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Overview
The interface series PSW50xx is designed to be used in LonWorks based systems. The devices are used as an interface between one or more physical switches and a building automation installation. The normal function of the interface is to allow for manual operation of lights, sun blinds, ventilation etc.

The inputs can be assigned to operate the build-in LonMark Switch objects. It is possible to use 4 inputs to operate 4 separate light groups or to use all 4 inputs to operate one single light group with different functions.

The series consists of 5 models with different I / O configuration, the number of I / O in the various models is especially adapted to suit standard FUGA and OPUS switches.

The interfaces device uses LonWorks 2.0 technology.

Software functions are according to the current LonMark standard, inputs control Switch 3200 or Scene Panel 3250. In addition scenes can be configured with the build-in Scene Controllers.

The device is very compact and designed to be placed behind the switch module when mounted in or on a wall.

In addition to the wires for connecting switches and indicators, the PSW50XX device has two wires for TP/FT-10 network communication and two wires for connection of an external 24Vdc power supply, normally these two pairs are connected to a network cable. Only the communication and power wires should be run away from the device. The PSW50XX device should be combined with the switch interface into one unit; I/O is not designed to be wired away from the device.

It is possible to transmit the service pin message by activating inputs 1 and 2 simultaneously.

Configuration
The main configuration of the function of the interface is done through two configuration properties on the Node Object. The configuration is located on the Node Object because the configuration applies to the physical digital inputs and not the other function block (switch).

Using the node object UCPTdiAssignment each digital input is told which switch function block to apply its operation to. This means that for a 4 input module, the 4 inputs can operate 4 individual switch function blocks or all 4 digital inputs can be assigned to apply different actions to the same one switch function block.

In default configuration each input operates one function block.

To change so that for example input 1 and 2 operates Switch[0] and inputs 3 and 4 operates Switch[1] set UCPTdiAssignment to 0,0,1,1.

When the 4 digital inputs has been assigned to a switch functional block, the operation or action that the digital input will have is selected through the SCPTdiSwitchAction configuration property. Initially each digital input will work in the mode SWA_DIM_UP_DOWN_OFF_ON_LEVEL.
The following table documents the different configuration modes that a digital input can be used in.

