Application Descriptions

7

Functional Blocks of Common Interest

1

General Purpose I/O

5

Summary

This document specifies general purpose I/O Functional Blocks.

Version 01.01.02 is a KNX Approved Standard.

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

Document updates

Version	Date	Modifications
0.1	2005.09.27	Document created
0.2	2005.10.04	Editorial corrections, Property ID for PeripheralZones changed to 104, new DPT added
0.3	2006.02.07	TFI comments included; DPT_Scaling used for analog values in S-Mode Introduction updated FB descriptions updated; editorial corrections TFI approved
0.4	2006.02.17	Preparation of the Draft Proposal.
0.5	2008.08.09	• **AN106 "Phasing out TP0"** integrated. • **AN107 "Phasing out LT-R"** integrated. • **AN108 "Phasing out LT-S"** integrated. • **AN109 "Phasing out PL132"** integrated. • **AN110 "Phasing out A-Mode"** integrated.
1.0	2009.04.27	Publication of the Approved Standard.
1.1	2010.04.16	Optional support of LTE geographical zones Blinking features in GPDO added Various editorial corrections
WD	2010.07.28	Editorial: • GPDO: Naming of Property 'OutputSelect' in Datapoint Description Table • Data Type of InputSelct (GPDI) and OutputSelect (GPDO) is B_1 (Tables 2.1.5 and 3.1.5)
WD	2010.07.29	Editorial: • GPDO: Z8-Commands SetOSV/ResetOSV no applicable on Output DigitalOutSetp.
WD	2010.11.22	Various editorial amendments and clarifications GPAO: optional parameter StatusAnalogOutputCOV added
1.1.00	2011.01.28	Draft for Voting.
1.1.01	2011.09.14	- Integration of the resolution of comments from Final Voting. - Pubication of the Approved Standard.
01.01.02	2013.10.29	Editorial updates for the publication of KNX Specifications 2.1.

References

[1] Chapter 3/7/2 "Datapoint Types"
[2] Part 10/1 "Logical Tag Extended"

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Contents

1 Introduction

1.1 Scope

This document is part of the KNX Application Interworking Standard.

It contains the specification of General Purpose Input / Output Functional Blocks (FBs).

1.2 Objectives

This document includes the information necessary to build interoperable general purpose input/output (I/O) products of common interest (FOCI) using the KNX communication system. Runtime Interworking between the I/O Functional Block and a controller, display etc is the focus. Also data-interfaces for parameter setting, visualisation etc. are specified where appropriate (only state of the art Datapoints generally used in all companies).

These FBs are mainly foreseen as an extension to the HVAC model using LTE mechanisms.

So far, such general purpose I/O devices are hard wired to the HVAC devices or linked through short distance proprietary bus connections. However KNX TP1 or KNX RF could increase the distance to intelligent general purpose I/O devices.

This document specifies the specific mechanisms for zoning and runtime process data distribution used in HVAC for an ‘easy installation’ system (LTE-Mode [2]). The Standard Mode Interface is also specified.

In the LTE mode linking of these general purpose I/O devices is based on "general peripheral zones". Binding in “geographical zones” may be supported as an additional, optional feature. In the LTE runtime system either “general peripheral” or “geographical” zone is activated. Usually it does not make sense to communicate simultaneously in both types of LTE zones. The deactivated zone parameter shall be set ‘OutOfService’.

EXAMPLE

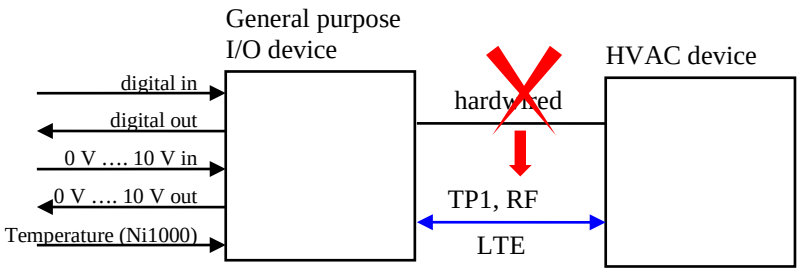


Figure 1 – The goal of general purpose I/O FBs

Such I/O devices can be used for supervision purposes, remote management, I/O extensions to the HVAC controller etc.

Each of these inputs and outputs is modelled according an own FB. The proper interpretation of the data (e.g. whether the temperature is an inside, outside, or floor temperature …) is only done by the HVAC device.

Every FB may be part of a complex device (e.g. a heating controller) containing more than one Functional Block. Because of this modular approach, there is no attempt in this specification to describe or dictate the internal construction of a FB or to describe specific device types.

This document only includes details of the transport protocol as needed to specify interoperability and easy installation mechanisms. The document does not specifically cover implementation aspects, but guidelines are included where appropriate.

Completely protocol dependent parts of the I/O specification such as Group Object Tables, Group Address Tables etc. are not part of this document.

1.3 Dependency on Configuration Modes

The main focus of this document is the specification of the **Basic Functional Blocks** and the **LTE specific parts**.

The document provides all necessary information needed

- for a complete implementation of the FBs in LTE mode, and
- for the implementation of mandatory Group Objects used for runtime Interworking in Standard Mode (Basic Functional Block).

1.3.1 Runtime Interworking

Configuration Mode dependent (S-Mode) implementation of optional runtime Interworking objects is not specified in this document, e.g. “E-Mode Channel” definitions.

The following table (example) shows the configuration mode dependencies concerning runtime Interworking.

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE
Inputs	Inp1	**NA**	NA	NA	M
	Inp2	**NA**	NA	NA	O
	Inp3	**(GO_b)**		(GO)	O
Outputs	Outp1	**NA**	NA	NA	M
	- Outp1-1	**GO_b**	GO	GO	NA
	- Outp1-2	**GO_b**	GO	GO	NA
	Outp 2	**GO_b**	GO	GO	M

Inp1: is mandatory M in LTE Mode but the information is not available (NA) in the Basic FB and all other modes because the Datapoint Type (DPT) is today not available in Standard Mode and there are no products on the market with this functionality.

Inp2: is optional O in LTE Mode but the information is not available (NA) in the Basic FB and all other modes because the DPT is today not available in Standard Mode and there are no products on the market with this functionality.

Inp3: is optional O in LTE Mode and an optional Group Object in the Basic FB (GO_b). The Datapoint is optionally supported as Group Object in the LTE Standard Mode Interface (GO). For all other modes the implementation is not defined. This is indicated by an empty field.

Outp1: is mandatory M in LTE Mode and has a structured DPT or a DPT with extended features that is today not available in Standard Mode. In the Basic FB the information of Outp1 is split up into Outp1-1 and Outp1-2 (separate Datapoints with standard DPT).
Outp1-1 and Outp1-2 are mandatory Group Objects GO in the Basic FB and are therefore mandatory in all modes.

Outp2: is mandatory in all modes.

1.3.2 Parameters and Diagnostic Data

LTE implementation

- Parameters and Diagnostic Data of a Functional Block shall be implemented as Properties of the corresponding Interface Object that are accessed using point-to-point communication.
- These Properties are addressed via the standard Interface Object Type (IO Type) for this Functional Block. This IO Type is also used for Datapoint addressing in the LTE runtime Interworking model.
- Standard DPT or HVAC specific DPT with extended features are used where appropriate.

Other modes:

- Parameters and Diagnostic Data can in principle be implemented as memory mapped Datapoints or Group Objects or Properties of an Interface Object using point-to-point communication. This document does not lay down how to implement Parameters and Diagnostic Data in S-Mode, Ctrl-Mode or PB-Mode.
- In case of **Memory Mapped** Datapoints the DPT may be manufacturer specific.
- In case of **Group Objects** standard DPT shall be used instead of HVAC specific (extended) DPTs. The description of these Group Objects shall be part of the mode-dependent specification (e.g. E-Mode Channel definition).
- In case of **Properties**, the implementation of HVAC specific DPT with extended features may be a problem (depending on the available microcontroller resources). The manufacturer has the choice:
  - to use the LTE style Property implementation as specified in this document (with the DPT and IO Type for LTE implementations) **$\text{IO Type}^{\text{used}} = \text{IO Type}^{\text{HVAC-LTE}}$**
  - to implement these Properties using standard DPT only.
    In this case, the same Property ID but a different IO Type shall be used since the DPT of a Property shall be unambiguous for each IO Type.
    Simple IOT mapping rule: $\text{IO Type}^{\text{used}} = \text{IO Type}^{\text{standardDPT}} = \text{IO Type}^{\text{HVAC-LTE}} + 10000\text{d}$
    (e.g. $\text{BUC}^{\text{HVAC-LTE}} = 128 \Rightarrow \text{BUC}^{\text{standardDPT}} = 10128$)
  - It is allowed to implement in a device both Interface Object Types $\text{IO Type}^{\text{HVAC-LTE}}$ and $\text{IO Type}^{\text{standardDPT}}$. The implementation of parameters and diagnostic data of one given Functional Block shall however be complete. It is thus not allowed to implement part of the Datapoints of a Functional Block in $\text{IO Type}^{\text{standardDPT}}$ and the remaining in $\text{IO Type}^{\text{HVAC-LTE}}$.

	Implementation of Parameter and Diagnostic Data			
	Property based		**Group Object**	**Memory mapped**
	LTE style	**Standard DPT**		
IO Type	$\text{IO Type}^{\text{HVAC-LTE}}$ e.g. BUC = 128	$\text{IO Type}^{\text{HVAC-LTE}}$ + 10000 e.g. BUC = 10128		
Property ID	Property ID x	Property ID x		
DPT	if standard DPT	⇒ same standard DPT	⇒ same standard DPT	company specific
	if HVAC-LTE specific***)** e.g. 205.100	⇒ mapped standard DPT, e.g. 9.001	⇒ mapped standard DPT, e.g. 9.001	

In this document only the **HVAC-LTE style** of Parameters and Diagnostic Data is specified for $\text{IO Type}^{\text{HVAC-LTE}}$.

In the FB Datapoint overview those Parameters and Diagnostic Data with HVAC-LTE specific (extended) DPT are marked " *) ".

The mapping of an HVAC specific DPT to a standard DPT is generic and described in the document [1].

1.4 Glossary

This document does not define any new terms.

1.5 Abbreviations

General

Abbreviation	Description
cs	Company Specific
GO	Group Object mandatory
(GO)	Group Object optional
M	Mandatory
NA	Not Allowed / Not Applicable
O	Optional
S	Has to be implemented in Standard Mode, if implemented in LTE-Mode
HVAC	Heating Ventilation Air Conditioning
LTE	Logical Tag Extended
IR	LTE-Service InfoReport
W	LTE-Service Write

2 General Purpose Input Functional Blocks

2.1 General Purpose Digital Input (GPDI)

2.1.1 Aims and objectives

The Functional Block ‘General Purpose Digital Input’ shall measure the value of a digital input signal (logical 0/1) that shall be translated to a binary Group Object.

2.1.2 Functional specification

The physical implementation of the digital input (voltage level, threshold etc.) is device specific. Usually the input can be switched by a potential free contact.

The logical operation of the input signal can be inverted by an optional parameter (e.g. change from ‘normally open’ to ‘normally closed’.

The distribution of the DigitalInputValue in the system shall be event-driven (COV-condition, change of value) and in addition repeated periodically.

In the LTE-Mode the ‘General Purpose Digital Input’ shall support LTE general peripheral zoning, i.e. the values of multiple binary signals may be distributed in the system in parallel for different zones.

Optional features in LTE Mode:

- Support of LTE geographical zones.
- The binary value may temporary be overridden by means of a tool for service purposes. The ‘Overridden’ condition must be reported.
- The value of the digital input signal may be set / reset out of service by means of a tool for service purposes.

Outputs

• DigitalInputValue	This Output shall deliver the binary value to the bus.
• StatusGO	This Output shall only be available in Standard Mode and shall contain the Z_8 information of the output value.

