

**Description of IEC 61850 data maps 11 and 12  
in VAMP 257 protection relays**

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# 1 Introduction

The goal of this document is to give a description of the IEC 61850 Logical Nodes (LN) in the data maps (11) and (12) available in VAMP 257 protection relays.

Abbreviations used in this document are explained in Table 1.1 below.

**Table 1.1: List of abbreviations.**

Abbreviation	Meaning
LN	Logical Node.
DO	DATA in IEC 61850-7-2, data object type or instance, depending on the context.
DA	Data Attribute.
SDO	Substructure Data Object.
BDA	Basic Data Attribute that is not structured.
GOOSE	Generic Object Oriented Subscriber Events

## 2 Description of Logical Nodes and their Data Objects and Data Attributes

### 2.1 Data map 11

#### 2.1.1 SUpMMXU29 (UL1-3) – Phase to neutral voltages

Element	Description
SUpMMXU29 (UL1-3)	Phase to neutral voltages, the whole structure containing all three voltages is assigned to the dataset as one element.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: PhV	Phase to neutral voltages.
SDO: phsA	Phase A to neutral voltage.
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53).
BDA: f	The value of Phase A to neutral.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).

BDA: SIUnit	SI unit.
BDA: multiplier	Multiplier.
SDO: phsB	Phase B to neutral voltage.
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	The value of Phase B to neutral.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit.
BDA: multiplier	Multiplier.
SDO: phsC	Phase C to neutral voltage.
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53).
BDA: f	The value of Phase C to neutral.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).

### 2.1.2 SUpMMXU30 (U12-23-31) – Phase to phase voltages

Element	Description
SUpMMXU30 (U12-23-31)	Phase to phase voltages, the whole structure containing all three voltages is assigned to the dataset as one element.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related

	HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: PPV	Phase to phase voltages.
SDO: phsAB	Phase A to phase B voltage. (Phase 1 to phase 2).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of phase A to phase B measurement.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsBC	Phase B to phase C voltage. (Phase 2 to phase 3).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of phase B to phase C measurement.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsCA	Phase C to phase A voltage. (Phase 3 to phase 1).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of phase C to phase A measurement.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).

BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).

### 2.1.3 *IoIO1PTEF1 (IoInt>>) – Directional transient intermittent earth fault protection*

Note: “IoInt>” is the correct name of this feature.

Element	Description
IoIO1PTEF1 (IoInt>>)	Directional transient intermittent earth fault protection.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Str	Start
DA: general	Logical "or" of the phase values, for example trip or start. The attribute shall also be set if not all phases have a fault condition.
DA: dirGeneral	General direction of the fault. If the faults of individual phases have different directions, this attribute shall be set to both.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p.

	58).
DO: Op	Operate. Indicates the trip decision of a protection function (LN).
DA: general	Logical "or" of the phase values, for example trip or start. The attribute shall also be set if not all phases have a fault condition.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

#### 2.1.4 EvtGGIO183 – Generic events

Element	Description
EvtGGIO183	Generic events.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctrlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamePlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1 of the generic events. (Event 1), binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2 of the generic events. (Event 2), binary input.
DA: stVal	Status value of the data.



DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3 of the generic events. (Event 3), binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind4	Indication 4 of the generic events. (Event 4), binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind5	Indication 5 of the generic events. (Event 5), binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind6	Indication 6 of the generic events. (Event 6), binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind7	Indication 7 of the generic events. (Event 7), binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind8	Indication 8 of the generic events. (Event 8), binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

**2.1.5 I3pGGIO184 (IL1, IL2, IL3, AI) – Analogue inputs of phase currents**

Element	Description
I3pGGIO184 (IL1,IL2,IL3 AI)	Analogue inputs of phase currents
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: AnIn1	Analogue input 1 (Phase 1 current).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 1 current.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: AnIn2	Analogue input 2 (Phase 2 current).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 2 current.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: AnIn3	Analogue input 3 (Phase 3 current).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 3 current.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).

