



Application Descriptions

7

Common Functional Blocks

1

Common Sensors

2

Summary

This document specifies Common Sensor 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	2005.02.14	Document created
0.2	2005.05.12	APS updated according to TFI inputs
0.3	2005.10.14	Publication of the TFI approved version.
0.4	2006.02.01	Added FB Scene Sensor
	2006.05.09	FB Scene Sensor <ul style="list-style-type: none"> – added Outputs Scene AB Activate and Scene AB Teach. Combinations specified in Table 2. FB Priority Sensor <ul style="list-style-type: none"> – First specification proposal. FB Lock Sensor <ul style="list-style-type: none"> – First specification proposal.
	2006.09.18	TF Editing: Inclusion of the feedback from TFI of 2006.05.19. See comment below Table 2. FB Timed Sensor added.
0.4	2007.03.02	Publication of the TFI approved version.
0.6	2008.08.09	<ul style="list-style-type: none"> • 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 AS	2009.04.27	Publication of the Approved Standard.
01.01.01	2013.09.04	<ul style="list-style-type: none"> • AN150 "FB Profiles for existing FBs" integrated. • Minor editorial correction.
01.01.02	2013.10.29	Editorial updates for the publication of KNX Specifications 2.1.

Copies with the same version number but a newer save date contain small corrections without impact on the content.

References

- [1] Chapter 3/7/2 "Datapoint Types"
- [2] Chapter 7/10/10 "HVAC Interface Object Type Identifier"
- [3] Part 10/1 "Logical Tag Extended"

Filename: 07_01_02 Common Sensors v01.01.02 AS.docx
 Version: 01.01.02
 Status: Approved Standard
 Savedate: 2013.10.29
 Number of pages: 34

Contents

1	Introduction	4
1.1	Scope.....	4
1.2	Objectives	4
1.3	Dependence on Configuration Modes	4
1.4	Glossary	6
1.5	Abbreviations.....	7
2	Physical Sensor	8
2.1	Atmospheric Pressure Sensor (APS)	8
3	Logic Functions Blocks	16
3.1	FB Scene Sensor	16
3.2	FB Priority Sensor	22
3.3	FB Lock Sensor	25
3.4	FB Timed Sensor	28

1 Introduction

1.1 Scope

This document is part of the KNX Application Interworking Standard. It contains the specification of Common Sensor Functional Blocks.

1.2 Objectives

This document includes the information necessary to build interoperable sensor products with Functional Blocks of common interest, using the KNX system. Runtime Interworking between the sensor 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).

In addition, this document specifies the specific mechanisms for zoning and runtime process data distribution used in HVAC for an 'easy installation' system (LTE-HEE Mode [3]).

This is a technical specification with informative material provided as needed to convey key concepts. The approach taken here is a top-down view of interoperability.

Every Functional Block 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 Functional Block 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 sensor specification such as data encoding and Datapoint Types, object address tables, Group Address tables etc. are not part of this document.

1.3 Dependence 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 Functional Blocks in LTE-Mode, and
- for the implementation of mandatory objects used for runtime Interworking in Standard Mode (Basic Functional Block).

1.3.1 Runtime Interworking

Configuration Mode dependent (S-Mode, Ctrl-Mode, PB-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 mode dependencies concerning runtime Interworking.

			STANDARD MODE	EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	LTE-HEE
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 which 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 addressing.
- 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 individual addressing. This document does not lay down how to implement Parameters and Diagnostic Data in S-Mode, Ctrl-Mode and 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) DPT. The description of these Group Objects shall be part of the mode-dependent specification (e.g. 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: $\text{IO Type}^{\text{used}} = \text{IO Type}^{\text{standardDPT}} = \text{IO Type}^{\text{HVAC-LTE}} + 10000$
(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 HVAC specific DPT to standard DPT is generic and described in the document [1].

1.4 Glossary

No new terms are introduced in this document.

1.5 Abbreviations

General

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

2 Physical Sensor

2.1 Atmospheric Pressure Sensor (APS)

2.1.1 Aims and objectives

The Functional Block ‘Atmospheric Pressure Sensor’ shall measure the absolute air pressure and shall deliver the data to the KNX system. The data may be used for barometer functionality, weather station, displaying etc.

2.1.2 Functional specification

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

In the LTE-Mode the ‘Atmospheric Pressure Sensor’ shall support LTE outside sensor zoning, i.e. multiple sensor values may be distributed in the system in parallel for different zones. (e.g. OutsideSensorZone_1= ‘north’, OutsideSensorZone_2= ‘south’ etc.)

Optional features in LTE-Mode:

- 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

- AtmosphericPressureAbs This output shall deliver the atmospheric pressure value to the bus.
- StatusGO This output shall only be available in Standard Mode and shall contain the Z₈ information of the output sensor value.

Binding Group (LTE)