Binding Group (LTE)

• GeneralPeripheralZone	no special features
• GeographicalZone	BuildingLocation.Room.Subzone

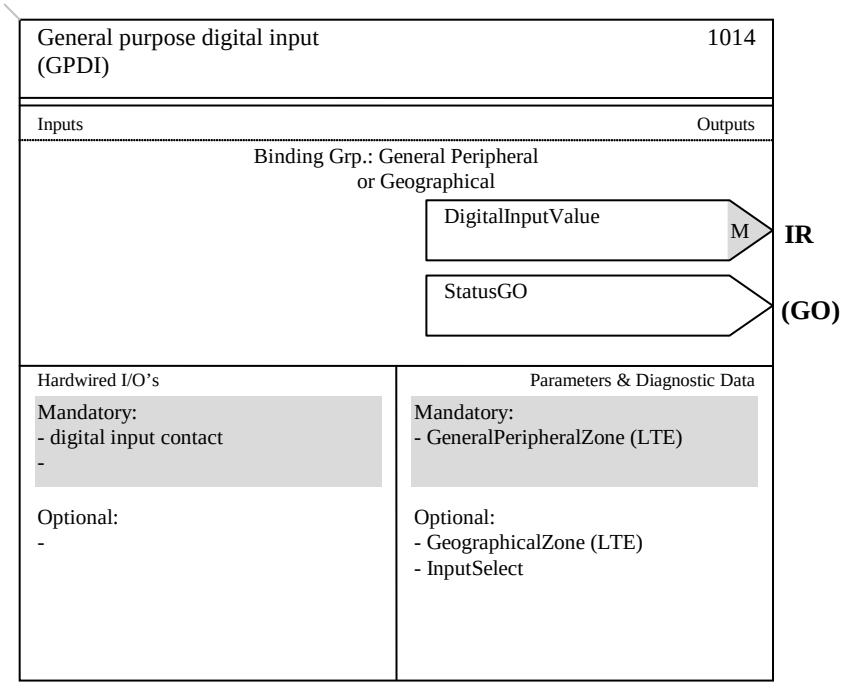
Parameters

• InputSelect	This optional Parameter is used to invert the logical behaviour of the physical input (e.g. from normally open to normally closed).

2.1.3 Constraints

None.

2.1.4 Functional Block diagram



2.1.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Outputs			
DigitalInputValue	Digital input value with: - COV and heartbeat - Z_8 STATUS and - Z_8 COMMAND supported	LTE: 200.001 DPT_BinaryValue_Z B_1Z_8 S: 1.006 DPT_BinaryValue B_1	LTE: M Low/High S: GO Low/High
StatusGO	Z_8 information as a Group Object	LTE: NA S: 21.001 DPT_StatusGen B_8	LTE: NA S: (GO) Bitset as Z_8
Parameters			
GeneralPeripheralZone	LTE zoning number for GenPeripheral	203.012 DPT_UcountValue16_Z $U_{16}Z_8$	M
GeographicalZone	LTE Geographical Zone: - BuildingZone like Floor, Apartment - Room within the BuildingZone - Subzone within the Room	3 Properties, each with DPT: 202.002 DPT_UcountValue8_Z $U_{16}Z_8$	O
InputSelect	This optional parameter is used to invert the logical behaviour of the physical input (e.g. from normally open to normally closed)	1.012 DPT_Invert B_1	O cs

Implementation of Properties using standard DPT see clause 1.3.2.

GPDI Runtime Interworking - dependence on Configuration Modes

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE-
Inputs					
Outputs	DigitalInputValue	**GO_b**	GO	GO	**M**
	StatusGO	**(GO_b)**		(GO)	**NA**

GPDI LTE specific Properties

		Support
Parameter	GeneralPeripheralZone	M
	GeographicalZone	O

GPDI standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter	InputSelect	O

2.1.6 Detailed specification of the Datapoints

2.1.6.1 Output DigitalInputValue

Standard Mode

DP Name:	DigitalInputValue			Abbr.:	---			Mandatory	☒		
FB Name:	GPDI							Can be internal	☐		
Description											
This output signal provides the logical value of the digital hardware input (including possible logical inversion according to optional parameter InputSelect)											
Datapoint Type											
DPT_Name:	DPT_BinaryValue										
DPT Format:	B_1					DPT_ID:	1.006				
Field	Description					Supp.	Range		Unit	Default	
Bit	0 = low 1 = high					M			Bit	cs	
♦ Output											
this → M	☒	this → 1	☐								
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	1 s *)				
Cyclic	☒	Period:	15 min (recommended value)								
Request	☒										
Communication Type											
♦ Group Object Datapoint								Mandatory:	☒		
Default Group Address:	---										
Dynamics											
Power down:	Save:	☐									
Power up:	Value:	No initialisation:	☐	Default value:	☐						
		Saved value:	☐	Actual value:	☒						
	Transmit on bus:	☒			☐						
Exception Handling											

Special Features											
*) recommended value. In some applications MinRepTime of 1s is too long and updates of DigitalInputValue may be sent immediately after a COV											

LTE-Mode

FB: GPDI	**LTE Server Output Name:** DigitalInputValue	Mandatory ☒ Optional ☐

Description:

This output signal provides the logical value of the digital hardware input (including possible logical inversion according to optional parameter InputSelect)

DPT:	Name	DPT_BinaryValue_Z	DPT ID	200.001	Datatype format	B_1Z_8

Field	Description	Sup.	Range	Unit	COV	Default
BinaryValue	0 = low 1 = high	M	Bit		yes	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- Overridden	Input is temporarily overridden	O	true/false	Bit 2	yes	false
- OutOfService	Input is active / inactive	O	true/false	Bit 0	yes	false
- all other status		NA				

		Sup.	Range	
COMMAND	For Property-Service Write only		enum	
- Override / Release	Temporary override / release of BinaryValue information	O	1 / 2	
- SetOSV & ResetOSV	Set input inactive / active	O	3 / 4	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1014 (GPDI)	Property ID:	51
LTE-Services (event):	COV ☒	MinRepTime: 1*) s	Heartbeat: 15 min	
InfoReport ☒	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
(LTE Read-Response polling of the output shall always be supported)	Transm after Power-up:	Stored Value ☐	Act Value ☒	Default Value ☐
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Exception Handling:	Save at Powerdown ☐

Special Features:

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

*) recommended value. In some applications MinRepTime of 1s is too long and updates of DigitalInputValue may be sent immediately after a COV

2.1.6.2 Output StatusGO

LTE-Mode NA

Standard Mode

DP Name:	StatusGO	Abbr.:	---	Mandatory	☐
FB Name:	GPDI			Can be internal	☐

Description

This output contains the Z_8 status information as a Group Object.

Datapoint Type

DPT_Name:	DPT_StatusGen		
DPT Format:	B_8	DPT_ID:	21.001

Field	Description	Supp.	Range	Unit	Default
Status	Z_8 Status information	O	Bitset		cs
Bit 0	OutOfService	O		t/f	
Bit 1	Fault	NA		t/f	
Bit 2	Overridden	O		t/f	
Bit 3	InAlarm	NA		t/f	
Bit 4	AlarmUnAcknowledged	NA		t/f	
Bits 5...7	reserved	NA			

Access Type

♦ Output

this → M	☒	this → 1	☐				
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	1 s
		Cyclic	☒	Period:	15 min (recommended value)		
Request	☒						

Communication Type

♦ Group Object Datapoint	Mandatory:	☒
Default Group Address:	---	

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☐
		Saved value:	☐	Actual value:	☒
	Transmit on bus:	☒			☐

Exception Handling

Special Features

2.1.6.3 Parameter GeneralPeripheralZone

FB:	GPDI	Property Name (Server):	GeneralPeripheralZone	Mandatory ☒ Optional ☐

Description:

Number of the general peripheral zone.

DPT:	Name	DPT_UcountValue16_Z	DPT ID	203.012	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Zone	Number of general peripheral tag	M	full		1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1014 (GPDI)	Property ID:	104
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDI is not LTE communicating if zone is 'OutOfService'

2.1.6.4 Parameter BuildingZone

FB:	GPDI	Property Name (Server):	BuildingZone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1..126	--	1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	true
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1014 (GPDI)	Property ID:	101
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDI is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag).
Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

2.1.6.5 Parameter Room

FB: GPDI	Property Name (Server): Room	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1..63	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1014 (GPDI)	Property ID:	102
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDI is not LTE communicating if zone is ‘OutOfService’. If parameter BuildingZone is ‘OutOfService’ also the corresponding Room and Subzone parameters are ‘OutOfService’ (common flag)

2.1.6.6 Parameter Subzone

FB: GPDI	Property Name (Server): Subzone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1..15	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1014 (GPDI)	Property ID:	103
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDI is not LTE communicating if zone is ‘OutOfService’. If parameter BuildingZone is ‘OutOfService’ also the corresponding Room and Subzone parameters are ‘OutOfService’ (common flag)

2.1.6.7 Parameter InputSelect

FB:	GPDI	Property Name (Server):	InputSelect		Mandatory ☐ Optional ☒
Description:					
Defines the operation logic of the physical input.					
DPT:	Name	DPT_Invert	DPT ID	1.012	Datatype format B_1

Field	Description	Sup.	Range	Unit	Default

Communication:				
DP Address: (in the server)	IO Type(ID):	1014 (GPDI)	Property ID:	110
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-
Exception Handling:	Value after Power-up:	Stored Value ☒	Act Value ☐	Default Value ☐

Special Features:				

2.2 General Purpose Analog Input (GPAI)

2.2.1 Aims and objectives

The Functional Block ‘General Purpose Analog Input’ shall measure the value of an analog input signal with a fixed range (e.g. 0 V to 10 V or 0 mA to 20 mA signal) that shall be translated to a percent value and communicated on the bus.

2.2.2 Functional specification

The physical implementation of the analog input (voltage level 0 V to 10 V, current level 0 mA to 20 mA etc.) is device specific.

The mapping between the analog value and the percentage value Outputs is manufacturer specific. It is typically controlled through one or more manufacturer specific parameters.

The distribution of the AnalogInputValue in the system shall be event-driven (COV-condition, change of value) and shall in addition b repeated periodically. The COV condition may be changed by an optional parameter.

In the LTE-Mode the ‘General Purpose Analog Input’ shall support LTE general peripheral zoning, i.e. the values of multiple analog signals may be distributed in the system in parallel for different zones.

Optional features in LTE Mode:

- Support of LTE geographical zones.
- The input value may temporary be overridden by means of a tool for service purposes. The ‘Overridden’ condition must be reported.
- The value of the analog input signal may be set / reset ‘Out of service’ by means of a tool for service purposes.

Outputs

• AnalogInputValue	This output shall deliver the analog value that is converted to a 0 % to 100 % value on the bus.
• StatusGO	This output shall only be available in Standard Mode and shall contain the Z_8 information of the output value.

Binding Group (LTE)

• GeneralPeripheralZone	No special features.
• GeographicalZone	BuildingLocation.Room.Subzone

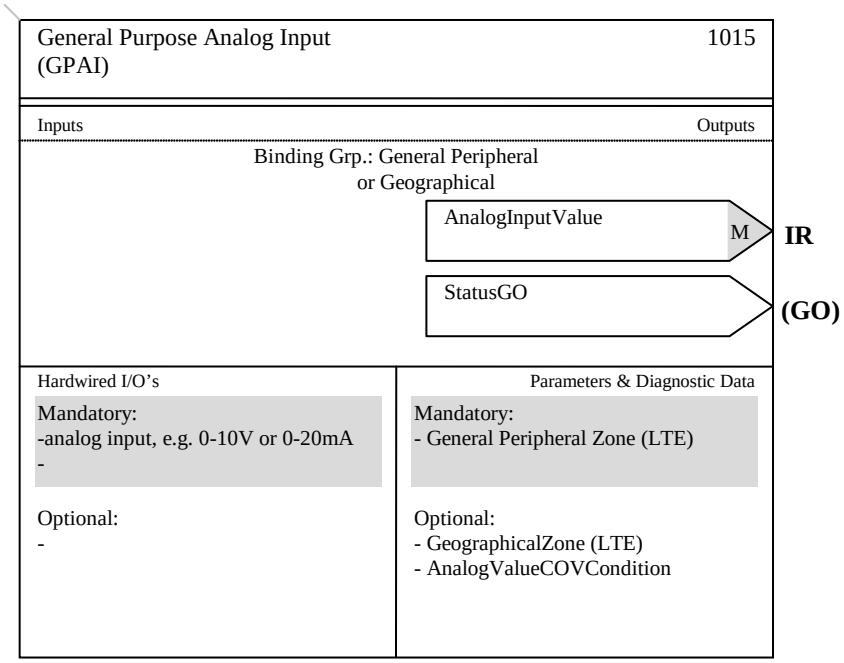
Parameters

• AnalogValueCOVCondition	This optional parameter shall define the COV condition (change of value in %) for the output signal.

2.2.3 Constraints

None.

2.2.4 Functional Block diagram



2.2.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Outputs			
AnalogInputValue	Analog input value with: - COV and heartbeat - Z_8 STATUS and - Z_8 COMMAND supported	LTE: 203.017 DPT_PercentU16_Z $U_{16}Z_8$ S: 5.001 DPT_Scaling U_8	LTE: M 0-100% with 0.01% resolution S: GO
StatusGO	Z_8 information as a Group Object	LTE: NA S: 21.001 DPT_StatusGen B_8	LTE: NA S: (GO) Bitset as Z_8
Parameters			
GeneralPeripheralZone	LTE zoning number for GenPeripheral	203.012 DPT_UcountValue16_Z $U_{16}Z_8$	M
GeographicalZone	LTE Geographical Zone: - BuildingZone like Floor, Apartment - Room within the BuildingZone - Subzone within the Room	3 Properties, each with DPT: 202.002 DPT_UcountValue8_Z $U_{16}Z_8$	O
AnalogValueCOVCondition	COV condition for the analog value in percent	5.001 DPT_Scaling U_8	O cs

Implementation of Properties using standard DPT see clause 1.3.2.

