

# Library Description



## **DALI\_647\_SpecialSensor\_02.lib** Specific Sensor Solutions

Version 1.0.1

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We wish to point out that the software and hardware terms, as well as the trademarks of companies used and/or mentioned in the present document are generally protected by trademark or patent.

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### Number Notation

Table 1: Number Notation

Number Code	Example	Comment
Decimal	100	Normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	In quotation marks, nibble separated by a period

### Font Conventions

Table 2: Font Conventions

Font Type	Explanation
<i>italic</i>	Names of paths and files are displayed in italics, e.g.: <i>C:\Programs\WAGO-I/O-CHECK</i>
<b>Menu</b>	Menu options are displayed in bold, e.g.,: <b>Save</b>
>	A “greater than” symbol between two names denotes the selection of a menu option from a menu, e.g.: <b>File &gt; New</b>
<b>Input</b>	Designation of input or optional fields are displayed in bold, e.g.: <b>Start of measurement range</b>
“Value”	Input or selection values are displayed in quotation marks, e.g.: Enter the value “4mA” under <b>Start of measurement range</b> .
<b>[Button]</b>	Button labels within the dialogs are bold and enclosed in square brackets, e.g.: <b>[Input]</b>
<b>[Key]</b>	Key labels on the keyboard are displayed in bold and enclosed in square brackets, e.g.: <b>[F5]</b>

## Symbols

**DANGER**



**Warning against personal injury!**

Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

**DANGER**



**Do not work on components while energized!**

Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING**



**Warning against personal injury!**

Indicates a moderate-risk, potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**



**Warning against personal injury!**

Indicates a low-risk, potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**NOTICE**



**Warning: Damage to property!**

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

**ESD**



**Warning: Damage to property caused by electrostatic discharge (ESD)!**

Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

**Note**



**Important note!**

Indicates a potential malfunction but one which will not result in damage to property if not avoided.

**Information**



**Additional information**

Refers to additional information which is not an integral part of this documentation (e.g., the Internet).

## Legal Principles

### Subject to Change

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### Personnel Qualification

The use of the product described in this document is exclusively geared to specialists having qualifications in PLC programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the appropriate current standards.

Moreover, the persons cited here must also be familiar with all of the products cited in this document, along with the operating instructions. They must also be capable of correctly predicting any hazards which may not arise until the products are combined.

WAGO Kontakttechnik GmbH & Co. KG assumes no liability resulting from improper action and damage to WAGO products and third-party products due to non-observance of the information contained in this document.

### Limitation of Liability

This documentation describes the use of various hardware and software components in specific example applications. The components may represent products or parts of products from different manufacturers. The respective operating instructions from the manufacturers apply exclusively with regard to intended and safe use of the products. The manufacturers of the respective products are solely responsible for the contents of these instructions.

The sample applications described in this documentation represent concepts, that is, technically feasible applications. Whether these concepts can actually be implemented depends on various guidelines. For example, different versions of the hardware or software components can require different handling than that described here. Therefore, the descriptions contained in this documentation do not form the basis for assertion of a certain product characteristic.

Responsibility for safe use of a specific software or hardware configuration lies with the party that produces or operates the configuration. This also applies when one of the concepts described in this document was used for implementation of the configuration.

WAGO Kontakttechnik GmbH & Co. KG assumes no liability for the realization of these concepts.