### 2.1.6 U3pGGIO185 (UL1, UL2, UL3 AI) – Analogue inputs of phase voltages

Element	Description
U3pGGIO185 (UL1,UL2,UL3 AI)	Analogue inputs of phase voltages.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: AnIn1	Analogue input 1 (Phase 1 voltage).
DA: mag	Deadbanded value (1 p. 53) .

BDA: f	Value of the phase 1 voltage.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: AnIn2	Analogue input 2 (Phase 2 voltage).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 2 voltage.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: AnIn3	Analogue input 3 (Phase 3 voltage).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 3 voltage.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).

### 2.1.7 U3ppGGIO186 (U12, U23, U31 AI) – Analogue inputs of phase to phase voltages

Element	Description
U3ppGGIO186 (U12,U23,U31 AI)	Analogue inputs of phase to phase voltages.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctrlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).

DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: AnIn1	Analogue input 1 (Phase 1 to phase 2 voltage).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 1 to phase 2 voltage.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: AnIn2	Analogue input 1 (Phase 2 to phase 3 voltage).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 2 to phase 3 voltage.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: AnIn3	Analogue input 3 (Phase 3 to phase 1 voltage).
DA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase 3 to phase 1 voltage.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).

### 2.1.8 SPow3MMXU31 (3 phase P, Q, S, PF) – Three-phase active power, reactive power, apparent power, power factor

Element	Description
SPow3MMXU31 (3 phase P, Q, S, PF)	Three-phase active power (P), reactive power (Q), apparent power (S) and power factor (PF). The whole structure containing all three phases is assigned to the dataset as one element.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctrlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamePlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: W	Active power, watts.
SDO: phsA	Phase A (phase 1).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase A active power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsB	Phase B (phase 2).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .

BDA: f	Value of the phase B active power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsC	Phase C (phase 3).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase C active power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: VAr	Reactive power, volt-ampere reactive.
SDO: phsA	Phase A (phase 1).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase A reactive power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsB	Phase B (phase 2).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase B reactive power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsC	Phase C (phase 3).
DA: cVal	Deadbanded complex value (1 p. 52).

BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase C reactive power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: VA	Apparent power, volt-amperes.
SDO: phsA	Phase A (phase 1).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase A apparent power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsB	Phase B (phase 2).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase B apparent power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsC	Phase C (phase 3).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase C apparent power.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
DO: PF	Power factor.



SDO: phsA	Phase A (phase 1).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase A power factor.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsB	Phase B (phase 2).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase B power factor.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).
SDO: phsC	Phase C (phase 3).
DA: cVal	Deadbanded complex value (1 p. 52).
BDA: mag	Deadbanded value (1 p. 53) .
BDA: f	Value of the phase C power factor.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
BDA: multiplier	Multiplier (2 p. 62).

**2.1.9 AlrmGGIO188 – Line fault alarm status**

Element	Description
AlrmGGIO188	Line fault alarm status. Indicates if one or more of the protected lines are in alarm state (the related protection function is ready to trip). If the protection function trips, the faulted line is indicated by logical nodes L1fGG1024, L1fGG1025 and L1fGG1026 (not covered in this document).
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. Line 1 alarm, binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2. Line 2 alarm, binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3. Line 3 alarm, binary input.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).

DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
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#### 2.1.10 Har5PTOC22 (If5>) – Fifth harmonic overcurrent stage

Element	Description
Har5PTOC22 (If5>)	Fifth harmonic overcurrent stage.
DO: Mod	Mode (2 p. 80)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55)
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Str	Start
DA: general	Logical "or" of the phase values, for example trip or start. The attribute shall also be set if not all phases have a fault condition.
DA: dirGeneral	General direction of the fault. If the faults of individual phases have different directions, this attribute shall be set to both.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Op	Operate. Indicates the trip decision of a protection function (LN).
DA: general	Logical "or" of the phase values, for example trip or start. The

	attribute shall also be set if not all phases have a fault condition.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: StrVal	Start value. Level of the supervised value, which starts a dedicated action of the related function.
DA: setMag	Indicates that the start value is set here.
BDA: f	The actual start value.
DA: units	Units of the attribute(s) representing the value of the data (1 p. 58).
BDA: SIUnit	SI unit (2 pp. 60-61).
DO: OpDlTmms	Operate delay time.
DA: setVal	The value of the operate delay time setting.