GPAI Runtime Interworking - dependence on Configuration Modes

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE
Inputs					
Outputs	AnalogInputValue	**GO_b**	GO	GO	**M**
	StatusGO	**(GO_b)**		(GO)	**NA**

GPAI LTE specific Properties

		Support
Parameter	GeneralPeripheralZone	M
	GeographicalZone	O

GPAI standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter	AnalogValueCOVCondition	O

2.2.6 Detailed specification of the Datapoints

2.2.6.1 Output AnalogInputValue

Standard Mode

DP Name:	AnalogInputValue	Abbr.:	---	Mandatory	☒
FB Name:	GPAI			Can be internal	☐

Description

This Output shall deliver the analog value that is converted to 0 % to 100 % to the bus with ~ 0,4 % resolution.

Datapoint Type

DPT_Name:	DPT_Scaling				
DPT Format:	U_8		DPT_ID:	5.001	
Field	Description	Supp.	Range	Unit	Default
			0 % to 100 %	%	cs

♦ Output

this → M	☒	this → 1	☐				
Spontaneous	☒	COV:	☒	Delta-Value:	[1]	MinRepTime:	10sec
		Cyclic	☒	Period:	15 min (recommended value)		
Request	☒						

Communication Type

♦ Group Object Datapoint		Mandatory:	☒
Default Group Address:	---		

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☐
		Saved value:	☐	Actual value:	☒
	Transmit on bus:	☒			☐

Exception Handling

Special Features

[1] COV see parameter

LTE-Mode

FB: GPAI	**LTE Server Output Name:** AnalogInputValue	Mandatory ☒ Optional ☐

Description:

This output shall deliver the analog value that is converted to 0 % to 100 % to the bus. Due to higher precision requirements the value shall be encoded with 16 bit and 0,01 % resolution. This output shall contain as well a STATUS information. The output may be overridden by means of the COMMAND.

DPT:	Name	DPT_PercentU16_Z	DPT ID	203.017	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	COV	Default
AnalogInputValue	Actual value in percent	M	0 % … 100 %	%	[1)]	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- OutOfService	Sensor out of service	O	true/false	Bit 0	Y	false
- Fault	Analog value is corrupted, out of range	O	true/false	Bit 1	Y	false
- Overridden	Sensor is temporarily overridden	O	true/false	Bit 2	Y	false
all other bits	reserved	NA		Bit 5-7	Y	false

		Sup.	Range	
COMMAND	For Property-Service Write only		enum	
- Override / Release	Temporary override / release of sensor value	O	1 / 2	
- Set / Reset OSV	Set / reset of out of service	O	3 / 4	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1015 (GPAI)	Property ID:	51
LTE-Services (event): InfoReport ☒ (LTE Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: 10 s	Heartbeat: 15 min	
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Power-up: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☐	Read/Write ☒		

Exception Handling: Save at Powerdown ☐

--

Special Features:

[1)] COV see parameter

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

2.2.6.2 Output StatusGO

LTE-Mode NA

Standard Mode

DP Name:	StatusGO	Abbr.:	---	Mandatory	☐
FB Name:	GPAI			Can be internal	☐

Description

This output shall contain the Z_8 status information as a Group Object.

Datapoint Type

DPT_Name:	DPT_StatusGen		
DPT Format:	B_8	DPT_ID:	21.001

Field	Description	Supp.	Range	Unit	Default
Status	Z_8 Status information	O	Bitset		cs
Bit 0	OutOfService	O		t/f	
Bit 1	Fault	O		t/f	
Bit 2	Overridden	O		t/f	
Bit 3	InAlarm	NA		t/f	
Bit 4	AlarmUnAcknowledged	NA		t/f	
Bits 5...7	reserved	NA			

Access Type

♦ Output

this → M	☒	this → 1	☐				
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	10 s
		Cyclic	☒	Period:	15 min (recommended value)		
Request	☒						

Communication Type

♦ Group Object Datapoint	Mandatory:	☒
Default Group Address:	---	

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☐
		Saved value:	☐	Actual value:	☒
	Transmit on bus (only for output):		☒	Read from bus (only for input):	☐

Exception Handling

Special Features

2.2.6.3 Parameter GeneralPeripheralZone

FB: GPAI	Property Name (Server): GeneralPeripheralZone	Mandatory ☒ Optional ☐

Description:

Number of the general peripheral zone.

DPT:	Name	DPT_UcountValue16_Z	DPT ID	203.012	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Zone	Number of general peripheral tag	M	full		1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1015 (GPAI)	Property ID:	104
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAI is not LTE communicating if zone is 'OutOfService'

2.2.6.4 Parameter BuildingZone

FB: GPAI	Property Name (Server): BuildingZone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1..126	--	1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	true
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1015 (GPAI)	Property ID:	101
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAI is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag). Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

2.2.6.5 Parameter Room

FB:	GPAI	Property Name (Server):	Room	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1..63	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1015 (GPAI)	Property ID:	102
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAI is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

2.2.6.6 Parameter Subzone

FB:	GPAI	Property Name (Server):	Subzone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1..15	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1015 (GPAI)	Property ID:	103
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAI is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

2.2.6.7 Parameter AnalogValueCOVCondition

FB:	GPAI	Property Name (Server):	AnalogValueCOVCondition	Mandatory ☐ Optional ☒

Description:

This optional parameter defines the COV condition (change of value in %) for the output signal with about 0,4 % resolution.

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
			cs	%	cs

Communication:

DP Address:	IO Type(ID):	1015 (GPAI)	Property ID:	110
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.3 General Purpose Temperature Sensor (GPTS)

2.3.1 Aims and objectives

This Functional Block shall measure the value of a general purpose temperature sensor and communicate the sensor value on the bus.

2.3.2 Functional specification

The physical implementation of the sensor input is device specific.

The distribution of the TempValue in the system shall be event-driven (COV-condition, change of value) and in addition be repeated periodically. The COV condition may be changed by an optional parameter.

In the LTE-Mode the 'General Purpose Temperture Sensor' supports LTE general peripheral zoning, i.e. the values of multiple binary signals may be distributed in the system in parallel for different zones.

Optional features in LTE Mode:

- Support of LTE geographical zones.
- Faults in the sensor device may be detected and reported.
- The sensor value may temporary be overridden by means of a tool for service purposes.
  The 'Overridden' condition must be reported.
  Alarm limits may be detected by the sensor and are reported.
- The alarm may be acknowledged.
- The sensor may be set / reset 'Out of service' by means of a tool for service purposes.

Outputs

• TempValue	This output delivers the measured temperature value to the bus.
• StatusGO	This output only is available in S-Mode and contains the Z_8 information of the output TempValue.

Binding Group (LTE)

• GeneralPeripheralZone	no special features
• GeographicalZone	BuildingLocation.Room.Subzone

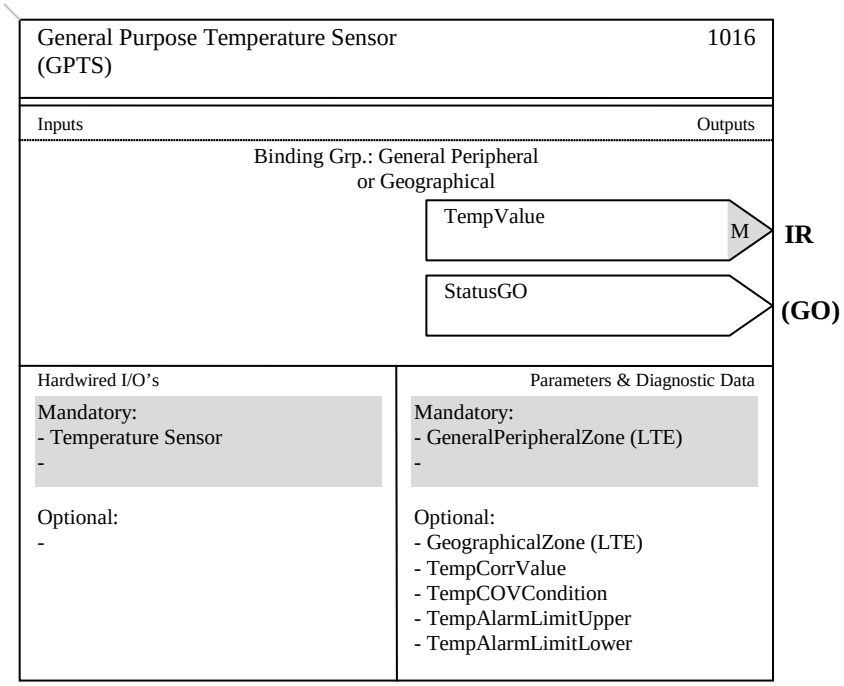
Parameters

• TempCorrValue	This parameter specifies the correction value for the sensor.
• TempCOVCondition	This parameter defines the delta temperature value at which the information spontaneously is transmitted.
• TempAlarmLimitUpper	This value can be used to create an alarm.
• TempAlarmLimitLower	This value can be used to create an alarm.

2.3.3 Constraints

None.

2.3.4 Functional Block Diagram



2.3.5 Datapoint Description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Outputs			
TempValue	Temperature sensor value with: - COV and RepPer - Z_8 STATUS and - Z_8 COMMAND supported to FB various controller	LTE: 205.100 DPT_TempHVACAbs_Z $V_{16}Z_8$ S: 9.001 DPT_Value_Temp F_{16}	LTE: M S: GO °C
StatusGO	Z_8 information as a Group Object	LTE: NA S: 21.001 DPT_StatusGen B_8	LTE: NA S: (GO) Bitset as Z_8
Parameters			
GeneralPeripheralZone	LTE zoning number for GenPeripheral	203.012 DPT_UcountValue16_Z $U_{16}Z_8$	M
GeographicalZone	LTE Geographical Zone: - BuildingZone like Floor, Apartment - Room within the BuildingZone - Subzone within the Room	3 Properties, each with DPT: 202.002 DPT_UcountValue8_Z $U_{16}Z_8$	O
TempCorrValue	For offset correction of the internal sensor: - Z_8 STATUS and - Z_8 COMMAND supported	205.101 1) DPT_TempHVACRel_Z $V_{16}Z_8$	O 0 K

Datapoints	Description / Remarks	Datapoint Type	Additional Info
TempCOVCondition	Value for COV condition with: - Z_8 not supported	205.101 1) DPT_TempHVACRel_Z $V_{16}Z_8$	O 0,2 K
TempAlarmLimitUpper	Upper alarm limit for generating STATUS 'Alarm' with: - Z_8 STATUS and - Z_8 COMMAND supported	205.100 1) DPT_TempHVACAbs_Z $V_{16}Z_8$	O cs °C
TempAlarmLimitLower	Lower alarm limit for generating STATUS 'Alarm' with: - Z_8 STATUS and - Z_8 COMMAND supported	205.100 1) DPT_TempHVACAbs_Z $V_{16}Z_8$	O cs °C

1) Implementation of Properties using standard DPT see clause 1.3.2.

GPTS Runtime Interworking - dependence on Configuration Modes

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE
Inputs					
Outputs	TempValue	**GO_b**	GO	GO	**M**
	StatusGO	**(GO_b)**		(GO)	**NA**

GPTS LTE specific Properties

		Support
Parameter	GeneralPeripheralZone	**M**
	GeographicalZone	**O**

GPTS Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter	TempCorrValue	**O**
	TempCOVCondition	**O**
	TempAlarmLimitUpper	**O**
	TempAlarmLimitLower	**O**

2.3.6 Detailed specification of the Datapoints

2.3.6.1 Output TempValue

Standard Mode

DP Name:	TempValue			Abbr.:	---			Mandatory	☒		
FB Name:	GPTS							Can be internal	☐		
Description											
This output contains the value of the temperature sensor											
Datapoint Type											
DPT_Name:	DPT_Value_Temp										
DPT Format:	F_{16}					DPT_ID:	9.001				
Field	Description					Supp.	Range		Unit	Default	
							Full		°C	cs	
Access Type											
♦ Output											
this → M	☒	this → 1	☐								
Spontaneous	☒	COV:	☒	Delta-Value:	0,2 [1)]	MinRepTime:	10 s				
		Cyclic	☒	Period:	15 min (recommended value)						
Request	☒										
Communication Type											
♦ Group Object Datapoint								Mandatory:	☒		
Default Group Address:	---										
Dynamics											
Power down:	Save:	☐									
Power up:	Value:	No initialisation:	☐			Default value:	☐				
		Saved value:	☐			Actual value:	☒				
	Transmit on bus:	☒					☐				
Exception Handling											

Special Features											
[1)] COV see parameter											

LTE-Mode

FB: **GPTS**	**LTE Server Output Name:** **TempValue**	Mandatory ☒ Optional ☐

Description:

This output signal shall contain the value of the temperature sensor as well as a STATUS information. The output may be overridden by means of the COMMAND field.