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# 1 Steinel

## 1.1 Steinel Configuration Visualization(PrgDALIConfigSteinel)

WAGO-I/O-PRO Library Elements			
<b>Category:</b>	Building technology		
<b>Name:</b>	PrgDALIConfigSteinel		
<b>Type:</b>	Function	Function block	Program <b>X</b>
<b>Name of library:</b>	DALI_647_SpecialSensor_02.lib		
<b>Libraries used:</b>	DALI_647_04.lib		
<b>Applicable to:</b>	See Release Note		
<b>Graphical Illustration:</b>			
<div style="border: 1px solid black; padding: 5px; display: inline-block;">PrgDALIConfigSteinel</div>			
<b>Visualization:</b>			
<div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p><b>Menu</b></p> <ul style="list-style-type: none"> <li>Addressing</li> <li>Identify</li> <li>Settings</li> <li>Groups</li> <li>Scenes</li> <li>Status</li> <li>Operating hours</li> <li>Device Type</li> </ul> </div> <div style="width: 80%; padding-left: 20px;"> <h3 style="text-align: center;">Steinel Settings</h3> <div style="display: flex; justify-content: space-between;"> <div>Module number <input type="text" value="1"/></div> <div>Feedback <input type="text" value="0"/></div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div>Short Address <input type="text" value="1"/></div> <div>Broadcast</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p style="background-color: yellow; padding: 2px;">Occupancy sensor</p> <p>Light sensor</p> </div> <div style="width: 70%; padding-left: 20px;"> <h4 style="text-align: center;">Occupancy Sensor</h4> <div style="margin-bottom: 10px;"> <p>Event scheme <input type="text" value="2"/></p> <p>Motion detection START event <input checked="" type="checkbox"/></p> <p>Motion detection STOP event <input checked="" type="checkbox"/></p> <p>Motion detection REPEAT event <input checked="" type="checkbox"/></p> </div> <div style="margin-bottom: 10px;"> <p>Motion timer <input type="text" value="4"/> (Motion Timer x 5s + 5s)</p> <p>Motion timer Repeat <input type="text" value="6"/> (Motion Timer Repeat x 5s + 5s)</p> <p>Motion verification level <input type="text" value="1"/></p> <p>Motion detection Range <input type="text" value="255"/></p> </div> </div> </div> </div> </div> </div> </div>			



Steinel Settings	
Menu	<div style="display: flex; justify-content: space-between;"> <div> <input type="text" value="Module number"/> <input type="text" value="1"/> </div> <div> <input type="text" value="Feedback"/> <input type="text" value="0"/> </div> </div>
<ul style="list-style-type: none"> <li>Addressing</li> <li>Identify</li> <li>Settings</li> <li>Groups</li> <li>Scenes</li> <li>Status</li> <li>Operating hours</li> <li>Device Type</li> </ul>	<div style="display: flex; justify-content: space-between;"> <div> <input type="text" value="Short Address"/> <input type="text" value="1"/> </div> <div> <input type="text" value="Broadcast"/> </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <div style="display: flex; justify-content: space-between;"> <div> <input type="text" value="Occupancy sensor"/> </div> <div> <input type="text" value="Light sensor"/> </div> </div> <div style="margin-top: 10px;"> <p>Brightness changed event <input checked="" type="checkbox"/></p> <p>Event scheme <input type="text" value="2"/></p> <p>Brightness change timer <input type="text" value="5"/> (Brightness Change Timer x 5s + 5s)</p> <p>Brightness change level <input type="text" value="50"/></p> </div> </div> <div style="margin-top: 10px; display: flex; justify-content: space-around;"> <div><input type="button" value="Read"/></div> <div><input type="button" value="Write"/></div> </div>

**Function Description:**

For the DALI configuration tool for Steinel sensors, the **PrgDALIConfigSteinel** program must be called once in the project. In addition, the associated visualization pages can be imported into the project via the **DALI\_647\_SpecialSensor\_02.exp** export files.

**Note:**

- Since this visualization involves a special solution, it is not integrated into the navigation by default. For integration into the DALI configuration interface, you must add a button that refers to the Steinel configuration interface; this can be added at any location.