### 2.1.11 NIStGGIO189 (GOOSE NI 1-16) – GOOSE Network Inputs 1-16

Element	Description
NIStGGIO189 (GOOSE NI 1-16)	GOOSE Network Inputs 1-16.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. GOOSE NI 1.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).

DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2. GOOSE NI 2.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3. GOOSE NI 3.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind4	Indication 4. GOOSE NI 4.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind5	Indication 5. GOOSE NI 5.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind6	Indication 6. GOOSE NI 6.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind7	Indication 7. GOOSE NI 7.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind8	Indication 8. GOOSE NI 8.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind9	Indication 9. GOOSE NI 9.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).

DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind10	Indication 10. GOOSE NI 10.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind11	Indication 11. GOOSE NI 11.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind12	Indication 12. GOOSE NI 12.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind13	Indication 13. GOOSE NI 13.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind14	Indication 14. GOOSE NI 14.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind15	Indication 15. GOOSE NI 15.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind16	Indication 16. GOOSE NI 16.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

**2.1.12 NIS~~t~~GGIO190 (GOOSE NI 17-32) – GOOSE Network Inputs 17-32**

Element	Description
NIS <del>t</del> GGIO190 (GOOSE NI 17-32)	GOOSE Network Inputs 17-32.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. GOOSE NI 17.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2. GOOSE NI 18.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3. GOOSE NI 19.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind4	Indication 4. GOOSE NI 20.
DA: stVal	Status value of the data.

DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind5	Indication 5. GOOSE NI 21.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind6	Indication 6. GOOSE NI 22.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind7	Indication 7. GOOSE NI 23.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind8	Indication 8. GOOSE NI 24.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind9	Indication 9. GOOSE NI 25.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind10	Indication 10. GOOSE NI 26.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind11	Indication 11. GOOSE NI 27.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind12	Indication 12. GOOSE NI 28.
DA: stVal	Status value of the data.



DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind13	Indication 13. GOOSE NI 29.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind14	Indication 14. GOOSE NI 30.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind15	Indication 15. GOOSE NI 31.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind16	Indication 16. GOOSE NI 32.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

### 2.1.13 NIS~~t~~GGIO191 (GOOSE NI 17-32) – GOOSE Network Inputs 33-48

Element	Description
NIS <del>t</del> GGIO191 (GOOSE NI 17-32)	GOOSE Network Inputs 33-48.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related

	HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. GOOSE NI 33.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2. GOOSE NI 34.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3. GOOSE NI 35.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind4	Indication 4. GOOSE NI 36.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind5	Indication 5. GOOSE NI 37.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind6	Indication 6. GOOSE NI 38.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind7	Indication 7. GOOSE NI 39.
DA: stVal	Status value of the data.

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DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind8	Indication 8. GOOSE NI 40.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind9	Indication 9. GOOSE NI 41.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind10	Indication 10. GOOSE NI 42.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind11	Indication 11. GOOSE NI 43.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind12	Indication 12. GOOSE NI 44.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind13	Indication 13. GOOSE NI 45.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind14	Indication 14. GOOSE NI 46.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind15	Indication 15. GOOSE NI 47.
DA: stVal	Status value of the data.

## IEC 61850 data maps 11 and 12

DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind16	Indication 16. GOOSE NI 48.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

**2.1.14 NIS~~t~~GGIO192 (GOOSE NI 49-64) – GOOSE Network Inputs 49-64**

Element	Description
NIS <del>t</del> GGIO191 (GOOSE NI 17-32)	GOOSE Network Inputs 49-64.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. GOOSE NI 49.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2. GOOSE NI 50.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3. GOOSE NI 51.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind4	Indication 4. GOOSE NI 52.
DA: stVal	Status value of the data.

DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind5	Indication 5. GOOSE NI 53.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind6	Indication 6. GOOSE NI 54.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind7	Indication 7. GOOSE NI 55.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind8	Indication 8. GOOSE NI 56.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind9	Indication 9. GOOSE NI 57.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind10	Indication 10. GOOSE NI 58.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind11	Indication 11. GOOSE NI 59.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind12	Indication 12. GOOSE NI 60.
DA: stVal	Status value of the data.

DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind13	Indication 13. GOOSE NI 61.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind14	Indication 14. GOOSE NI 62.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind15	Indication 15. GOOSE NI 63.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind16	Indication 16. GOOSE NI 64.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

**2.1.15 NIGrGGIO193 – Status of GOOSE Supervision Groups**

Element	Description
NIGrGGIO193	Status of GOOSE Supervision Groups.
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. Status of GOOSE supervision group 1.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2. Status of GOOSE supervision group 2.
DA: stVal	Status value of the data. Status of GOOSE supervision group 2.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3. Status of GOOSE supervision group 3.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind4	Indication 4. Status of GOOSE supervision group 4.



DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind5	Indication 5. Status of GOOSE supervision group 5.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind6	Indication 6. Status of GOOSE supervision group 6.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind7	Indication 7. Status of GOOSE supervision group 7.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind8	Indication 8. Status of GOOSE supervision group 8.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind9	Indication 9. Status of GOOSE supervision group 9.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind10	Indication 10. Status of GOOSE supervision group 10.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind11	Indication 11. Status of GOOSE supervision group 11.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind12	Indication 12. Status of GOOSE supervision group 12.

DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind13	Indication 13. Status of GOOSE supervision group 13.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind14	Indication 14. Status of GOOSE supervision group 14.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind15	Indication 15. Status of GOOSE supervision group 15.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind16	Indication 16. Status of GOOSE supervision group 16.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

**2.1.16 GPubGGIO194 – GOOSE Publisher properties**

Element	Description
GPubGGIO194	GOOSE Publisher properties
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. GCB1, GOOSE Control Block 1, Test status.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: d	Textual description of the data.
DO: Ind2	Indication 2. GCB1 Needs commissioning status.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: d	
DO: Ind3	Indication 3. GCB2 Test status.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p.

	58).
DA: d	Textual description of the data.
DO: Ind4	Indication 4. GCB2 Needs commissioning status.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: d	Textual description of the data.

## 2.2 Data map 12

### 2.2.1 FTrpGGIO195 – Final Trip for Objects

Element	Description
FTrpGGIO195	Final Trip for Objects
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamPlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: Ind1	Indication 1. Final trip for Object 1.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind2	Indication 2. Final trip for Object 2.

DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind3	Indication 3. Final trip for Object 3.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind4	Indication 4. Final trip for Object 4.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind5	Indication 5. Final trip for Object 5.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Ind6	Indication 6. Final trip for Object 6.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

**2.2.2 DrRDRE1 – Disturbance recorder**

Element	Description
DrRDRE1	Disturbance recorder
DO: Mod	Mode (2 p. 80).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DA: ctrlModel	Specifies the control model of IEC 61850-7-2 that corresponds to the behaviour of the data (1 p. 51).
DO: Beh	Behaviour (2 p. 71).
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: Health	This information reflects the state of the logical node related HW and SW (2 p. 75)
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: NamePlt	Name plate.
DA: vendor	Vendor name.
DA: swRev	Software revision.
DA: d	Textual description of the data.
DO: RcdMade	Recording made.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: FltNum	Fault Number.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).
DO: MemUsed	Memory used in %.
DA: stVal	Status value of the data.
DA: q	Quality (1 p. 55).
DA: t	Timestamp of the last change in one of the attribute(s) representing the value of the data or in the q attribute (1 p. 58).

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1. **International Electrotechnical Commission.** *INTERNATIONAL STANDARD IEC 61850-7-3 Communication networks and systems in substations – Part 7-3: Basic communication structure for substation and feeder equipment – Common data classes.* s.l. : International Electrotechnical Commission, 2003. IEC 61850-7-3:2003(E).
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