- OutsideSensorZone no special features

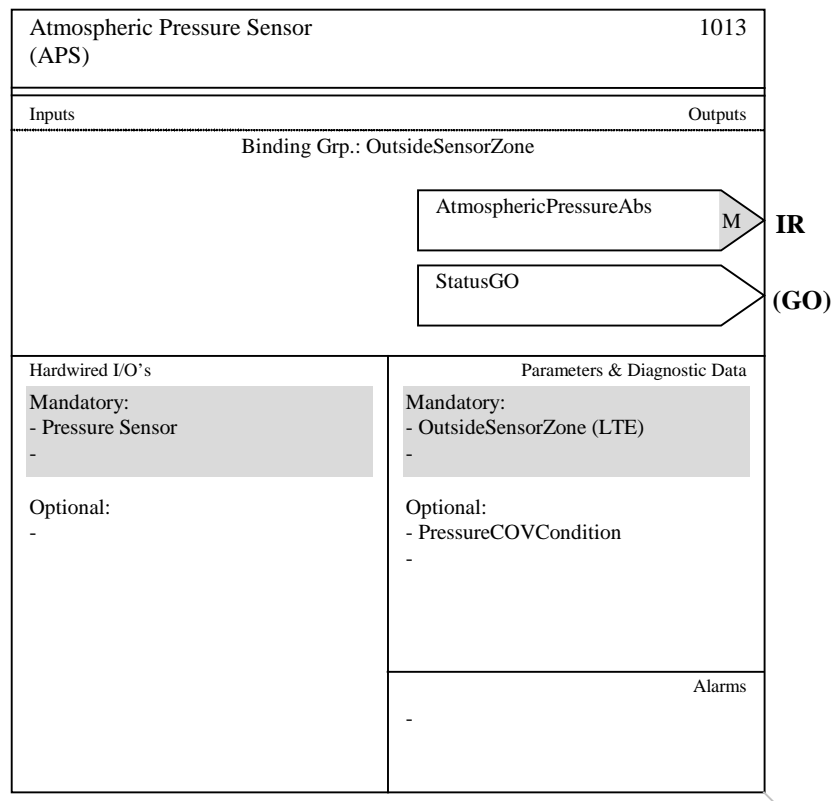
Parameters

- PressureCOVCondition This parameter shall define the delta pressure value at which the information shall be transmitted spontaneously.

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			
AtmosphericPressureAbs	Atmospheric pressure value with: - COV and RepPer - Z ₈ STATUS and - Z ₈ COMMAND supported to FB various controller	LTE: 203.015 DPT_AtmPressureAbs_Z U ₁₆ Z ₈ S: 9.006 DPT_Value_Pres F ₁₆	LTE: M Mbar S: GO Pa
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			
Outside Sensor Zone	LTE zoning number for outside sensor zone	202.002 DPT_UcountValue8_Z U ₈ Z ₈	M 1
Pressure COV Condition	Value for COV condition with: - Z ₈ not supported	203.015 ¹⁾ DPT_AtmPressureAbs_Z U ₁₆ Z ₈	O cs

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

APS Runtime Interworking - Dependence on Configuration Modes

			STANDARD MODE	EXTENDED MODE		
			Basic FB	S-Mode	Standard Mode Interface	HEE
Inputs						
Outputs	AtmosphericPressureAbs	GO _b	GO	GO		M
	StatusGO	(GO _b)		(GO)		NA

APS LTE specific Properties

		Support
Parameter	OutsideSensorZone	M

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

		Support
Parameter	PressureCOVCondition	O

2.1.6 Detailed specification of the Datapoints

2.1.6.1 Output Atmospheric Pressure

Standard Mode

DP Name:	AtmosphericPressureAbs	Abbr.:	---	Mandatory	<input checked="" type="checkbox"/>	
FB Name:	APS	Can be internal			<input type="checkbox"/>	
Description						
This output shall contain the value of the the atmospheric pressure						
Datapoint Type						
DPT_Name:	DPT_Value_Pres					
DPT Format:	F ₁₆	DPT_ID:	9.006			
Field	Description	Supp.	Range	Unit	Default	
FloatValue	The atmospheric pressure in F ₁₆ .	M	Full	Pa	cs	
Access Type						
♦ Output						
this → M		<input checked="" type="checkbox"/>	this → 1		<input type="checkbox"/>	
Spontaneous		<input checked="" type="checkbox"/>	COV:	<input checked="" type="checkbox"/>	Delta-Value: cs ¹⁾ MinRepTime: 10 s	
			Cyclic	<input checked="" type="checkbox"/>	Period: 15 min (recommended value)	
Request		<input checked="" type="checkbox"/>				
Communication Type						
♦ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>	
Default Group Address:		---				
Dynamics						
Power down:		Save:	<input type="checkbox"/>			
Power up:		Value:	No initialisation:	<input type="checkbox"/>	Default value:	<input type="checkbox"/>
			Saved value:	<input type="checkbox"/>	Actual value:	<input checked="" type="checkbox"/>
		Transmit on bus:		<input checked="" type="checkbox"/>		<input type="checkbox"/>
Exception Handling						

Special Features						
¹⁾ COV see parameter, recommended value 20 Pa (0,2 mbar)						

LTE-HEE Mode

FB:	APS	LTE Server Output Name:	AtmosphericPressureAbs		Mandatory <input checked="" type="checkbox"/>		Optional <input type="checkbox"/>	
Description:								
This output shall contain the value of the atmospheric pressure as well as a STATUS information. The output may be overridden by means of the COMMAND.								
DPT:	Name	DPT_AtmPressureAbs_Z	DPT ID	203.015	Datatype format	U ₁₆ Z ₈		
Field	Description			Sup.	Range	Unit	COV	Default
AtmosphericPressure	Actual pressure value			M	Full Range	mbar	cs 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
COMMAND	For Property-Service Write only					Sup.	Range	
- Override / Release	Temporary override / release of sensor value					O	enum	
- Set / Reset OSV	Set / reset of out of service					O	1 / 2	
- AlarmAck	Acknowledgement of alarm					O	3 / 4	
- all other commands						NA	5	
Communication:								
Binding Group:								
Class	Type				Default			
Geographical <input type="checkbox"/>								
Application Specific <input checked="" type="checkbox"/>	OutsideSensorZone				1			
Unassigned <input type="checkbox"/>	Broadcast <input type="checkbox"/> Configurable <input type="checkbox"/>							
DP Address:	IO Type(ID):		1013 (APS)		Property ID:		51	
LTE-Services (event):	COV <input checked="" type="checkbox"/>		MinRepTime:		10 s		Heartbeat: 15 min	
InfoReport <input checked="" type="checkbox"/>	Output per default communicating <input checked="" type="checkbox"/>		Binding Group Wildcard allowed <input type="checkbox"/>					
(LTE Read-Response polling of the output shall always be supported)	Tx Prio:		High <input type="checkbox"/> Normal <input checked="" type="checkbox"/> Low <input type="checkbox"/>					
	Transm after Power-up: Stored Value <input type="checkbox"/> Act Value <input checked="" type="checkbox"/> Default Value <input type="checkbox"/>							
Property-Service (individual access):	Read only <input type="checkbox"/>		Read/Write <input checked="" type="checkbox"/>					
Exception Handling:						Save at Powerdown <input type="checkbox"/>		