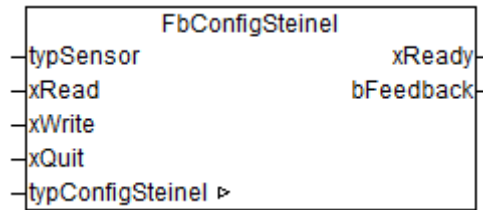


## 1.2 Configuration of a Steinel Sensor (FbConfigSteinel)

<b>WAGO-I/O-PRO Library Elements</b>			
<b>Category:</b>	Building technology		
<b>Name:</b>	FbConfigSteinel		
<b>Type:</b>	Function	Function block <b>X</b>	Program
<b>Name of library:</b>	DALI_647_SpecialSensor_02.lib		
<b>Libraries used:</b>	DALI_647_04.lib		
<b>Applicable to:</b>	See Release Note		
<b>Input Parameter:</b>			
<b>Data Type:</b>	<b>Comment:</b>		
typSensor	typSensor	DALI sensor address parameters	
.bAddress	BYTE	Address of the sensor	
.bInstanceType	BYTE	[Not used currently] Instance type of the function to be configured	
.bInstanceNumber	BYTE	[Not used currently] Instance number of the function to be configured	
.bModule_753_647	BYTE	Specifies which DALI Multi-Master Module is to be addressed at the controller; counting is from left to right. Default setting: 1	
xRead	BOOL	Reading the configuration	
xWrite	BOOL	Writing the configuration	
xQuit	BOOL	A positive edge acknowledges the fault message at the “ <i>bFeedback</i> ” output.	
<b>Input / Output Param.:</b>			
<b>Data Type:</b>	<b>Comment:</b>		
typConfigSteinel	typConfigSteinel	Steinel sensor configuration parameters  <i>The parameters of this structure are based on the sensor parameters named in the Steinel documentation. Please see the documentation of the sensor for a detailed description.</i>	
.bEventFilter	BYTE	Event filter to enable/disable events Bit 0: MOTION DETECTION START Bit 1: MOTION DETECTION STOP Bit 2: MOTION DETECTION REPEAT Bit 3: BRIGHTNESS CHANGED (SPOT)	
.bSignalLEDState	BYTE	Status of the signal LED	
.bSensortype	BYTE	Connected sensor type 2: Control Pro HD 4: Control Pro dual HF	

.bMotionTimer	BYTE	Motion timer Internal hold time Time = 5s + (bMotionTimer * 5s)
.bMotionTimerRepeat	BYTE	Motion timer repeat Repetition time of permanent events Time = 5s + (bMotionTimerRepeat * 5s)
.bMotionVerificationLevel	BYTE	Motion verification level Time until a valid presence is detected 0: Deactivated 1-15: The detection is recognized as a valid presence after movement is detected x times
.bMotionDetectionRange	BYTE	Motion detection range 0: 0 % 255: 100 %
.bMotionEventScheme	BYTE	Motion event scheme This value is set to “2” during addressing and should not be changed so that the communication will function correctly.
.bBrightnessChangeTimer	BYTE	Brightness change timer Internal hold time Time = 5s + (BrightnessChangeTimer * 5s)
.bBrightnessChangeLevel	BYTE	Brightness change level Threshold for internal recognition of the measured brightness as a change 0: No change event 1-255: Threshold
.bBrightnessEventScheme	BYTE	Brightness event scheme This value is set to “2” during addressing and should not be changed so that the communication will function correctly.
<b>Output Parameter:</b>	<b>Data Type:</b>	<b>Comment:</b>
xReady	BOOL	TRUE: Module ready. FALSE: Module not ready, e.g., ongoing operation
bFeedback	BYTE	Response byte (see documentation for DALI_647_04.lib)

### Graphical Illustration:



### Function Description:

The **FbConfigSteinel** function block serves to configure the LiveLink presence detector from the manufacturer “Steinel”.

The “*typSensor*” data type specifies the communication parameter of the sensor that is to be configured. The following input is required for this:

- “*bAddress*” defines the address of the sensor.
- “*bInstanceType*” specifies the instance type of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bInstanceNumber*” specifies the number of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bModule\_753\_647*” defines the DALI Multi-Master Module with which this function block must communicate.

The configuration reading process from the sensor is started on a positive edge at the “*xRead*” input.

The configuration writing process in the sensor is started on a positive edge at the “*xWrite*” input.

The “*typConfigSteinel*” input/output parameter contains the configuration parameters for the sensor. Please see the corresponding manufacturer documentation for a detailed explanation of the parameters:

- “*bEventFilter*” represents the state of the available events. Events can be switched on and off with this parameter.
- “*bSignalLEDState*” represents the state of the signal LED on the device.
- “*bSensorType*” represents the connected sensor type.
- “*bMotionTimer*” specifies the internal hold time for presence detection according to this formula:  $Time = 5s + (bMotionTimer * 5s)$ .
- “*bMotionTimerRepeat*” specifies the repetition time of permanent events according to this formula:  $Time = 5s + (bMotionTimerRepeat * 5s)$ .
- “*bMotionVerificationLevel*” specifies the time after which the recorded presence signal is verified as valid.
- “*bMotionDetectionRange*” specifies the range that is recorded by the presence detection
- “*bMotionEventScheme*” specifies the type of communication of events through the

DALI bus. This parameter is set to “2” during addressing of the sensor and should not be changed.

