Prolon Control Systems

Lonbox PSW5000 Users Manual

Switch interface for building automation

Prolon Control Systems
9/25/2014

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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.

SWA_ACTIVE_ON	Used for toggle switch types When input is active the configured on level is transmitted. When input is passive OFF = 0% 0 is transmitted
SWA_ACTIVE_OFF	Used for toggle switch types When input is active OFF = 0% 0 is transmitted. When input is passive, the configured on level is transmitted.
SWA_ON_LEVEL	When activated the configured on level is transmitted.
SWA_ON_LAST	When activated, the last known on level is transmitted.
SWA_OFF	When activated, OFF 0% 0 is transmitted
SWA_AUTO	When activated an invalid switch value is transmitted 127.5% -1, this is used to reset manual override of a light controller.
SWA_DIM_UP	When pressed and as long as the switch is held active the switch level is dimmed up using configured step value.
SWA_DIM_DOWN	When pressed and as long as the switch is held active the switch level is dimmed down using configured step value.
SWA_DIM_UP_ON_LEVEL	If clicked configured on level is transmitted. If held active the switch level is dimmed up using configured step value.
SWA_DIM_UP_ON_LAST	If clicked the last known on level is transmitted. If held active the switch level is dimmed up using configured step value.
SWA_DIM_DOWN_OFF	If clicked, OFF 0% 0 is transmitted If held active the switch level is dimmed down using configured step value.
SWA_DIM_UP_DOWN_OFF_ON_LEVEL	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.
SWA_DIM_UP_DOWN_OFF_ON_LAST	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.
SWA_TOGGLE	Toggles the switch level transmitted between off and configured on level.
SWA_SETTING_ON	When activated sends SET_ON with a setting level as configured in on level and a rotation of 0 (zero)
SWA_SETTING_OFF	When activated sends SET_OFF with a setting level as

	configured in on level and a rotation of 0 (zero)
SWA_SETTING_UP	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.
SWA_SETTING_DOWN	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.
SWA_SETTING_ROTATE_INC	When activated sends SET_DOWN with a setting level of 0 (zero) and a rotation level as configured in step value.
SWA_SETTING_ROTATE_DEC	When activated sends SET_UP with a setting level of 0 (zero) and a rotation level as configured in step value.
SWA_SETTING_STOP	When activated sends SET_STOP.
SWA_SETTING_NUL	When activated sends SET_NUL.
SWA_SETTING_OFF_ON	When input is activated SET_OFF is transmitted. When input is passivized SET_ON 100% is transmitted
SWA_SETTING_ON_SWITCH_UP	If clicked SET_ON is transmitted on the setting output. If held switch level is dimmed up with the configured step value.
SWA_SETTING_OFF_SWITCH_DOWN	If clicked SET_OFF is transmitted on the setting output. If held switch level is dimmed down with the configured step value.
SWA_SETTING_ON_OFF_SWITH_DIM	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.
SWA_SETTING_ON_UP	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.
SWA_SETTING_OFF_DOWN	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.

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

nviRequest

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

nviSwitchFb

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 Ouput

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 it 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)

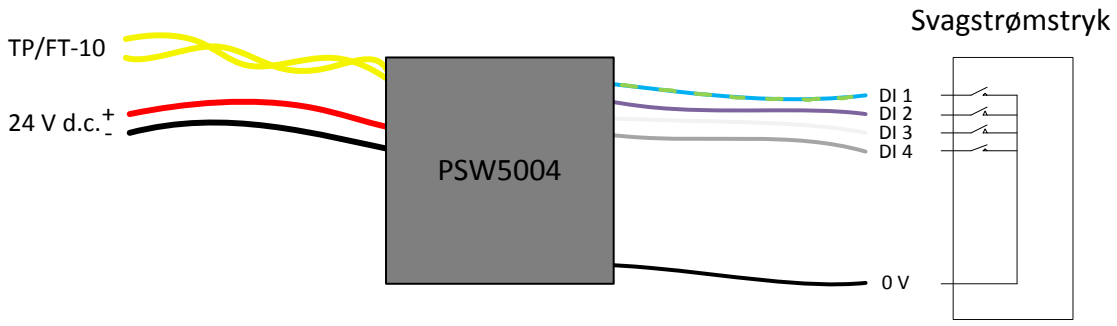
Switch Connection Information

The following figures show the wire information for the different models available.

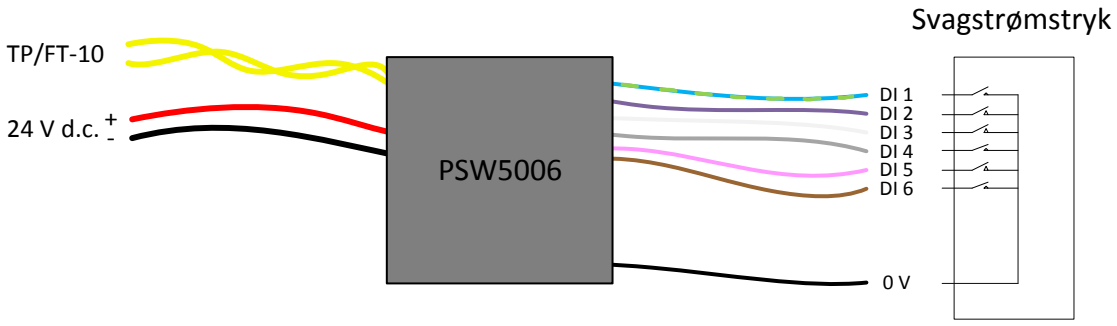
Mounting Instruction

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 extedended and the inputs and outputs should only be connected to switches or LED's as shown below.

