure 4 – Fault indication – Main use case 35
Figure 5 – Fault detection and indication – T1 36
Figure 6 – Fault detection and indication– T2 37
Figure 7 – Fault detection and indication for FPI – T3,T4 (with communication to HV/MV SS) in the context of FLISR as described in 4.4.5 38
Figure 8 – Fault detection and indication for FPI – T3,T4 (without communication to HV/MV SS) in the context of FLISR as described in 4.4.5 39
Figure 9 – Voltage presence/absence 52
Figure 10 – Energy flow related use cases 54
Figure 11 – Sequence diagram for monitoring energy flows use cases 55
Figure 12 – Logical selectivity – FLI along the MV feeder 61
Figure 13 – Logical selectivity – FLI inside the EU plant 62
Figure 14 – Logical selectivity – FLI along the MV feeder and anti-islanding 63
Figure 15 – Use case – fault location indication 64

Figure 16 – For further analysis 65
Figure 17 – IED configuration process via CID 77
Figure 18 – FieldComp configuration – Main UC 78
Figure 19 – FieldComp asset management 79
Figure 20 – Grid and topology planning 79
Figure 21 – Communication network planning 80
Figure 22 – First FieldComp connection to communication network 81
Figure 23 – New FieldComp configuration via CID – Remote + local (successful case) 82
Figure 24 – New FieldComp configuration via CID – Remote + local (unsuccessful case – corrupted CID) 83
Figure 25 – Existing FieldComp on-line reconfiguration – (topology – successful case) 84
Figure 26 – Possible arrangement of LNs to support fault passage indication 101
Figure 27 – Possible arrangement of LNs to support "Energy flow related use cases" 102
Figure 28 – Possible arrangement of LNs to support CID Handling 103
Figure 29 – Class diagram LogicalNodesJAHWG51::LogicalNodesJAHWG51 104
Figure 30 – Statechart diagram LNGroupL::LNGroupL 105
Figure 31 – Class diagram LNGroupL::LNGroupL 106
Figure 32 – Class diagram LNGroupM::LNGroupM 109
Figure 33 – Class diagram LNGroupS::LNGroupS 117
Figure 34 – Class diagram DOEnumsJAHWG51::DOEnumsJAHWG51 127

Table 1 – Generic acronyms and abbreviated terms 10
Table 2 – Abbreviated terms for data object names 11
Table 3 – Abbreviated terms of IEC 61850 (all parts) for data object names 12
Table 4 – Fault types 23
Table 5 – List of common actors 28
Table 6 – Data objects of LICH 107
Table 7 – Data objects of LCLD 108
Table 8 – Data objects of MMTNExt 110
Table 9 – Data objects of MMTRExt 112
Table 10 – Data objects of MMXNExt 114
Table 11 – Data objects of MMXUExt 115
Table 12 – Data objects of SCPI 117
Table 13 – Data objects of SFPI 119
Table 14 – Data objects of SFST 120
Table 15 – Data objects of SVPI 122
Table 16 – Attributes defined on classes of LogicalNodesJAHWG51 package 123
Table 17 – Literals of CIDHandlingResultKind 127
Table 18 – Literals of CIDHandlingStatusKind 128
Table 19 – Literals of CurrentTransformersArrangementKind 128
Table 20 – Literals of FaultConfirmationModeKind 128
Table 21 – Literals of FaultPermanenceKind 129
Table 22 – Literals of PwrFlwSignKind 129

Table A.1 – Interpretation of logical node tables 131
Table A.2 – Conditions for presence of elements within a context 132

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CURRENT AND VOLTAGE SENSORS OR DETECTORS, TO BE USED FOR FAULT PASSAGE INDICATION PURPOSES –

Part 100: Requirements and proposals for the IEC 61850 series data model extensions to support fault passage indicators applications

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IEC TR 62689-100, which is a Technical Report, has been prepared by IEC technical committee 38: Instrument transformers, in cooperation with TC 57: Power systems management and associated information exchange.

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

Enquiry draft	Report on voting
38/499/DTR	38/519/RVC

Full information on the voting for the approval of this technical report 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 in the IEC 62689 series, published under the general title *Current and voltage sensors or detectors, to be used for fault passage indication purposes*, 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 website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication 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

This part of IEC 62689 has two main framework constraints with editorial and technical impacts as

- this document will be merged with IEC TR 61850-90-6[1]: IEC TR 62689-100 will exactly stick with the targeted document structure and principles, and
- this document intends to prepare the content of the future IEC 62689-3[2] which will directly rely on the functional requirements expressed in IEC 62689-1 and IEC 62689-2.