Special Features:								
¹⁾ COV see parameter, recommended value 0,2 mbar								

2.1.6.2 Output StatusGO**LTE-HEE Mode**

Not applicable.

Standard Mode

DP Name:	StatusGO	Abbr.:	---	Mandatory	<input type="checkbox"/>
FB Name:	APS	Can be internal			<input type="checkbox"/>
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	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input checked="" type="checkbox"/>	Delta-Value:	--- MinRepTime: 10 s
		Cyclic	<input checked="" type="checkbox"/>	Period:	15 min (recommended value)
Request	<input checked="" type="checkbox"/>				
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:		---			
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Actual value:	<input checked="" type="checkbox"/>
	Transmit on bus:		<input checked="" type="checkbox"/>		<input type="checkbox"/>
Exception Handling					

Special Features					

2.1.6.3 Parameter OutsideSensorZone

FB:	APS	Property Name (Server): OutsideSensorZone				Mandatory <input checked="" type="checkbox"/>		Optional <input type="checkbox"/>	
Description:									
Number of the outside sensor zone.									
DPT:	Name	DPT_UcountValue8_Z	DPT ID	202.002	Datatype format		U ₈ Z ₈		
Field		Description			Sup.	Range	Unit	Default	
Sensor Zone		Number of the sensor zone			M	1...31		1	
STATUS - OutofService - all other bits		zone active / inactive not supported, fixed to '0'			O NA	true/false	Bitset Bit 0	false 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):		1013 (APS)	Property ID:		101		
		Start-Index:		1	N° of elements		1		
Property access:		Read only <input type="checkbox"/>		Read/Write <input checked="" type="checkbox"/>					
Protection		Read level		-	Write level		-		
Exception Handling: Value after Power-up: Stored Value <input checked="" type="checkbox"/> Act Value <input type="checkbox"/> Default Value <input type="checkbox"/>									
Zone = 0 (wildcard) NOT allowed									
Special Features:									
The device is not LTE communicating in this zone if zone is 'OutOfService'									

2.1.6.4 Parameter PressureCOVCondition

FB:	APS	Property Name (Server): PressureCOVCondition				Mandatory <input type="checkbox"/>	
						Optional <input checked="" type="checkbox"/>	
Description:							
Delta pressure value for COV condition							
DPT:	Name	DPT_AtmPressureAbs_Z	DPT ID	203.015	Datatype format	U ₁₆ Z ₈	
Field	Description			Sup.	Range	Unit	Default
AtmosphericPressure	pressure COV value			O	Full Range	mbar	0,2 mbar*)
STATUS - all bits	not supported, fixed to '0'			NA		Bitset	false
COMMAND - NormalWrite - all other commands	not supported			M NA	enum 0		cs
Communication:							
DP Address: (in the server)		IO Type(ID):		1013 (APS)	Property ID:		112
		Start-Index:		1	N° of elements		1
Property access:		Read only <input type="checkbox"/>		Read/Write <input checked="" type="checkbox"/>			
Protection		Read level		-	Write level		-
Exception Handling:		Value after Power-up:		Stored Value <input checked="" type="checkbox"/>	Act Value <input type="checkbox"/>		Default Value <input type="checkbox"/>

Special Features:							

*) recommended COV = 0,2 mbar (= 0,2 hPa).

The resolution of typical sensor elements is 0,1 mbar.

During exceptional storms like “Lothar” the atmospheric pressure changed 15 mbar within 6 hours.

This is a change of 0,625 mbar in 15 min (heartbeat). In case of storm „Lothar“ a message would be generated approximately every 5 minutes with a COV of 0,2 mbar. This is sufficient to generate storm warnings or to calculate a tendency.

DPT_AtmPressureAbs_Z (203.015) is specified in [1]. In Standard Mode, DPT_Value_Pres (9.006) shall be used.

3 Logic Functions Blocks

3.1 FB Scene Sensor

3.1.1 Aims and objectives

The FB Scene Sensor shall be used to call and teach scenes in other FBs.

The implementation of this functionality is not restricted to push buttons only. It may for instance be implemented in a larger controller, scheduler, gateway, weather station ...

3.1.2 Functional specification

3.1.2.1 Scene Control without learning

The output DP Scene Control shall allow for teaching scenes in the receivers. It is optionally allowed to support this DP limiting the functionality to solely calling scenes without teaching, under the condition that the parameter Scene Teaching Enable is implemented.

If no scene teaching is supported or can be activated, than the DP Scene Number shall be used.

3.1.2.2 Scene number range

The number of scene numbers that can be supported is manufacturer specific.

This range of supported scene numbers does not have to start at 0 and does not have to be continuous.

3.1.3 Constraints

None.