- “*bBrightnessChangeTimer*” specifies the internal hold time for brightness detection according to this formula:  $Time = 5s + (bBrightnessChangeTimer * 5s)$ .
- “*bBrightnessChangeLevel*” specifies the threshold for internal recognition of the measured brightness as a change.
- “*bBrightnessEventScheme*” specifies the type of communication of events through the DALI bus. This parameter is set to “2” during addressing of the sensor and should not be changed.

The “*xReady*” output signals whether the module is ready for operation. It can be assumed that no action will be performed by the function block as long as “*xReady*” is FALSE.

If there is fault message at the “*bFeedback*” output, it can be acknowledged by a positive edge at the “*xQuit*” input. Only after the fault is acknowledged can the module execute a new action.

**Note:**

- It is advisable to read the configuration values out once before writing in order to make changes to the values provided.
- The “*typConfigSteinel.bMotionEventScheme*” and “*typConfigSteinel.bBrightnessEventScheme*” parameters are set to “2” during addressing. This value should not be modified in order to function correctly with WAGO components.

### 1.3 Integration of a Steinel Sensor (FbConfigSteinel)

<b>WAGO-I/O-PRO Library Elements</b>			
<b>Category:</b>	Building technology		
<b>Name:</b>	FbSensorSteinel		
<b>Type:</b>	Function	Function block <b>X</b>	Program
<b>Name of library:</b>	DALI_647_SpecialSensor_02.lib		
<b>Libraries used:</b>	DALI_647_04.lib		
<b>Applicable to:</b>	See Release Note		
<b>Input Parameter:</b>			
<b>Data Type:</b>	<b>Comment:</b>		
typSensor	typSensor	DALI sensor address parameters	
.bAddress	BYTE	Address of the sensor	
.bInstanceType	BYTE	[Not used currently] Instance type of the function to be configured	
.bInstanceNumber	BYTE	[Not used currently] Instance number of the function to be configured	
.bModule_753_647	BYTE	Specifies which DALI Multi-Master Module is to be addressed at the controller; counting is from left to right. Default setting: 1	
tOffDelay	TIME	Switch-off delay for the presence detector in the event that a STOP event does not occur Default setting: 10 min	
tWatchdog	TIME	Time monitoring of the sensor Default setting: 5 min (t#0s = No watchdog monitoring)	
<b>Output Parameter:</b>			
<b>Data Type:</b>	<b>Comment:</b>		
xPresence	BOOL	TRUE: Presence detected FALSE: Presence not detected	
wLightLevel	WORD	Current value from light intensity sensor [lx]	
bFeedback	BYTE	Response byte (see documentation for DALI_647_04.lib)	
<b>Graphical Illustration:</b>			

**Function Description:**

The **FbSensorSteinel** serves to communicate with the LiveLink presence detector of the manufacturer “Steinel”.

The “*typSensor*” data type specifies the communication parameter of the sensor that is to be connected. The following input is required for this:

- “*bAddress*” defines the address of the sensor.
- “*bInstanceType*” specifies the instance type of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bInstanceNumber*” specifies the number of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bModule\_753\_647*” defines the DALI Multi-Master Module with which this function block must communicate.

The switch-off delay of the “*xPresence*” output after which the module is deactivated at the latest is given at the “*tOffDelay*” input. If the presence event is repeated within this period, the time monitoring starts again. If “*tOffDelay*” = t#0s and there is a “STOP” event from the sensor, then “*xPresence*” output is deactivated prematurely.

The time after which the module detected the last event is indicated on the “*tWatchdog*” input. If this time value is exceeded, an error code is output through the “*bFeedback*” output.

The “*xPresence*” output signals whether the sensor has detected a presence.

The “*wLightLevel*” output outputs the light value measured by the sensor.

In the event of an error, the “*bFeedback*” outputs a number that is documented in the “DALI\_647\_04.lib” library.