<table>
<thead>
<tr>
<th>Configuration Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWA_ACTIVE_ON</td>
<td>Used for toggle switch types. When input is active the configured on level is transmitted. When input is passive OFF = 0% 0 is transmitted.</td>
</tr>
<tr>
<td>SWA_ACTIVE_OFF</td>
<td>Used for toggle switch types. When input is active OFF = 0% 0 is transmitted. When input is passive, the configured on level is transmitted.</td>
</tr>
<tr>
<td>SWA_ON_LEVEL</td>
<td>When activated the configured on level is transmitted.</td>
</tr>
<tr>
<td>SWA_ON_LAST</td>
<td>When activated, the last known on level is transmitted.</td>
</tr>
<tr>
<td>SWA_OFF</td>
<td>When activated, OFF 0% 0 is transmitted.</td>
</tr>
<tr>
<td>SWA_AUTO</td>
<td>When activated an invalid switch value is transmitted 127.5% -1, this is used to reset manual override of a light controller.</td>
</tr>
<tr>
<td>SWA_DIM_UP</td>
<td>When pressed and as long as the switch is held active the switch level is dimmed up using configured step value.</td>
</tr>
<tr>
<td>SWA_DIM_DOWN</td>
<td>When pressed and as long as the switch is held active the switch level is dimmed down using configured step value.</td>
</tr>
<tr>
<td>SWA_DIM_UP_ON_LEVEL</td>
<td>If clicked configured on level is transmitted. If held active the switch level is dimmed up using configured step value.</td>
</tr>
<tr>
<td>SWA_DIM_UP_ON_LAST</td>
<td>If clicked the last known on level is transmitted. If held active the switch level is dimmed up using configured step value.</td>
</tr>
<tr>
<td>SWA_DIM_DOWN_OFF</td>
<td>If clicked, OFF 0% 0 is transmitted. If held active the switch level is dimmed down using configured step value.</td>
</tr>
<tr>
<td>SWA_DIM_UP_DOWN_OFF_ON_LEVEL</td>
<td>If clicked either OFF 0% 0 or configured on level is transmitted. If held active the switch level is dimmed up or down using configured step value.</td>
</tr>
<tr>
<td>SWA_DIM_UP_DOWN_OFF_ON_LAST</td>
<td>If clicked either OFF 0% 0 or last known on level is transmitted. If held active the switch level is dimmed up or down using configured step value.</td>
</tr>
<tr>
<td>SWA_TOGGLE</td>
<td>Toggles the switch level transmitted between off and configured on level.</td>
</tr>
<tr>
<td>SWA_SETTING_ON</td>
<td>When activated sends SET_ON with a setting level as configured in on level and a rotation of 0 (zero)</td>
</tr>
<tr>
<td>SWA_SETTING_OFF</td>
<td>When activated sends SET_OFF with a setting level as</td>
</tr>
<tr>
<td>Command</td>
<td>Function Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SWA_SETTING_UP</td>
<td>If clicked sends a SET_UP with a level of 100%. When held sends SET_UP with a setting level as configured in on level and a rotation of 0 (zero). When released after being held sends SET_STOP.</td>
</tr>
<tr>
<td>SWA_SETTING_DOWN</td>
<td>If clicked sends a SET_DOWN with a level of 100%. When held sends SET_DOWN with a setting level as configured in on level and a rotation of 0 (zero). When released after being held sends SET_STOP.</td>
</tr>
<tr>
<td>SWA_SETTING_ROTATE_INC</td>
<td>When activated sends SET_DOWN with a setting level of 0 (zero) and a rotation level as configured in step value.</td>
</tr>
<tr>
<td>SWA_SETTING_ROTATE_DEC</td>
<td>When activated sends SET_UP with a setting level of 0 (zero) and a rotation level as configured in step value.</td>
</tr>
<tr>
<td>SWA_SETTING_STOP</td>
<td>When activated sends SET_STOP.</td>
</tr>
<tr>
<td>SWA_SETTING_NUL</td>
<td>When activated sends SET_NUL.</td>
</tr>
<tr>
<td>SWA_SETTING_OFF_ON</td>
<td>When input is activated SET_OFF is transmitted.</td>
</tr>
<tr>
<td></td>
<td>When input is passivized SET_ON 100% is transmitted</td>
</tr>
<tr>
<td>SWA_SETTING_ON_SWITCH_UP</td>
<td>If clicked SET_ON is transmitted on the setting output. If held switch level is dimmed up with the configured step value.</td>
</tr>
<tr>
<td>SWA_SETTING_OFF_SWITCH_DOWN</td>
<td>If clicked SET_OFF is transmitted on the setting output. If held switch level is dimmed down with the configured step value.</td>
</tr>
<tr>
<td>SWA_SETTING_ON_OFF_SWITCH_DIM</td>
<td>If clicked SET_ON or SET_OFF is transmitted. If held the switch level is dimmed up or down. When switch is released the direction is changed.</td>
</tr>
<tr>
<td>SWA_SETTING_ON_UP</td>
<td>When clicked SET_ON is transmitted on the setting output. When held SET_UP is transmitted with setting value from configured step value. When released SET_STOP is transmitted.</td>
</tr>
<tr>
<td>SWA_SETTING_OFF_DOWN</td>
<td>When clicked SET_OFF is transmitted on the setting output. When held SET_DOWN is transmitted with setting value from configured step value. When released SET_STOP is transmitted.</td>
</tr>
</tbody>
</table>
Functional Blocks

Node Object
Function block name: “Node”
LonMark object type: 0
Number of blocks in device: 1
Principal network variable: nvOStatus (SNVT_obj_status)

Network Variables

nvRequest
LonMark network variable type name: SNVT_obj_request
LonMark network variable type id: 92

nvOStatus
LonMark network variable type name: SNVT_obj_status
LonMark network variable type id: 93

Configuration Properties

Major Device Version
LonMark configuration property type: 165
LonMark configuration property name: SCPTdevMajVer

As defined by the LonMark standard this constant configuration property defines the major version number of the device.