3.1.4 Functional Block diagram

FB Scene Sensor	
Inputs	Outputs
	Scene Control (SC)
	Scene Number (SN)
	Scene AB Activate (SABA)
	Scene AB Teach (SABT)
additional I/Os	Parameters
	Scene Teaching Enable (STE)

3.1.5 Datapoint description

Table 1 – Datapoint overview

Datapoint	Description/Remarks	Datapoint Type
Outputs		
Scene Control	To call or teach a scene identified by the contained scene number in the receiver.	DPT_SceneControl (18.001)
Scene Number	To call a scene identified by the contained scene number in the receiver.	DPT_SceneNumber (17.001)
Scene AB Activate	To call one out of two scenes.	DPT_Scene_AB (1.022)
Scene AB Teach	To teach one out of two scenes.	DPT_Scene_AB (1.022)

Datapoint	Description/Remarks	Datapoint Type
Inputs		
None.		
Parameters		
Scene Teaching Enable	Allows for limiting the output Scene Control to calling scenes without learning possibility.	DPT_Enable (1.003)

FB Profiles

Features and options	Basic FB	Standard Mode			
		FB profile 1	FB profile 2	FB profile 3	FB profile 4
SABA	O	GO	GO	(GO)	(GO)
SABT	O	(GO)	GO	(GO)	(GO)
SN	O	(GO)	(GO)	GO	(GO)
// Full Scene Control					
SC	O	(GO)	(GO)	(GO)	GO
IF Scene Teaching can be disabled					
STE	O	O	O	O	M

Figure 1 – FB Profiles for the FB Scene Sensor

The FB Profiles 1 and 2 use DPT_Scene_AB for activating and teaching scenes in the receivers. The number of scenes is by this limited to two. These Outputs are mainly modelled for compatibility with E-Mode channel specifications. For S-Mode realisations, these flavours are not recommended.

This FB Scene Sensor features a DP Scene Control, that shall allow teaching scenes in the receiver and a DP Scene Number that only supports calling scenes without teaching.

Table 2 - Combination of mandatory Datapoints

Datapoints	Combination			
	Without teaching		With teaching	
	1a	1b	2a	2b
SN	M	O	O	O
SABA	O	M	O	M
SC	O	O	M	O
SABT	O	O	O	M

The flavours 1b and 2b use DPT_Scene_AB for activating and teaching scenes in the receivers. The number of scenes is by this limited to two. These Outputs are mainly modelled for compatibility with E-Mode channel specifications. For S-Mode realisations, these flavours are not recommended.

3.1.6 Detailed specification of Datapoints

3.1.6.1 Output Scene Control (SC)

DP Name:	Scene Control	Abbr.:	SC	Mandatory	<input checked="" type="checkbox"/>
FB Name:	FB Scene Sensor			Can be internal	<input type="checkbox"/>
Description					
This output shall be used to call or teach a scene identified by the contained scene number in the receivers. The maximal scene number that is supported is company specific.					
Datapoint Type					
DPT_Name:	DPT_SceneControl				
DPT Format:	B ₁ r ₁ U ₆	DPT_ID:	18.001		
Field		Supp.	Range	Unit	Default
C	Shall indicate whether the contained scene number shall be taught or called.	M	{0, 1}	none	None
SceneNumber	Scene number.	M	cs	none	None
Access Type					
◆ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	Min repetition time:
		Cyclic	<input type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.1.6.2 Output Scene Number (SN)

DP Name:	Scene Number	Abbr.:	SN	Mandatory	<input checked="" type="checkbox"/>
FB Name:	FB Scene Sensor			Can be internal	<input type="checkbox"/>
Description					
This output shall be used to call a scene identified by the contained scene number in the receivers. The maximal scene number that is supported is company specific.					
Datapoint Type					
DPT_Name:	DPT_SceneNumber				
DPT Format:	r ₂ U ₆	DPT_ID:	17.001		
Field		Supp.	Range	Unit	Default
SceneNumber	Scene number to be called	M	cs	none	None
Access Type					
◆ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	Min repetition time:
		Cyclic	<input type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.1.6.3 Output Scene AB Activate (SABA)

DP Name:	Scene AB Activate	Abbr.:	SABA	Mandatory	<input type="checkbox"/>
FB Name:	FB Scene Sensor			Can be internal	<input type="checkbox"/>
Description					
This Output shall be used to activate one out of two possible scenes in the receivers. The use of this DP is not recommended for S-Mode applications. DP Scene Number should be used instead.					
Datapoint Type					
DPT_Name:	DPT_Scene_AB				
DPT Format:	B ₁	DPT_ID:	1.022		
Field		Supp.	Range	Unit	Default
b	Shall indicate which of the scenes A or B shall be called.	M	{0, 1}	none	None
Access Type					
♦ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	Min repetition time:
		Cyclic	<input type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
♦ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.1.6.4 Output Scene AB Teach (SABT)

DP Name:	Scene AB Teach	Abbr.:	SABT	Mandatory	<input type="checkbox"/>
FB Name:	FB Scene Sensor	Can be internal			<input type="checkbox"/>
Description					
This Output shall be used to teach one out of two possible scenes in the receivers. The use of this DP is not recommended for S-Mode applications. DP Scene Control should be used instead.					
Datapoint Type					
DPT_Name:	DPT_Scene_AB				
DPT Format:	B ₁	DPT_ID:	1.022		
Field		Supp.	Range	Unit	Default
b	Shall indicate which of the scenes A or B shall be taught.	M	{0, 1}	none	none
Access Type					
♦ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	Min repetition time:
		Cyclic	<input type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
♦ Group Object Datapoint					Mandatory: <input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.1.6.5 Parameter Scene Teaching Enable (STE)