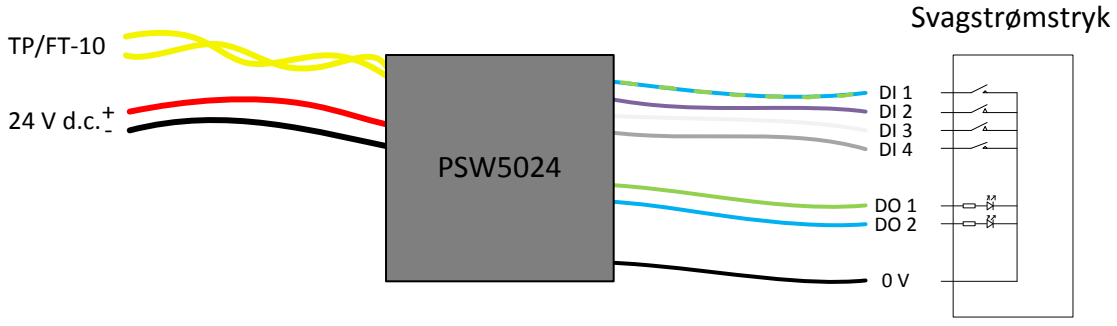
OBS: Activating switch 1&2 (DI1 + DI2) simultaneously will transmit a **service-pin message** to the network.



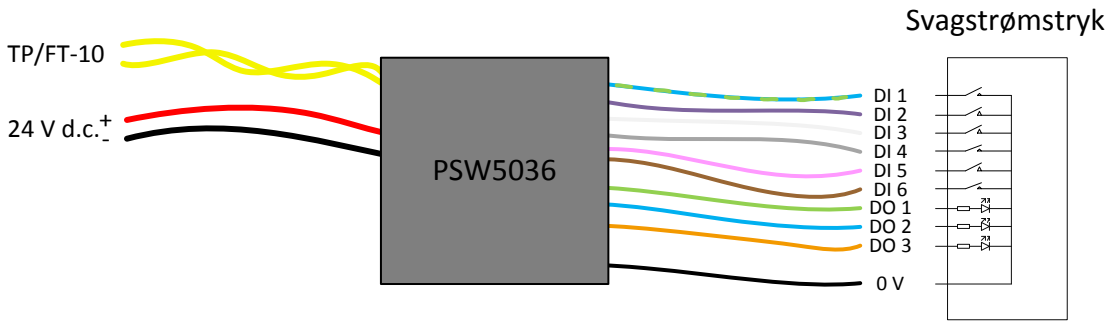
Figur 1 Lonbox PSW5004 - 4 indgange



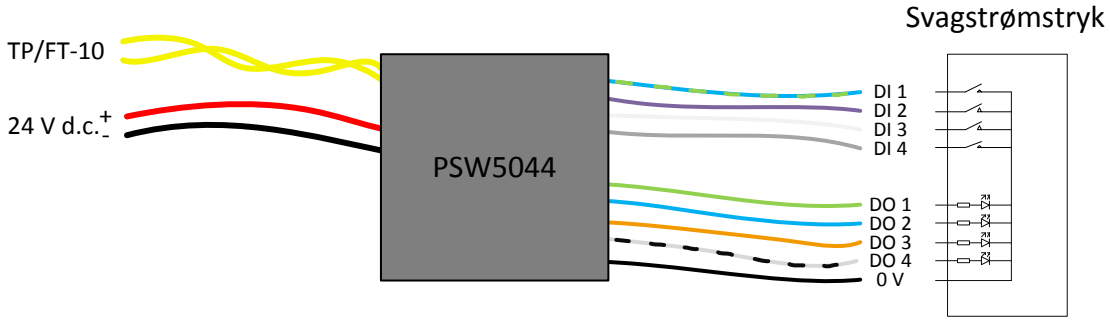
Figur 2 Lonbox PSW5006 – 6 indgange



Figur 3 Lonbox PSW5024 - 4 indgange, 2 udgange



Figur 4 Lonbox PSW5036 - 6 indgange, 3 udgange



Figur 5 Lonbox PSW5044 - 4 indgange, 4 udgange

Technical Data

Interface	
LonWorks 2.0	TP/FT-10 (bus eller fri)
Processor type	FT5000
Forsyning	24 V d.c.
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
Indgange	
Kontaktspænding	3,3 V d.c.
Pull-up	1 kOhm
Indgangsimpedans	10 kOhm
Strøm ved sluttet kontakt	3,3 mA
Udgange	
Spænding	24 V d.c.
Max strøm	10 mA (240 mW)

Models

Model / varenumre	EAN / GTIN koder
Lonbox PSW5004 4-in	5711536000383
Lonbox PSW5006 6-in	5711536000390
Lonbox PSW5024 2-out 4-in	5711536000406
Lonbox PSW5036 3-out 6-in	5711536000413
Lonbox PSW5044 4-out 4-in	5711536000420