## 2 Theben HTS

### 2.1 Theben HTS Configuration Visualization (PrgDALIConfigThebenHTS)

WAGO-I/O-PRO Library Elements			
<b>Category:</b>	Building technology		
<b>Name:</b>	PrgDALIConfigThebenHTS		
<b>Type:</b>	Function	Function block	Program <b>X</b>
<b>Name of library:</b>	DALI_647_SpecialSensor_02.lib		
<b>Libraries used:</b>	DALI_647_04.lib		
<b>Applicable to:</b>	See Release Note		
<b>Graphical Illustration:</b>			
<div style="border: 1px solid black; padding: 5px; display: inline-block;">PrgDALIConfigThebenHTS</div>			
<b>Visualization:</b>			
<div style="border: 1px solid gray; padding: 10px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p><b>Menu</b></p> <ul style="list-style-type: none"> <li>Addressing</li> <li>Identify</li> <li>Settings</li> <li>Groups</li> <li>Scenes</li> <li>Status</li> <li>Operating hours</li> <li>Device Type</li> </ul> </div> <div style="width: 80%; padding-left: 20px;"> <h3 style="text-align: center;">Theben HTS Settings</h3> <div style="display: flex; justify-content: space-between;"> <div>Module number <input type="text" value="1"/></div> <div>Feedback <input type="text" value="0"/></div> </div> <div style="margin-top: 10px; text-align: center;">Short Address <input type="text" value="0"/></div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 25%;"> <p style="background-color: yellow; padding: 2px;">Occupancy sensor</p> <p>Light sensor</p> <p>Switch</p> </div> <div style="width: 75%; padding-left: 20px;"> <h4 style="text-align: center;">Occupancy Sensor</h4> <div style="display: flex; justify-content: space-between;"> <div>Instance status <input checked="" type="checkbox"/></div> <div>Event scheme <input type="text" value="2"/></div> </div> <p>Occupied event <input checked="" type="checkbox"/></p> <p>Occupancy event <input checked="" type="checkbox"/></p> <p>Vacant event <input checked="" type="checkbox"/></p> <p>Movement event <input type="checkbox"/></p> <div style="display: flex; justify-content: space-between;"> <div>Holdtime [s] <input type="text" value="10"/></div> <div>Reporttime [s] <input type="text" value="15"/></div> </div> <div style="display: flex; justify-content: space-between;"> <div>Sensitivity <input type="text" value="3"/></div> <div>Detection range reduced <input type="checkbox"/></div> </div> </div> </div> </div> </div> </div>			



Menu

Addressing

Identify

Settings

Groups

Scenes

Status

Operating hours

Device Type

### Theben HTS Settings

Module number 
Feedback

Short Address

Occupancy sensor

Light sensor

Switch

#### Light Sensor

Instance status	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Event scheme	<input type="text" value="2"/>	<input type="text" value="2"/>	<input type="text" value="2"/>	<input type="text" value="2"/>
Room correct. factor	<input type="text" value="1.00"/>	<input type="text" value="1.00"/>	<input type="text" value="1.00"/>	<input type="text" value="1.00"/>

Min report time [s]   
 Delta lux [%]

---

Menu

Addressing

Identify

Settings

Groups

Scenes

Status

Operating hours

Device Type

### Theben HTS Settings

Module number 
Feedback

Short Address

Occupancy sensor

Light sensor

Switch

#### Switch

	CH1		CH2		Scene 1	Scene 2
	ON	OFF	ON	OFF		
Instance status	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Event filter						
Short press	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Long press start	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long press repeat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long press stop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Repeat time [ms]

**Function Description:**

For the DALI configuration tool for Theben-HTS sensors, the **PrgDALIConfigThebenHTS** program must be called once in the project. In addition, the associated visualization pages can be imported into the project via the **DALI\_647\_SpecialSensor\_02.exp** export files.

**Note:**

Since this visualization involves a special solution, it is not integrated into the navigation by default. For integration into the DALI configuration interface, you must add a button that refers to the Theben-HTS configuration interface; this can be added at any location.