1 Under preparation. Stage at the time of publication: IEC PWI 61850-90-6:2016.

2 Under preparation. Stage at the time of publication: IEC PWI 62689-3:2016.

CURRENT AND VOLTAGE SENSORS OR DETECTORS, TO BE USED FOR FAULT PASSAGE INDICATION PURPOSES –

Part 100: Requirements and proposals for the IEC 61850 series data model extensions to support fault passage indicators applications

1 Scope

This part of IEC 62689, which is a Technical Report, was prepared jointly with TC 57 with the scope to prepare requirements and proposals for the IEC 61850 series data model extensions to support fault passage indicators (all classes and extended functions) applications to be introduced in the future IEC 61850-90-6 and that, in turn, will be needed for the preparation of the future IEC 62689-3.

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 TS 61850-2, *Communication networks and systems in substations – Part 2: Glossary*

IEC 61850-7-2, *Communication networks and systems for power utility automation – Part 7-2: Basic information and communication structure – Abstract communication service interface (ACSI)*

IEC 61850-7-4, *Communication networks and systems for power utility automation – Part 7-4: Basic communication structure – Compatible logical node classes and data object classes*

IEC 62689 (all parts), *Current and voltage sensors or detectors, to be used for fault passage indication purposes*

IEC 62689-1, *Current and voltage sensors or detectors, to be used for fault passage indication purposes – Part 1: General principles and requirements*

IEC 62689-2, *Current and voltage sensors or detectors, to be used for fault passage indication purposes – Part 2: System aspects*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61850-2, IEC 61850-7-2, IEC 62689 (all parts) and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
fault passage indicator
FPI
device able to detect faults providing indications about their localization (upstream or downstream from the FPI's location) and/or about the direction of fault current (usually referred as the direction of load current, i.e. from the HV/MV transformer towards end of MV feeders in a radial operated network)

[SOURCE: IEC 62689-1:2016, 3.1.1, modified — The notes to entry have been deleted.]

3.1.2
substation
substation of a power system
part of a power system, concentrated in a given place, including mainly the terminations of transmission or distribution lines switchgear and housing and which may also include transformers

Note 1 to entry: It generally includes facilities necessary for system security and control (e.g. the protective devices).

Note 2 to entry: Apply as well to overhead and underground equipment.

[SOURCE: IEC 62689-1:2016, 3.1.3, modifed — The term "substation of a power system" has been added as a second preferred term, the last sentence in the definition has been moved to a new note and the notes to entry have been replaced by new a new note.]

3.1.3
distribution substation unit
DSU
distribution automation unit
device (or a combination of devices and/or functions) able to perform, in addition to specific FPI functionalities, additional features, not strictly related to fault detection (for instance remote communication/commands, switch control or breaker control, network automation, distributed energy resources monitoring and control, etc.)

[SOURCE: IEC 62689-1:2016, 3.1.4, modified — The term "distribution automation unit" has been added as an admitted term and the note to entry has been deleted.]

3.2 Abbreviated terms

3.2.1 Generic abbreviated terms

Table 1 presents generic acronyms and abbreviated terms used throughout the document.

Table 1 – Generic acronyms and abbreviated terms

Term	Description
AR	Autorecloser
CB	Circuit Breaker
DER	Distributed Energy Resource
ds	derived statistics
DER MS	DER Management System
DERCtl	DER Unit Controller
DMSapp	DMS application module
DSO	SysOp
ECP	Electrical connection point

Term	Description
EPS	Electrical Power System
FeProt	Feeder protection function
FeCTL	Feeder equipment controller
FieldComp	Field level physical component
FieldSyst	Field level sub system
FLISRapp	FLISR application module
FMS	Electric Network Fault management system
FOP	Field Operation Personnel
FPI	Fault Passage Indicator
FtDet	Fault signature detection
FtInd	Fault Indicator
FtLOCapp	Fault location application module
FtPInd	Fault Passage indicator at feeder level
Ms(I,U)	Electrical measurement
Ms(Wh)	Energy counting for operation
nds	not derived statistics
PCC	Point of common coupling
Planning	Electric Network Planning
PresCond	Presence Condition
QIS	(Electric Network) Quality Index System
RTUapp	Remote terminal gateway function
SysOp	Electric System operator
VPI	Voltage presence indicator
VVCapp	Volt var control Application module

NOTE Refer to Annex A for the terms ds,nds, PresCond.