FB:	Scene Sensor	Property Name (Server):	Scene Teaching Enable	Mandatory	<input type="checkbox"/>	
				Optional	<input checked="" type="checkbox"/>	
Description:						
This parameter allows limiting the functionality of the output Scene Control to only calling scenes without the functionality to teach scenes. If this parameter is not implemented then the output Scene Control shall be implemented without limitation.						
DPT:	Name	DPT_Enable	DPT ID	Datatype format	B ₁	
Field	Description		Sup.	Range	Unit	Default
b	Setting whether teaching of scenes shall be enabled or not.		M	{0, 1}	none	Enabled
Communication:						
DP Address:		object_type:	403	PID:	51	
(in the server)		start_index:	1	nr_of_elem:	1	
Property access:		Read only <input type="checkbox"/>	Read/Write <input checked="" type="checkbox"/>			
Protection		Read level	-	Write level	-	
Exception Handling:		Value after Power-up:	Stored Value <input checked="" type="checkbox"/>	Act Value <input type="checkbox"/>	Default Value <input type="checkbox"/>	
None.						
Special Features:						
None.						

3.2 FB Priority Sensor

3.2.1 Aims and objectives

The FB Priority Sensor shall be used for high priority control of any single bit state of a receiver.

This priority control is modelled in many receiving FBs as dedicated Input.

EXAMPLE FB Dimming Actuator (Chapter 7/20/2 “Lighting Actuators”) features the Input Forced to allow overriding the data from lower priority Inputs and impose the binary output state to assume the value as imposed by this DP.

3.2.2 Functional specification

3.2.2.1 General

This FB Priority Sensor allows imposing the state of actuators that have a single bit state ¹⁾ and other receivers to assume another value than the one that is given by its normal Inputs. This Input allows to override the output state of the receiver with a value that may differ from the values that would result from the Inputs that are controlled by automatic or manual control.

This requires that the receiver differentiates between its Inputs and introduces a priority concept between them.

3.2.2.2 Realisation

The implementation of this functionality is not restricted to push buttons only. It may for instance be implemented in a larger controller, scheduler, gateway, weather station ...

In combination with the other FBs, this FB Priority Sensor will only result in the availability of the Output Force.

EXAMPLE This FB can be implemented in combination with the FBs Switching Sensor Basic, Dimming Sensor Basic, Sunblind Sensor Basic...

3.2.2.3 Output Force

This Output is not fixed to one single Datapoint Type; several DPTs with coding B₂, as specified in clause 3.2 in Chapter 3/7/2 “Datapoint Types” may make sense. Most meaningful however are the Datapoint Types as listed in Table 3.

Table 3 – Typical use of priority control

Datapoint Type	Use
2.001 DPT_Switch_Control	Priority setting of lighting actuators (on/off).
2.008 DPT_Direction1_Control	Priority setting of of shutters and blinds actuators (fully up or fully down).

3.2.2.4 Value of the high priority state

If the priority control becomes active, then the value field of the DP Force shall have the value according the Parameter Control Activation Value. If this Parameter is not implemented, then the value is implementation specific.

If the priority control is released, then the value field of the DP Force shall have the value according the Parameter Control Release Value. If this Parameter is not implemented, then the value is implementation specific.

¹⁾ EXAMPLE Off/On, Up/Down, Open/Close...

3.2.3 Constraints

None.

3.2.4 Functional Block diagram

FB Priority Sensor	
Inputs	Outputs
	Force (FO)
additional I/Os	Parameters
	(CAV) Control Activation Value
	(CRV) Control Release Value

3.2.5 Datapoint description

Table 4 – Datapoint overview

Datapoint	Description/Remarks	Datapoint Type
Outputs		
Force	Priority control active or inactive and priority value.	2.nnn
Inputs		
None.		
Parameters		
Control Activation Value	Defines the value of the v-field of the Output Force when the priority becomes active.	1.nnn
Control Release Value	Defines the value of the v-field of the Output Force when the priority is released.	1.nnn

3.2.6 Runtime Interworking – Dependence on Configuration Mode

		STANDARD MODE		EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	HEE
Inputs					
Outputs	FO	GO _b	GO _b	GO _b	NA

Figure 2 - Runtime Interworking – Dependence on Configuration Mode

Table 5 - Parameters

		Basic FB	S-Mode
Parameters			
	CAV	O	O
	CRV	O	O

3.2.7 Detailed specification of Datapoints

3.2.7.1 Output Force (FO)

DP Name:	Force	Abbr.:	FO	Mandatory	<input checked="" type="checkbox"/>
FB Name:	FB Priority Sensor			Can be internal	<input type="checkbox"/>
Description					
This Output shall be used to lock or release the binary output state in one or more receivers. In case the output state is locked, this Output also specifies the outputs state that shall be assumed by the receivers. The value of the field					
Datapoint Type					
DPT_Name:	<all DPTs of 2.nnn>				
DPT Format:	B ₂	DPT_ID:	2.nnn		
Field		Supp.	Range	Unit	Default
c	0: the priority control is released 1: the priority control is activated	M	{0, 1}	none	none
v	The coding of this field depends on the used DPT. Please refer to Chapter 3/7/2 "Datapoint Types" clause 3.2. The value can be given by the parameters CAV and CRV.	M	{0, 1}	none	none
Access Type					
◆ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	Min repetition time:
		Cyclic	<input type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.2.7.2 Parameter Control Activation Value (CAV)