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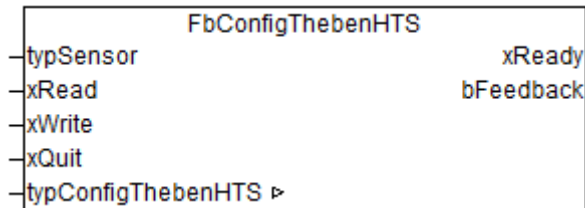
## 2.2 Configuration of a Theben-HTS Sensor (FbConfigThebenHTS)

<b>WAGO-I/O-PRO Library Elements</b>			
<b>Category:</b>	Building technology		
<b>Name:</b>	FbConfigThebenHTS		
<b>Type:</b>	Function	Function block <b>X</b>	Program
<b>Name of library:</b>	DALI_647_SpecialSensor_02.lib		
<b>Libraries used:</b>	DALI_647_04.lib		
<b>Applicable to:</b>	See Release Note		
<hr/>			
<b>Input Parameter:</b>	<b>Data Type:</b>	<b>Comment:</b>	
typSensor	typSensor	DALI sensor address parameters	
.bAddress	BYTE	Address of the sensor	
.bInstanceType	BYTE	[Not used currently] Instance type of the function to be configured	
.bInstanceNumber	BYTE	[Not used currently] Instance number of the function to be configured	
.bModule_753_647	BYTE	Specifies which DALI Multi-Master Module is to be addressed at the controller; counting is from left to right. Default setting: 1	
xRead	BOOL	Reading the configuration	
xWrite	BOOL	Writing the configuration	
xQuit	BOOL	A positive edge acknowledges the fault message at the “ <i>bFeedback</i> ” output.	
<hr/>			

<b>Input / Output Param.:</b>	<b>Data Type:</b>	<b>Comment:</b>
typConfigThebenHTS	typConfigThebenHTS	Theben-HTS sensor configuration parameters  <i>The parameters of this structure are based on the sensor parameters named in the Theben HTS documentation. Please see the documentation of the sensor for a detailed description.</i>
.bDeviceError	BYTE	Device status Bit 0: Checksum_Error_Info Bit 1: Checksum_Error_Hardware Bit 2: Checksum_Error_Parameter Bit 3: No-HTS_CODE Bit 4: EEPROM_ERROR Bit 5: Checksum_Error_DALI Bit 6: Reserved Bit 7: Instance error
.aInstanceError	ARRAY [0..10] OF BYTE	Error status of the instances
.uiInstanceStatus	UINT	Status of the instances Bit 0: Instance 0 – presence detector Bit 1: Instance 1 – light sensor, integral Bit 2: Instance 2 – light sensor, internal Bit 3: Instance 3 – light sensor, middle Bit 4: Instance 4 – light sensor, window Bit 5: Instance 5 – remote control channel 1 ON Bit 6: Instance 6 – remote control channel 1 OFF Bit 7: Instance 7 – remote control channel 2 ON Bit 8: Instance 8 – remote control channel 2 OFF Bit 9: Instance 9 – remote control channel scene 1 Bit 10: Instance 10 – remote control channel scene 2
.aEventScheme	ARRAY [0..10] OF BYTE	“Event scheme” of each instance This value is set to “2” during addressing and should not be changed so that the communication will function correctly.
.xPowerCycleNotification	BOOL	TRUE: “Power notification” on FALSE: “Power notification” off

.bEventFilterOccupancy	BYTE	Event filter to enable/disable events for instance 0 (presence) Bit 0: Occupied event Bit 1: Occupancy event Bit 2: Vacant event Bit 3: Movement event Bits 4-7: Reserved
.wHoldTime	WORD	Only for movement: Hold time in s since a movement was last detected Value range: 1 ... 2540 in 10 s steps
.bReportTime	BYTE	Interval at which an event is repeated in the event of an unchanged value, in s Value range: 1 ... 255, 0=deactivated
.bSensitivity	BYTE	Sensitivity for the motion sensor Value range: 1 (sensitive) ... 5 (insensitive)
.xDetectionRange	BOOL	Detection range of the motion sensor TRUE: Standard FALSE: Reduced
.aEventFilterLight	ARRAY [0..3] OF BYTE	Event filter to enable/disable events for instances 1 ... 4 (light) Bit 0: Delta Lux event Bits 1-7: Reserved
.bMinReportTime	BYTE	Minimum interval between two sequential event telegrams, in s Value range: 5 ... 240
.bDeltaLux	BYTE	Brightness change in % Value range = 5 – 80 %
.aRoomCorrectionFactor	ARRAY[0..3] OF REAL	Room correction factor for adjusting the measured value Value range: 0.01 ... 2.54 in 0.01 steps
.aEventFilterSwitch	ARRAY[0..5] OF BYTE	Event filter to enable/disable events for instances 5 – 10 (remote control) Bit 0: Reserved Bit 1: Reserved Bit 2: Short actuation Bit 3: Reserved Bit 4: Long actuation start Bit 5: Long actuation repeat Bit 6: Long actuation stop Bit 7: Reserved
.uiRepeatTime	UINT	Interval in ms at which telegrams are repeated with a long button press Value range: 100 ... 2000 in 20 ms steps