3.2.2 Proposed specifically for the data model part of this document

Table 2 shows abbreviated terms that are combined to create data object names.

Table 2 – Abbreviated terms for data object names

Term	Description
Abc	Absence
All	All
Cid	Configuration file (CID)
Cus	customer
Def	Default
Evo	Evolution, Evolutive
Hdl	Handle, Handling
Itm	Intermittent
Ms	measurement
New	New

Term	Description
Abc	Absence
Ot	Outage
Oth	Other
Pm	Permanent
Q	Quadrant
Run	Run
Sfx	Self-extinguishing
Spm	Semi-permanent
To	To (preposition)

3.2.3 Existing abbreviated terms used in IEC 61850 (all parts) data object names model

Table 3 shows abbreviated terms of IEC 61850 (all parts) that are combined to create data object names.

Table 3 – Abbreviated terms of IEC 61850 (all parts) for data object names

Term	Description
A	Current; phase A (L1)
AC	AC, alternating current
AGC	Automatic generation control
ASG	Analogue setting CDC
AWatt	Wattmetric component of current
Abr	Abrasion
Abs	Absolute
Absb	Absorbing
Acc	Accuracy; acceleration (deprecated: use Accl instead)
Accl	Acceleration
Accm	Accumulated
Ack	Acknowledgement, acknowledge
Acs	Access
Act	Action, activity, active, activate
Actr	Actuator
Acu	Acoustic
Adj	Adjustment
Adp	Adapter, adaptation
Aff	Affected
Age	Ageing
Ahr	Ampere hours
Air	Air
Alg	Algorithm
Alm	Alarm
Alt	Altitude
Amnt	Amount
Amp	Ampere, current DC or non-phase-related AC
An	Analogue
Anc	Ancillary
Ane	Anemometer
Ang	Angle
Ap	Access point
Apc	Analogue point control
App	Apparent
Ar	Amperes reactive (reactive current)
Arc	Arc
Area	Area
Arr	Array
At	At
Auth	Authorisation
Auto	Automatic
Aux	Auxiliary
Av	Average
Avl	Availability
Ax	Axial
Azi	Azimuth
B	Bushing; phase B (L2)
BG	Before Gain

Term	Description
Bac	Binary-controlled analogue value
Base	Base
Bat	Battery
Bck	Backup
Bec	Beacon
Beh	Behaviour
Ber	Bit error rate
Bias	Bias
Bl	Blade
Blb	Bulb
Blk	Block, blocked
Blow	Blowby
Bnd	Band, bandwidth
Boil	Boiler
Bot	Bottom
Brcb	Buffered report control block
Brg	Bearing
Brk	Brake
Bsc	Binary status control
Bst	Boost
Bt	Heartbeat
Bus	Bus
C	Carbon; phase C (L3)
C2H2	Acetylene
C2H4	Ethylene
C2H6	Ethane
CB	Circuit breaker
CE	Cooling equipment (see also Cl)
CG	Core ground
CH4	Methane
CHP	Combined heat and power
CO	Carbon monoxide
CO2	Carbon dioxide
Cab	Cable
Cal	Calorie, caloric
Cam	Cam, e.g. rotating non-circular disk
Cap	Capability, capacity
Capac	Capacitance
Car	Carrier
Cbr	Calibration
Ccw	Counter clockwise
Ccy	Currency
Ceil	Ceiling
Cel	Cell

Term	Description
Cf	Crest factor
Cff	Coefficient
Cfg	Configuration
Ch	Channel
Cha	Charger
Chg	Change
Chk	Check
Chr	Characteristic
Circ	Circulating, circuit
Cl	Cooling, coolant, cooling system (see also CE)
Clc	Calculate, calculated
Clip	Clip
Clk	Clock
Cloud	Cloud
Clr	Clear
Cls	Close, closed
Cm	Centimetres
Cmbu	Combustible, combustion
Cmd	Command
Cmpl	Completed, completion, complete
Cmut	Commute, commutator
Cndct	Conductivity
Cnt	Counter
Cntt	Contractual
Cnv	Converter
Col	Coil
Comm	Communication
Comp	Compensation
ConfRev	Configuration revision (confRev from IEC 61850-7-2)
Conn	Connected, connections
Cons	Constant (general)
Cor	Correction
Core	Core
Cost	Cost
Crank	Crank
Crd	Coordination
Crit	Critical
Crl	Correlation
Crp	Creeping, slow movement
Crv	Curve
Csmp	Consumption, consumed
Ctl	Control
Ctr	Center