DPT:	Name	DPT_TempHVACAbs_Z	DPT ID	205.100	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	COV	Default
Temperature	Actual temperature value	M	Full Range	°C	0,2 [1)]	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- OutOfService	Sensor out of service	O	true/false	Bit 0	Y	false
- Fault	Sensor value is corrupted	O	true/false	Bit 1	Y	false
- Overridden	Sensor is temporarily overridden	O	true/false	Bit 2	Y	false
- InAlarm	Sensor is in alarm	O	true/false	Bit 3	Y	false
- AlarmUnAck	Acknowledgement of alarm	O	true/false	Bit 4	Y	false
all other bits	reserved	NA		Bit 5-7	Y	false

		Sup.	Range	
COMMAND	For Property-Service Write only		enum	
- Override / Release	Temporary override / release of sensor value	O	1 / 2	
- Set / Reset OSV	Set / reset of out of service	O	3 / 4	
- AlarmAck	Acknowledgement of alarm	O	5	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐	OutsideSensorZone	
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1016 (GPTS)	Property ID:	51
LTE-Services (event): InfoReport ☒	COV ☒	MinRepTime: 10 s	Heartbeat:	15 min
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
(LTE Read-Response polling of the output shall always be supported)	Transm after Power-up: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☐	Read/Write ☒		

Exception Handling: Save at Powerdown ☐

Special Features:

[1)] COV see parameter

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

2.3.6.2 Output StatusGO

LTE-Mode NA

Standard Mode

DP Name:	StatusGO	Abbr.:	---	Mandatory	☐
FB Name:	GPTS			Can be internal	☐

Description

This output contains the Z_8 status information as a Group Object.

Datapoint Type

DPT_Name:	DPT_StatusGen		
DPT Format:	B_8	DPT_ID:	21.001

Field	Description	Supp.	Range	Unit	Default
Status	Z_8 Status information	O	Bitset		cs
Bit 0	OutOfService	O		t/f	
Bit 1	Fault	O		t/f	
Bit 2	Overridden	O		t/f	
Bit 3	InAlarm	O		t/f	
Bit 4	AlarmUnAcknowledged	O		t/f	
Bits 5...7	reserved	NA			

Access Type

♦ Output

this → M	☒	this → 1	☐				
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	10 s
		Cyclic	☒	Period:	15 min (recommended value)		
Request	☒						

Communication Type

♦ Group Object Datapoint	Mandatory:	☒
Default Group Address:	---	

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☐
		Saved value:	☐	Actual value:	☒
	Transmit on bus:	☒			☐

Exception Handling

Special Features

2.3.6.3 Parameter GeneralPeripheralZone

FB:	GPTS	Property Name (Server):	GeneralPeripheralZone	Mandatory ☒ Optional ☐

Description:

Number of the general peripheral zone.

DPT:	Name	DPT_UcountValue16_Z	DPT ID	203.012	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Zone	Number of general peripheral tag	M	full		1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1016 (GPTS)	Property ID:	104
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPTS is not LTE communicating if zone is 'OutOfService'

2.3.6.4 Parameter BuildingZone

FB:	GPTS	Property Name (Server):	BuildingZone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1..126	--	1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	true
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1016 (GPTS)	Property ID:	101
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPTS is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag). Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

2.3.6.5 Parameter Room

FB:	GPTS	Property Name (Server):	Room	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1..63	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1016 (GPTS)	Property ID:	102
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPTS is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

2.3.6.6 Parameter Subzone

FB:	GPTS	Property Name (Server):	Subzone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1..15	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1016 (GPTS)	Property ID:	103
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPTS is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

2.3.6.7 Parameter TempCorrValue

FB: GPTS	Property Name (Server): TempCorrValue	Mandatory ☐ Optional ☒

Description:

Temperature value correction for sensor value.

DPT:	Name	DPT_TempHVACRel_Z	DPT ID	205.101	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature correction value	O	Full Range	K	0
STATUS				Bitset	
- OutOfService	correction active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set correction inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1016 (GPTS)	Property ID:	111
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.3.6.8 Parameter TempCOVCondition

FB: GPTS	Property Name (Server): TempCOVCondition	Mandatory ☐ Optional ☒

Description:

Delta temperature value for COV condition

DPT:	Name	DPT_TempHVACRel_Z	DPT ID	205.101	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature COV value	O	Full Range	K	0,2
STATUS				Bitset	
- all bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1016 (GPTS)	Property ID:	112
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.3.6.9 Parameter TempAlarmLimitUpper

FB:	GPTS	Property Name (Server):	TempAlarmLimitUpper	Mandatory ☐ Optional ☒

Description:

Upper temperature value for alarm.

DPT:	Name	DPT_TempHVACAbs_Z	DPT ID	205.100	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature limit value	O	Full Range	°C	cs
STATUS				Bitset	
- OutOfService	limit active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set limit inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1016 (GPTS)	Property ID:	113
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.3.6.10 Parameter TempAlarmLimitLower

FB:	GPTS	Property Name (Server):	TempAlarmLimitLower	Mandatory ☐ Optional ☒

Description:

Lower temperature value for alarm.

DPT:	Name	DPT_TempHVACAbs_Z	DPT ID	205.100	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature limit value	O	Full Range	°C	cs
STATUS				Bitset	
- OutOfService	limit active / inactive	O	true/false		false
- all other bits	not supported, fixed to '0'	NA		bool	false
COMMAND			enum		cs
- NormalWrite		M			
- SetOSV & ResetOSV	Set limit inactive / active	O			
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1016 (GPTS)	Property ID:	114
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐ -		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.4 Multi Purpose Input (MPI)

2.4.1 Aims and objectives

The Functional Block 'Multi Purpose Input' shall have a universal physical input that - depending on hardware configuration - can be a:

- digital input that is mapped to a binary value, or
- analog input with a fixed range (e.g. 0 V to 10 V or 0 mA to 20 mA signal) that is translated to a percent value, or
- a general purpose temperature sensor.

For each of these physical values a dedicated output object exists. The value of one of these output objects shall be communicated on the bus according to the selected sensor type.

2.4.2 Functional specification

The physical implementation of the multi purpose input is device specific. Selection of its functionality can be implemented by e.g. a dip-switch or a parameter, automatically etc.

If a parameter (SensorSelect) is used to select the used sensor type, this parameter can be read only (in case the device detects the sensor type automatically), or read/write (in this case, the user sets the sensor type and the device may possibly signal an error in case the wrong sensor is physically connected).

The distribution of the output value in the system shall be event-driven (COV-condition, change of value) and in addition be repeated periodically. The COV condition may be changed by an optional parameter.

In the LTE-Mode the 'Multi Purpose Input' shall support LTE general peripheral zoning, i.e. the values of multiple MPI may be distributed in the system in parallel for different zones.

Optional features in LTE Mode:

- Support of LTE geographical zones.
- The input value may temporary be overridden by means of a tool for service purposes.
  The 'Overridden' condition must be reported.
- The value of the multi purpose input signal may be set / reset 'Out of service' by means of a tool for service purposes.

Outputs

• DigitalInputValue *)	This output shall deliver the binary value to the bus.
• AnalogInputValue *)	This output shall deliver the analog value that is converted to a 0 % to 100 % value on the bus.
• TempValue *)	This output shall deliver the measured temperature value to the bus.
• StatusGO	This output is only available in Standard Mode and shall contain the Z_8 information of the active output value.

*) only one of these signals is active

Binding Group (LTE)

• GeneralPeripheralZone	no special features
• GeographicalZone	BuildingLocation.Room.Subzone

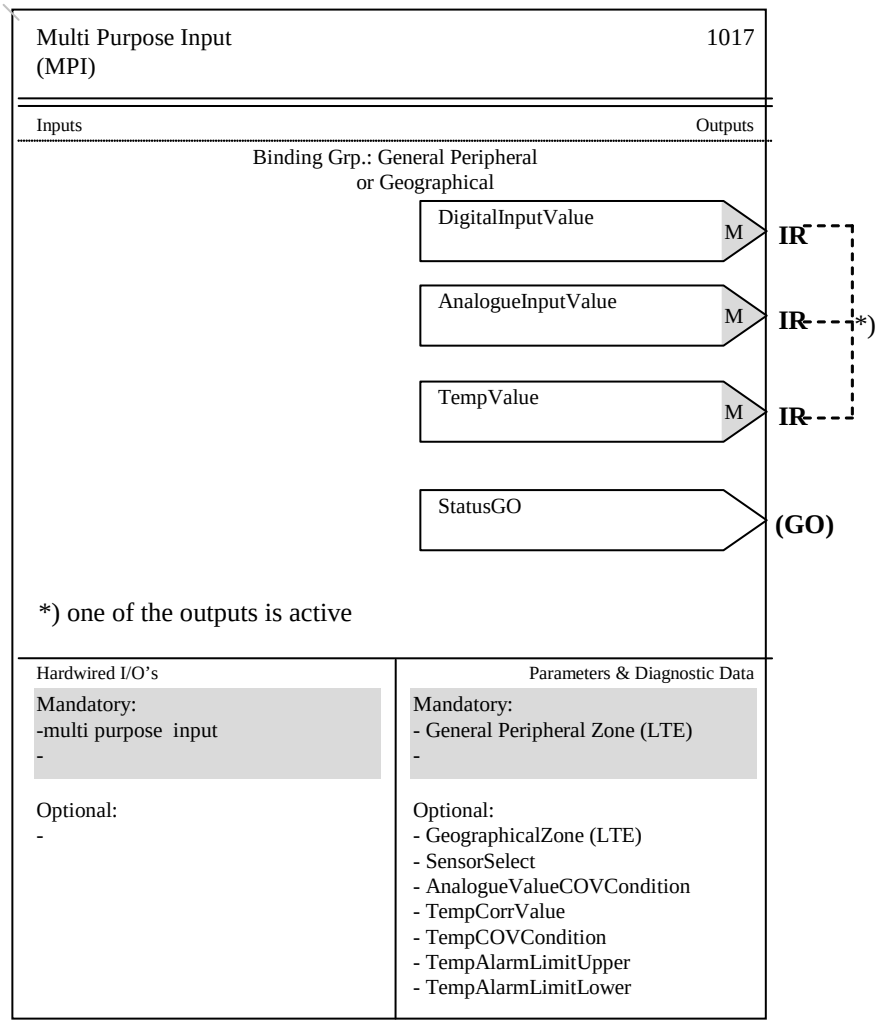
Parameters

- SensorSelect
  This optional parameter shall be used to configure the physical input according to the connected sensor:
  - input inactive
    (⇒ all output signals are ‘out of service’)
  - digital input not inverted
  - digital input inverted
  - analog input
  - temperature sensor input
- AnalogValueCOVCondition
  This optional parameter shall define the COV condition (change of value in %) for the analog output signal.
- TempCorrValue
  This parameter shall specify the correction value for the temperature sensor.
- TempCOVCondition
  This parameter shall specify the COV condition for the temperature sensor at which the information shall be transmitted spontaneously.
- TempAlarmLimitUpper
  This value can be used to create a temperature alarm.
- TempAlarmLimitLower
  This value can be used to create a temperature alarm.

2.4.3 Constraints

None.

2.4.4 Functional Block diagram



2.4.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Outputs			
DigitalInputValue	Digital input value with: - COV and heartbeat - Z_8 STATUS and - Z_8 COMMAND supported	LTE: 200.001 DPT_BinaryValue_Z B_1Z_8 S: 1.006 DPT_BinaryValue B_1	LTE: M Low/High S: GO Low/High
AnalogInputValue	Analog input value with: - COV and heartbeat - Z_8 STATUS and - Z_8 COMMAND supported	LTE: 203.017 DPT_PercentU16_Z $U_{16}Z_8$ S: 5.001 DPT_Scaling U_8	LTE: M 0-100% with 0.01% resolution S: GO
TempValue	Temperature sensor value with: - COV and RepPer - Z_8 STATUS and - Z_8 COMMAND supported to FB various controller	LTE: 205.100 DPT_TempHVACAbs_Z $V_{16}Z_8$ S: 9.001 DPT_Value_Temp F_{16}	LTE: M S: GO °C
StatusGO	Z_8 information as a Group Object	LTE: NA S: 21.001 DPT_StatusGen B_8	LTE: NA S: (GO) Bitset as Z_8
Parameters			
GeneralPeripheralZone	LTE zoning number for GenPeripheral	203.012 DPT_UcountValue16_Z $U_{16}Z_8$	M
GeographicalZone	LTE Geographical Zone: - BuildingZone like Floor, Apartment - Room within the BuildingZone - Subzone within the Room	3 Properties, each with DPT: 202.002 DPT_UcountValue8_Z $U_{16}Z_8$	O
SensorSelect	used to configure the physical input according to the connected sensor	20.017 DPT_SensorSelect N_8	O cs
AnalogValueCOVCondition	COV condition for the analog value in percent	S: 5.001 DPT_Scaling U_8	O Cs
TempCorrValue	For offset correction of the internal sensor: - Z_8 STATUS and - Z_8 COMMAND supported	205.101 1) DPT_TempHVACRel_Z $V_{16}Z_8$	O 0 K

TempCOVCondition	Value for COV condition with: - Z_8 not supported	205.101 1) DPT_TempHVACRel_Z $V_{16}Z_8$	O 0,2 K
TempAlarmLimitUpper	Upper alarm limit for generating STATUS 'Alarm' with: - Z_8 STATUS and - Z_8 COMMAND supported	205.100 1) DPT_TempHVACAbs_Z $V_{16}Z_8$	O cs °C
TempAlarmLimitLower	Lower alarm limit for generating STATUS 'Alarm' with: - Z_8 STATUS and - Z_8 COMMAND supported	205.100 1) DPT_TempHVACAbs_Z $V_{16}Z_8$	O cs °C

1) Implementation of Properties using standard DPT see clause 1.3.2.