FB:	FB Priority Sensor	Property Name (Server):	Control Activation Value	Mandatory	<input type="checkbox"/>
				Optional	<input checked="" type="checkbox"/>
Description:					
<p>This Parameter shall specify the value for the v-field of the Output Force in case the priority control becomes active (c-field = 1).</p> <p>Multiple DPTs of the type B₁ (Chapter 3/7/2 "Datapoint Types" clause 3.1) may apply. The precise DPT shall match the DPT as used for DP Force.</p> <p>EXAMPLE If the Output Force is encoded according DPT_Switch_Control, then this Parameter shall be encoded according DPT_Switch.</p>					
DPT:	Name	<all DPTs of 1.nnn>	DPT ID	1.nnn	Datatype format
					B ₁
Field	Description			Sup.	Range
b	Value of v-field in DP Force if c-field is 1.			M	{0, 1}
Unit					
none					
Default					
none					
Communication					
DP Address:	object_type:	1020	PID:	51	
(in the server)	start_index:	1	nr_of_elem:	1	
Property access:	Read only	<input type="checkbox"/>	Read/Write	<input checked="" type="checkbox"/>	
Protection	Read level	-	Write level	-	
Exception Handling: Value after Power-up: Stored Value <input checked="" type="checkbox"/> Act Value <input type="checkbox"/> Default Value <input type="checkbox"/>					
None.					
Special Features:					
None.					

3.2.7.3 Parameter Control Release Value (CRV)

FB:	FB Priority Sensor	Property Name (Server):	Control Release Value	Mandatory	<input type="checkbox"/>
				Optional	<input checked="" type="checkbox"/>
Description:					
<p>This Parameter shall specify the value for the v-field of the Output Force in case the priority control becomes released (c-field = 0).</p> <p>Multiple DPTs of the type B₁ (Chapter 3/7/2 "Datapoint Types" clause 3.1) may apply. The precise DPT shall match the DPT as used for DP Force.</p> <p>EXAMPLE If the Output Force is encoded according DPT_Switch_Control, then this Parameter shall be encoded according DPT_Switch.</p>					
DPT:	Name	<all DPTs of 1.nnn>	DPT ID	1.nnn	Datatype format
					B ₁
Field	Description			Sup.	Range
b	Value of v-field in DP Force if c-field is 0.			M	{0, 1}
Unit					
none					
Default					
none					
Communication:					
DP Address:	object_type:	1020	PID:	52	
(in the server)	start_index:	1	nr_of_elem:	1	
Property access:	Read only	<input type="checkbox"/>	Read/Write	<input checked="" type="checkbox"/>	
Protection	Read level	-	Write level	-	
Exception Handling: Value after Power-up: Stored Value <input checked="" type="checkbox"/> Act Value <input type="checkbox"/> Default Value <input type="checkbox"/>					
None.					
Special Features:					
None.					

3.3 FB Lock Sensor

3.3.1 Aims and objectives

The FB Lock Sensor shall be used to enable and disable functionality in the receivers.

Many FBs feature an Input that allows their functionality to be enabled and disabled by this FB Lock Sensor.

EXAMPLE 1 FB Dimming Actuator (Chapter 7/20/2 "Lighting Actuators") features the Input Lock Device to freeze its output state under the control of this FB Lock Sensor.

EXAMPLE 2 FB Dimming Actuator (Chapter 7/20/2 "Lighting Actuators") features the Parameter Scene Learning Mode Enable (accessible as Group Object) to disable the scene learning functionality. This Parameter can be set by this FB Lock Sensor.

3.3.2 Functional specification

3.3.2.1 General

This FB Lock Sensor shall allow making the receiver ignore accesses to its Inputs that are controlled by automatic or manual control.

NOTE Compared to the FB Priority Sensor, this FB Lock Sensors does not impose a certain value of the receiver's Output state.

This requires that the receiver differentiates between its Inputs and introduces a priority concept between them.

3.3.2.2 Realisation

The implementation of this functionality is not restricted to push buttons only. It may for instance be implemented in a larger controller, scheduler, gateway, weather station ...

In combination with the other FBs, this FB Lock Sensor will only result in the availability of the Output Lock.

EXAMPLE This FB can be implemented in combination with the FBs Switching Sensor Basic, Dimming Sensor Basic, Sunblind Sensor Basic...

3.3.2.3 Output Lock

This Output shall control whether the receiver is locked or not.

3.3.2.4 Interpretation by the receiver

There exists no complementary FB that specifies the communication partner for this FB Lock Sensor: this is typically realised through optional Inputs in many FBs.

The specifications of various FBs, the reaction of the FB when the Lock state becomes enabled and the reaction when the lock state becomes disabled can be controlled through optional Parameters.

3.3.3 Constraints

None.

3.3.4 Functional Block diagram

FB Lock Sensor	
Inputs	Outputs
	Lock (LO)
additional I/Os	Parameters
	None.

3.3.5 Datapoint description

Table 6 – Datapoint overview

Datapoint	Description/Remarks	Datapoint Type
Outputs		
Lock	Enables or disables the lock state of the receiver.	1.003

Datapoint	Description/Remarks	Datapoint Type
Inputs		
None.		
Parameters		
None.		

3.3.6 Runtime Interworking – Dependence on Configuration Mode

		STANDARD MODE		EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	HEE
Inputs					
Outputs	LO	GO _b	GO _b	GO _b	NA

Figure 3 - Runtime Interworking – Dependence on Configuration Mode

3.3.7 Detailed specification of Datapoints

3.3.7.1 Output Lock (LO)

DP Name:	Lock	Abbr.:	LO	Mandatory	<input checked="" type="checkbox"/>
FB Name:	FB Lock Sensor			Can be internal	<input type="checkbox"/>
Description					
This Output shall be used to enable or disable the lock state in the receiver.					
Datapoint Type					
DPT_Name:	DPT_Enable				
DPT Format:	B ₁	DPT_ID:	1.003		
Field		Supp.	Range	Unit	Default
b	0: disables the lock state 1: enables the lock state	M	{0, 1}	none	none
Access Type					
◆ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	
		Cyclic	<input type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):	<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>	
Exception Handling					
None.					
Special Features					
None.					