Output Parameter:	Data Type:	Comment:
xReady	BOOL	TRUE: Module ready. FALSE: Module not ready, e.g., ongoing operation
bFeedback	BYTE	Response byte (see documentation for DALI_647_04.lib)

**Graphical Illustration:****Function Description:**

The **FbConfigThebenHTS** serves to configure the “PlanoSpot 360 DALI” presence detector of the manufacturer “Theben HTS”.

The “*typSensor*” data type specifies the communication parameter of the sensor that is to be configured. The following input is required for this:

- “*bAddress*” defines the address of the sensor.
- “*bInstanceType*” specifies the instance type of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bInstanceNumber*” specifies the number of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bModule\_753\_647*” defines the DALI Multi-Master Module with which this function block must communicate.

The configuration reading process from the sensor is started on a positive edge at the “*xRead*” input.

The configuration writing process in the sensor is started on a positive edge at the “*xWrite*” input.

The “*typConfigThebenHTS*” input/output parameter contains the configuration parameters for the sensor. Please see the corresponding manufacturer documentation for a detailed explanation of the parameters:

- “*bDeviceError*” represents the device status.
- “*aInstanceError*” represents the error status of the individual instances.
- “*aInstanceStatus*” represents the event status of the instances. Individual events can be activated/deactivated here for each instance.
- “*aEventScheme*” specifies the type of communication of events through the DALI bus. This parameter is set to “2” during addressing of the sensor and should not be changed.
- “*xPowerCycleNotification*” specifies whether the “Power notification” function is

enabled or disabled. The function causes the sensor to send a telegram at startup, which allows a sensor restart to be detected.

- “**.bEventFilterOccupancy**” indicates which events are enabled for the motion sensor.
- “**.wHoldtime**” specifies the internal hold time for presence detection
- “**.bReportTime**” specifies the interval at which events are repeated when the value is unchanged.
- “**.bSensitivity**” specifies the sensitivity of the sensor.
- “**.xDetectionRange**” specifies whether the detection range of the sensor is set to normal or reduced.
- “**.aEventFilterLight**” indicates which events are enabled for the light sensor.
- “**.bMinReportTime**” specifies the smallest interval between two successive event telegrams.
- “**.bDeltaLux**” specifies the brightness change necessary to initiate a new event.
- “**.aRoomCorrectionFactor**” specifies the room correction factor for adjustment in the room with a lux meter.
- “**.aEventFilterSwitch**” indicates which events are enabled for the remote control.
- “**.uiRepeatTime**” specifies the interval at which telegrams are repeated with a long button press.

The “**xReady**” output signals whether the module is ready for operation. It can be assumed that no action will be performed by the function block as long as “**xReady**” is FALSE.

If there is fault message at the “**bFeedback**” output, it can be acknowledged by a positive edge at the “**xQuit**” input. Only after the fault is acknowledged can the module execute a new action.

**Note:**

- It is advisable to read the configuration values out once before writing in order to make changes to the values provided.
- The “**typConfigThebenHTS.aEventScheme**” is set to “2” during addressing. This value should not be modified in order to function correctly with WAGO components.

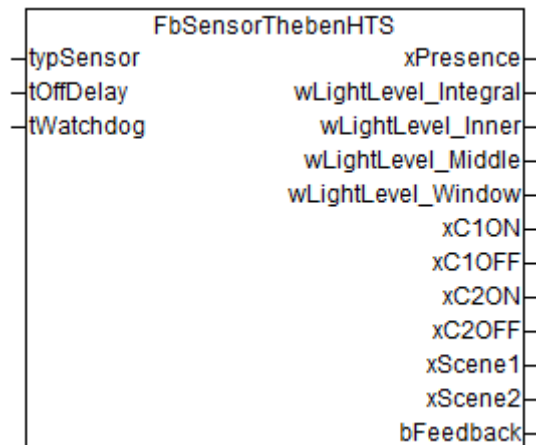
## 2.3 Integrating a Theben HTS Sensor(FbSensorThebenHTS)