MPI Runtime Interworking - Dependence on Configuration Modes

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE
Inputs					
Outputs	DigitalInputValue	**GO_b**	GO	GO	**M*)**
	AnalogInputValue	**GO_b**	GO	GO	**M*)**
	TempValue	**GO_b**	GO	GO	**M*)**
	StatusGO	**(GO_b)**		(GO)	**NA**

*) one of the outputs is active

MPI LTE specific Properties

		Support
Parameter	GeneralPeripheralZone	**M**
	GeographicalZone	**O**

MPI Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter	SensorSelect	**O**
	AnalogValueCOVCondition	**O**
	TempCorrValue	**O**
	TempCOVCondition	**O**
	TempAlarmLimitUpper	**O**
	TempAlarmLimitLower	**O**

2.4.6 Detailed specification of the Datapoints

2.4.6.1 Output DigitalInputValue

Standard Mode

DP Name:	DigitalInputValue			Abbr.:	---			Mandatory	☒		
FB Name:	MPI							Can be internal	☐		
Description											
This output signal provides the logical value of the digital hardware input (including possible logical inversion according to optional parameter SensorSelect).											
Datapoint Type											
DPT_Name:	DPT_BinaryValue										
DPT Format:	B_1					DPT_ID:	1.006				
Field	Description					Supp.	Range		Unit	Default	
Bit	0 = low 1 = high					M			Bit	cs	
♦ Output											
this → M	☒		this → 1	☐							
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	1 s *)				
		Cyclic	☒	Period:	15 min (recommended value)						
Request	☒										
Communication Type											
♦ Group Object Datapoint								Mandatory:	☒		
Default Group Address:	---										
Dynamics											
Power down:	Save:	☐									
Power up:	Value:	No initialisation:	☐			Default value:	☐				
		Saved value:	☐			Actual value:	☒				
	Transmit on bus:	☒					☐				
Exception Handling											

Special Features											
*) recommended value. In some applications MinRepTime of 1s is too long and updates of DigitalInputValue may be sent immediately after a COV											

LTE-Mode

FB: MPI	**LTE Server Output Name:** DigitalInputValue	Mandatory ☒ Optional ☐

Description:

This output signal provides the logical value of the digital hardware input (including possible logical inversion according to optional parameter SensorSelect).

DPT:	Name	DPT_BinaryValue_Z	DPT ID	200.001	Datatype format	B_1Z_8

Field	Description	Sup.	Range	Unit	COV	Default
BinaryValue	0 = low 1 = high	M	Bit		yes	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- Overridden	Input is temporarily overridden	O	true/false	Bit 2	yes	false
- OutOfService	Input is active / inactive	O	true/false	Bit 0	yes	false
- all other status		NA				

		Sup.	Range	
COMMAND	For Property-Service Write only		enum	
- Override / Release	Temporary override / release of BinaryValue information	O	1 / 2	
- SetOSV & ResetOSV	Set input inactive / active	O	3 / 4	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID): 1017 (MPI)	Property ID: 51		
LTE-Services (event):	COV ☒	MinRepTime: 1 *) s	Heartbeat: 15 min	
InfoReport ☒	Output per default communicating ☒	Binding Group Wildcard allowed ☐		
(LTE Read-Response polling of the output shall always be supported)	Tx Prio: High ☐	Normal ☒	Low ☐	
	Transm after Power-up: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☐	Read/Write ☒		

Exception Handling: Save at Powerdown ☐

Special Features:

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

*) recommended value. In some applications MinRepTime of 1s is too long and updates of DigitalInputValue may be sent immediately after a COV

2.4.6.2 Output AnalogInputValue

Standard Mode

DP Name:	AnalogInputValue	Abbr.:	---	Mandatory	☒
FB Name:	MPI			Can be internal	☐

Description

This output shall deliver the analog value that is converted to 0 % to 100 % with a resolution of about 0,4 % resolution to the bus.

Datapoint Type

DPT_Name:	DPT_Scaling		
DPT Format:	U_8	DPT_ID:	5.001

Field	Description	Supp.	Range	Unit	Default
			0 % to 100 %	%	cs

♦ Output

this → M	☒	this → 1	☐				
Spontaneous	☒	COV:	☒	Delta-Value:	[1]	MinRepTime:	10 s
		Cyclic	☒	Period:	15 min (recommended value)		
Request	☒						

Communication Type

♦ Group Object Datapoint		Mandatory:	☒
Default Group Address:	---		

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☐
		Saved value:	☐	Actual value:	☒
	Transmit on bus:	☒			☐

Exception Handling

Special Features

[1] COV see parameter

LTE-Mode

FB: MPI	**LTE Server Output Name:** AnalogInputValue	Mandatory ☒ Optional ☐

Description:

This output shall deliver the analog value that shall be converted to a value in the range of 0 % to 100 % to the bus. Due to higher precision requirements the value is encoded with 16 bit and 0,01 % resolution. This output contains as well STATUS information. The output may be overridden by means of the COMMAND.

DPT:	Name	DPT_PercentU16_Z	DPT ID	203.017	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	COV	Default
AnalogInputValue	Actual value in percent	M	0 % to 100 %	%	1)	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- OutOfService	Sensor out of service	O	true/false	Bit 0	Y	false
- Fault	Analog value is corrupted, out of range	O	true/false	Bit 1	Y	false
- Overridden	Sensor is temporarily overridden	O	true/false	Bit 2	Y	false
all other bits	reserved	NA		Bit 5-7	Y	false

		Sup.	Range	
COMMAND	For Property-Service Write only		enum	
- Override / Release	Temporary override / release of sensor value	O	1 / 2	
- Set / Reset OSV	Set / reset of out of service	O	3 / 4	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1017 (MPI)	Property ID:	52
LTE-Services (event): InfoReport ☒ (LTE Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: 10 s	Heartbeat:	15 min
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Power-up: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☐	Read/Write ☒		

Exception Handling: Save at Powerdown ☐

Special Features:

1) COV see parameter

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

2.4.6.3 Output TempValue

Standard Mode

DP Name:	TempValue			Abbr.:	---			Mandatory	☒		
FB Name:	MPI							Can be internal	☐		
Description											
This output shall contain temperature value measured by the temperature sensor.											
Datapoint Type											
DPT_Name:	DPT_Value_Temp										
DPT Format:	F_{16}					DPT_ID:	9.001				
Field	Description					Supp.	Range		Unit	Default	
							Full		°C	cs	
Access Type											
♦ Output											
this → M	☒	this → 1	☐								
Spontaneous	☒	COV:	☒	Delta-Value:	0,2 [1)]	MinRepTime:	10 s				
		Cyclic	☒	Period:	15 min (recommended value)						
Request	☒										
Communication Type											
♦ Group Object Datapoint								Mandatory:	☒		
Default Group Address:	---										
Dynamics											
Power down:	Save:	☐									
Power up:	Value:	No initialisation:	☐	Default value:	☐						
		Saved value:	☐	Actual value:	☒						
	Transmit on bus:	☒			☐						
Exception Handling											

Special Features											
[1)] COV see parameter											

LTE-Mode

FB: MPI	**LTE Server Output Name:** TempValue	Mandatory ☒ Optional ☐

Description:

This output shall contain the temperature value measured by the temperature sensor as well as STATUS information. The output may be overridden by means of the COMMAND.

DPT:	Name	DPT_TempHVACAbs_Z	DPT ID	205.100	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	COV	Default
Temperature	Actual temperature value	M	Full Range	°C	0,2 [1)]	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- OutOfService	Sensor out of service	O	true/false	Bit 0	Y	false
- Fault	Sensor value is corrupted	O	true/false	Bit 1	Y	false
- Overridden	Sensor is temporarily overridden	O	true/false	Bit 2	Y	false
- InAlarm	Sensor is in alarm	O	true/false	Bit 3	Y	false
- AlarmUnAck	Acknowledgement of alarm	O	true/false	Bit 4	Y	false
all other bits	reserved	NA		Bit 5-7	Y	false

		Sup.	Range	
COMMAND	For Property-Service Write only		enum	
- Override / Release	Temporary override / release of sensor value	O	1 / 2	
- Set / Reset OSV	Set / reset of out of service	O	3 / 4	
- AlarmAck	Acknowledgement of alarm	O	5	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐	OutsideSensorZone	
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1017 (MPI)	Property ID:	53
LTE-Services (event):	COV ☒	MinRepTime: 10 s	Heartbeat:	15 min
InfoReport ☒	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
(LTE Read-Response polling of the output shall always be supported)	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Power-up: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☐	Read/Write ☒		

Exception Handling: Save at Powerdown ☐

Special Features:

[1)] COV see parameter

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

2.4.6.4 Output StatusGO

LTE-Mode: NA

Standard Mode

DP Name:	StatusGO	Abbr.:	---	Mandatory	☐
FB Name:	MPI			Can be internal	☐

Description

This output shall contain the Z_8 status information of the active sensor output as a Group Object.

Datapoint Type

DPT_Name:	DPT_StatusGen		
DPT Format:	B_8	DPT_ID:	21.001

Field	Description	Supp.	Range	Unit	Default
Status	Z_8 Status information	O	Bitset		cs
Bit 0	OutOfService	O		t/f	
Bit 1	Fault	O		t/f	
Bit 2	Overridden	O		t/f	
Bit 3	InAlarm	O		t/f	
Bit 4	AlarmUnAcknowledged	O		t/f	
Bits 5...7	reserved	NA			

Access Type

♦ Output

this → M	☒	this → 1	☐				
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	1 s
		Cyclic	☒	Period:	15 min (recommended value)		
Request	☒						

Communication Type

♦ Group Object Datapoint		Mandatory:	☒
Default Group Address:	---		

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☐
		Saved value:	☐	Actual value:	☒
	Transmit on bus:	☒			☐

Exception Handling

Special Features

2.4.6.5 Parameter GeneralPeripheralZone

FB: MPI	Property Name (Server): GeneralPeripheralZone	Mandatory ☒ Optional ☐

Description:

Number of the general peripheral zone.

DPT:	Name	DPT_UcountValue16_Z	DPT ID	203.012	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Zone	Number of general peripheral tag	M	full		1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1017 (MPI)	Property ID:	104
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

MPI is not LTE communicating if zone is 'OutOfService'

2.4.6.6 Parameter BuildingZone

FB: MPI	Property Name (Server): BuildingZone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1..126	--	1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	true
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1017 (MPI)	Property ID:	101
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

MPI is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag). Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

2.4.6.7 Parameter Room

FB: MPI	Property Name (Server): Room	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1..63	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1017 (MPI)	Property ID:	102
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

MPI is not LTE communicating if zone is ‘OutOfService’. If parameter BuildingZone is ‘OutOfService’ also the corresponding Room and Subzone parameters are ‘OutOfService’ (common flag)

2.4.6.8 Parameter Subzone

FB: MPI	Property Name (Server): Subzone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1..15	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1017 (MPI)	Property ID:	103
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

MPI is not LTE communicating if zone is ‘OutOfService’. If parameter BuildingZone is ‘OutOfService’ also the corresponding Room and Subzone parameters are ‘OutOfService’ (common flag)

2.4.6.9 Parameter SensorSelect

FB: MPI	Property Name (Server): SensorSelect	Mandatory ☐ Optional ☒

Description:

Defines the sensor type of the physical input..