3.4 FB Timed Sensor

3.4.1 Aims and objectives

The FB Timed Sensor shall be used to trigger a timer in the receiver. Optionally, it can also be used to stop this timer.

EXAMPLE 1 The lighting actuators (Chapter 7/20/2 “Lighting Actuators”) features an Input Timed Start Stop that can be accessed to switch on the light, after which the actuator switches off the light autonomously after a timer has expired.

The use of this FB Timed Sensor is not limited to the application domain of lighting.

EXAMPLE 2 In a rest room, a light switch may incorporate this FB Timed Sensor. By this, when switching the light, it can trigger the operation of a ventilator for a certain period.

3.4.2 Functional specification

3.4.2.1 General

This FB Timed Sensor shall allow triggering a timer in the receiver. This FB TSS models the communication partner for many FBs featuring an Input “Timed Start Stop” (or similar).

Furthermore, it allows redirecting data received from a sender that does not support timing, via the Input On Off In (OOI) either unchanged to the Output On Off Out (OOO) or the Output Timed Start Stop (TSS) under the control of the Input Timed Mode (TM). In this, the value received on OOI shall not be modified.

If the realisation of this FB features a HMI, then this HMI and the Input OOI shall not influence each other in either way. The value of OOI shall be passed unchanged to either Output OOI or TSS regardless of the last operation to the HMI. In the same way, the operation of the HMI is not changed (e.g. not inverted) in function of any reception of the Input OOI.

3.4.2.2 Timed Mode

The Input Timed Mode allows selecting either one of the Outputs TSS or OOO to be used. If one Output is activated the other Output shall be deactivated.

Timed Mode	Outputs
Active	The Output Timed Start Stop shall be used. The Output On Off Out shall not be used.
Inactive	The Output Timed Start Stop shall not be used. The Output On Off Out shall be used.

It shall thus not be possible to use the Outputs TSS and OOO at the same time.

3.4.2.3 Realisation

The implementation of this functionality is not restricted to push buttons only. It may for instance be implemented in a larger controller, scheduler, gateway, weather station ...

In combination with other FBs, this FB Timed Sensor will only result in the availability of the Output Timed Start Stop.

EXAMPLE This FB can be implemented in combination with the FBs Switching Sensor Basic, Dimming Sensor Basic.

3.4.2.4 Interpretation by the receiver

There exists no complementary FB that specifies the communication partner for this FB Timed Sensor: this is typically realised through optional Inputs in many FBs.

The functionality depends on the receiver. In general, the receiver performs a certain action when the timer starts and again takes some action, e.g. an action complementary to the first one, when the timer expires.

In the specifications of various FBs, the reaction of the FB on reception of an access to the corresponding Input may be controlled through parameters.

EXAMPLE 1 The Parameter Timed On Retrigger Function in the Light Switching Actuator Basic (see Chapter 7/20/2 "Lighting Actuators") may control whether or not the timer in the receiver can be retriggered by a subsequent access to the Input Timed Start Stop or not.

The reaction of the receiver on reception of the value "Stop" on its Input may or may not be identical to the reaction when the timer simply expires. This can again be influenced by parameters.

3.4.3 Constraints

This FB Timed Sensor only uses a single bit DPT_Start that does not contain any information concerning the timer period in the receiver. This may only be controlled through a parameter in the receiver.

The Datapoints OOI and TM are optional. They can however only be implemented if the DP OOO is implemented.

3.4.4 Functional Block diagram

FB Timed Sensor			
Inputs		Outputs	
OnOffIn	(OOI)	Timed Start Stop	(TSS)
TimedMode	(TM)	OnOffOut	(OOO)
additional I/Os		Parameters	
		Enable Sending Stop	(ESS)

3.4.5 Datapoint description

Table 7 – Datapoint overview

Datapoint	Description/Remarks	Datapoint Type
Outputs		
Timed Start Stop	This Output shall be used to trigger the timing function in the receiver.	1.010 DPT_Start
On Off Out	This Output shall be used to directly control the output of the receiver, without timer.	1.001 DPT_Switch
Inputs		
On Off In	Commands to be directly sent on the OOO or to be transformed as a TSS in timed mode.	1.001 DPT_Switch
Timed Mode	To set the timed mode or normal mode.	1.011 DPT_State
Parameters		
Enable Sending Stop	Shall allow extending the values of the Output Timed Start Stop from only 1 to both 0 and 1.	1.003 DPT_Enable

3.4.6 Runtime Interworking – Dependence on Configuration Mode

		STANDARD MODE		EXTENDED MODE	
		Basic FB	S-Mode	Standard Mode Interface	HEE
Inputs	OOI	(GO _b)	(GO _b)	(GO _b)	NA
	TM	(GO _b)	(GO _b)	(GO _b)	NA
Outputs	TSS	GO _b	GO _b	GO _b	NA
	OOO	(GO _b)	(GO _b)	(GO _b)	NA