Devices with same major version number will have identical network interface. This means that if any changes are made to the device network interface, the major version number will be incremented.

Minor Device Version
LonMark configuration property type: 166
LonMark configuration property name: SCPTdevMinVer

As defined by the LonMark standard this constant configuration property defines the minor version number for the device.

Digital Input Assignment
LonMark configuration property type: 167
LonMark configuration property name: UCPTdiAssignment

Default value: 1,2,3,4,(5,6)

Digital Input Switch Action
LonMark configuration property type: 168
LonMark configuration property name: SCPTdiSwitchAction

Default value: SWA_DIM_UP_DOWN_OFF_ON_LEVEL
**Switch**

Function block name: “Switch”
LonMark object type: 3200
LonMark object name: SFPTswitch
Number of blocks in device: 4-6
Principal network variable: nvoSwitch (SNVT_switch)

The switch function reflects the state of one or more connected switch button. Using the node object digital inputs can be assigned to the Switch function and the functionality can be configured.

The function or the switch object is described in detail in the configuration description.

**Network Variables**

*nvoSwitchFb*
LonMark network variable type name: SNVT_switch
LonMark network variable type id: 95

For correct dimming start point this feedback should be connected to the lamp actuator output. This will give information to the switch about lamp level when this is adjusted by another source, for example light controller or another manual switch. When a dimming sequence starts the initial output will be based on the last value received on the feedback or the last value that the switch has send.

*nvoSwitch*
LonMark network variable type name: SNVT_switch
LonMark network variable type id: 95

The output will send the switch level when updated. See the configuration chapter for details on how the digital inputs will affect the switch output.

*nvoSetting*
LonMark network variable type name: SNVT_setting
LonMark network variable type id: 117

The output will send the setting action and level when updated. See the configuration chapter for details on how the digital inputs will affect the setting output.

**Configuration Properties**

**Step**
LonMark configuration property type: 92
LonMark configuration property name: SCPTstep
Applies to: Function Block

This configuration step size is used for dimming function of the switch. During dimming the step size is incremented or decremented on the output every 400 millisecond.

Default value: 2.5 %
**Maximum Output**
LonMark configuration property type: 93
LonMark configuration property name: SCPTmaxOut
Applies to: Function block
Default value: 100.0 %

**Maximum Send Time**
LonMark configuration property type: 49
LonMark configuration property name: UCPTturnOnLevel
Applies to: Function block
Default value: 100.0 %.

**Scene Panel**
Function block name: “ScenePanel"
LonMark object type: 3250
LonMark object name: SFPTscenePanel
Number of blocks in device: 1
Principal network variable: nvoScene (SNVT_scene)

**Network Variables**

```
nvoScene
LonMark network variable type name: SNVT_scene
LonMark network variable type id: 95
```

```
nviPreset
LonMark network variable type name: SNVT_preset
LonMark network variable type id: 95
```

**Configuration Properties**

**Switch scenes**
LonMark configuration property type: 25
LonMark configuration property name: UCPTswitchScene
Applies to: Function block

This configuration value is used to assign a scene number to each if the digital inputs on the switch interface. The value 0 (zero) will disable sending scene recall for a given input.