DPT:	Name	DPT_SensorSelect	DPT ID	20.017	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
	0 = inactive 1 = digital input not inverted 2 = digital input inverted 3 = analog input -> 0 % to 100 % 4 = temperature sensor input				cs

Communication:

DP Address: (in the server)	IO Type(ID):	1017 (MPI)	Property ID:	110
	Start-Index:	1	N° of elements	1
Property access:	Read only ☒ 1)		Read/Write ☒ 1)	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ 1) Act Value ☒ 1) Default Value ☐

Special Features:

1) This parameter can be read only (in case the device detects the sensor type automatically), or read/write (in this case, the user sets the sensor type and the device may possibly signal an error in case the wrong sensor is physically connected)

2.4.6.10 Parameter AnalogValueCOVCondition

FB: GPAI	Property Name (Server): AnalogValueCOVCondition	Mandatory ☐ Optional ☒

Description:

This optional parameter shall define the COV condition (change of value in %) for the output signal with a resolution of about 0,4 %.

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
			cs	%	cs

Communication:

DP Address: (in the server)	IO Type(ID):	1017 (MPI)	Property ID:	111
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.4.6.11 Parameter TempCorrValue

FB: MPI	Property Name (Server): TempCorrValue	Mandatory ☐ Optional ☒

Description:

Temperature value correction for sensor value.

DPT:	Name	DPT_TempHVACRel_Z	DPT ID	205.101	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature correction value	O	Full Range	K	0
STATUS				Bitset	
- OutOfService	correction active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set correction inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1017 (MPI)	Property ID:	112
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.4.6.12 Parameter TempCOVCondition

FB: MPI	Property Name (Server): TempCOVCondition	Mandatory ☐ Optional ☒

Description:

Delta temperature value for COV condition

DPT:	Name	DPT_TempHVACRel_Z	DPT ID	205.101	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature COV value	O	Full Range	K	0,2
STATUS				Bitset	
- all bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1017 (MPI)	Property ID:	113
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.4.6.13 Parameter TempAlarmLimitUpper

FB: MPI	Property Name (Server): TempAlarmLimitUpper	Mandatory ☐ Optional ☒

Description:

Upper temperature value for alarm.

DPT:	Name	DPT_TempHVACAbs_Z	DPT ID	205.100	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature limit value	O	Full Range	°C	cs
STATUS				Bitset	
- OutOfService	limit active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set limit inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1017 (MPI)	Property ID:	114
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

2.4.6.14 Parameter TempAlarmLimitLower

FB: MPI	Property Name (Server): TempAlarmLimitLower	Mandatory ☐ Optional ☒

Description:

Lower temperature value for alarm.

DPT:	Name	DPT_TempHVACAbs_Z	DPT ID	205.100	Datatype format	$V_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Temperature	Temperature limit value	O	Full Range	°C	cs
STATUS				Bitset	
- OutOfService	limit active / inactive	O	true/false		false
- all other bits	not supported, fixed to '0'	NA		bool	false
COMMAND			enum		cs
- NormalWrite		M			
- SetOSV & ResetOSV	Set limit inactive / active	O			
- all other commands	not supported	NA			

Communication:

DP Address:	IO Type(ID):	1017 (MPI)	Property ID:	115
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

---

3 General PurposeOutput Functional Blocks

3.1 General Purpose Digital Output (GPDO)

3.1.1 Aims and objectives

The Functional Block ‘General Purpose Digital Output’ shall be used to implement a universal Digital Output.

The Functional Block shall translate the received binary setpoint value information to the electrical output signal. The physical implementation of the output signal is device specific (e.g. potential free relays or TTL logic etc).

Functional Block GPDO may optionally support autonomous blinking of the digital hardware output. Autonomous blinking of the output enables smoth on/off timing of the output and minimizes the number of messages. GPDO blinking feature is only meaningful if the connected hardware is suitable for blinking, e.g. a LED.

3.1.2 Functional specification

Distribution of the setpoint information DigitalOutSetp in the system shall be event-driven (COV-condition, change of value) and may be repeated periodically. Therefore, the Input may have a time-out.

In the LTE-Mode the ‘General Purpose Digital Output’ shall support LTE general peripheral zones and optionally geographical zones.

The state of the electrical representation of the Digital Output may be inverted (e.g. from normally open to normally closed) using the parameter OutputSelect.

If no valid setpoint is available, the behaviour (company specific) of the Digital Output may be:

- output low / open, or
- output high /closed, or
- leave position unchanged.

After power up the behaviour of the Digital Output is company specific. It may be

- the default value, or
- the last stored value before power-down.

Blinking function of the Digital Output:

Blinking of the Digital Output may be implemented in different ways:

- **Method A)**
  Toggle of the binary setpoint (input DigitalOutSetp) => the sender determines the blinking frequency and the on/off ratio.
  Latency between the sender and the receiver may lead to visible jitter of the electrical output signal. Short blinking periods create high network traffic.
- **Method B)**
  Autonomous blinking function is locally implemented in the GPDO. The blinking frequency and the on/off ratio are determined by local parameters of the GPDO (e.g. blinking period and on/off ratio). Blinking function is controlled by the configuration parameter BlinkingMode. The Digital Output starts blinking after a transition low -> high of DigitalOutSetp. Blinking is acknowledged and terminated by an additional input trigger signal StopBlinking.
- **Method C)**
  Method C works in a similar way as Method B. However blinking of the output is controlled (i.e. dynamically enabled/disbled) via an additional input signal ForcedBlinking. The Digital Output starts blinking if DigitalOutSetp = high and ForcedBlinking = enabled

Inputs

• DigitalOutSetp	This input controls the binary setpoint for the Digital Output.
• StopBlinking	This optional trigger input in combination with parameter BlinkingMode is used to control/acknowledge local blinking (Method B). The trigger terminates local blinking state of the electrical output. I.e. electrical output changes from blinking state to a permanent binary state according to input DigitalOutSetp
• ForcedBlinking	This optional input is used to control local blinking (Method C). If ForcedBlinking = enabled, the electrical output is blinking if DigitalOutSetp = high If ForcedBlinking = disabled, the electrical output is controlled according to the value of DigitalOutSetp

Outputs

• StatusDigitalOutput	This signal reflects the current **logical** status of the Digital Output. Behavior in case of active local blinking function (Method B and C): Blinking of the electrical output does **not** trigger updates of StatusDigitalOutput messages to avoid extensive network traffic.

Binding Group (LTE)

- GeneralPeripheralZone — No special features.
- GeographicalZone — BuildingLocation.Room.Subzone

Parameters

- OutputSelect — This optional parameter shall be used to invert the electrical signal of the DigitalOutput (e.g. from normally open to normally closed).
- BlinkingMode — This optional parameter controls the behavior of the local blinking function for Method B

Specification of local blinking function Method B (optional feature)

BlinkingMode = BlinkingDisabled		
State: Digital Output = low		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	None	unchanged
Receive DigitalOutSetp = high	send StatusDigitalOutput = high	Digital Output = high
Receive StopBlinking	None	unchanged
State: Digital Output = high		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	send StatusDigitalOutput = low	Digital Output = low
Receive DigitalOutSetp = high	None	unchanged
Receive StopBlinking trigger	None	unchanged

BlinkingMode = BlinkingWithoutAcknowledge		
State: Digital Output = low		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	None	unchanged
Receive DigitalOutSetp = high	send StatusDigitalOutput = high start blinking of electrical output signal	Digital Output = high / Electrical Output Blinking
Receive StopBlinking trigger	None	unchanged
State: Digital Output = high / Electrical Output Blinking		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	send StatusDigitalOutput = low stop blinking of electrical output signal	Digital Output = low
Receive DigitalOutSetp = high	None	unchanged
Receive StopBlinking trigger	None	unchanged

BlinkingMode = BlinkingWithAcknowledge		
State: Digital Output = low		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	None	unchanged
Receive DigitalOutSetp = high	send StatusDigitalOutput = high start blinking of electrical output signal	Digital Output = high / Electrical Output Blinking
Receive StopBlinking trigger	None	unchanged
State: Digital Output = high / Electrical Output Blinking		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	send StatusDigitalOutput = low stop blinking of electrical output signal	Digital Output = low
Receive DigitalOutSetp = high	None	unchanged
Receive StopBlinking trigger	stop blinking of electrical output signal	DigitalOutput = high
State: DigitalOutput = high		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	send StatusDigitalOutput = low	DigitalOutput = low
Receive DigitalOutSetp = high	None	unchanged
Receive StopBlinking trigger	None	unchanged

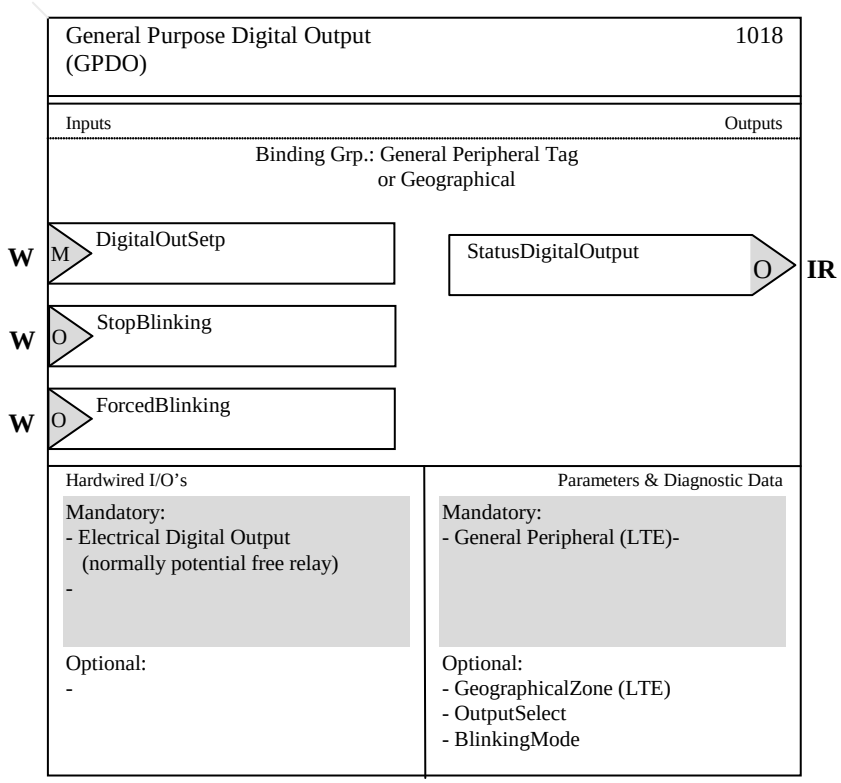
Specification of local blinking function Method C (optional feature)

State: Digital Output = low		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	None	unchanged
Receive DigitalOutSetp = high	send StatusDigitalOutput = high	Digital Output = high
Receive ForcedBlinking = enabled	None	unchanged
Receive ForcedBlinking = disabled	None	unchanged
State: Digital Output = high		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	send StatusDigitalOutput = low	Digital Output = low
Receive DigitalOutSetp = high	None	unchanged
Receive ForcedBlinking = enabled	start blinking of electrical output signal	Digital Output = high / Electrical Output Blinking
Receive ForcedBlinking = disabled	None	unchanged
State: Digital Output = high / Electrical Output Blinking		
Event:	**Action:**	**Following State:**
Receive DigitalOutSetp = low	send StatusDigitalOutput = low stop blinking of electrical output signal	Digital Output = low
Receive DigitalOutSetp = high	None	unchanged
Receive ForcedBlinking = enabled	None	unchanged
Receive ForcedBlinking = disabled	stop blinking of electrical output signal	DigitalOutput = high

3.1.3 Constraints

None.

3.1.4 Functional Block diagram



3.1.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Inputs			
DigitalOutSetp	Setpoint for the digital output with: - timeout (optional) - Z_8 STATUS and - Z_8 COMMAND supported	LTE: 200.001 DPT_BinaryValue_Z B_1Z_8 S: 1.006 DPT_BinaryValue B_1	LTE: M Low/High S: GO Low/High
StopBlinking	Trigger input to acknowledge and terminate blinking state of the electrical output according to Method C	1.017 DPT_Trigger B_1	O
ForcedBlinking	Input to control the blinking state of the electrical output according to Method C	1.003 DPT_Enable B_1	O
Outputs			
StatusDigitalOutput	Actual status of the digital output value with: - COV and heartbeat - Z_8 STATUS	LTE: 200.001 DPT_BinaryValue_Z B_1Z_8 S: 1.006 DPT_BinaryValue B_1	LTE: O Low/High S: GO Low/High
Parameters			
GeneralPeripheralZone	LTE zoning number for GenPeripheral	203.012 DPT_UcountValue16_Z $U_{16}Z_8$	M
GeographicalZone	LTE Geographical Zone: - BuildingZone like Floor, Apartment - Room within the BuildingZone - Subzone within the Room	3 Properties, each with DPT: 202.002 DPT_UcountValue8_Z $U_{16}Z_8$	O
OutputSelect	This optional parameter is used to invert the electrical behaviour of the physical output (e.g. from normally open to normally closed)	1.012 DPT_Invert B_1	O Cs
BlinkingMode	This optional parameter is used to control the behavior of the local blinking function (Method B)	20. 603 DPT_BlinkingMode	O

Implementation of Properties using standard DPT: see clause 1.3.2.