Figure 4 - Runtime Interworking – Dependence on Configuration Mode

Table 8 - Parameters

		Basic FB	S-Mode
Parameters			
	ESS	O	O

3.4.7 Detailed specification of Datapoints

3.4.7.1 Output Timed Start Stop (TSS)

DP Name:	Timed Start Stop	Abbr.:	TSS	Mandatory	<input checked="" type="checkbox"/>
FB Name:	Timed Sensor			Can be internal	<input type="checkbox"/>
Description					
<p>This Output shall be used to trigger the timing function in the receiver.</p> <p>If the parameter Enable Sending Stop is not implemented or the parameter Enable Sending Stop is implemented and has the value "Disable", then this Output shall only be transmitted with the value 1 (= "Start").</p> <p>If the parameter Enable Sending Stop is implemented and has the value "Enable" then this Output may transmit both values 0 (= "Stop") and 1 (= "Start").</p>					
Datapoint Type					
DPT_Name:	DPT_Start				
DPT Format:	B ₁	DPT_ID:	1.010		
Field		Supp.	Range	Unit	Default
b	0: shall be used to request to stop the timer in the receiver 1: shall be used to request to start the timer in the receiver	M	{0, 1}	none	none
Access Type					
◆ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	Min repetition time:
		Cyclic	<input type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.4.7.2 Output On Off Out (OOO)

DP Name:	On Off Out	Abbr.:	OOO	Mandatory	<input type="checkbox"/>
FB Name:	Timed Sensor			Can be internal	<input type="checkbox"/>
Description					
This Output will be used by the FB Timed Sensor if the timed mode is inactive.					
Datapoint Type					
DPT_Name:	DPT_Switch				
DPT Format:	B ₁	DPT_ID:	1.001		
Field		Supp.	Range	Unit	Default
b	This field shall indicate whether the switching actuator will switch on (1) or off (0).	M	{0, 1}	none	none
Access Type					
◆ Output					
this → M	<input checked="" type="checkbox"/>	this → 1	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	COV:	<input type="checkbox"/>	Δ-Value:	
		Cyclic	<input checked="" type="checkbox"/>	Period:	
Request	<input type="checkbox"/>				
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
Special Features					

3.4.7.3 Input On Off In (OOI)

DP Name:	On Off In	Abbr.:	OOI	Mandatory	<input type="checkbox"/>
FB Name:	Timed Sensor	Can be internal			<input type="checkbox"/>
Description					
This is the value that shall be sent on the Output Timed Start Stop or Output On Off Out, according the value of the Input Timed Mode.					
Datapoint Type					
DPT_Name:	DPT_Switch				
DPT Format:	B ₁	DPT_ID:	1.001		
Field		Supp.	Range	Unit	Default
b	Contains the value to be forwarded to the Output Timed Start Stop or the Output On Off Out.	M	{0, 1}	none	none
Access Type					
◆ Input					
N → this	<input checked="" type="checkbox"/>	1 → this	<input type="checkbox"/>		
Spontaneous	<input checked="" type="checkbox"/>	Cyclically:	<input type="checkbox"/>	Time-out:	
Request	<input type="checkbox"/>	Polling:	<input type="checkbox"/>	Period:	
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
Power down:	Save:	<input type="checkbox"/>			
Power up:	Value:	No initialisation:	<input checked="" type="checkbox"/>	Default value:	<input type="checkbox"/>
		Saved value:	<input type="checkbox"/>	Current value (not for input):	<input type="checkbox"/>
	Transmit on bus (only for output):		<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.4.7.4 Input Timed Mode (TM)

DP Name:	Timed Mode	Abbr.:	TM	Mandatory	<input type="checkbox"/>
FB Name:	Timed Sensor			Can be internal	<input type="checkbox"/>
Description					
This Input activates or inactivates the Timed Mode of the Timed Sensor.					
Datapoint Type					
DPT_Name:	DPT_State				
DPT Format:	B ₁	DPT_ID:	1.011		
Field		Supp.	Range	Unit	Default
b	0 Timed Mode is inactive. The Output On Off Out is used. 1 Timed Mode is active. The Output Timed Start Stop is used.	M	{0, 1}	none	1
Access Type					
◆ Input					
	N → this <input checked="" type="checkbox"/>	1 → this	<input type="checkbox"/>		
	Spontaneous <input checked="" type="checkbox"/>	Cyclically:	<input type="checkbox"/>	Time-out:	
	Request <input type="checkbox"/>	Polling:	<input type="checkbox"/>	Period:	
Communication Type					
◆ Group Object Datapoint				Mandatory:	<input checked="" type="checkbox"/>
Default Group Address:					
Dynamics					
	Power down:	Save:	<input type="checkbox"/>		
	Power up:	Value:	No initialisation:	<input type="checkbox"/>	Default value:
			Saved value:	<input type="checkbox"/>	Current value (not for input):
		Transmit on bus (only for output):	<input type="checkbox"/>	Read from bus (only for input):	<input type="checkbox"/>
Exception Handling					
None.					
Special Features					
None.					

3.4.7.5 Parameter Enable Sending Stop

FB:	Timed Sensor	Property Name (<u>Server</u>):	Enable Sending Stop	Mandatory	<input type="checkbox"/>
				Optional	<input checked="" type="checkbox"/>
Description:					
This parameter shall allow limiting the values of the output Timed Start Stop to either only 1 (= "Start") or both 1 (= "Start") as well as 0 (= "Stop").					
DPT:	Name	DPT_Enable	DPT ID	1.003	Datatype format
Field	Description	Sup.	Range	Unit	Default
b	0: the Output Timed Start Stop shall only have the value 1 (= "Start") 1: the Output Timed Start Stop may have both the values 1 (= "Start") as well as 0 (= "Stop")	M	{0, 1}	none	none
Communication:					
DP Address:	object_type:	406	PID:	51	
(in the server)	start_index:	1	nr_of_elem:	1	
Property access:	Read only <input type="checkbox"/>	Read/Write <input checked="" type="checkbox"/>			
Protection	Read level	-	Write level	-	
Exception Handling:	Value after Power-up:	Stored Value <input checked="" type="checkbox"/>	Act Value <input type="checkbox"/>	Default Value <input type="checkbox"/>	
None.					
Special Features:					
None.					