<b>WAGO-I/O-PRO Library Elements</b>			
<b>Category:</b>	Building technology		
<b>Name:</b>	FbSensorThebenHTS		
<b>Type:</b>	Function	Function block <b>X</b>	Program
<b>Name of library:</b>	DALI_647_SpecialSensor_02.lib		
<b>Libraries used:</b>	DALI_647_04.lib		
<b>Applicable to:</b>	See Release Note		
<b>Input Parameter:</b>			
<b>Data Type:</b>	<b>Comment:</b>		
typSensor	typSensor	DALI sensor address parameters	
.bAddress	BYTE	Address of the sensor	
.bInstanceType	BYTE	[Not used currently] Instance type of the function to be configured	
.bInstanceNumber	BYTE	[Not used currently] Instance number of the function to be configured	
.bModule_753_647	BYTE	Specifies which DALI Multi-Master Module is to be addressed at the controller. Counting is from left to right. Default setting: 1	
tOffDelay	TIME	Switch-off delay for the presence detector in the event that a STOP event does not occur Default setting: 10 min	
tWatchdog	TIME	Time monitoring of the sensor Default setting: 5 min (t#0s = No watchdog monitoring)	
<b>Output Parameter:</b>			
<b>Data Type:</b>	<b>Comment:</b>		
xPresence	BOOL	TRUE: Presence detected FALSE: Presence not detected	
wLightLevel_Integral	WORD	Current value from light intensity sensor [lx] for instance 1	
wLightLevel_Inner	WORD	Current value from light intensity sensor [lx] for instance 2	
wLightLevel_Middle	WORD	Current value from light intensity sensor [lx] for instance 3	
wLightLevel_Window	WORD	Current value from light intensity sensor [lx] for instance 4	
xC1ON	BOOL	Current value of the remote control for instance 5	



xC1OFF	BOOL	Current value of the remote control for instance 6
xC2ON	BOOL	Current value of the remote control for instance 7
xC2OFF	BOOL	Current value of the remote control for instance 8
xScene1	BOOL	Current value of the remote control for instance 9
xScene2	BOOL	Current value of the remote control for instance 10
bFeedback	BYTE	Response byte (see documentation for DALI_647_04.lib)

**Graphical Illustration:**



**Function Description:**

The **FbSensorThebenHTS** serves for communication with the “PlanoSpot 360 DALI” presence detector of the manufacturer “Theben HTS”.

The “*typSensor*” data type specifies the communication parameter of the sensor that is to be connected. The following input is required for this:

- “*bAddress*” defines the address of the sensor.
- “*bInstanceType*” specifies the instance type of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bInstanceNumber*” specifies the number of the instance that is to be configured. This parameter is not used with this module and can be ignored!
- “*bModule\_753\_647*” defines the DALI Multi-Master Module with which this function block must communicate.

The switch-off delay of the “*xPresence*” output after which the module is deactivated at the latest is given at the “*tOffDelay*” input. If the presence event is repeated within this period, the time monitoring starts again. If “*tOffDelay*” = t#0s and there is a “STOP” event from the sensor, then “*xPresence*” output is deactivated prematurely.

The time after which the module detected the last event is indicated on the “*tWatchdog*” input. If this time value is exceeded, an error code is output through the “*bFeedback*” output.

The “*xPresence*” output signals whether the sensor has detected a presence.

The “*wLightLevel\_Integral*” output outputs the light value measured by sensor instance 1.

The “*wLightLevel\_Inner*” output outputs the light value measured by sensor instance 2.

The “*wLightLevel\_Middle*” output outputs the light value measured by sensor instance 3.

The “*wLightLevel\_Window*” output outputs the light value measured by sensor instance 4.

The “*xCION*” output indicates the state of remote control for sensor instance 5.

The “*xCIOFF*” output indicates the state of remote control for sensor instance 6.

The “*xC2ON*” output indicates the state of remote control for sensor instance 7.

The “*xC2OFF*” output indicates the state of remote control for sensor instance 8.

The “*xScene1*” output indicates the state of remote control for sensor instance 9.

The “*xScene2*” output indicates the state of remote control for sensor instance 10.

In the event of an error, the “*bFeedback*” outputs a number that is documented in the “DALI\_647\_04.lib” library.

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