GPDO Runtime Interworking - dependence on Configuration Modes

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE
Inputs	DigitalOutSetp	**GO_b**	GO	GO	**M**
	StopBlinking	**$(GO_{b)}$**	(GO)	(GO)	**O**
	ForcedBlinking	**$(GO_{b)}$**	(GO)	(GO)	**O**
Outputs	StatusDigitalOutput	**$(GO)_b$**		(GO)	**O**

GPDO LTE specific Properties

		Support
Parameter	GeneralPeripheralZone	**M**
	GeographicalZone	O

GPDO Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter	OutputSelect	**O**
	BlinkingMode	**O**

3.1.6 Detailed specification of the Datapoints

3.1.6.1 Input DigitalOutSetp

Standard Mode

DP Name:	DigitalOutSetp	Abbr.:	---	Mandatory	☒
FB Name:	GPDO			Can be internal	☒

Description

This input signal contains the setpoint value for the digital output

Datapoint Type

DPT_Name:	DPT_BinaryValue		
DPT Format:	B_1	DPT_ID:	1.006

Field	Description	Supp.	Range	Unit	Default
			Low/High		cs

Access Type

♦ Input

	N → this	☐	1 → this	☒		
	Spontaneous	☒	Cyclically:	☒ 2)	Time-out:	31 min (rec.) 2)
	Request	☐	Polling:	☐	Period:	

Communication Type

♦	Group Object Datapoint	Mandatory:	☒
	Default Group Address:	---	

Dynamics

	Power down:	Save:	☐			
	Power up:	Value:	No initialisation:	☐	Default value:	☒ 1)
			Saved value:	☒ 1)		☐
				☐	Read from bus:	☐

Exception Handling

1) see LTE-representation
2) This time-out is optional.

Special Features

LTE-Mode

FB: GPDO	**LTE Server Input Name:** DigitalOutSetp	Mandatory ☒ Optional ☐

Description:

This input signal contains the setpoint value for the digital output

DPT:	Name	DPT_BinaryValue_Z	DPT ID	200.001	Datatype format	B_1Z_8

Field	Description	Sup.	Unit	Default
BinaryValue	Setpoint value 0 = low 1 = high	M		cs [2]
STATUS	For Read Service only		Bitset	
- OutOfService	DigitalOutSetp is out of service (only applicable for void setpoint after power-up)	O	Bit 0	false
- Overridden	DigitalOutSetp is temporarily overridden	O	Bit 2	false
- all other bits	fixed to '0'	NA		false
COMMAND	For Write Service only		enum.	
- NormalWrite	Used for normal runtime communication (LTE Write Service)	M	0	
- Override / Release	Used for temporary override / release of DigitalOutSetp (mainly by a tool using Property Write access with point-to-point communication)	O	1 / 2	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1018 (GPDO)	Property ID:	51
LTE-Service (event): Write ☒	Timeout: [2]	31	min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☒ or Stored Value [1] ☒

Exception Handling: Save at Power-down [1] ☒

[1] optional feature:
After power up the behaviour of the digital output is company specific:
- 'void' setpoint (DigitalOutSetp 'out of service') => digital output is set to a default value
- last stored value before power-down

[2] This time-out is an optional feature. In case of a timeout the setpoint may be set to 'void' value (DigitalOutSetp 'out of service').
Behaviour of the digital output if no valid setpoint is available (company specific):
- output low / open
- output high /closed
- leave position unchanged

Special Features:

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

3.1.6.2 Input StopBlinking

Standard Mode

DP Name:	StopBlinking	Abbr.:	---	Mandatory	☐
FB Name:	GPDO			Can be internal	☐

Description

This trigger input signal is used to acknowledge and terminate blinking state of the electrical output (blinking method B) if parameter BlinkingMode = BlinkingWithAcknowledge. Otherwise this input has no effect.

Datapoint Type

DPT_Name:	DPT_Trigger		
DPT Format:	B_1	DPT_ID:	1.017

Field	Description	Supp.	Range	Unit	Default
	Both values 0/1 will be accepted as trigger		0/1		cs

Access Type

♦ Input

	N → this	☐	1 → this	☒		
	Spontaneous	☒	Cyclically:	☐	Time-out:	
	Request	☐	Polling:	☐	Period:	

Communication Type

♦	Group Object Datapoint	Mandatory:	☒
	Default Group Address:	---	

Dynamics

	Power down:	Save:	☐			
	Power up:	Value:	No initialisation:	☒	Default value:	☐
			Saved value:	☐		☐
				☐	Read from bus:	☐

Exception Handling

--

Special Features

--

LTE-Mode

FB: **GPDO**	**LTE Server Input Name:** **StopBlinking**	Mandatory ☐ Optional ☒

Description:

This trigger input signal is used to acknowledge and terminate blinking state of the electrical output (blinking method B) if parameter BlinkingMode = BlinkingWithAcknowledge. Otherwise this input has no effect.

DPT:	Name	DPT_Trigger	DPT ID	1.017	Datatype format	B_1

Field	Description	Sup.	Unit	Default
BinaryValue	Both values 0/1 will be accepted as trigger	M		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1018 (GPDO)	Property ID:	53
LTE-Service (event): Write ☒	Timeout:	--	min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☐ or Stored Value ☐

Exception Handling: Save at Power-down ☐

Special Features:

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

3.1.6.3 Input ForcedBlinking

Standard Mode

DP Name:	ForcedBlinking	Abbr.:	---	Mandatory	☐
FB Name:	GPDO			Can be internal	☐

Description

This optional input is used to control local blinking (Method C).
If ForcedBlinking = enabled, the electrical output is blinking if DigitalOutSetp = high
If ForcedBlinking = disabled, the electrical output is controlled according to the value of DigitalOutSetp

Datapoint Type

DPT_Name:	DPT_Enable		
DPT Format:	B_1	DPT_ID:	1.003

Field	Description	Supp.	Range	Unit	Default
	0 = Disable blinking 1 = Enable blinking				cs

Access Type

♦ Input

N → this	☐	1 → this	☒		
Spontaneous	☒	Cyclically:	☐	Time-out:	
Request	☐	Polling:	☐	Period:	

Communication Type

♦ Group Object Datapoint				Mandatory:	☒
Default Group Address:	---				

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☒
		Saved value:	☐		☐
			☐	Read from bus:	☐

Exception Handling

--

Special Features

--

LTE-Mode

FB: GPDO	**LTE Server Input Name:** ForcedBlinking	Mandatory ☐ Optional ☒

Description:

This optional input is used to control local blinking (Method C).
If ForcedBlinking = enabled, the electrical output is blinking if DigitalOutSetp = high
If ForcedBlinking = disabled, the electrical output is controlled according to the value of DigitalOutSetp

DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format	B_1

Field	Description	Sup.	Unit	Default
BinaryValue	0 = Disable blinking 1 = Enable blinking	M		cs

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1018 (GPDO)	Property ID:	54
LTE-Service (event): Write ☒	Timeout:	--		min
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☒ or Stored Value ☐

Exception Handling: Save at Power-down ☐

Special Features:

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

3.1.6.4 Output StatusDigitalOutput

Standard Mode

DP Name:	StatusDigitalOutput			Abbr.:	---			Mandatory	☐		
FB Name:	GPDO							Can be internal	☐		
Description											
Actual logical state of the digital output											
Datapoint Type											
DPT_Name:	DPT_BinaryValue										
DPT Format:	B_1					DPT_ID:	1.006				
Field	Description					Supp.	Range		Unit	Default	
Bit	0 = low 1 = high					M			Bit	cs	
♦ Output											
this → M	☒		this → 1	☐							
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	10 s				
		Cyclic	☒	Period:	15 min (recommended value)						
Request	☒										
Communication Type											
♦ Group Object Datapoint								Mandatory:	☒		
Default Group Address:	---										
Dynamics											
Power down:	Save:	☐									
Power up:	Value:	No initialisation:	☐			Default value:	☐				
		Saved value:	☐			Actual value:	☒				
	Transmit on bus:	☒					☐				
Exception Handling											

Special Features											

LTE-Mode

FB: GPDO	**LTE Server Output Name:** StatusDigitalOutput	Mandatory ☐ Optional ☒

Description:

This output signal provides the actual logical state of the digital output

DPT:	Name	DPT_BinaryValue_Z	DPT ID	200.001	Datatype format	B_1Z_8

Field	Description	Sup.	Range	Unit	COV	Default
BinaryValue	0 = low 1 = high	M	Bit		yes	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- Fault	Failure of the hardware output (e.g. overload)	O	true/false	Bit 1	yes	false
- Overridden	Digital output is temporarily overridden due to an override of DigitalOutSetp or due to local device settings (e.g. dip-switch)	O	true/false	Bit 2	yes	false
- all other status		NA				

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1018 (GPDO)	Property ID:	52
LTE-Services (event):	COV ☒	MinRepTime: 10 s	Heartbeat:	15 min
InfoReport ☒ (LTE Read-Response polling of the output shall always be supported)	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Power-up: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☒	Read/Write ☐		

Exception Handling: Save at Powerdown ☐

Special Features:

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

3.1.6.5 Parameter GeneralPeripheralZone

FB: GPDO	Property Name (Server): GeneralPeripheralZone	Mandatory ☒ Optional ☐

Description:

Number of the general peripheral zone.

DPT:	Name	DPT_UcountValue16_Z	DPT ID	203.012	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Zone	Number of general peripheral tag	M	full		1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1018 (GPDO)	Property ID:	104
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDO is not LTE communicating if zone is 'OutOfService'

3.1.6.6 Parameter BuildingZone

FB: GPDO	Property Name (Server): BuildingZone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1..126	--	1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	true
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1018 (GPDO)	Property ID:	101
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDO is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)
Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

3.1.6.7 Parameter Room

FB: GPDO	Property Name (Server): Room	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1..63	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1018 (GPDO)	Property ID:	102
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDO is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

3.1.6.8 Parameter Subzone

FB: GPDO	Property Name (Server): Subzone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1..15	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1018 (GPDO)	Property ID:	103
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPDO is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

3.1.6.9 Parameter OutputSelect

FB: GPDO	Property Name (Server): OutputSelect	Mandatory ☐ Optional ☒

Description:

Defines the operation logic of the electrical output: inverted or not inverted.

DPT:	Name	DPT_Invert	DPT ID	1.012	Datatype format	B_1

Field	Description	Sup.	Range	Unit	Default

Communication:

DP Address: (in the server)	IO Type(ID):	1018 (GPDO)	Property ID:	110
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

3.1.6.10 Parameter BlinkingMode

FB: GPDO	Property Name (Server): BlinkingMode	Mandatory ☐ Optional ☒

Description:

This optional parameter is used to control the behavior of the local blinking function (method B)

DPT:	Name	DPT_BlinkingMode	DPT ID	20.603	Datatype format	N_8

Field	Description	Sup.	Range	Unit	Default
BlinkingMode	0 = BlinkingDisabled 1 = BlinkingWithoutAcknowledge 2 = BlinkingWithAcknowledge	M	[0…2]	none	none

Communication:

DP Address: (in the server)	IO Type(ID):	1018 (GPDO)	Property ID:	111
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

3.2 General Purpose Analog Output (GPAO)

3.2.1 Aims and objectives

The Functional Block ‘General Purpose Analog Output’ shall be used to implement a universal analog output signal with a fixed range (e.g. 0 V to 10 V or 0 mA to 20 mA signal).

The Functional Block shall translate the received value in the range 0 % to 100 % to the electrical output. The physical implementation of the output is device specific and may be controlled by implementation specific parameters.

3.2.2 Functional specification

The distribution of the setpoint information in the system shall be event-driven (COV-condition, change of value) and may be repeated periodically. Therefore, the Input may have a time-out.

In the LTE-Mode the ‘General Purpose Digital Output’ shall support LTE general peripheral zones and optionally geographical zones.

The behaviour of the physical output if no valid setpoint is available is company specific. It may be:

- take the maximum value, or
- take the minimum value, or
- leave position unchanged.

After power up the behaviour of the output is company specific. It may be:

- the default value, or
- the last stored value before power-down.

Inputs

• AnalogOutSetp	Setpoint (0 % to 100 %) for the physical output.

Outputs

• StatusAnalogOutput	Actual value (0 % to 100 %) and status of the physical output.