Default value: 1,2,3,4,(5,6)

**Scene Controller**
Function block name: “SceneController"
LonMark object type: 20003
Number of blocks in device: 4-6
Principal network variable: nvoSceneValue (SNVT_switch)
Network Variables

**nvIScene**
LonMark network variable type name: SNVT_scene
LonMark network variable type id: 115

**nvOSceneValue**
LonMark network variable type name: SNVT_switch
LonMark network variable type id: 95

**nvISetting**
LonMark network variable type name: SNVT_setting
LonMark network variable type id: 117

Configuration Properties

**Scene Numbers**
LonMark configuration property type: 10
LonMark configuration property name: UCPTsceneNumber
Applies to: Function Block

The list of scene number that will trigger sending one of the values in the UCPTsceneValue list. The index of the scene number matches the index of the value, this means that if a scene recall is received for the scene number in UCPTsceneNumber table index 4 the matching value from the SCPTsceneValue table index 4 will be send.

Example: With the default configuration, if SC_RECALL 4 is received then the value 75% ON(1) will be transmitted on the output.

Default value: 1,2,3,4,5,6,7,8,9,10

**Scene Values**
LonMark configuration property type: 49
LonMark configuration property name: SCPTsceneValue
Applies to: Function Block

The scene values defined for the scene numbers in the UCPTsceneNumber list.

Default value: 0% OFF(0)
25% ON(1)
50% ON(1)
75% ON(1)
100% ON(1)
0% OFF(0)
0% OFF(0)
0% OFF (0)
0% OFF (0)
**Switch Connection Information**
The following figures show the wire information for the different models available.

**Mounting Instruction**
The interface device is designed to be build directly together with a low voltage switch and LED indicator module. The input wires must not be extended and the inputs and outputs should only be connected to switches or LED’s as shown below.

OBS: Activating switch 1&2 (DI1 + DI2) simultaneously will transmit a *service-pin message* to the network.
Figur 4 Lonbox PSW5036 - 6 indgange, 3 udgange

Figur 5 Lonbox PSW5044 - 4 indgange, 4 udgange
Technical Data

<table>
<thead>
<tr>
<th>Interface</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LonWorks 2.0</td>
<td>TP/FT-10 (bus eller fri)</td>
</tr>
<tr>
<td>Processor type</td>
<td>FT5000</td>
</tr>
<tr>
<td>Forsyning</td>
<td>24 V d.c.</td>
</tr>
</tbody>
</table>
| Forbrug            | Norm 15 mA @ 24 V d.c.  
                         | Max. 25 mA @ 24 V d.c. (uden udgange) |
| Størrelse          | 32 * 35 * 15 mm |
| Kapslingsklasse    | IP20      |
| Drifttemperatur    | -10 til 55 C |
| Opbevaringstemperatur | -20 til 70 C |
| Tilslutninger forsyning og bus | 4 x 0.33 |
| Tilslutning af svagstrømstryk | 5..11 x 0.33 |

<table>
<thead>
<tr>
<th>Indgange</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kontaktspænding</td>
<td>3.3 V d.c.</td>
</tr>
<tr>
<td>Pull-up</td>
<td>1 kOhm</td>
</tr>
<tr>
<td>Indgangsimpedans</td>
<td>10 kOhm</td>
</tr>
<tr>
<td>Strøm ved sluttet kontakt</td>
<td>3.3 mA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Udgange</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spænding</td>
<td>24 V d.c.</td>
</tr>
<tr>
<td>Max strøm</td>
<td>10 mA (240 mW)</td>
</tr>
</tbody>
</table>

Models

<table>
<thead>
<tr>
<th>Model / varenumre</th>
<th>EAN / GTIN koder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lonbox PSW5004 4-in</td>
<td>5711536000383</td>
</tr>
<tr>
<td>Lonbox PSW5006 6-in</td>
<td>5711536000390</td>
</tr>
<tr>
<td>Lonbox PSW5024 2-out 4-in</td>
<td>5711536000406</td>
</tr>
<tr>
<td>Lonbox PSW5036 3-out 6-in</td>
<td>5711536000413</td>
</tr>
<tr>
<td>Lonbox PSW5044 4-out 4-in</td>
<td>5711536000420</td>
</tr>
</tbody>
</table>