Binding Group (LTE)

• GeneralPeripheralZone	no special features
• GeographicalZone	BuildingLocation.Room.Subzone

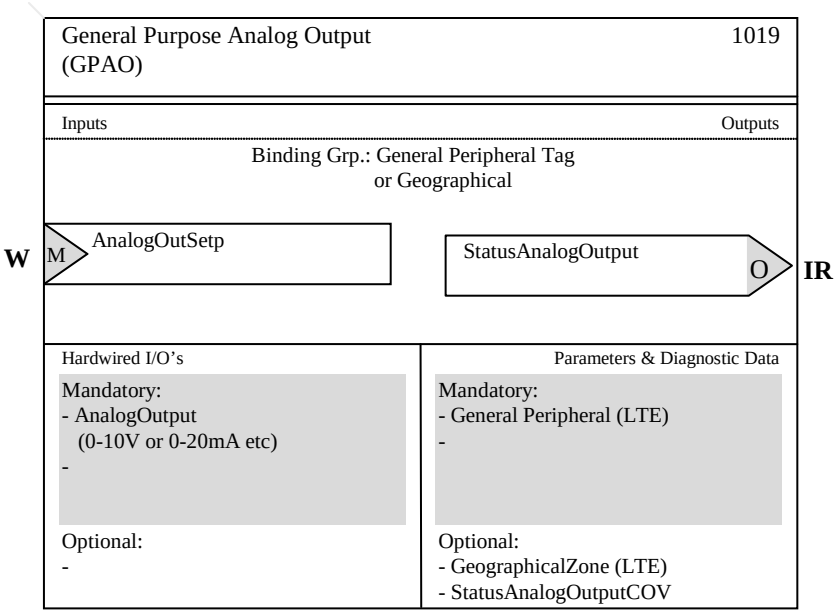
Parameters

• StatusAnalogOutputCOV	COV condition for StatusAnalogOutput in percent

3.2.3 Constraints

None.

3.2.4 Functional Block diagram



3.2.5 Datapoint description

Overview

Datapoints	Description / Remarks	Datapoint Type	Additional Info
Inputs			
AnalogOutSetp	Setpoint for the analog output with: - timeout - Z_8 STATUS and - Z_8 COMMAND supported	LTE: 203.017 DPT_PercentU16_Z $U_{16}Z_8$ S: 5.001 DPT_Scaling U_8	LTE: M 0-100% with 0.01% resolution S: GO
Outputs			
StatusAnalogOutput	Actual status of the analog output value with: - COV and heartbeat - Z_8 STATUS	LTE: 203.017 DPT_PercentU16_Z $U_{16}Z_8$ S: 5.001 DPT_Scaling U_8	LTE: O 0-100% with 0.01% resolution S: GO
Parameters			
GeneralPeripheralZone	LTE zoning number for GenPeripheral	203.012 DPT_UcountValue16_Z $U_{16}Z_8$	M
GeographicalZone	LTE Geographical Zone: - BuildingZone like Floor, Apartment - Room within the BuildingZone - Subzone within the Room	3 Properties, each with DPT: 202.002 DPT_UcountValue8_Z $U_{16}Z_8$	O
StatusAnalogOutputCOV	COV condition for StatusAnalogOutput in percent	5.001 DPT_Scaling U_8	O cs

Implementation of Properties using standard DPT see clause 1.3.2

GPAO Runtime Interworking - dependence on Configuration Modes

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE
Inputs	AnalogOutSetp	**GO_b**	GO	GO	**M**
Outputs	StatusAnalogOutput	**$(GO)_b$**		(GO)	**O**

GPAO LTE specific Properties

		Support
Parameter	GeneralPeripheralZone	**M**
	GeographicalZone	O

GPAO Standard Properties of Interface Objects (or memory mapped DP)

		Support
Parameter	StatusAnalogOutputCOV	**O**

3.2.6 Detailed specification of the Datapoints

3.2.6.1 Input AnalogOutSetp

Standard Mode

DP Name:	AnalogOutSetp	Abbr.:	---	Mandatory	☒
FB Name:	GPAO			Can be internal	☒

Description

This input signal shall contain the 0 % to 100 % setpoint value with a resolution of about 0,4 % that shall be translated to the corresponding analog range of the physical output.

Datapoint Type

DPT_Name:	DPT_Scaling				
DPT Format:	U_8	DPT_ID:	5.001		

Field	Description	Supp.	Range	Unit	Default
			0 % to 100 %	%	cs [1]

Access Type

♦ Input

N → this	☐	1 → this	☒			
Spontaneous	☒	Cyclically:	☒ [2]	Time-out:	31 min (rec.) [2]	
Request	☐	Polling:	☐	Period:		

Communication Type

♦ Group Object Datapoint		Mandatory:	☒
Default Group Address:	---		

Dynamics

Power down:	Save:	☐			
Power up:	Value:	No initialisation:	☐	Default value:	☒ [1]
		Saved value:	☒ [1]		☐
			☐	Read from bus:	☐

Exception Handling

[1] see LTE-representation-
[2] This time-out is optional.

Special Features

LTE-Mode

FB: GPAO	**LTE Server Input Name:** AnalogOutSetp	Mandatory ☒ Optional ☐

Description:

This input signal shall contain the 0 % to 100 % setpoint value that shall be translated to the corresponding analog range of the physical output. Due to higher precision requirements the value shall be encoded with 16 bit and 0,01 % resolution.

DPT:	Name	DPT_PercentU16_Z	DPT ID	203.017	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Unit	Default
AnalogValue	Setpoint value 0-100% [2]	M	%	cs [3]
STATUS	For Read Service only		Bitset	
- OutOfService	AnalogOutSetp is out of service (only applicable for void setpoint after power-up)	O	Bit 0	false
- Overridden	AnalogOutSetp is temporarily overridden	O	Bit 2	false
- all other bits	fixed to '0'	NA		false
COMMAND	For Write Service only		enum.	
- NormalWrite	Used for normal runtime communication (LTE Write Service)	M	0	
- Override / Release	Used for temporary override / release of AnalogOutSetp (mainly by a tool using Property Write access with point-to-point communication)	O	1 / 2	
- all other commands		NA		

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1019 (GPAO)	Property ID:	51
LTE-Service (event): Write ☒	Timeout:	31	min	
Property-Service (individual access):	Read only ☐		Read/Write ☒	

Value after Power-up: Default Value ☒ or Stored Value [1] ☒

Exception Handling: Save at Power-down [1] ☒

[1] optional feature: After power up the behaviour of the analog output is company specific:
- 'void' setpoint (AnalogOutSetp 'out of service') => analog output is set to a default value
- last stored value before power-down

[2] handling of input values >100% is company specific

[3] This time-out is an optional feature. In case of a timeout the setpoint may be set to 'void' value (AnalogOutSetp 'out of service').
Behaviour of the physical output if no valid setpoint is available (company specific):
- maximum value
- minimum value
- leave position unchanged

Special Features:

Support of Geographical zones is optional. Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

3.2.6.2 Output StatusAnalogOutput

Standard Mode

DP Name:	StatusAnalogOutput			Abbr.:	---			Mandatory	☐		
FB Name:	GPAO							Can be internal	☐		
Description											
This output signal shall provide the current status of the physical analog output.											
Datapoint Type											
DPT_Name:	DPT_Scaling										
DPT Format:	U_8					DPT_ID:	5.001				
Field	Description			Supp.	Range			Unit	Default		
					0 % to 100 %			%	cs		
Group Object											
♦ Output											
this → M	☒	this → 1	☐								
Spontaneous	☒	COV:	☒	Delta-Value:	---	MinRepTime:	10 s				
		Cyclic	☒	Period:	15 min (recommended value)						
Request	☒										
Communication Type											
♦ Group Object Datapoint								Mandatory:	☒		
Default Group Address:	---										
Dynamics											
Power down:	Save:	☐									
Power up:	Value:	No initialisation:	☐	Default value:	☐						
		Saved value:	☐	Actual value:	☒						
	Transmit on bus:	☒			☐						
Exception Handling											

Special Features											

LTE-Mode

FB: GPAO	**LTE Server Output Name:** StatusAnalogOutput	Mandatory ☐ Optional ☒

Description:

This output signal shall provide the current status of the physical analog output. Due to higher precision requirements the value shall be encoded with 16 bit and 0,01 % resolution.

DPT:	Name	DPT_PercentU16_Z	DPT ID	203.017	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	COV	Default
AnalogValue	Actual value in percent	M	0 % to 100%	%	cs *)	cs
STATUS	For LTE-Service InfoReport and Property-Service Response only			Bitset		
- Fault	Failure of the hardware output (e.g. overload, value out of range)	O	true/false	Bit 1	Y	false
- Overridden	Analog output is temporarily overridden due to an override of AnalogOutSetp or due to local device settings	O	true/false	Bit 2	Y	false
all other bits	reserved	NA		Bit 5-7	Y	false

Communication:

Binding Group:

Class	Type	Default
Geographical ☒	BuildingZone.Room.Subzone	1.1.1
Application Specific ☐		
Unassigned ☒	Broadcast ☐ Configurable ☒	cs

DP Address:	IO Type(ID):	1019 (GPAO)	Property ID:	52
LTE-Services (event): InfoReport ☒ (LTE Read-Response polling of the output shall always be supported)	COV ☒	MinRepTime: 10 s	Heartbeat:	15 min
	Output per default communicating ☒		Binding Group Wildcard allowed ☐	
	Tx Prio:	High ☐	Normal ☒	Low ☐
	Transm after Power-up: Stored Value ☐	Act Value ☒	Default Value ☐	
Property-Service (individual access):	Read only ☒	Read/Write ☐		

Exception Handling: Save at Powerdown ☐

Special Features:

Support of Geographical zones is optional Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set ‘OutOfService’

*) COV may be fixed or configurable via parameter StatusAnalogOutputCOV

3.2.6.3 Parameter GeneralPeripheralZone

FB: GPAO	Property Name (Server): GeneralPeripheralZone	Mandatory ☒ Optional ☐

Description:

Number of the general peripheral zone.

DPT:	Name	DPT_UcountValue16_Z	DPT ID	203.012	Datatype format	$U_{16}Z_8$

Field	Description	Sup.	Range	Unit	Default
Zone	Number of general peripheral tag	M	full		1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	false
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1019 (GPAO)	Property ID:	104
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAO is not LTE communicating if zone is 'OutOfService'

3.2.6.4 Parameter BuildingZone

FB: GPAO	Property Name (Server): BuildingZone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> BuildingEntity (Floor, Apartment, Building section etc.)

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Number of the BuildingZone	M	1..126	--	1
STATUS				Bitset	
- OutOfService	zone active / inactive	O	true/false	Bit 0	true
- all other bits	not supported, fixed to '0'	NA			false
COMMAND			enum		cs
- NormalWrite		M	0		
- SetOSV & ResetOSV	Set zone inactive / active	O	3 / 4		
- all other commands	not supported	NA			

Communication:

DP Address: (in the server)	IO Type(ID):	1019 (GPAO)	Property ID:	101
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAO is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)
Usually it does not make sense to communicate simultaneously in Geographical and Unassigned Peripheral Zones. Therefore the parameter for the inactive zone is set 'OutOfService'

3.2.6.5 Parameter Room

FB:	GPAO	Property Name (Server):	Room	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Room within BuildingZone

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Room number	M	1..63	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1019 (GPAO)	Property ID:	102
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAO is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

3.2.6.6 Parameter Subzone

FB:	GPAO	Property Name (Server):	Subzone	Mandatory ☐ Optional ☒

Description:

Part of LTE GeographicalZone parameter -> Subzone within BuildingZone.Room

DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format	U_8Z_8

Field	Description	Sup.	Range	Unit	Default
CounterValue	Subzone number	M	1..15	--	1
STATUS - OutOfService - all other bits	 zone active / inactive not supported, fixed to '0'	 O NA	 true/false	Bitset Bit 0	 true false
COMMAND - NormalWrite - SetOSV & ResetOSV - all other commands	 Set zone inactive / active not supported	 M O NA	enum 0 3 / 4		cs

Communication:

DP Address: (in the server)	IO Type(ID):	1019 (GPAO)	Property ID:	103
	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:

GPAO is not LTE communicating if zone is 'OutOfService'. If parameter BuildingZone is 'OutOfService' also the corresponding Room and Subzone parameters are 'OutOfService' (common flag)

3.2.6.7 Parameter StatusAnalogOutputCOV

FB:	GPAO	Property Name (Server):	StatusAnalogOutputCOV	Mandatory ☐ Optional ☒

Description:

This optional parameter defines the COV condition (change of value in %) for the output feedback signal StatusAnalogOutput.

DPT:	Name	DPT_Scaling	DPT ID	5.001	Datatype format	U_8

Field	Description	Sup.	Range	Unit	Default
			cs	%	cs

Communication:

DP Address:	IO Type(ID):	1019 (GPAO)	Property ID:	110
(in the server)	Start-Index:	1	N° of elements	1
Property access:	Read only ☐		Read/Write ☒	
Protection	Read level	-	Write level	-

Exception Handling: Value after Power-up: Stored Value ☒ Act Value ☐ Default Value ☐

Special Features:
