LON manual

Application description

LON presence detector
PlanoCentro PCLON

Inhaltsverzeichnis

1. Functional characteristics

1.1 PlanoCentro PCLON presence detector

Presence detector switches or controls a maximum of two lighting groups dependent on the presence of persons and the current brightness. For this purpose two constant light controller objects are available, each with its own brightness set point value, in which a selection can be made from three targeted light measurements.

- With brightness-dependent switching, the lighting is switched on for an adjustable length of time if movement is detected in detection area and there is insufficient light.
- With constant light control, the lighting is controlled to a constant brightness of artificial light and daylight if movement has been detected in the detection area.

The occupancy controller objects transmit the presence information in the room either to the constant light controller or other devices such as heating, ventilation or blinds controls. The channel has a switch-on delay and a time delay.

The presence detector also has another integrated scene component as well the possibility of processing scenes for both lighting groups. In combination with the remote control, the presence detector is not only capable of switching and dimming its own lighting groups but also other external consumers such as lights, blinds etc.

The SendoPro management remote control permits the adjustment and optimisation of defined parameters. For example, the brightness level can be set quickly and reliably via both daylight-dependent switching and constant light control.

The parameters can be read to provide a clear overview. In order to achieve the optimum adjustment to the lighting conditions in a room, the current brightness can be read out in lux and optimised using the room correction factor.

1.2 Features

- Optionally one or two light groups
- Constant light control or daylight-dependent switching.
- Presence-dependent switching of other devices, such as HVAC systems, with switch-on delay and time delay
- Standardised LONMARK objects
- Parallel switching Master-Slave for gap-free coverage of large areas
- Parallel connection Master-Master for several lighting groups with separate light measurement but joint presence detection
- Separate disable objects for light and presence-dependent outputs
- Scene control with two scenes
- Detection and sending of current brightness
- Adjustable dimming value at standby
- Setting the brightness set point values via network variables
- Management remote control SendoPro (optional)
  - Changing parameters
  - Reading data (parameters, brightness actual value, diagnostics data)
- SendoClic user remote control (optional)
  - Switch and dim light groups individually
  - Two programmable scenes
  - Optional control of blinds or external channels

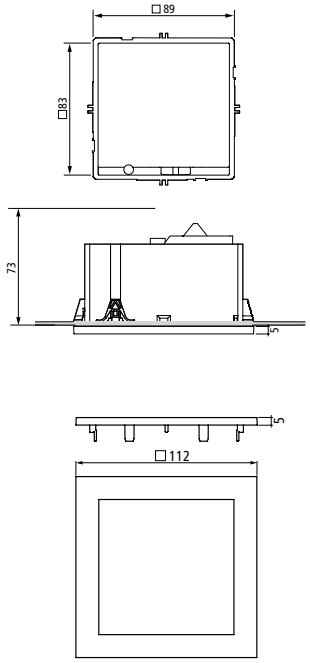
1.3 Technical data

Presence detector	PlanoCentro PCLON
Horizontal / vertical detection angle	360° / 120°
Recommended installation height	2.0 – 3.5 m
Detection area 3.5m installation height	64 m² (8 x 8 m) stationary 100 m² (10 x 10 m) mobile
Light measurement	Mixed light
Parameter setting	All settings are remotely configurable via software and described in this document
Brightness range Light measurement deactivated	approx. 10 – 2000 Lux Measurement off (light control dependent on presence)
Time delay	10 s – 100 min
Stand-by brightness light	approx. 10 – 200 Lux
Standby time light	30 s – 60 min / on
Switch-on delay	10 s – 30 min / inactive
Connection terminal	WAGO 243 Screwless terminals
Topology	FTT-10
Power consumption	~ 30 mA
Receiving communication data Sending data	IR Radio 868 MHz
Ambient temperature	0 °C – +50°C
Storage temperature	-25 °C – +60 °C
Protection rating	IP 20 IP 40 (installed)
Ceiling installation (false ceilings)	
Installation type	PlanoFix E installation frame
Ceiling cut out	100 x 100 mm ± 1 mm
Ceiling strength	up to approx. 26 mm
Flush-mounted installation (concrete ceiling)	
Installation type	PlanoFix U, flush-mounted junction box
Flush-mounted junction box	115 x 115 x 100 mm, Agro/Kaiser 9908.01/1298-07
PlanoFix U (installation plate)	Metal 118 x 118 mm

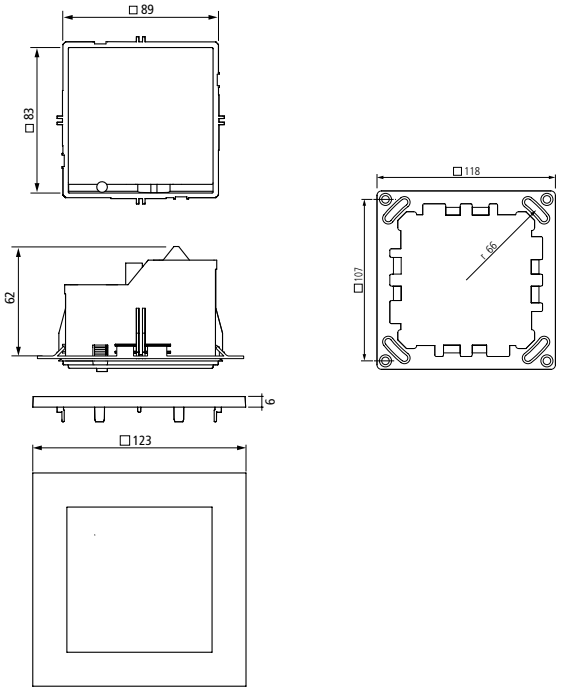
Item numbers	
PlanoCentro EWH PCLON, integrated installation set, white	206 9 102
PlanoCentro EBK PCLON, integrated installation set, black	206 9 103
PlanoCentro ESR PCLON, integrated installation set, silver	206 9 104
PlanoCentro UWH PCLON, flush-mounted installation set, white	206 9 202
PlanoCentro UBK PCLON, flush-mounted installation set, black	206 9 203
PlanoCentro USR PCLON, flush-mounted installation set, white	206 9 204
SendoPro 868-A management remote control	907 0 675
SendoClic user remote control	907 0 690
Surface-mounted housing PlanoBox, white	907 0 731
PlanoCover EWH-112x112, white	907 0 677
PlanoCover EBK-112x112, black	907 0 678
PlanoCover ESR-112x112, silver	907 0 679
PlanoCover UWH-123x123, white	907 0 680
PlanoCover UBK-123x123, black	907 0 681
PlanoCover USR-123x123, silver	907 0 682
PlanoSet RQ EWH (with PlanoCover EWH 142 x 142)	907 0 736
PlanoSet RQ EBK (with PlanoCover EBK 142 x 142)	907 0 737
PlanoSet RQ ESR (with PlanoCover ESR 142 x 142)	907 0 738
PlanoSet RR EWH (with PlanoCover EWH 172)	907 0 740
PlanoSet RR EBK (with PlanoCover EBK 172)	907 0 741
PlanoSet RR ESR (with PlanoCover ESR 172)	907 0 742

1.3.1 Measures

Ceiling installation
PlanoCentro E . . -PCLON



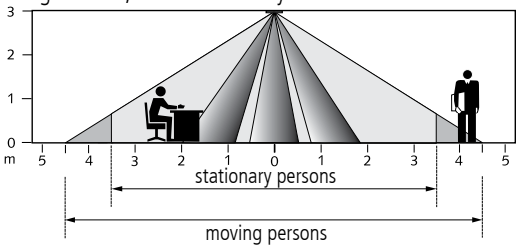
Flush-mounted installation
PlanoCentro U . . -PCLON

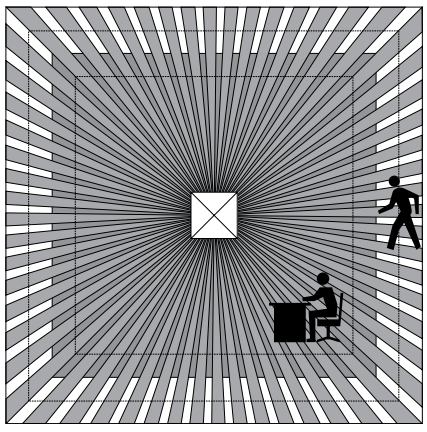


1.3.2 Detection area

Installation height	stationary persons		moving persons	
2.0m	20 m^2	4.5m x 4.5m	36 m^2	6.0m x 6.0m ± 0.5m
2.5m	36 m^2	6.0m x 6.0m	64 m^2	8.0m x 8.0m ± 0.5m
3.0m	49 m^2	7.0m x 7.0m	81 m^2	9.0m x9.0m ± 1.0m
3.5m	64 m^2	8.0m x 8.0m	100 m^2	10.0m x 10.0m ± 1.0m

Detection area with an installation height of 3m, side view and layout.





2. Description of the PlanoCentro PCLON objects

The LON interface files can be found on the Theben HTS internet site: http://www.theben-hts.ch or http://www.theben.de

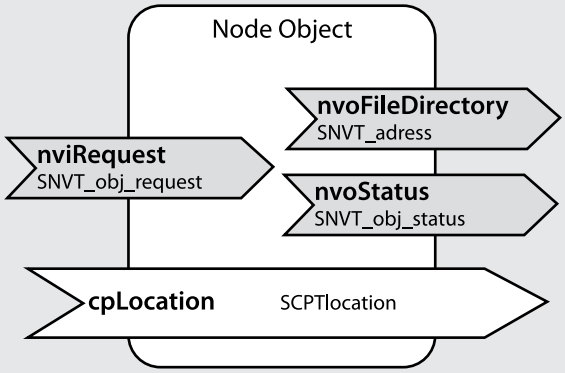
2.1 Objects

The PlanoCentro PCLON presence detector uses the following standardised LONMARK function profile exclusively.

Name	Profile	Description
Node object	0	The device-relevant, higher-order information, inputs and outputs are shown here. – Neuron ID – Location – Detector status – Device-relevant faults if applicable – Error-handling
Light sensor (3x)	1010	The light sensor makes available the current brightness value in Lux. 1 per light measurement available.
Occupancy sensor	1060	The presence sensor makes available information about whether the detection area is occupied.
Occupancy controller (3x)	3071	The presence controller supports the presence-dependent control of light channels or additional controllers.
Constant light controller (2x)	3050	The constant light controller controls the light according to the desired brightness and presence. Control can be switched off. The constant light controller is then in switching mode dependent on presence and brightness (traditional presence detector).
Remote control	3200	This object passes on the IR commands received from the user's SendoClic remote control to the configured output variables for control of blinds, lights, etc.
Scene panel	3250	The scene panel broadcasts the configured scenes for each of the two scene buttons on the user's SendoClic remote control.
Scene controller	3251	The scene controller processes the scenes received via IR commands or input variables and generates control commands for the light or blinds controller.

2.2 Node object

The node object only supports the commands prescribed by LONMARK.



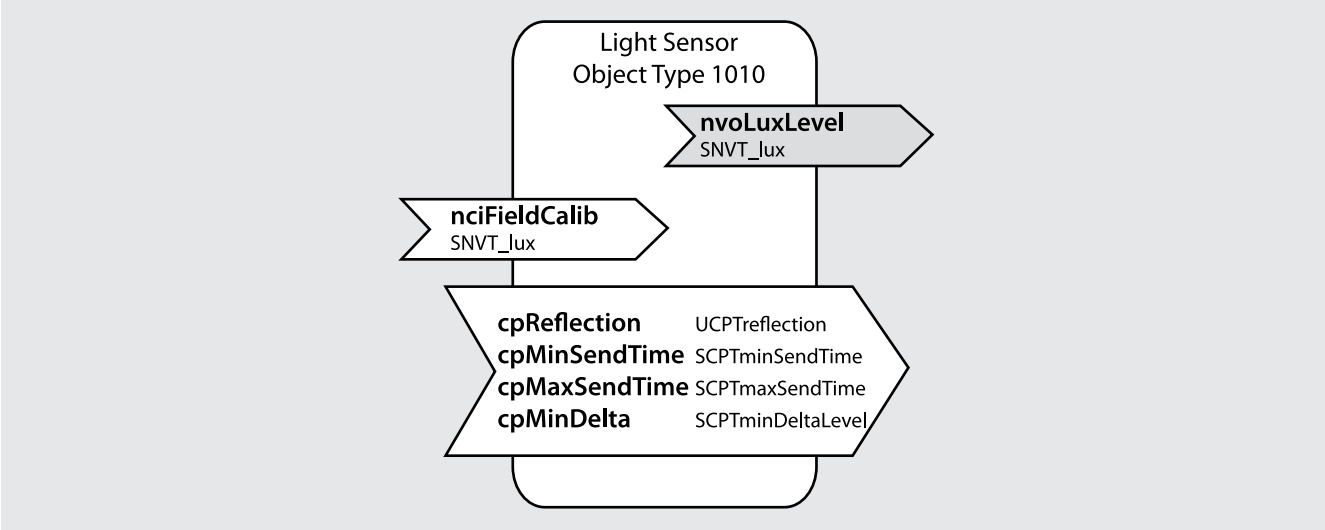
- Processing and output of the detector's status information.
- Processing and output of possible faults relevant to the device.

2.2.1 Configuration parameters

	Variable	Data type	Value range	Default	Description
Input variables (nvi)	nviRequest	SNVT_obj_request			Variable to control and query the device state or the function profile. Feedback takes place via nvoStatus. The following functions are supported: • RQ_NORMAL enable object and remove override • RQ_UPDATE_STATUS just report object status • RQ_REPORT_MASK report status bit mask
Output variables (nvo)	nvoStatus	SNVT_obj_status			Feedback on queries via nviRequest. The following status bits are supported: • invalid_id • invalid_request • report_mask
	nvoFileDirectory	SNVT_address			Start address of the configuration parameter files
Configuration variables (nci)	--				
Configuration parameters (cp)	cpLocation	SCPTlocation			Name of the site, can be assigned by the integrator during programming.
	cpAppVersion	UCPTappVersion			HI-Byte = HardwareVersion; LOW-Byte = Build Version; e.g. 1.02
	cpDeviceStatus	UCPTdeviceStatus			3 error bits can be shown: Bit 0: invalid configuration variables (nci) in the EEPROM Bit 1: invalid configuration parameters (cp) Bit 2: Hardware malfunction Error bits 0 and 1 can be cleared by parameter download (resync with LNS database)

2.3 Light sensor objects

There are 3 function profiles for the light sensor available, corresponding to the three light measurements of the detector. They correspond to LONMARK Profile 1010. The light sensor sends the current brightness value in Lux at the place where the detector was installed over the Lonworks network, either cyclically or when there are sufficiently large changes. The measured brightness value can be adapted to the current situation in the room with a correction value (room correction factor).



2.3.1 Description

The currently measured brightness is output via the network variable nvoLuxLevel. The measurement must be calibrated, so that nvoLuxLevel corresponds to the value measured with a lux meter below the detector.

The configuration variable nciFieldCalib is used to calibrate the light measurement with a lux meter. The presence detector uses this to calculate the reflection factor nciReflection valid for this room. This factor can also be input directly.

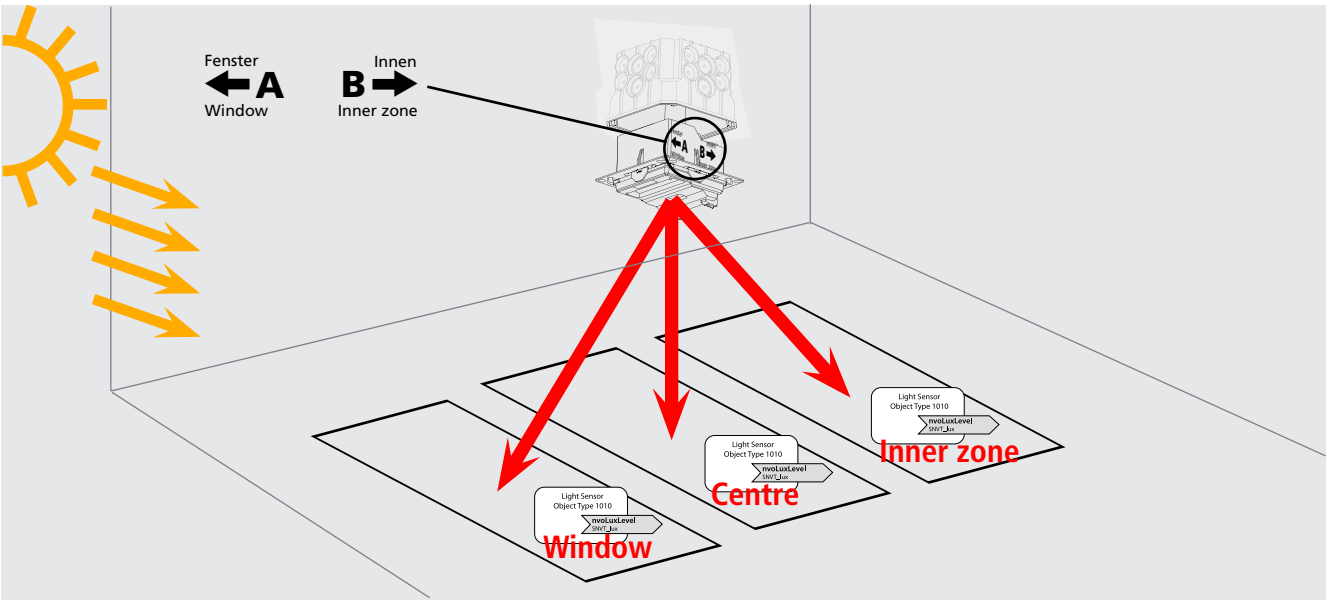
The configuration variable nciMinDelta defines how large the daylight change must be for the network variable nvoLuxLevel to be updated prior to the expiry of cpMaxSendTime. Updating will not take place in shorter intervals than specified in cpMinSendTime.

2.3.2 Positioning of the detector and light measurement

The PlanoCentro PCLON has up to three directed light measurements. The central light measurement detects the brightness directly below the detector, while the two other light measurements detect the brightness close to the window or in the interior. The precondition for this is that the PlanoCentro PCLON is correctly positioned during installation. For this purpose a sticky label is affixed to the presence detector, enabling the correct installation of the presence detector. The use of the following light measurements is recommended:

- Switching or constant light control 1-channel: Use of the centre light measurement
- Switching or Constant light control 2-channel: use of both light measurements window or interior

For special room configurations, light measurements can be selected to optimise the result.



2.3.3 Information about calibration

The presence detector measures the brightness on the ceiling. The brightness measured by the presence detector is dependent on the reflection characteristics of the room, in particular the materials and furniture, but also the time of day and weather conditions. The aim of the room correction factor or reflection factor is to adapt the measurement of the presence detector to the conditions of the relevant area, e.g. the work surface.

$$\text{Room correction factor (reflection factor)} = \frac{\text{Brightness value on the ceiling}}{\text{Brightness value on the work surface}}$$

In every case it is recommended to perform the calibration with a mix of approximately 50% each of artificial light and daylight. When the detector is powering up, calibration may only be performed after the start-up phase has ended. During the start-up phase the LED of the detector flashes once per second.

2.3.3.1 Calibration with the plug-in or parameter browser.

- The Lux meter is placed on the work surface below the sensor and the measured lux value is entered in the plug-in. Then press the "Calibrate" button. Alternatively the measured lux value is entered in the configuration variable nciFieldCalib and confirmed with the Enter button.
- The room correction factor cpReflection is calculated from this. Values between 0.05 and 2.0 are permitted. Calculated or entered values outside the permitted range will be automatically set to the appropriate limit value.
- The calculated reflection factor cpReflection will be applied directly. With correct calibration the output variable nvoLuxLevel corresponds to the value measured on the work surface. The reaction of the constant light controller is delayed, caused by the control parameter, both with daylight-dependent switching and Constant light control.

2.3.3.2 Calibration via the configuration variable nciFieldCalib

- The lux meter is placed on the work surface below the sensor and the measured lux value sent as the data type SNVT_lux to the configuration variable nciFieldCalib. In this way the calibration can be performed through a visualisation or a control system.
- The room correction factor cpReflection is calculated from this. Values between 0.05 and 2.0 are permitted. Calculated or entered values outside the permitted range will be automatically set to the appropriate limit value.
- The calculated reflection factor cpReflection will be applied directly. With correct calibration the output variable nvoLuxLevel corresponds to the value measured on the work surface. The reaction of the constant light controller is delayed, caused by the control parameter, both with daylight-dependent switching and Constant light control.

2.3.3.3 Direct input of the room correction factor (reflection factor)

The room correction factor can also be input directly. For this purpose the corresponding value between 0.05 and 2.0 will be written to the variable cpReflection. When the presence detector is delivered, the room correction factor is preset to the value 0.3.

2.3.4 Configuration parameters

	Variable	Data type	Value range	Default	Description
Input variables (nvi)	-				
Output variables (nvo)	nvoLuxLevel	SNVT_lux	0 … 65,535 Lux		Measured brightness in Lux will be sent when there are changes larger than SCPTminSendDelta or cyclically after SCPTmaxSendTime
Configuration variables (nci)	nciFieldCalib	SNVT_lux	0 … 65,535 Lux		Ambient brightness in lux for self-calibration
Configuration parameters (cp)	cpReflection	UCPTreflection	0.05 ... 2.0	0.3	Room correction factor. The reflection factor will be calculated automatically from cpFieldCalib when it has an entry, but can also be entered manually.
	cpMinSendTime	SCPTminSendTime	0 … 6553.5 s	1 secs	Minimum transmission pause for nvoLuxLevel. 0 = no transmission pause
	cpMaxSendTime	SCPTmaxSendTime	0 … 6553.5 s	60 secs	Heartbeat for nvoLuxLevel. 0 = no heartbeat
	cpMinSendDelta	SCPTminDeltaLevel	0.0 .. 100%	5 %	Minimum value change that leads to resending

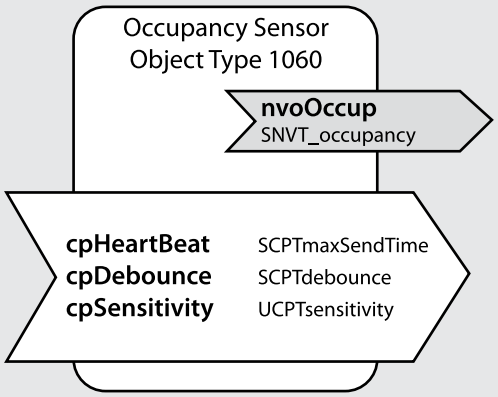
Note: Calculated or input values of the room correction factor cpReflection will be automatically set to the permitted limits if a binding exists between light sensor and constant light controller. If there is no binding between both objects, the room correction factor is configurable within the variable limits (0.05 ... 2.0), also the brightness setpoint value (10 - 2000 Lux).

If light sensor and constant light controller are subsequently connected with one another, a connection check will be performed within 30 seconds. In the process the brightness set point value nciLuxSetPoint will be moved to the physically possible limits, which depend on the set room correction factor cpReflection.

If the light sensor and constant light controller are already connected during input, the testing and any shifting are performed as soon as input takes place.

2.4 Occupancy Sensor Object

The occupancy sensor object corresponds to the LONMARK profile 1060. If the presence detector detects a movement, the output of the occupancy sensor will be set to the state OCCUPIED. This presence signal is used, for example, by an occupancy controller for presence-dependent control. The behaviour is defined with the configuration parameters.



2.4.1 Description

The network variable nvoOccup will be set to the status OCCUPIED as soon as the detector has registered a movement. After the movement has ended the status changes back to UNOCCUPIED after the delay time nciDebounce.

The configuration variable nciDebounce defines the time delay for the reset of the output variable after movement has been recognised. It is restarted with every new movement. The internal delay time of 5 seconds is added to the set delay time.

The configuration variable nciHeartbeat defines the repeat frequency of the network variable nvoOccup. It is sent without changes. The setting of 0 seconds deactivates the heartbeat.

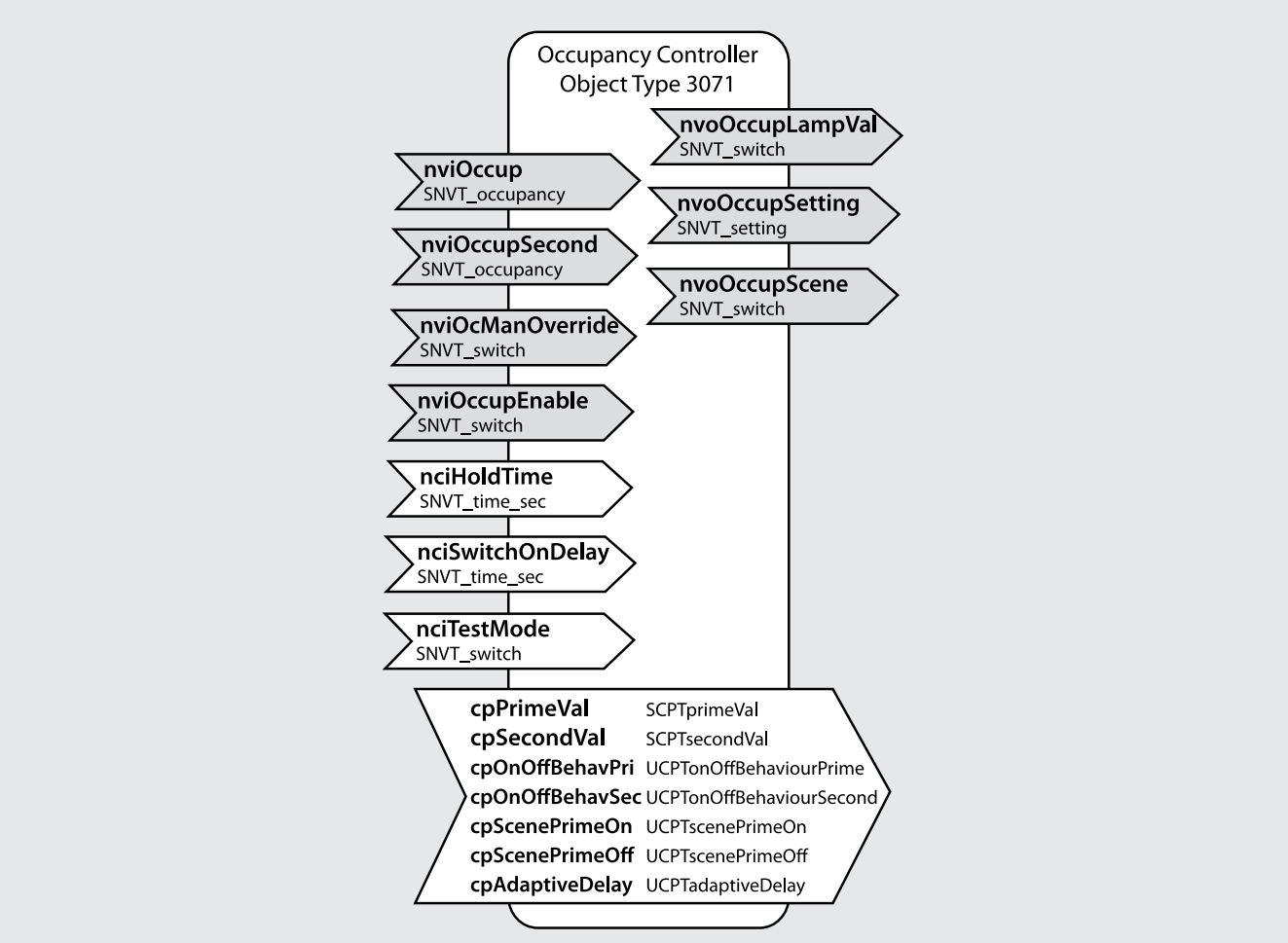
5 levels of detection sensitivity can be set using the configuration variable cpSensitivity. The default is average sensitivity (level 3). In practice this is optimal for all application cases and should only be adjusted in urgent cases.

2.4.2 Configuration parameters

	Variable	Data type	Value range	Default	Description
Input variables (nvi)	--				
Output variables (nvo)	nvoOccup	SNVT_occupancy			0: OC_OCCUPIED: Room occupied 1: OC_UNOCCUPIED: Room unoccupied
Configuration variables (nci)	--				
Configuration parameters (cp)	cpHeartbeat	SCPTmaxSendTime	0.0 to 6553.4 s	120 secs	Heartbeat for the output nvoOccup Setting 0 seconds deactivates the heartbeat.
	cpDebounce	SCPTdebounce	0.0 to 6553.4 s	0 secs	Time delay for the reset of nvoOccup after the motion ends, plus an internal delay of 5 s.
	cpSensitivity	UCPT_sensitivity	1 ... 5	3	Detection sensitivity for the presence detection: 1: Low sensitivity 2: Reduced sensitivity 3: Average sensitivity, default setting 4: Increased sensitivity 5: High sensitivity
	cpLedIndicator	UCPT_ledIndicator	ACTIVE, INACTIVE	INACTIVE	ACTIVE: LED indicates movement in normal mode and test mode. INACTIVE: LED indicates movement only in test mode

2.5 Occupancy controller objects

There are 3 function profiles of the occupancy controller type available. These correspond to LONMARK Profile 3071. The three outputs can be used universally. For example, one can be used to control both light outputs, a second controls the wall panel light group depending on the brightness level, while a third is used for presence-dependent HVAC control. The presence test mode is also part of the occupancy controller.



2.5.1 Description

The network variable nvoSetting is used for presence-dependent control e.g. of the constant light controller. During presence (input nviOccup to OC_OCCUPIED) it switches to the status SET_ON. With every movement the time delay nciHoldTime is restarted. After the time delay nciHoldTime expires, the nvoSetting changes to SET_OFF.

The network variable nvoOccupLampValue is used for presence-dependent switching of a light group (without brightness influence). During presence (input nviOccup to OC_OCCUPIED) it switches to the value defined with cpPrimeVal. With every movement the time delay nciHoldTime is restarted. After the time delay nciHoldTime expires, nvoOccupLampValue changes to 0%/0.

Manual override is possible, for example using a button, via the network variable nviOcManOverride. When a x%/1 is received on nviOcManOverride, the controller will be activated and the time delay restarted. nvoOccupSetting will be set to SET_ON, the value x%/1 received on nciOcManOverride will be written to nvoOccupLampValue. When a 0%/0 is received on nviOcManOverride, the controller will be switched off for the duration of the presence. nvoOccupLampValue will be set to 0%/0.

Every occupancy controller can also be permanently overriden or blocked. When a x%/0 is received on nviOccupEnable, nvoOccupLampValue, nvoOccup-Setting and nvoOccupScene will be deactivated. The internal logic continues to operate during the block, but no telegrams about the network variables mentioned will be sent. After unblocking with x%/1 the current status will be sent. After every reset, nviOccupEnable is set to 100%/1.

Taking adjacent presence into account enables the formation of light islands. When an OC_OCCUPIED is received on nviOccupSecond when there is no own presence (OC_UNOCCUPIED at nviOccup), nvoOccupLampValue will be set to x%/1 in accordance with cpSecondVal. In addition the value from cpSecondVal will be transferred to nvoOccupSetting using SET_STATE. When own presences exists (nviOccup at OC_OCCUPIED), nvoOccupLampValue will be set to x%/1 in accordance with cpPrimeVal. cpSecondVal will thus be overriden. When a x%/1 is received on nviOcManOverride, the received value is set to the output nvoOccupLampValue.

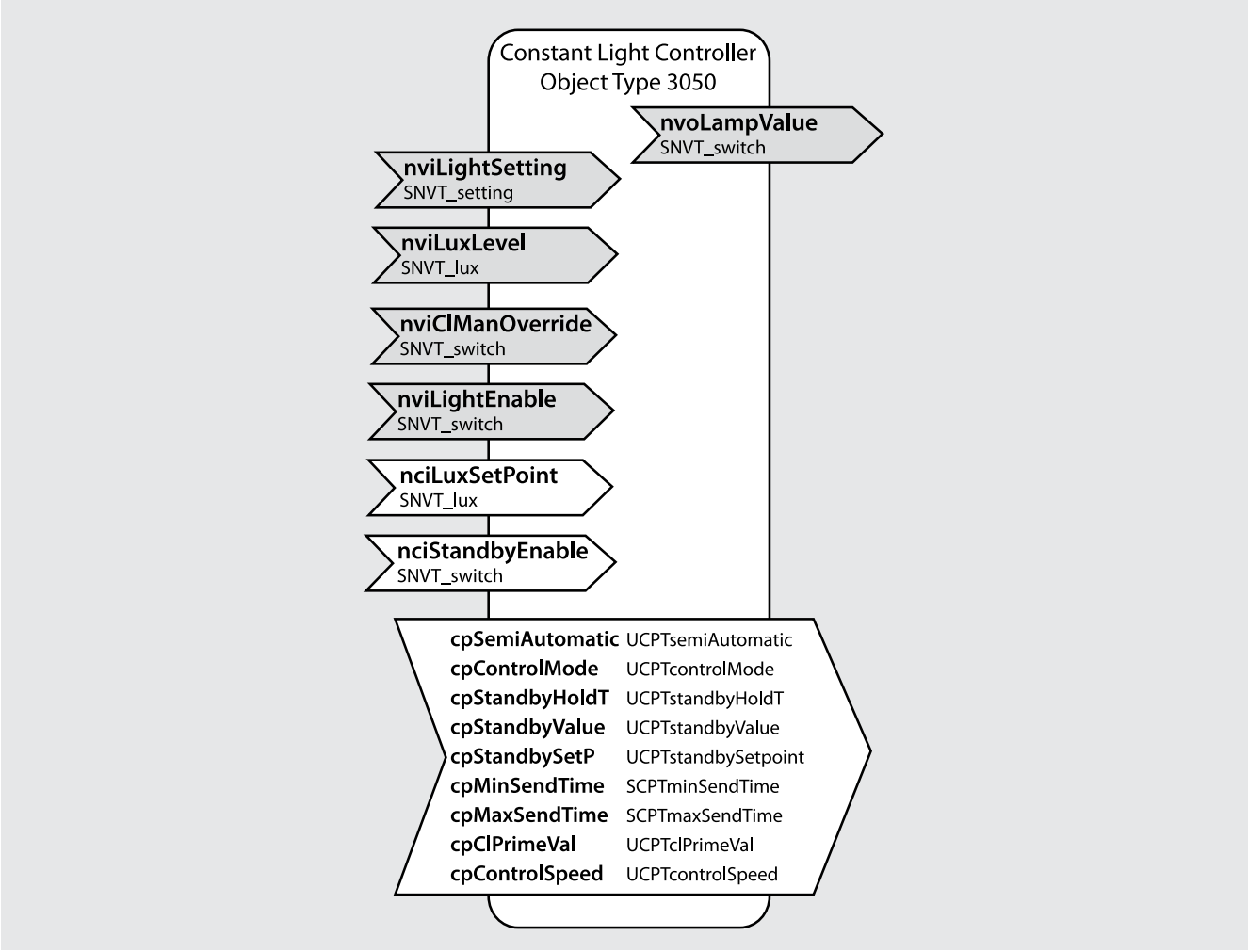
Depending on the status, during presence or absence in each case a defined scene number can be set via the output nvoOccupScene. The scene to be set is selected with the configuration parameters cpScenePrimeOn or cpScenePrimeOff.

2.5.2 Configuration parameters

	Variable	Data type	Value range	Default	Description
Input variables (nvi)	nviOccup	SNVT_occupancy			Input variable from occupancy sensor
	nviOccupSecond	SNVT_occupancy			Occpupancy signal from detectors from the vicinity, for the formation of "light islands". Overriden when own presence exists
	nviOcManOverride	SNVT_switch			Input variable for manual override: When 0%/0 is received the occupancy controller switches off the lighting for the duration of the presence. When a x%/1 is received the time delay nciHoldTime is started and the value received written to mvoOccupLampVal. (overrides cpPrimeVal) When an UNOCCUPIED is received on nviOccup, the controller switches off the light after the time delay nciHoldTime expires and goes back into fully automatic mode. Switched on immediately when switch-on delay configured.
	nviOccupEnable	SNVT_switch			Input variable to block the occupancy controller. When x%/0 is received, nvoOccLampValue, nvoOccupSetting and nvoOccupScene will be deactivated. After every reset, nviOccupEnable is set to 100%/1.
Output variables (nvo)	nvoOccupLampVal	SNVT_switch			Output variable for control of light or HLK without brightness influence. Status x%/1 according to cpPrimeVal when present. Status 0%/0 when no one is present after expiry of nciHoldTime or switch-off with 0%/0 to nviManOverride.
	nvoOccupSetting	SNVT_setting			Operation mode for an additional controller (e.g. constant light controller). SET_ON when present. SET_OFF when absent after the expiry of nciHoldTime. SET_STATE transfers a status
	nvoOccupScene	SNVT_scene			Output of the defined scene numbers 0 ... 255 (RECALL) in accordance with: cpScenePrimeOn when present cpScenePrimeOff when absent after the expiry of nciHoldTime
Configuration variables (nci)	nciHoldTime	SNVT_time_sec	0.0 ... 6553 secs	600 secs	The time delay for the outputs nvoOccupLampVal and nvoOccupSetting. nciHoldTime is restarted whenn any motion occurs (OCCUPIED to nviOccup). If the adjacent zones are still occupied, there will be no switch off, but rather a switch to nciSecondVal.
	nciSwitchOnDelay	SNVT_time_sec	0.0 ... 6553 secs	0 secs	Switch-on delay for the output nvoOccupLampVal.
	nciTestMode	SNVT_switch			Activation / Deactivation of test mode for motion detection: OCCUPIED: nvoOccLampVal = 100%/1 UNOCCUPIED: nvoOccLampVal = 0%/0
Configuration parameters (cp)	cpPrimeVal	UCPTprimeVal	0 ... 100 %	100 %	Output value of the lamp when present via nviOccup
	cpSecondVal	UCPTsecondVal	0 ... 100 %	0 %	Output value of the lamp during presence of adjacent zones ("light island") via nviOccup-Second.
	cpOnOffBehavPri	UCPTonOffBeha-viourPrime		On/Off	Describes what telegram is sent (via nviOccup) when presence begins and ends. ON_OFF_CMD: On when present, Off when absent NO_ON_CMD: only off when absent NO_OFF_CMD: only ON when present
	cpOnOffBehavSec	UCPTonOffBeha-viourSecond		On/Off	Describes what telegram is sent (via nviOccupSecond) when presence begins and ends. For selection see cpOnOffBehavPri
	cpScenePrimeOn	UCPTscene-PrimeOn		0	Scene when room occupied Scene number 0 … 255
	cpScenePrimeOff	UCPTscene-PrimeOff		0	Scene when room unoccupied Scene number 0 … 255
	cpAdaptiveDelay	LON_State_t	ACTIVE, INACTIVE	ACTIVE	Activates or deactivates the adaptive time delay and short-term presence: ACTIVE: recommended when the Occupancy Controller is connected to a Constant Light Controller. The time delay nciHoldTime adjusts automatically to the user's behaviour and can increase independently to 30 minutes or reduce back to the set minimum time. With settings ≤ 2 min or ≥ 30 min it remains unchanged at the set value. INACTIVE: recommended, when the Occupancy Controller controls HVAC applications. The set time delay remains fixed.

2.6 Constant Light Controller Objects

There are 2 function profiles of the constant light controller type available. These correspond to LONMARK Profile 3071. They optionally permit constant light control or daylight-dependent switching. By selecting between three directional light measurements (light sensor objects), two light groups can be switched or regulated independently of one another.



2.6.1 Functionality

Each of the two constant light controllers optionally supports the daylight-dependent switching function or constant light control. Both controllers can be used independently of one another. The network variables nvoLightLampValue are used to control a light group, optionally in constant light control mode (cpControlMode = CONSTANT LIGHT CONTROL) or presence and daylight-dependent switching (cpControlMode = SWITCHING).

2.6.1.1 Presence and daylight-dependent switching

Fully automatic operation

In fully automatic operation (cpSemiAutomatic = FULLY AUTOMATIC) the network variable nvoLightLampValue switches when someone is present (nviLightSetting to SET_ON) **and** insufficient brightness (nviLuxLevel < nciLuxSetPoint, wait delay) to the status x%/1 defined with cpClPrimeVal. When no one is present (nviLightSetting at SET_OFF) **or** sufficient brightness (nviLuxLevel > nciLuxSetPoint+hysteresis, wait delay) nvoLightLampValue switches to 0%/0, if no stand-by mode is activated.

Semi-automatic operation

In semi-automatic operation (cpSemiAutomatic = SEMI AUTOMATIC) the detector never switches independently, i.e. no telegram is triggered when no one is present and there is unsufficient brightness. The lighting must always be switched manually via nviClManOverride with x%/-1 (see following sections). When no one is present (nviLightSetting at OFF) **or** sufficient brightness (nviLuxLevel > nciLuxSetPoint+hysteresis, wait delay) nvoLightLampValue switches to 0%/0, if no stand-by mode is activated.

Setting of the brightness threshold value

The brightness threshold value nciLuxSetPoint can be set by means of the commissioning tool, plug-in, with the SendoPro management remote control or via the network variable nciLuxSetPoint. If a value is set that is invalid in conjunection with the room correction factor (reflection factor), the next closest valid value will be set.

Note: when a binding exists or after the creation of the binding between light sensor and constant light controller the brightness threshold value nciLuxSetPoint will be moved to the physically possible limits, which depend on the set room correction factor cpReflection. See Section 2.3 for information about calibration.

Teach-in of the brightness threshold value

The brightness threshold value can be learned via teach-in. This is done via the plug-in, via the SendoPro management remote control or via the network variable nciTeachIn. In the process the detector takes the currently measured brightness and saves it as a new brightness threshold value. In doing so nciLuxSetPoint is overwritten.

Standby mode as orientation light

If nciStandbyEnable is set to x%/1, the lighting will not be switched off when no one is present (nviSetting at SET_OFF) and there is insufficient brightness, but the lighting remains during the set standby time cpStandbyHoldTime at the standby value cpStandbyValue and thus serves as an orientation light.

With the "ON" setting the lighting remains permanently at the standby value cpStandbyValue when no one is present. The lighting switches off if the brightness level in the room exceeds the standby set point value cpStandBySetPoint. The lighting returns to the standby value independently when no one is present if the room brightness falls below the set brightness level (also in semi-automatic).

Manual override

Manual override is possible, for example using a button, via the network variables nviSetting or nviCIManOverride. Depending on which of the two network variables was used, different behaviour appears after the manual override:

- When a x%/1 is received on nviClManOverride, the received value is copied to nvoLightLampValue.
  When a 0%/0 is received on nviClManOverride, the controller will be switched off and nvoLightLampValue set to 0%/0.
  Dimming occurs through cyclically transmitted x±Δx%/1. The lighting will be dimmed to be brighter or darker.
  Constant light control will remain at the set value for the duration of the presence (behaviour after manual override: "school")
- Upon receiving a SET_UP or SET_DOWN on nviSetting the lighting will be dimmed brighter or darker.
  During the presence, the brightness threshold value will be temporarily set to the current actual value. After the time delay expires the originally configured brightness threshold value applies again. (Behaviour after manual override: "office")
  No SET_ON, SET_OFF or SET_STATE may be sent from the button. These commands are reserved for internal detector use.

If the lighting is switched off (nvoLightLampValue at 0%/0) the lighting will be switched on again with a x%/-1 to nviClManOverride and remainsa active for at least 30 mins, as long as there are people present. It then switches off when the brightness is adequate. If the light is already switched on, with a x%/-1 to nviClManOverride the manual override will be cancelled; the detector is in normal operation.

Blocking and unblocking

Every constant light controller can also be permanently overriden or blocked. Upon reception of a x%/0 on nviLightEnable nvoLightLampValue will be deactivated. The internal logic continues to operate during the block, but no telegrams about the network variables mentioned will be sent. After unblocking with x%/1 the current state will be sent. After every reset, nviLightEnable is set to 100%/1.

2.6.1.2 Constant light control

Fully automatic operation

In fully automatic operation (cpSemiAutomatic = FULLY AUTOMATIC) the constant light control will be started when someone is present (nviLightSetting to SET_ON) **and** insufficient brightness (nviLuxLevel < nciLuxSetPoint, wait delay). The network variable nvoLightLampValue switched to the status x%/1 defined with cpCIPrimeVal. Control will be performed to the set point value, starting from this switch-on value. When no one is present (nviLightSetting at SET_OFF) **or** sufficient brightness (nviLuxLevel > nciLuxSetPoint, wait delay after dimming down from nvoLightLampValue to < 10%) nvoLightLampValue switches to 0%/0, if no stand-by mode is activated.

Semi-automatic operation

In semi-automatic operation (cpSemiAutomatic = SEMI AUTOMATIC) the detector never switches independently, i.e. no telegram is triggered when no one is present and there is unsufficient brightness. The lighting must always be switched manually with a x%/-1 on via nviClManOverride. The constant light control is started. When no one is present (nviLightSetting at SET_OFF) **or** sufficient brightness (nviLuxLevel > nciLuxSetPoint, wait delay after dimming down from nvoLightLampValue to 10%) nvoLightLampValue switches to 0%/0, if no stand-by mode is activated.

Setting of the brightness set point value

The brightness set point value nciLuxSetPoint can be set by means of the commissioning tool, plug-in, with the SendoPro management remote control or via the network variable nciLuxSetPoint. If a value is set that is invalid in conjunection with the room correction factor (reflection factor), the next closest valid value will be set.

Note: when a binding exists or after the creation of the binding between light sensor and constant light controller the brightness set point value nciLuxSetPoint will be moved to the physically possible limits, which depend on the set room correction factor cpReflection. See Section 2.3 for information about calibration.

Teach-in of the brightness set point value

The brightness set point value can be learned via teach-in. This is done via the plug-in, via the SendoPro management remote control or via the network variable nciTeachIn. In the process the detector takes the currently measured brightness and saves it as a new brightness set point value. In doing so nciLuxSetPoint is overwritten.

Standby mode as orientation light

If nciStandbyEnable is set to x%/1, the lighting will not be switched off when no one is present (nviLightSetting at SET_OFF) and there is insufficient brightness, but the lighting remains controlled during the set standby time cpStandbyHoldTime at the standby set point value cpStandBySetPoint and thus serves as an orientation light. The standby value cpStandbyValue serves as the upper limit of the output value.

With the setting "ON" the lighting will be permanently controlled when no one is present to the Standby set point value cpStandBySetPoint (limited by the standby value cpStandbyValue). If the room brightness climbs above the standby set point value, the lighting switches off (wait delay after dimming down from nvoLightLampValue to <10%). The lighting returns to the standby value independently when no one is present if the room brightness falls below the set brightness level (also in semi-automatic).

Manual override

Manual override is possible, for example using a button, via the network variables nviLightSetting or nviCIManOverride. Depending on which of the two network variables was used, different behaviour appears after the manual override:

- When a x%/1 is received on nviCIManOverride, the received value is copied to nvoLightLampValue.
  When a 0%/0 is received on nviCIManOverride, the controller will be switched off and nvoLightLampValue set to 0%/0.
  Dimming occurs through cyclically transmitted x±Δx%/1. The lighting will be dimmed to be brighter or darker.
  Constant light control will be stopped for the duration of the presence (behaviour after manual override: "school")
- Upon receiving a SET_UP or SET_DOWN on nviLightSetting the lighting will be dimmed brighter or darker.
  While the presence continues, the constant light control remains active at the new temporary set point value. After the time delay expires the originally configured brightness set point value applies again. (Behaviour after manual override: "office")
  When a STATE is received, the received value will be copied to nvoLightLampValue.
  No SET_ON, SET_OFF or SET_STATE may be sent from the button. These commands are reserved for internal detector use.

With a x%/-1 on nviCIManOverride the manual override will be cancelled; the detector is in normal operation.

Blocking and unblocking

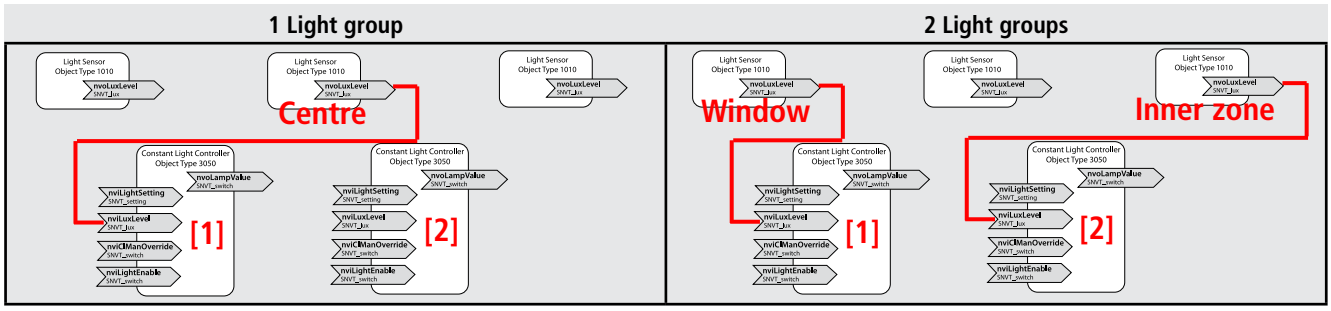
Every constant light controller can also be permanently overriden or blocked. Upon reception of a x%/0 on nviLightEnable nvoLightLampValue will be deactivated. The internal logic continues to operate during the block, but no telegrams about the network variables mentioned will be sent. After unblocking with x%/1 the current state will be sent. After every reset, nviLightEnable is set to 100%/1.

2.6.1.3 Number of light groups

The use of the following light measurements is recommended:

- Switching or constant light control 1-channel: Use of the centre light measurement
- Switching or Constant light control 2-channel: use of both light measurements window or interior

For special room configurations, light measurements can be selected to optimise the result.

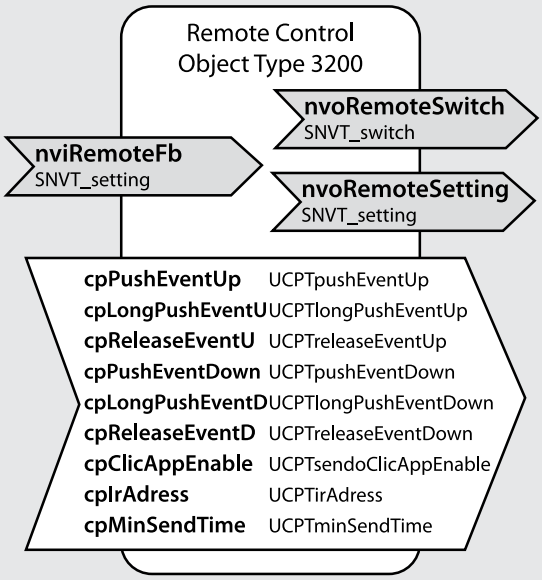


2.6.2 Configuration parameters

	Variable	Data type	Value range	Default	Description
Output variables (nvo)	nviLightSetting	SNVT_setting			Defines the controller operating mode. SET_ON starts the controller to present (start of the control) SET_OFF switches the controller to Absent SET_STATE sets the output to the received value SET_UP, SET_DOWN, changes the set point value of the controller relatively SET_STOP deactivates nvoLightLampValue. The internal logic continues to operate during the block, but no telegrams about the network variables mentioned will be sent.
	nviLuxLevel	SNVT_lux			Current brightness value from the light sensor
	nviClManOverride	SNVT_switch			Manual override for the light channel. The sent value will be transferred directly to the output and the controller will be stopped. A received value x%/-1 shows the following behaviour: - Switching (in the switched-off state): lighting will be switched on for 30 mins, regardless of brightness. If the room has been left in the interim, the lighting switches off. - Control, semi-automatic: start of the control - Switching or control (in the switched-on state): Eliminating a manual override, return to automatic mode
	nviLightEnable	SVNT_switch			Disable: in the state x%/0 of the network variable nviLightEnable the nvoLight-LampValue is deactivated (internal logic continues to operate, but no telegrams are sent via the output objects). After every reset, nviLightEnable is set to 100%/1.
Output variables (nvo)	nvoLightLampValue	SNVT_switch			Output of the controller, to be connected with actuator. ON/OFF and 0%-100%
Configuration variables (nci)	nciLuxSetPoint	SNVT_lux	10 - 2000 Lux		Brightness set point value [Lux] If the light measurement is deactivated in the switching operating mode (cpControlMode = Switching), (nciLuxSetPoint = 65,535, measurement off (only dependent on presence)) and there is a switch to the constant light control operating mode (cpControlMode = 0), nciLuxSetPoint will be set to 500 Lux. The setting limits of nciLuxSetPoint are dependent on the room reflection factor cpReflection. During input, there will be a check to see whether the value lies within valid limits.
	nciStandbyEnable	SNVT_Switch			Stand-by mode x%/0: Disable x%/1: Enable
	nciTeachIn	SNVT_Switch			An x%/1 to nciTeachIn overwrites nciLuxSetPoint with the currently measured brightness value.
Configuration parameters (cp)	cpSemiAutomatic	UCPTsemiAutomatic		FULLY AUTOMATIC	Fully or semi-automatic FULLY AUTOMATIC: Fully automatic SEMI AUTOMATIC: Semi-automatic
	cpControlMode	UCPTcontrolMode		SWITCHING	select CONSTANT LIGHT CONTROL: constant light control SWITCHING: switching mode
	cpStandbyHoldTime	UCPTstandbyHoldTime	0.0 – 6553 s	30 min.	Stand-by time
	cpStandbyValue	UCPTstandbyValue	0 % to 25 %	10 %	Maximum dimming value in standby mode or switch-on dimming value
	cpStandbySetPoint	UCPTstandbySetPoint	10 - 200 Lux	50 lux	Standby set point value (constant light control) or Standby threshold value (switching)
	cpMaxSendTime	SCPTmaxSendTime	0 s – 6553 s	1 min.	Heartbeat (max. time between two updates for the light output
	cpClPrimeVal	UCPTclPrimeVal	0 – 100 %	100 %	Output value from nvoLightLampValue (switching) or switch-on value of the control system (constant light control)
	cpControlSpeed	UCPTcontrolSpeed		Standard	Control speed: standard, average, fast

2.7 Remote control

2 function profiles for remote control are available, one for each button series on the user's SendoClic remote control. These correspond to LONMARK Profile 3200 (switch). Every function profile passes on the IR commands received from the relevant series of buttons from SendoClic to the configured output variables for control of blinds, lights, etc. This allows either the light groups controlled by the presence detector itself to be manually switched and dimmed or external light groups or blinds to be operated.



2.7.1 Functionality

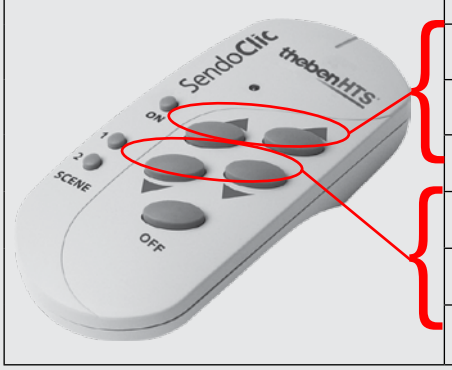
The SendoClic user remote control makes it possible to issue switching/dimming and blinds commands. When any button press occurs the configured event is sent via the network variables nvoRemoteSetting and nvoRemoteSwitch. To be able to define the start value for dimming, the network variable nviRemoteFb must also be connected with the feedback output object of the actuator.

Both series of buttons on the user remote control SendoClic are each encoded with an IR group address. The IR group address is to be set using the configuration variables cpRcGroupAddress.

The following commands are available

Action	Telegram to nvoRemoteSetting	Telegram to nvoRemoteSwitch
Switch light on and off	SET_ON, SET_OFF (no internal use possible!)	100%/1, 0%/0
Dim light	SET_UP 2%, SET_DOWN 2%	(x+2)%/1, (x-2)%/1
Automatic mode constant light controller		x%/-1
Moving curtain up and down	SET_STATE UP, DOWN	
Jiggle lamella	SET_UP x%, y°, SET_DOWN x%, y°	
No action	SET_NO_MESSAGE	NO_MSG

The following connections exist between the SendoClic buttons and the configuration variables:



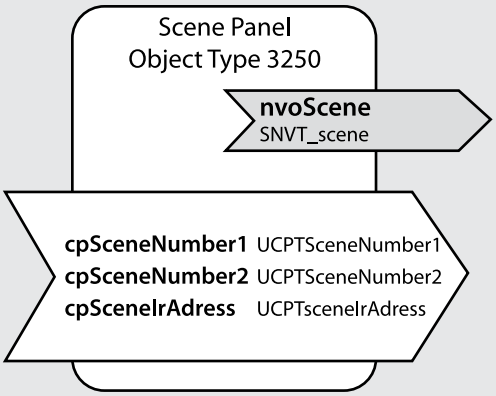
Designation	Network variable
SendoClic button ▲, short button press event	cpPushEventUp
SendoClic button ▲, long button press event	cpLongPushEventU
SendoClic button ▲, release event	cpReleaseEventU
SendoClic button ▼, short button press event	cpPushEventDown
SendoClic button ▼, long button press event	cpLongPushEventD
SendoClic button ▼, release event	cpReleaseEventD

2.7.2 Configuration parameters

	Variable	Data type	Value range	Default	Description
Input variables (nvi)	nviRemoteFb	SNVT_switch			Feedback input of switching/dimming actuators during dimming
Output variables (nvo)	nvoRemoteSwitch	SNVT_switch			Output of the switching values for light control (switching/ dimming)
	nvoRemoteSetting	SNVT_setting			Output of the dimming values for light control Output of the operating commands for the blinds
Configuration parameters (cp)	cpPushEventUp	UCPTpushEventUp		Switch: ON/100% Setting: SET_NO_MSG, invalid, invalid	Event when up button is pressed briefly **nvoRemoteSwitch:** ON : switch on OFF : switch off UP : dim up DOWN : dim down NO_MSG : no event INVALID: -1 **nvoRemoteSetting:** SET_ON : switch on SET_OFF: switch off SET_UP : move upwards SET_DOWN : move downwards SET_STOP : stop command SET_STATE: Absolute command SET_NO_MSG : no event
	cpLongPushEventU	UCPTlongPushEventUp		UP, 2%	Event when up button is pressed for an extended period. For events see cpPushEventUp1
	cpReleaseEventU	UCPTreleaseEventUp		NO_MSG	Event when up button is released (after extended button press). For events see cpPushEventUp1
	cpPushEventDown	UCPTpushEventDown		OFF	Event when down button is pressed briefly. For events see cpPushEventUp1
	cpLongPushEventD	UCPTlongPushEventDown		DOWN, 2%	Event when down button is pressed for an extended period. For events see cpPushEventUp1
	cpReleaseEventD	UCPTreleaseEventDown		NO_MSG	Event when down button is released (after extended button press). For events see cpPushEventUp1
	cpRcGroupAddress	UCPTremoteGroupAddress	I, II, III	I	IR group address of the relevant button series from SendoClic
	cpMinSendTime	SCPTminSendTime	0 ... 6553 secs	0.2 s	Time between dimming telegrams
	cpClicAppEnable	UCPTsendoClicAppEnable		Active	Release of the SendoClic app

2.8 Scene panel (3250)

A Scene Panel function profile is available. This corresponds to the LONMARK Profile 3250. The scene panel broadcasts the scene numbers which can be triggered via both scene buttons on the user's SendoClic remote control.



2.8.1 Functionality

The Scene Panel can only be used in conjunction with the SendoClic user remote control.

- When there is a short button press on scene button 1 of the SendoClic user remote control, the scenes defined with cpSceneNumber1 will be sent to nvoScene.
- When there is a short button press on scene button 2 of the SendoClic user remote control, the scenes defined with cpSceneNumber2 will be sent to nvoScene.

Both scene buttons on the user remote control SendoClic are encoded with an IR group address. The IR group address is to be set using the configuration variables cpScGroupAddress.

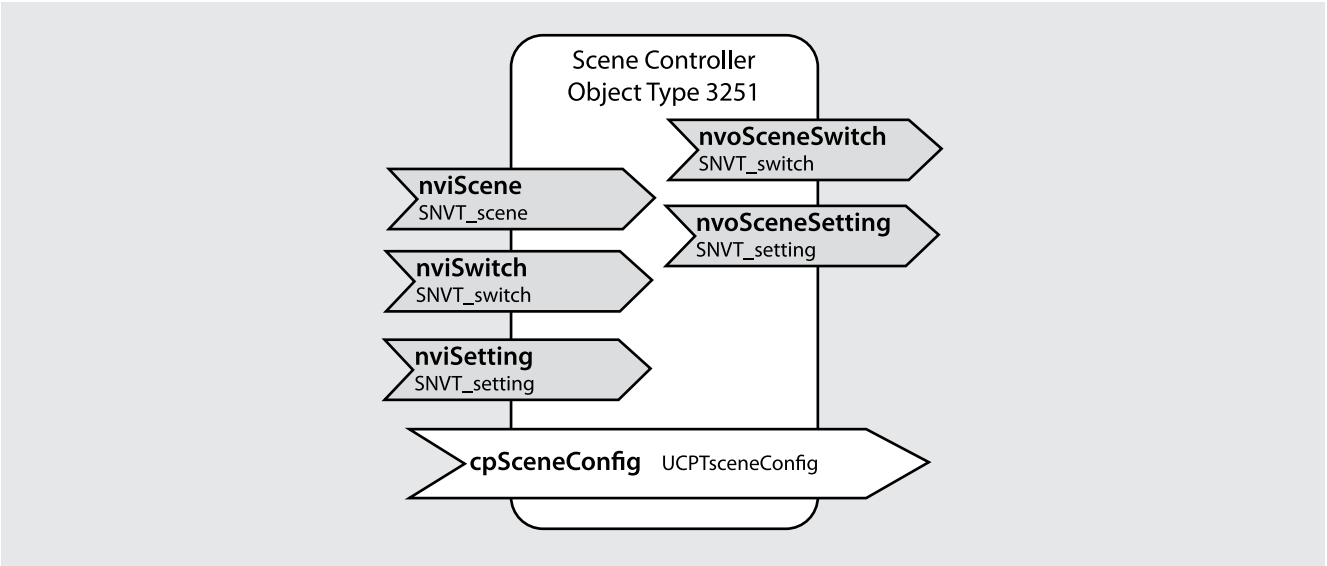
The scene panel is linked with a scene controller, either the internal scene controller of the presence detector, or another scene controller, for example one that is available in an actuator.

2.8.2 Configuration parameters

	Variable	Data type	Value range	Default	Description
Output variables (nvo)	nvoScene	SNVT_scene			Scene output object RECALL when there is a short button press on the scene button of the Sendo-Clic user remote control. LEARN when there is an extended (10 s) press of the scene button on the SendoClic user remote control with appropriate scene number. Scene 0 is not used.
Configuration parameters (cp)	cpSceneNumber1	Unsigned short	0 ... 255	1	Scene that should be sent when button 1 of the SendoClic user remote control is sent
	cpSceneNumber2	Unsigned short	0 ... 255	2	Scene that should be sent when button 2 of the SendoClic user remote control is sent
	cpScGroupAdress	UCPTsceneGroupAddress	I, II, III	I	Details of the IR group address from SendoClic

2.9 Scene Controller

Two function profiles are available for the scene controller. These correspond to the LONMARK profile 3251. These are either controlled from external scene buttons or via the scene buttons of the user's SendoClic remote control. Two scenes are available for each scene output object.

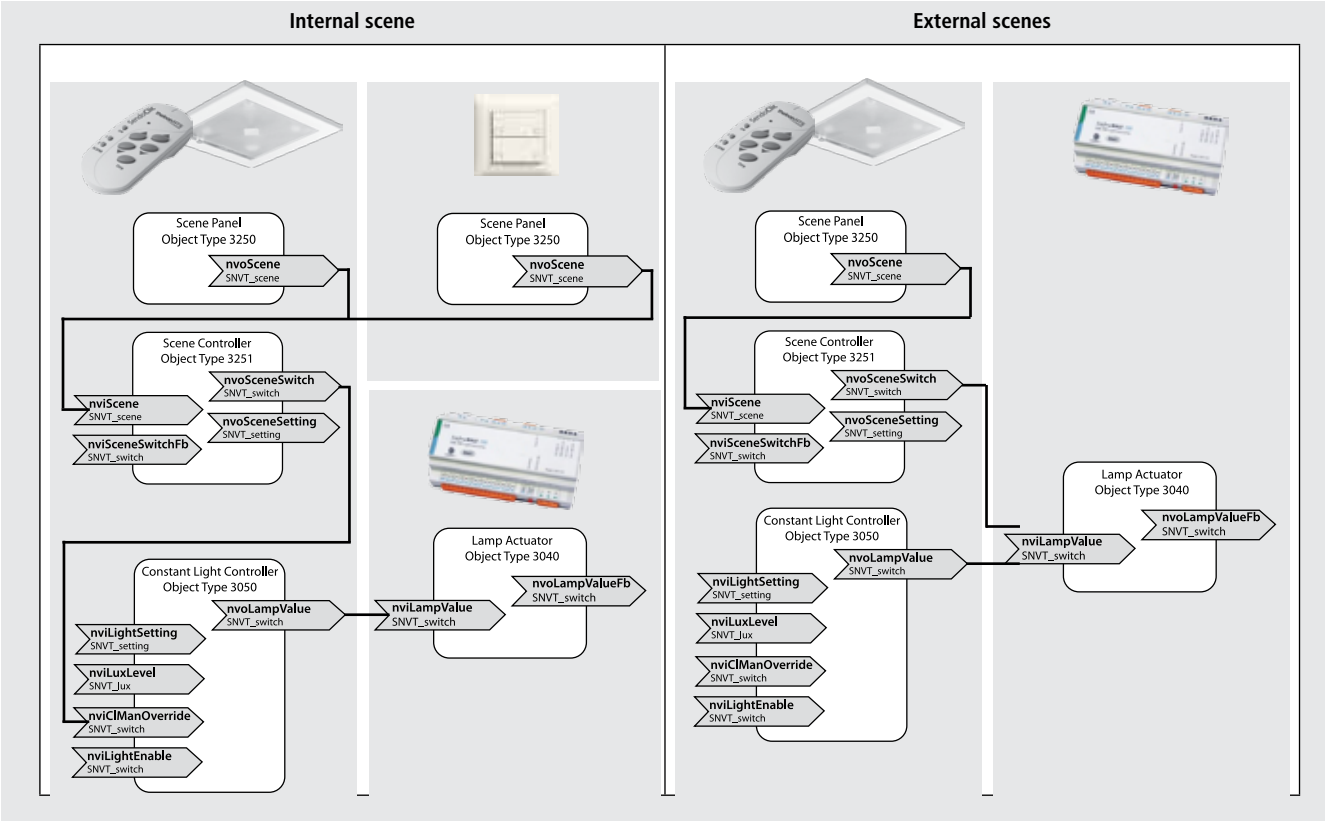


2.9.1 Functionality

Two different application cases can be covered:

- **Internal scenes**: these can be initiated via the remote control or via external scene buttons. The network variable nvoSceneSwitch outputs is taken to the constant light controller.
- **External scenes**: Actuators without their own scene controllers can use the scene controller of the presence detector. The network variable nvoSceneSwitch outputs is taken to the actuator.

In both cases with an SC_RECALL to nviScene the value configured with cpSceneConfig will be output to nvoSceneSwitch.



2.9.2 Configuration parameters

	Variable	Data type	Value range	Default	Description
Input variables (nvi)	nviScene	SNVT_scene			Scene input object from the scene panel for saving and reading the saved scenes, with the commands RECALL and LEARN and the associated scene number 1 to 255. Scene 0 is not used. • Call with nviScene.function = SC_RECALL and nviScene.scene_number = x • Learn with nviScene.function = SC_LEARN and nviScene.scene_number = x
	nviSceneSwitchFb	SNVT_switch			Input object for the actuator value. When there is a LEARN command on nviScene, the current value will be learned as a new scene value.
Output variables (nvo)	nvoSceneSwitch	SNVT_switch			Output object type switch of the scene controller. The configuration takes place via cpSceneConfig.
	nvoSceneSetting	SNVT_setting			Output object type setting of the scene controller. The configuration takes place via cpSceneConfig.
Configuration parameters (cp)	cpSceneConfig	UCPTsceneConfig			8 save points for the configuration of individual scenes. **nvoSceneSwitch:** ON / 0 % - 100 % OFF / 0% NO_MSG **nvoSceneSetting:** SET_ON SET_OFF SET_UP SET_DOWN SET_STATE SET_STOP SET_NO_MSG

3. Basic configurations

The functionality of the presence detector is dependent on the bindings between the function blocks.

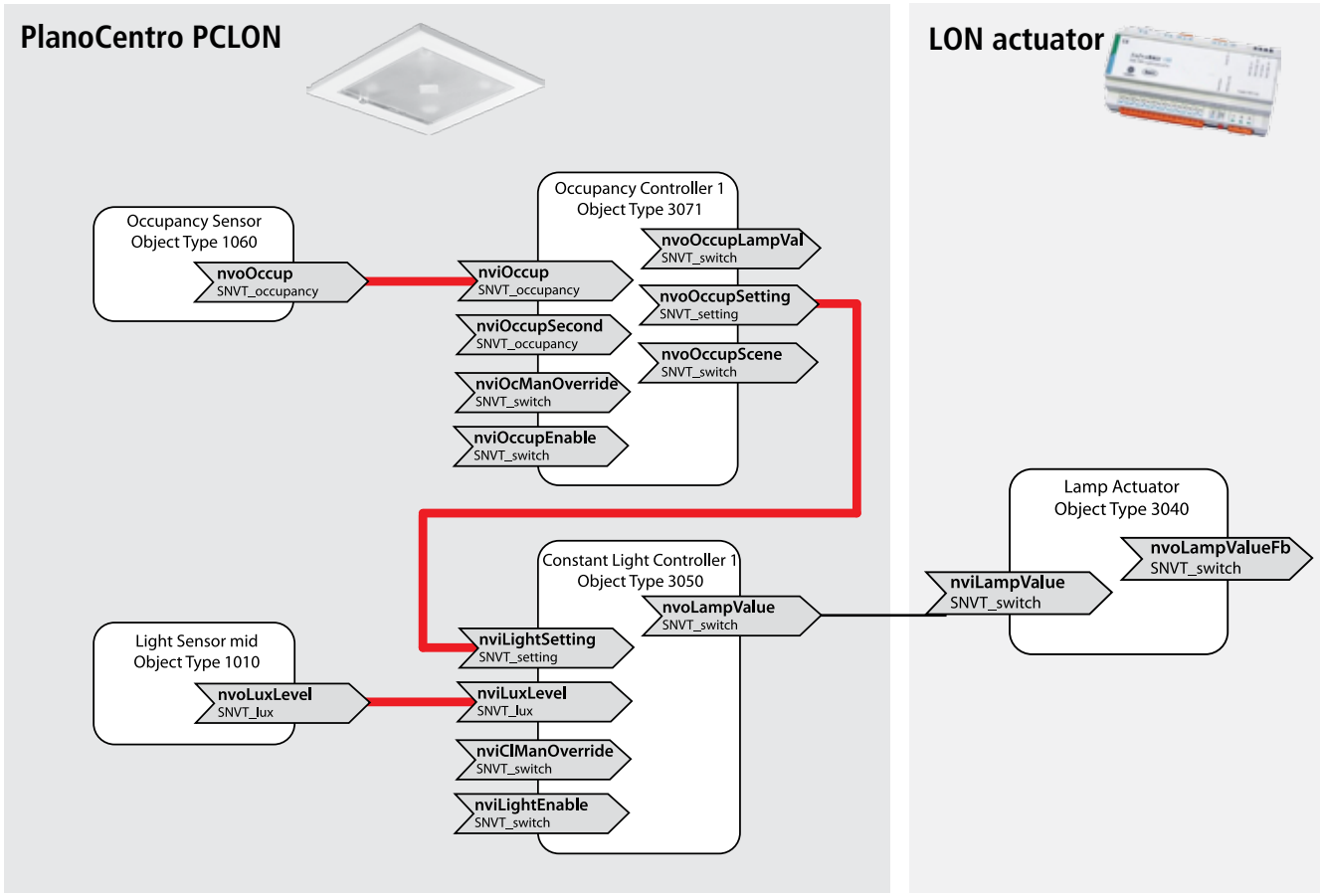
The bindings for the most common applications can be generated automatically by the plug-in. The plug-in checks whether bindings already exist. If no bindings exist, they will be generated automatically. If bindings already exist, these must first be deleted before they can be automatically generated.

- Presence detector with 1-channel switching or constant light control
- Presence detector with 1-channel switching or constant light control and additional presence-dependent output for HVAC
- Presence detector with 1-channel switching or constant light control and manual override via LON button
- Presence detector with 1-channel switching or constant light control and manual override via SendoClic user remote control
- Presence detector with 2-channel switching or constant light control
- Presence detector with 2-channel switching or constant light control and additional presence-dependent output for HVAC
- Presence detector with 2-channel switching or constant light control and SendoClic remote control
- Presence detector with 2-channel switching or constant light control and additional wall panel lighting (classroom application)

3.1 Presence detector with 1-channel switching or constant light control

It is the basic functionality of a presence detector. The average light measurement will be used for daylight-dependent switching or constant light control of the presence detector. The presence-detector bindings marked in red can be generated directly by the plug-in.

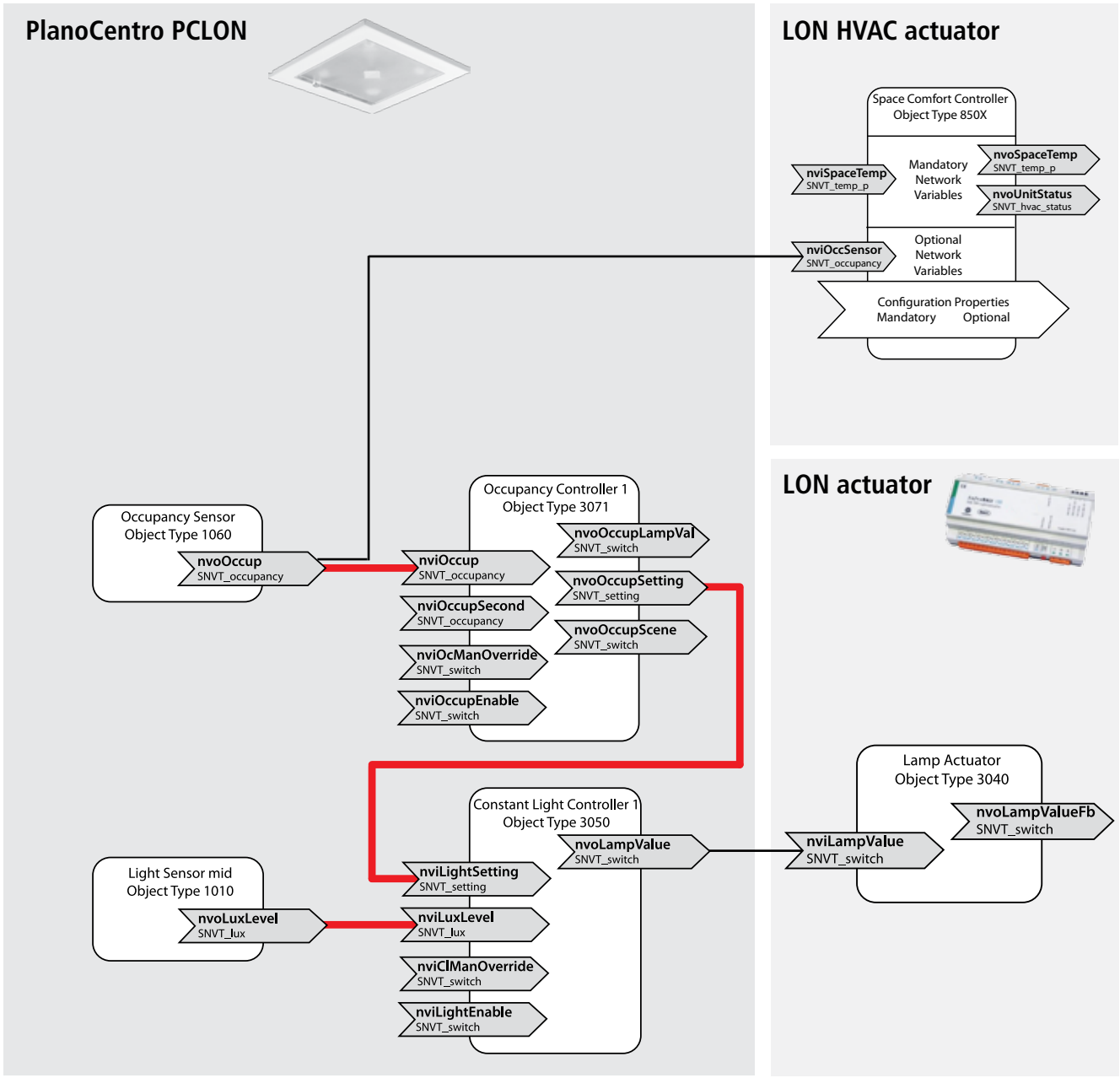
Parameter



Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

3.1.1 Presence detector with 1-channel switching or constant light control and presence-dependent output for HVAC

It is the basic functionality of a presence detector. The average light measurement will be used for daylight-dependent switching or constant light control of the presence detector. In addition, a second occupancy sensor is used for the presence-dependent control of HVAC. The presence-detector bindings marked in red can be generated directly by the plug-in.



Parameter

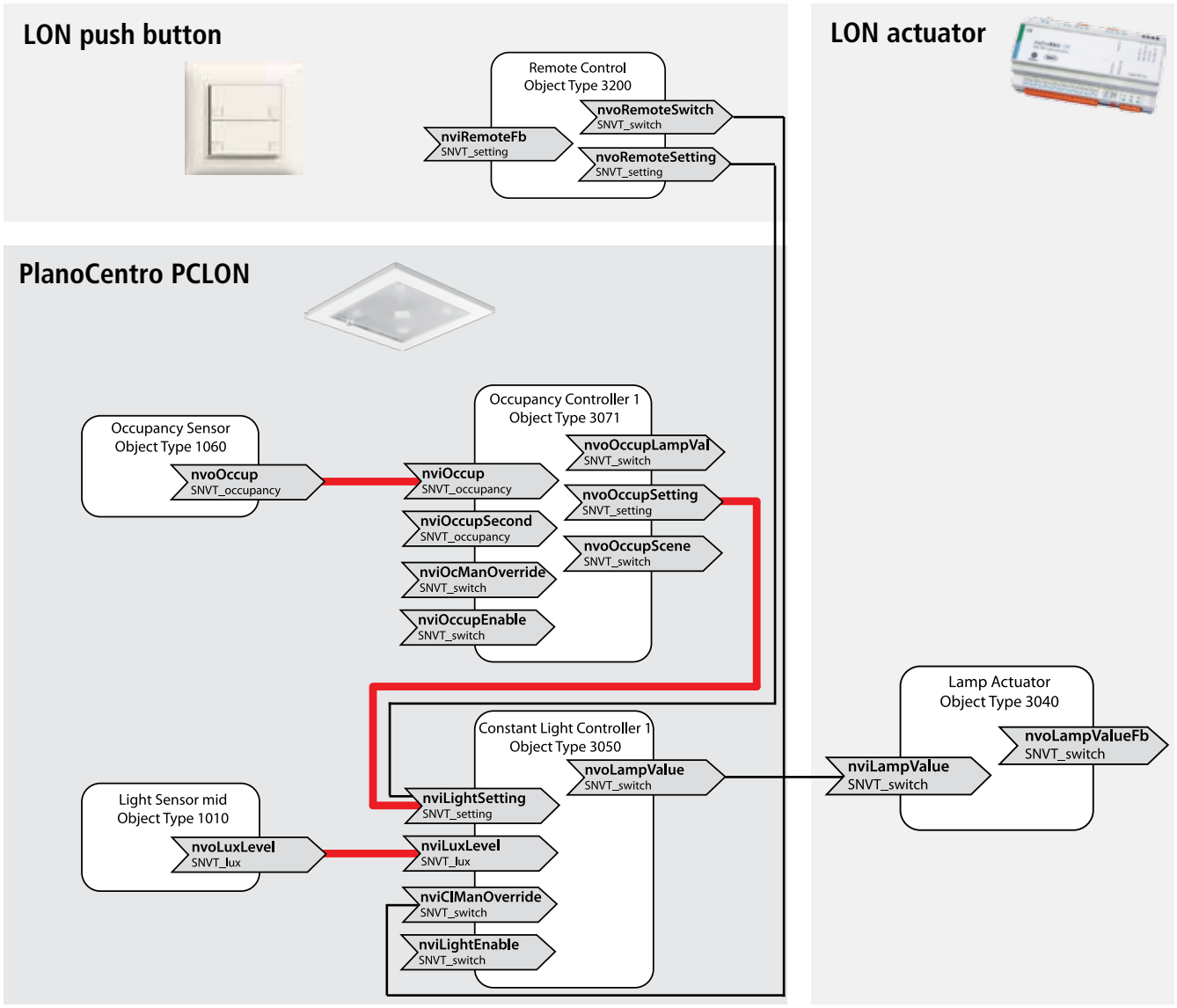
Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

3.1.2 Presence detector with 1-channel switching or constant light control and manual override

3.1.2.1 Use of the network variables setting

Presence detector with manual override. The average light measurement will be used for daylight-dependent switching or constant light control of the presence detector. In addition, the lighting can be manually switched and dimmed via a button. The presence-detector bindings marked in red can be generated directly by the plug-in.

When using the input nviLightsetting for manual override, please note that after a manual dimming procedure the constant light control remains active at the new set point value



Parameter

Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

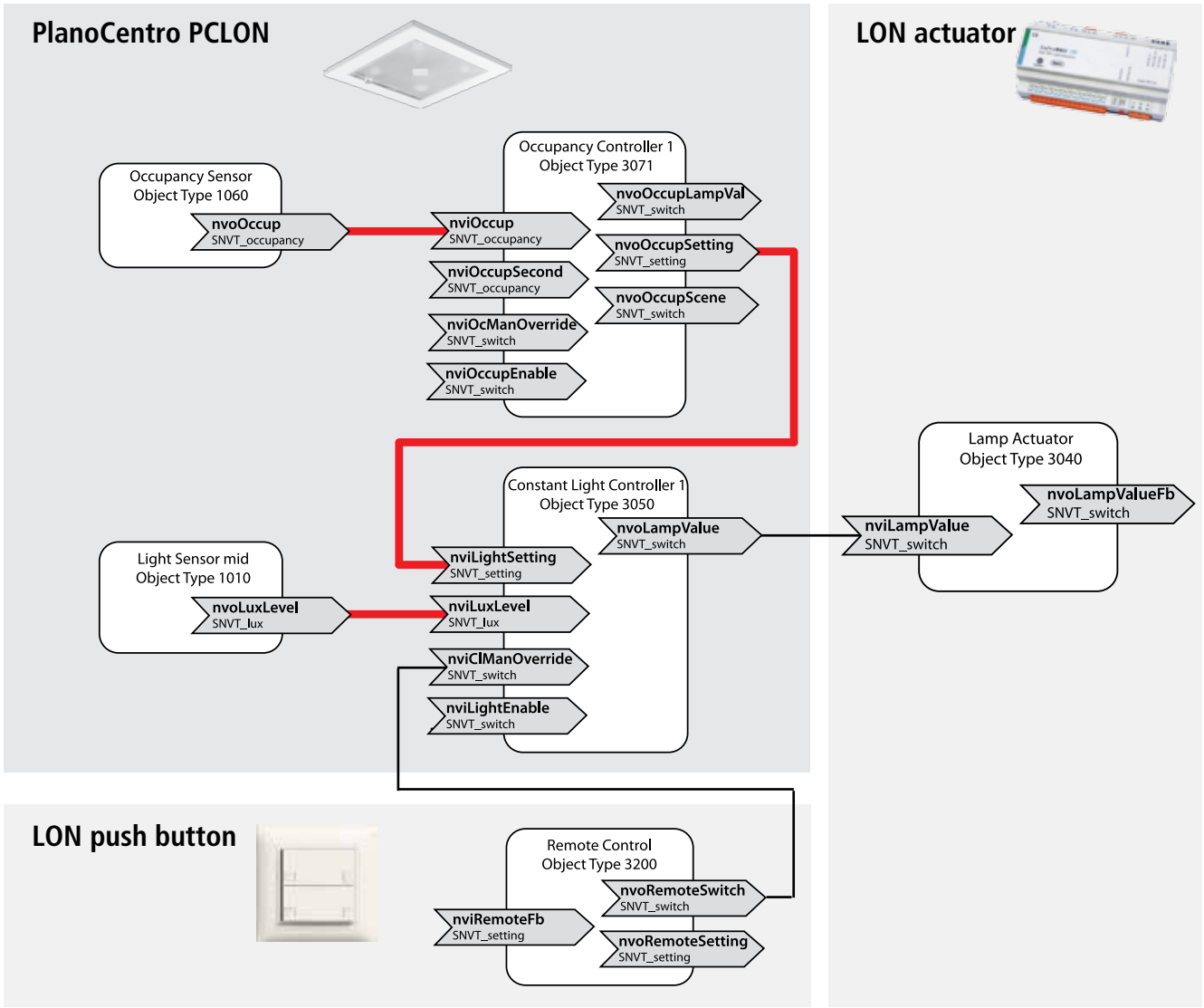
3.1.2.2 Use of the manOverride network variables

Presence detector with manual override. The average light measurement will be used for daylight-dependent switching or constant light control of the presence detector. In addition, the lighting can be manually switched and dimmed via a button. The presence-detector bindings marked in red can be generated directly by the plug-in.

Please note: when using the input nviCIManOverride for manual override, the following behaviour is exhibited:

Switching: the lighting remains on for at least 30 mins, then goes off when there is enough brightness. The light will go off after a preset time delay if the room is vacated (or goes into Stand-by mode).

Constant light control: control will be stopped after a manual dimming procedure. While the presence continues, the lighting remains dimmed to the set value, regardless of the daylight.



Parameter

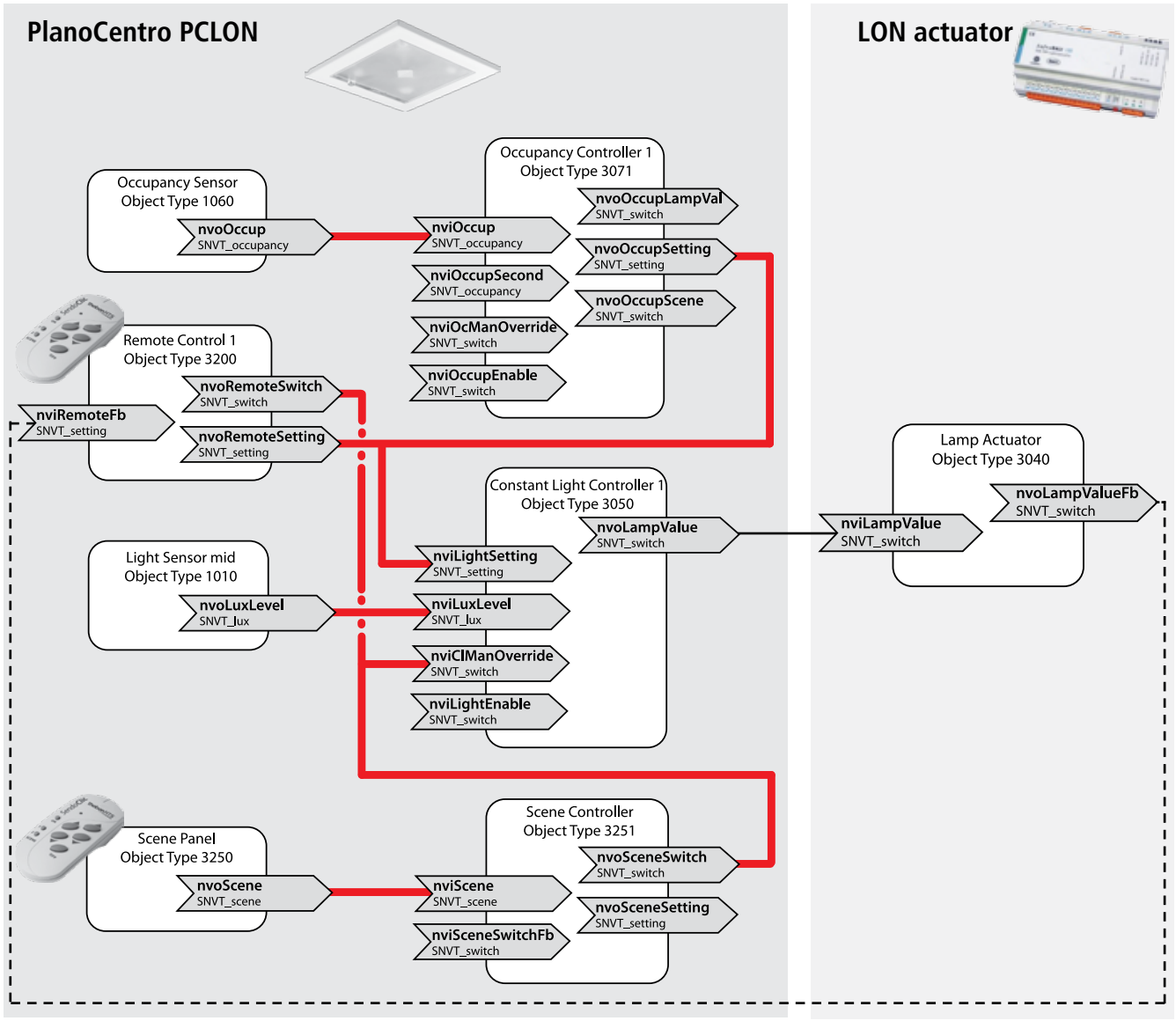
Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

3.1.3 Presence detector with 1-channel switching or constant light control and SendoClic remote control

3.1.3.1 Use of the network variables setting

Presence detector with manual override via remote control. The average light measurement will be used for daylight-dependent switching or constant light control of the presence detector. In addition, lighting can be switched and dimmed via the SendoClic user remote control; scenes can also be used. The presence-detector bindings marked in red can be generated directly by the plug-in.

When using the input nviLightsetting for manual override, please note that after a manual dimming procedure the constant light control remains active at the new set point value



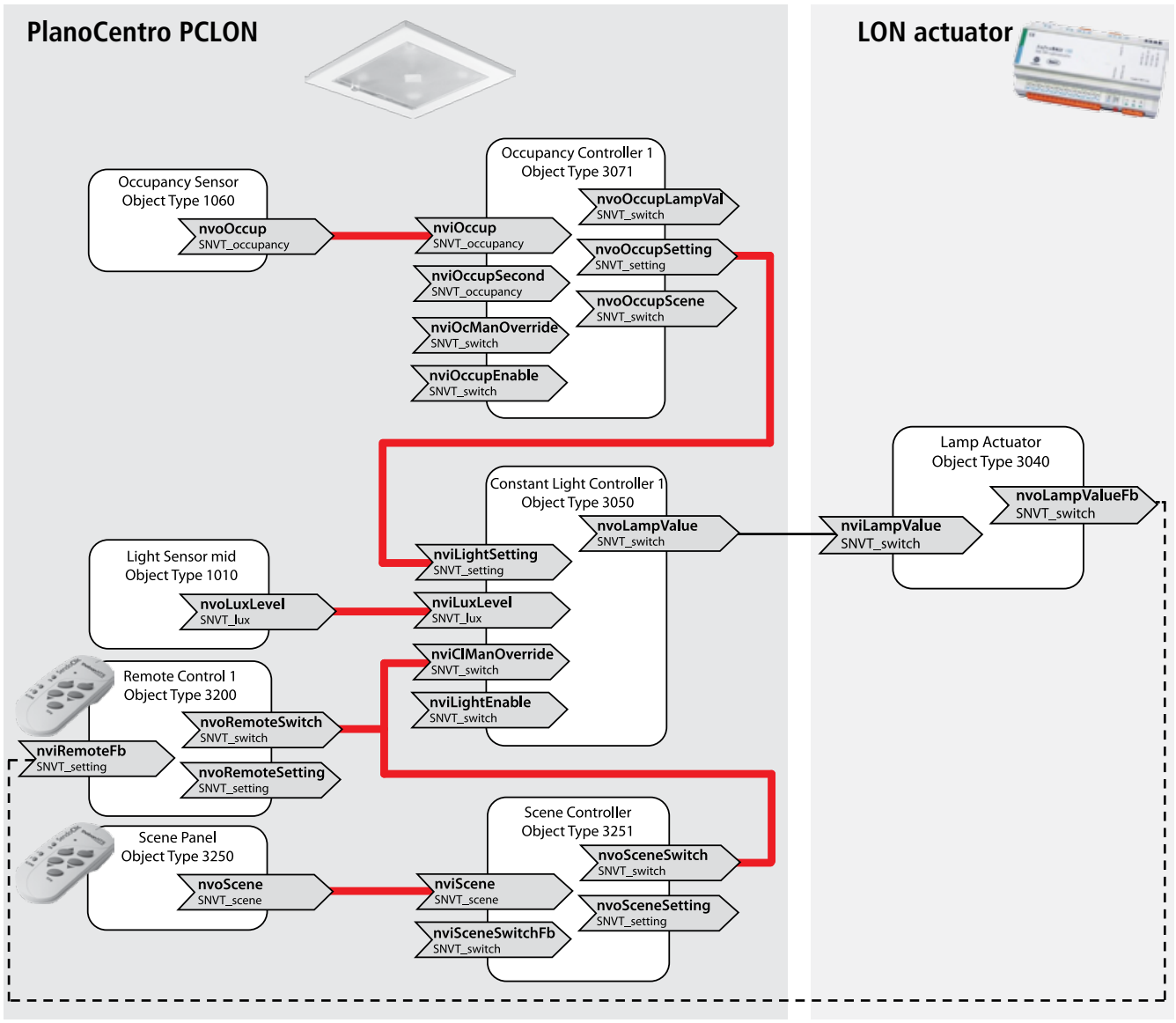
Parameter

Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
	cpSceneConfig = 1, 70%, 1, SET_NO_MESSAGE, invalid, invalid; 2, 30%, 1, SET_NO_MESSAGE, invalid, invalid;
	cpPushEventUp = 100%; SS_ON; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventU = invalid; invalid; SET_UP; 2%; invalid
	cpReleaseEventU = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
	cpPushEventDown = 0%; SS_OFF; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventD = invalid; invalid; SET_DOWN; 2%; invalid
	cpReleaseEventD = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
All other parameters are set to their default values.	

3.1.3.2 Use of the manOverride network variables

Presence detector with manual override via remote control. The average light measurement will be used for daylight-dependent switching or constant light control of the presence detector. In addition the lighting can be switched and dimmed manually via remote control. The presence-detector bindings marked in red can be generated directly by the plug-in.

When using the input nviCIManOverride for manual override, please note that after a manual dimming procedure the constant light control will be stopped. While the presence continues, the lighting remains dimmed to the set value, regardless of the daylight.



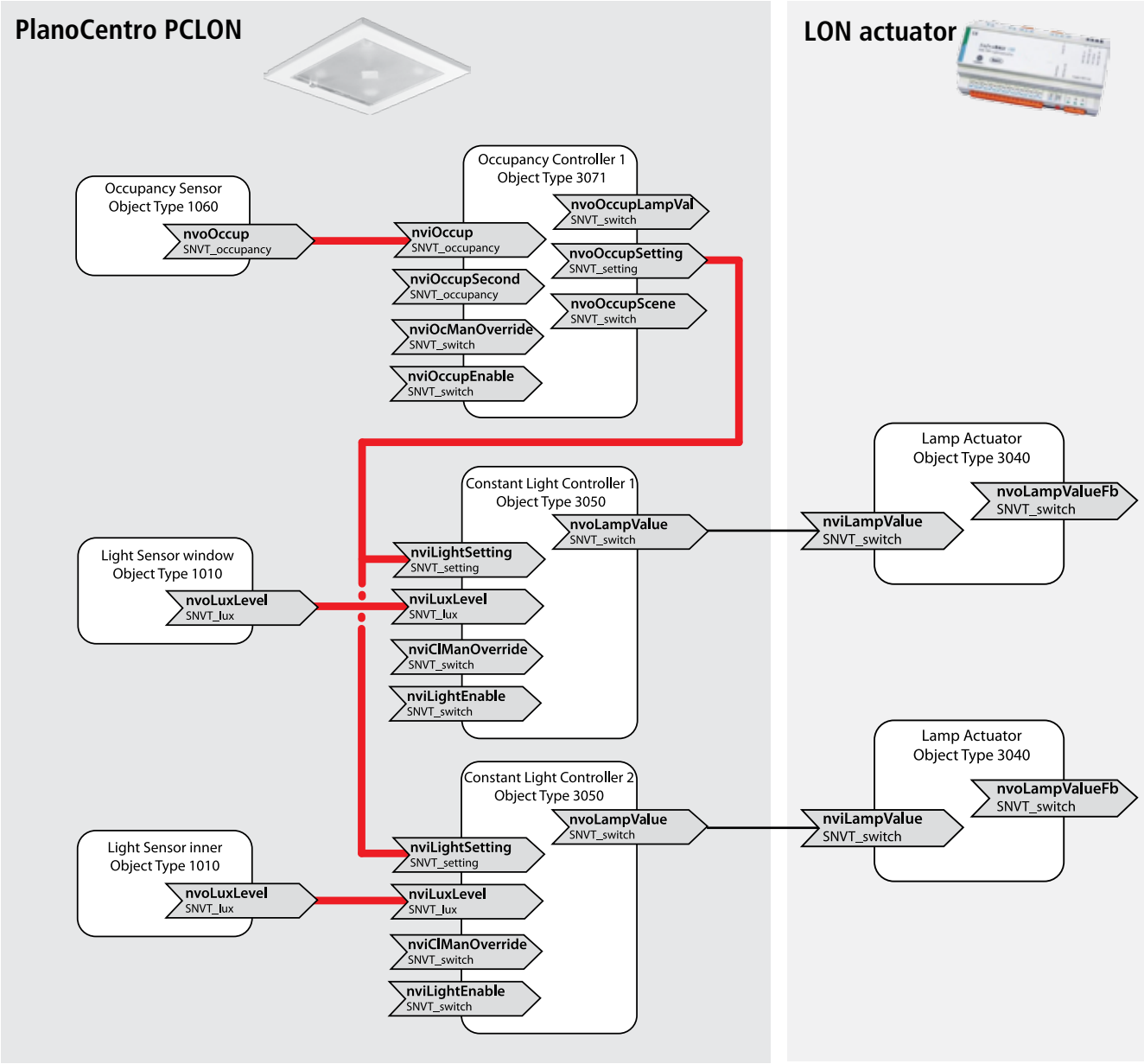
Parameter

Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
	cpSceneConfig = 1, 70%, 1, SET_NO_MESSAGE, invalid, invalid; 2, 30%, 1, SET_NO_MESSAGE, invalid, invalid;
	cpPushEventUp = 100%; SS_ON; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventU = 2%; SS_UP; SET_NO_MESSAGE_; invalid; invalid
	cpReleaseEventU = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
	cpPushEventDown = 0%; SS_OFF; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventD = 2%; SS_DOWN; SET_NO_MESSAGE_; invalid; invalid
	cpReleaseEventD = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
All other parameters are set to their default values.	

3.2 Switching or constant light control of 2 light groups

3.2.1 Presence detector with 2-channel switching or constant light control

Switching or constant light control of two light groups. Subdivision into a light group close to the window and a light group close to the room interior. The presence-detector bindings marked in red can be generated directly by the plug-in.

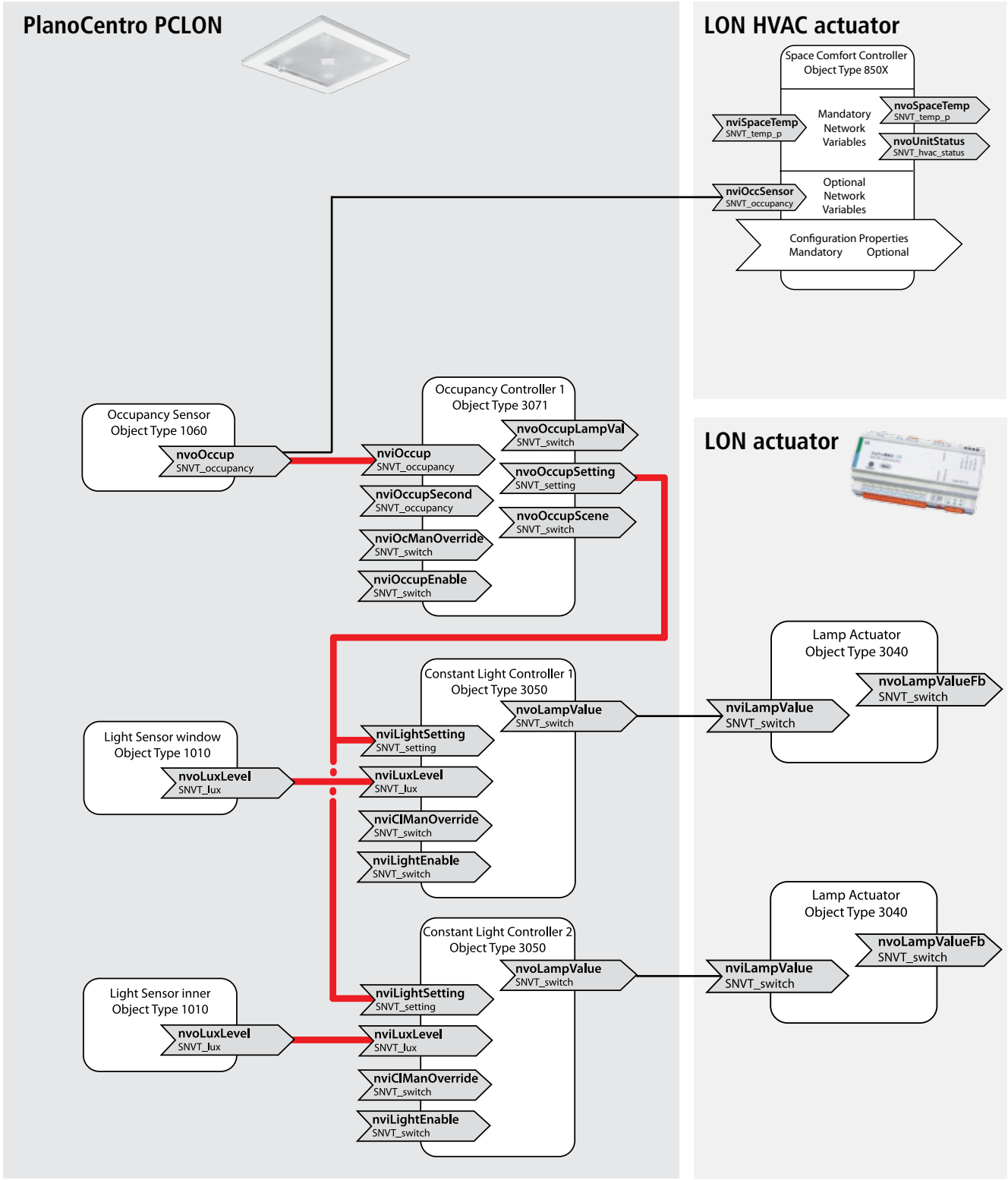


Parameter

Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

3.2.2 Presence detector with 2-channel switching or constant light control and presence-dependent output for HVAC

Switching or constant light control of two light groups. Subdivision into a light group close to the window and a light group close to the room interior. In addition, a second occupancy sensor is used for the presence-dependent control of HVAC. The presence-detector bindings marked in red can be generated directly by the plug-in.



Parameter

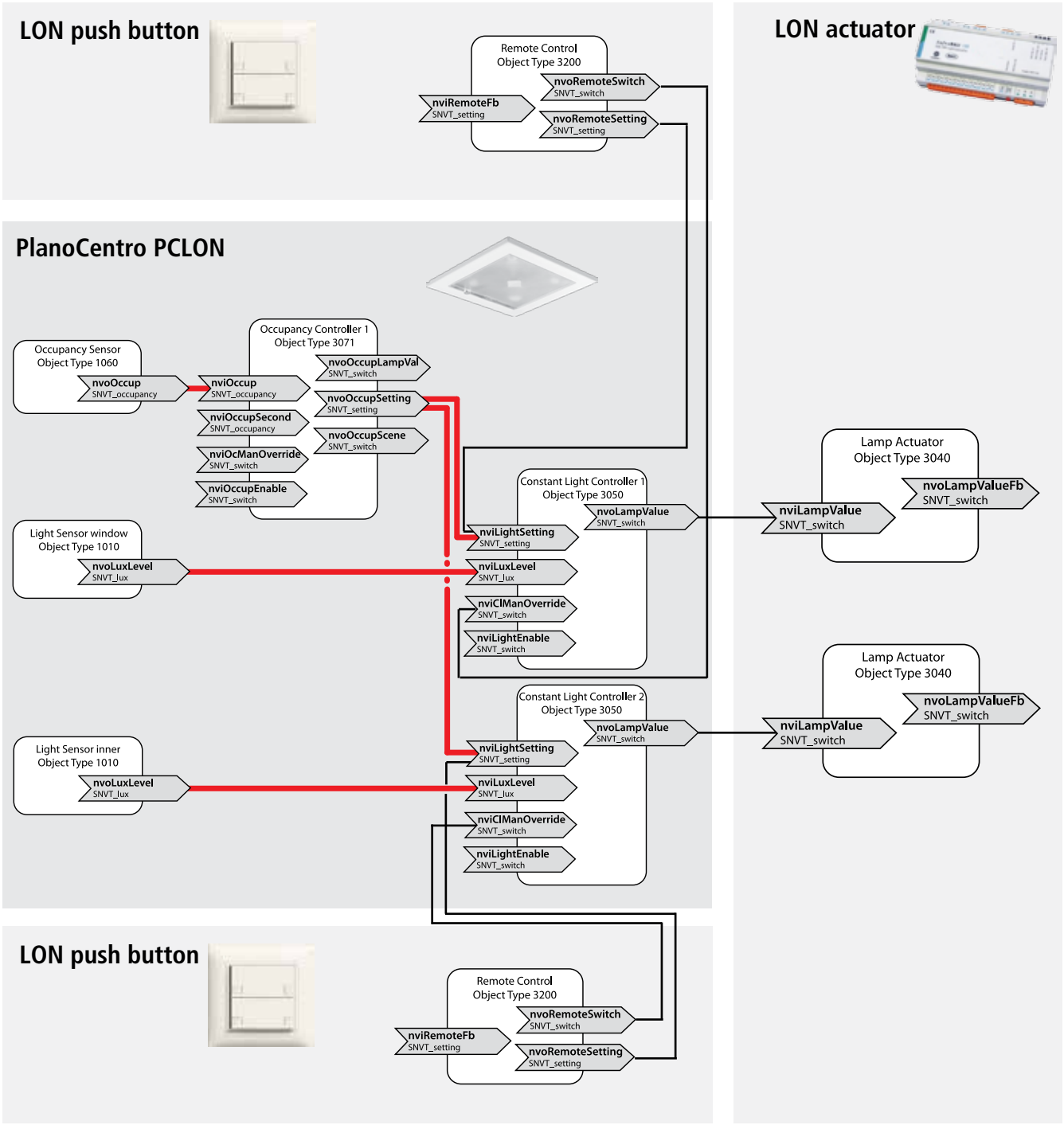
Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

3.2.3 Presence detector with 2-channel switching or constant light control and manual override

3.2.3.1 Use of the network variables setting

Switching or constant light control of two light groups, with manual override. Subdivision into a light group close to the window and a light group close to the room interior. In addition, the lighting can be manually switched and dimmed via a button. The presence-detector bindings marked in red can be generated directly by the plug-in.

When using the input nviLightsetting for manual override, please note that after a manual dimming procedure the constant light control remains active at the new set point value



Parameter

Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

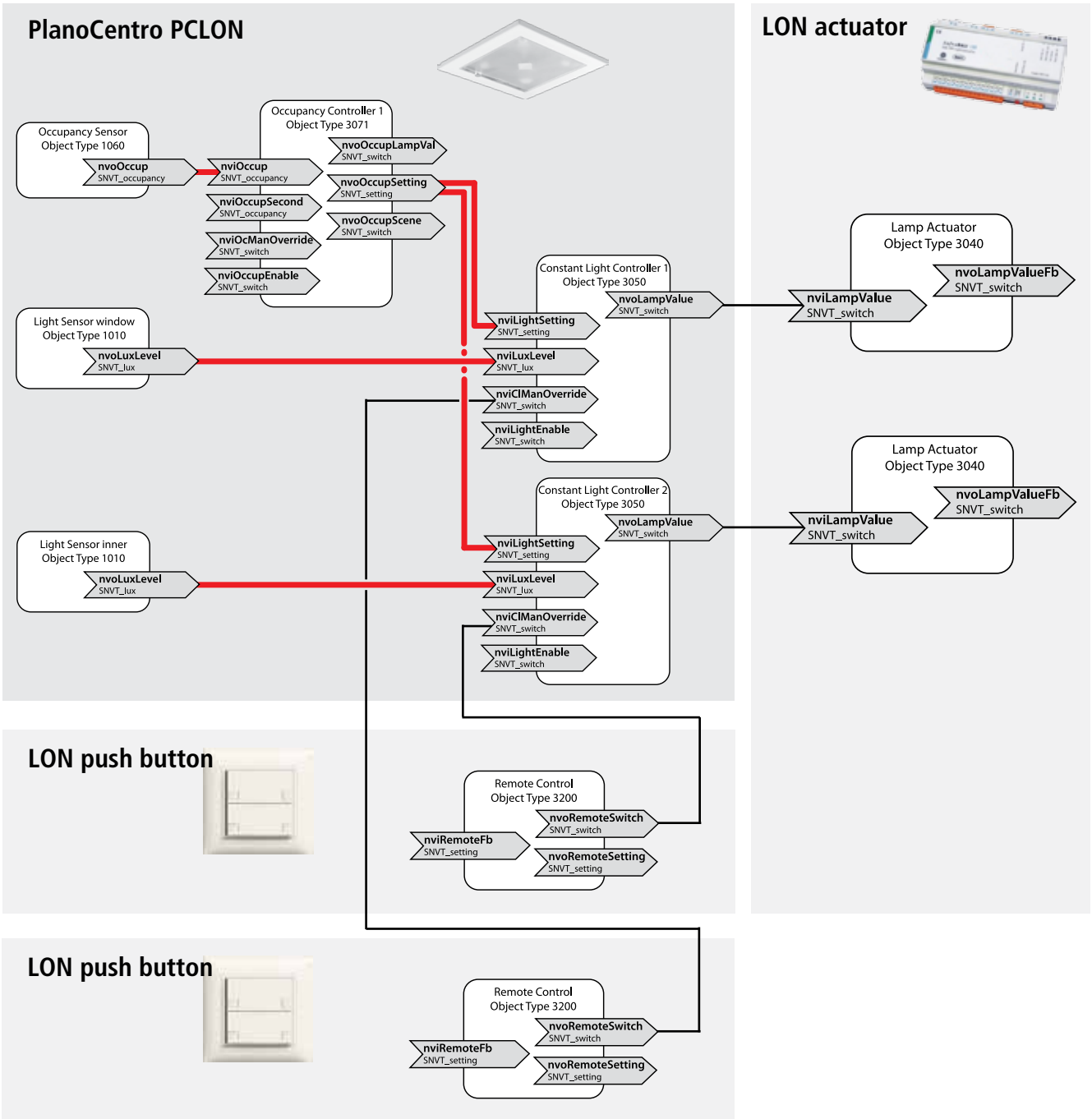
3.2.3.2 Use of the manOverride network variables

Switching or constant light control of two light groups, with manual override. Subdivision into a light group close to the window and a light group close to the room interior. In addition, the lighting can be manually switched and dimmed via a button. The presence-detector bindings marked in red can be generated directly by the plug-in.

Please note: when using the input nviCIManOverride for manual override, the following behaviour is exhibited:

Switching: the lighting remains on for at least 30 mins, then goes off when there is enough brightness. The light will go off after a preset time delay if the room is vacated (or goes into Stand-by mode).

Constant light control: control will be stopped after a manual dimming procedure. While the presence continues, the lighting remains dimmed to the set value, regardless of the daylight.



Parameter

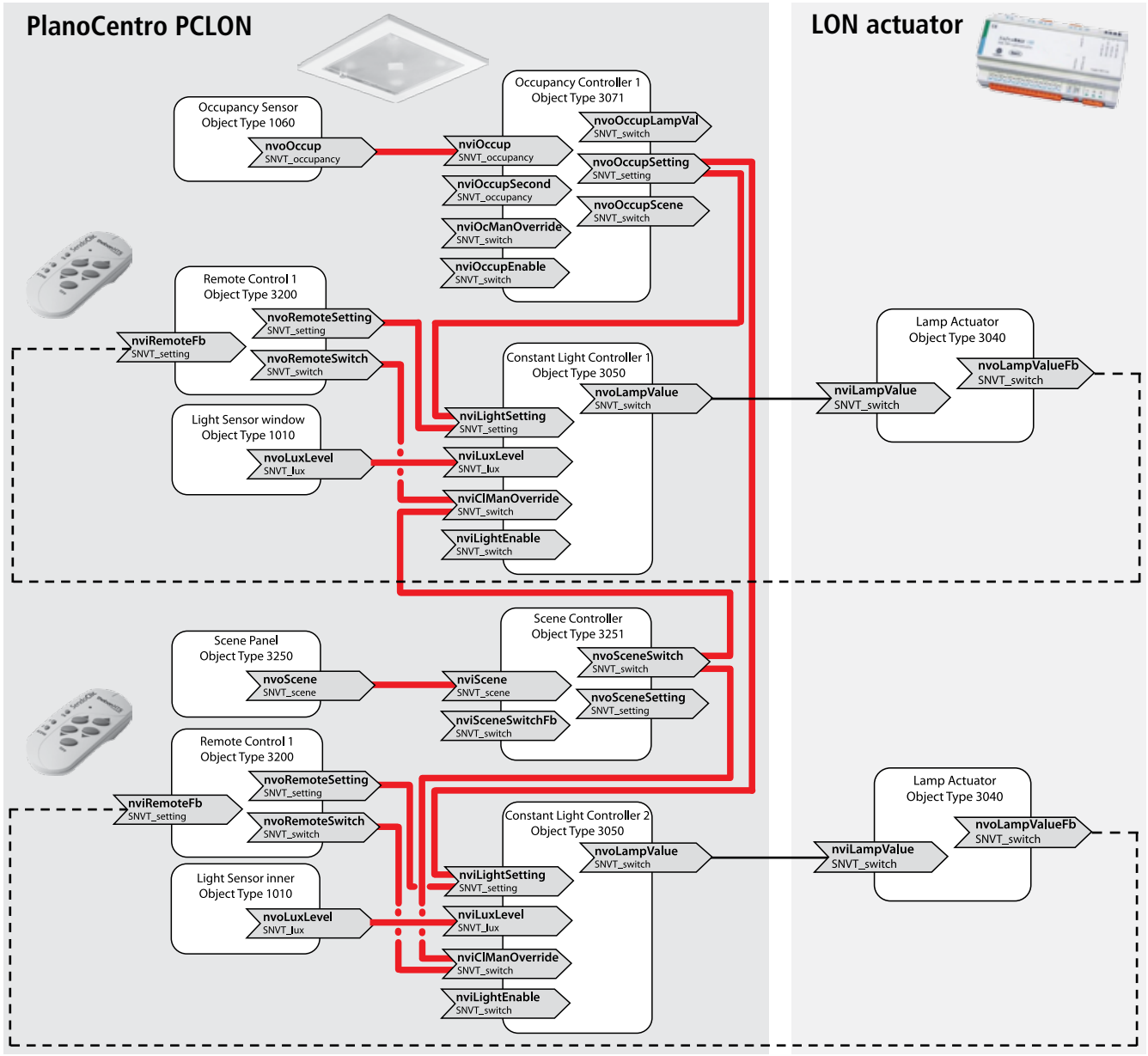
Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
All other parameters are set to their default values.	

3.2.4 Presence detector with 2-channel switching or constant light control and SendoClic remote control

3.2.4.1 Use of the network variables setting

Switching or constant light control of two light groups, with manual override via remote control. Subdivision into a light group close to the window and a light group close to the room interior. In addition, lighting can be switched and dimmed via the SendoClic user remote control; scenes can also be used. The presence-detector bindings marked in red can be generated directly by the plug-in.

When using the input nviLightsetting for manual override, please note that after a manual dimming procedure the constant light control remains active at the new set point value



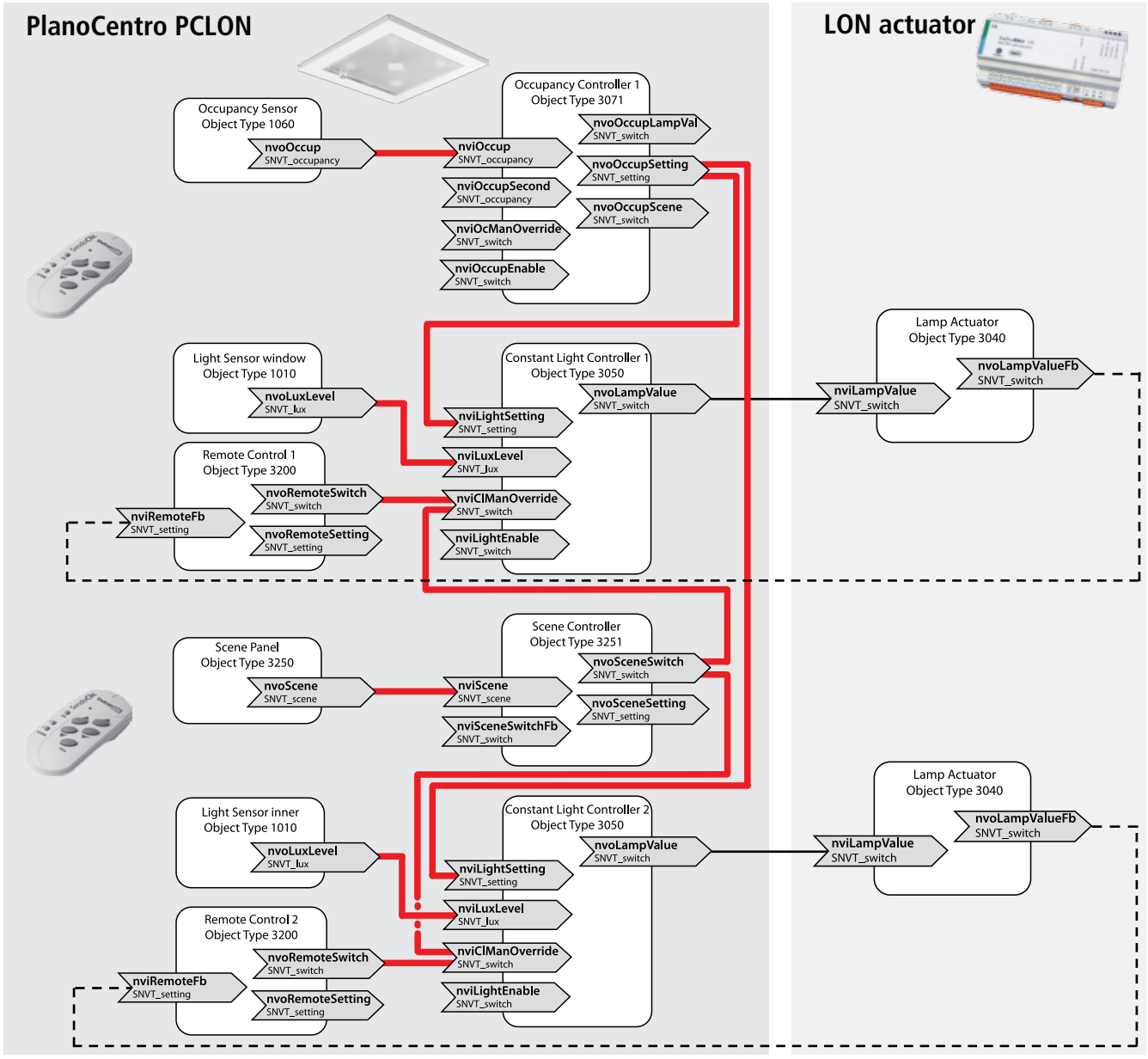
Parameter

Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
	cpSceneConfig = 1, 70%, 1, SET_NO_MESSAGE, invalid, invalid; 2, 30%, 1, SET_NO_MESSAGE, invalid, invalid;
	cpPushEventUp = 100%; SS_ON; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventU = invalid; invalid; SET_UP; 2%; invalid
	cpReleaseEventU = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
	cpPushEventDown = 0%; SS_OFF; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventD = invalid; invalid; SET_DOWN; 2%; invalid
	cpReleaseEventD = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
All other parameters are set to their default values.	

3.2.4.2 *Use of the manOverride network variables*

Switching or constant light control of two light groups, with manual override via remote control. Subdivision into a light group close to the window and a light group close to the room interior. In addition, lighting can be switched and dimmed via the SendoClic user remote control; scenes can also be used. The presence-detector bindings marked in red can be generated directly by the plug-in.

Please note: for behaviour during switching or constant light control see Section 3.2.3.2



Parameter

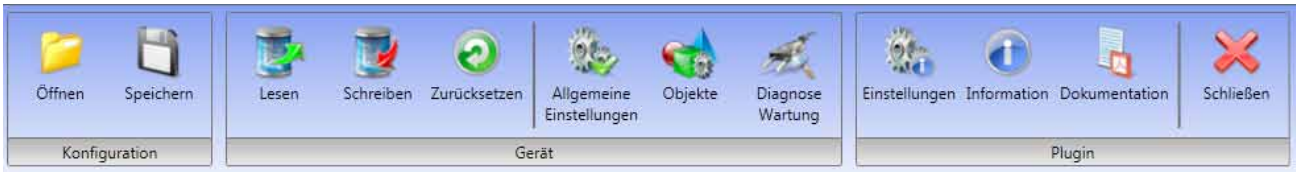
Switching	cpControlMode = SWITCHING
Constant light control	cpControlMode = CONSTANT_LIGHT_CONTROL
	cpSceneConfig = 1, 70%, 1, SET_NO_MESSAGE, invalid, invalid; 2, 30%, 1, SET_NO_MESSAGE, invalid, invalid;
	cpPushEventUp = 100%; SS_ON; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventU = 2%; SS_UP; SET_NO_MESSAGE_; invalid; invalid
	cpReleaseEventU = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
	cpPushEventDown = 0%; SS_OFF; SET_NO_MESSAGE_; invalid; invalid
	cpLongPushEventD = 2%; SS_DOWN; SET_NO_MESSAGE_; invalid; invalid
	cpReleaseEventD = invalid; SS_NO_MESSAGE; SET_NO_MESSAGE_; invalid; invalid
All other parameters are set to their default values.	

4. Plug-in

A plug-in is available for convenient configuration of the presence detector. In particular it allows the configuration of parameters, shows information on the detector's operating status and is able to generate bindings for typical application cases at the press of a button.

4.1 Operation of the plug-in

The plug-in

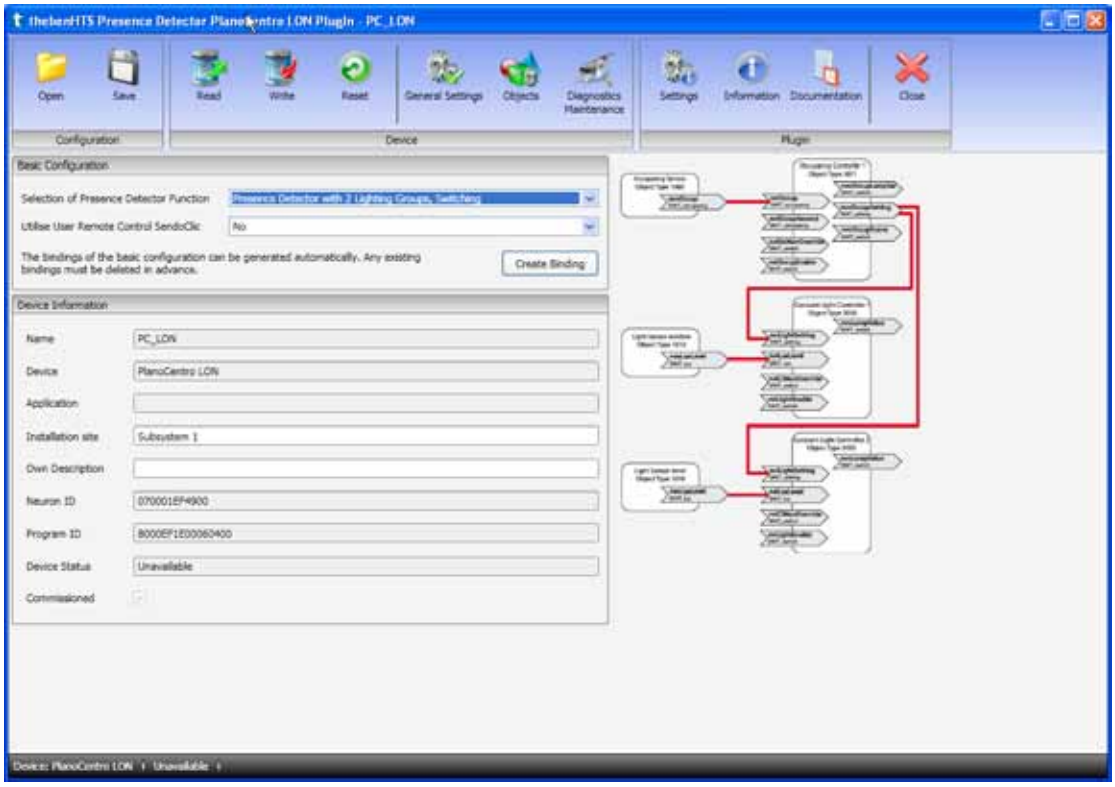


Description of the icon:

Icon	Function	Description
	Open	A saved parameter configuration can be loaded into the plug-in.
	Save	The entire device configuration performed with the plug-in is written to a configuration file.
	Read	Loads configuration from the presence detector
	Write	Saves the settings made in the LNS database
	Reset	The presence detector will be reset to the default settings it had when delivered.
	General settings	For information about the device and the creation of basic bindings, see Section 4.2
	objects	Configuration of the objects, see Section 4.3
	Diagnostics, Maintain	Information on the bindings and the status of the presence detector, see Section 4.4
	Settings	Plug-in settings, especially language selection
	Information	Information about the plug-in, especially the software version
	documentation	LON manual will be opened as a PDF.
	Close	Terminates the plug-in

4.2 General settings

Device name, loaded application, Neuron ID, program version, device, article number are shown in the general settings. In addition, two fields are available for text input, one for the installation location, the other for a general description.



4.2.1 Basic function setting

As a special feature, the basic function of the presence detector can be selected. At the press of a button the bindings required for the selected presence detector function will be generated. The plug-in checks whether bindings already exist. If no bindings exist, they will be generated automatically. If bindings already exist, these must first be deleted before they can be automatically generated.

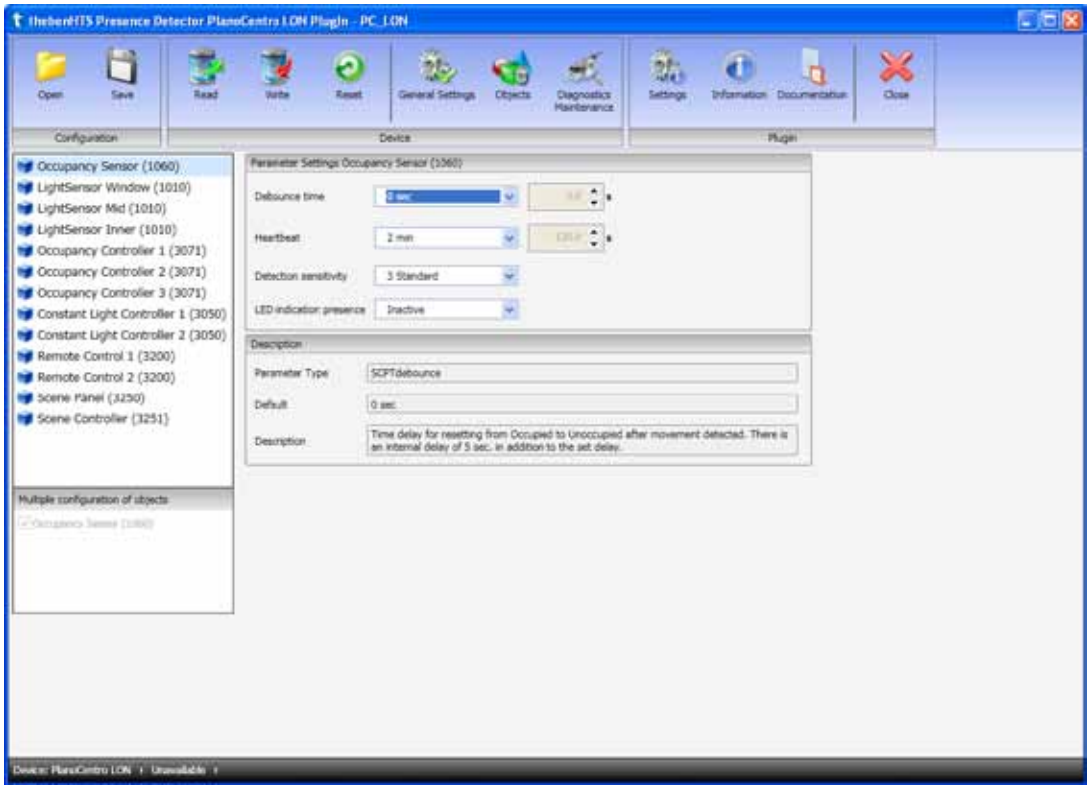
The following basic functions are available:

Function	Use SendoClic
Presence detector with 1 light group, switching	No
Presence detector with 1 light group, switching	Yes
Presence detector with 2 light groups, switching	No
Presence detector with 2 light groups, switching	Yes
Presence detector with 1 light group, constant light control	No
Presence detector with 1 light group, constant light control	Yes, with control inactive after manual override (school)
Presence detector with 1 light group, constant light control	Yes, with control active after manual override (office)
Presence detector with 2 lighting groups, constant light control	No
Presence detector with 2 lighting groups, constant light control	Yes, with control inactive after manual override (school)
Presence detector with 2 lighting groups, constant light control	Yes, with control active after manual override (office)

4.3 Objects

4.3.1 Occupancy sensor

The following object configuration page is available for the occupancy sensor

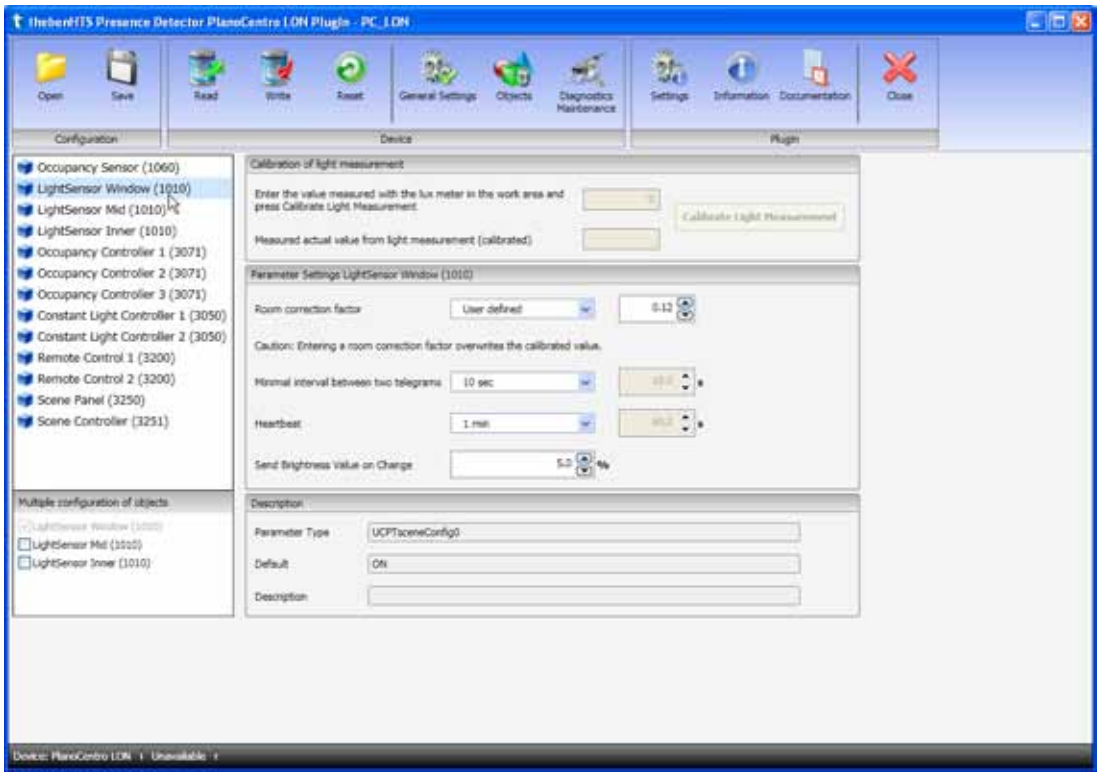


The following parameter settings can be made (**bold**: default):

Name	LON name	Values	Description
Debounce time	cpDebounce	**0 s** | 1 s | 5 s | 10 s | 20 s | 30 s | 1 min | 2 min | 3 min | 4 min | 5 min | 10 min | 15 min | 20 min | 25 min | 30 min | user-defined*	Time delay for the reset of nvoOccup after the motion ends, plus an internal delay of 5 s.
Cyclical transmission	cpMaxSendTime	inactive | 10 s | 20 s | 30 s | 40 s | 50 s | 1 min | **2 min** | 5 min | 10 min | 15 min | 20 min | 25 min | 30 min | user-defined*	The output status for the output nvoOccup can be transmitted cyclically.
Detection sensitivity	cpSensitivity	1 veru insensitive | 2 insensitive | **3 standard** | 4 sensitive | 5 very sensitive	Detection sensitivity for the presence detection: 1: Low sensitivity 2: Reduced sensitivity 3: Average sensitivity, default setting 4: Increased sensitivity 5: High sensitivity
LED presence display	cpLedIndicator	**Inactive** | Active	Inactive: LED indicates movement only in test mode Active: LED indicates movement in normal mode and test mode.

4.3.2 Light Sensor

The following object configuration page is available for every light sensor



The following parameter settings can be made (**bold**: default):

Name	LON name	Values	Description
Room correction factor	cpReflection	0.05 | 0.1 | 0.15 | 0.2 | 0.25 | **0.3** | 0.35 |0.4 | 0.45 | 0.5 | 0.55 | 0.6 | 0.65 | 0.7 | 0.75 | 0.8 | 0.85 | 0.9 | 0.95 | 1.0 | 1.05 | 1.1 | 1.15 | 1.2 | 1.25 | 1.3 | 1.35 | 1.4 | 1.45 | 1.5 | 1.55 | 1.6 | 1.65 | 1.7 | 1.75 | 1.8 | 1.85 | 1.9 | 1.95 | 2.0 | calibrated	The room correction factor will be calculated automatically from cpFieldCalib when it has an entry, but can also be entered manually. "Calibrated" means that a calibration of the detector was carried out, see Section 4.3.2.1
Minimum transmission pause	cpMinSendTime	inactive | 0.2 s | **1 s** | 5 s | 10 s | 20 s | 30 s | 1 min | 2 min | 3 min | 4 min | 5 min | 6 min | 7 min | 8 min | 9 min | 10 min | user-defined*	Minimum transmission pause for nvoLuxLevel.
Maximum time between two telegrams	cpMaxSendTime	inactive | 10 s | 20 s | 30 s | 40 s | 50 s | **1 min** | 2 min | 5 min | 10 min | 15 min | 20 min | 25 min | 30 min | user-defined*	Heartbeat for nvoLuxLevel.
Minimum value change	cpMinDelta	1 ... 100%, increment 0.5%, **5%**	Minimum value change that leads to the nvoLuxLevel being sent again

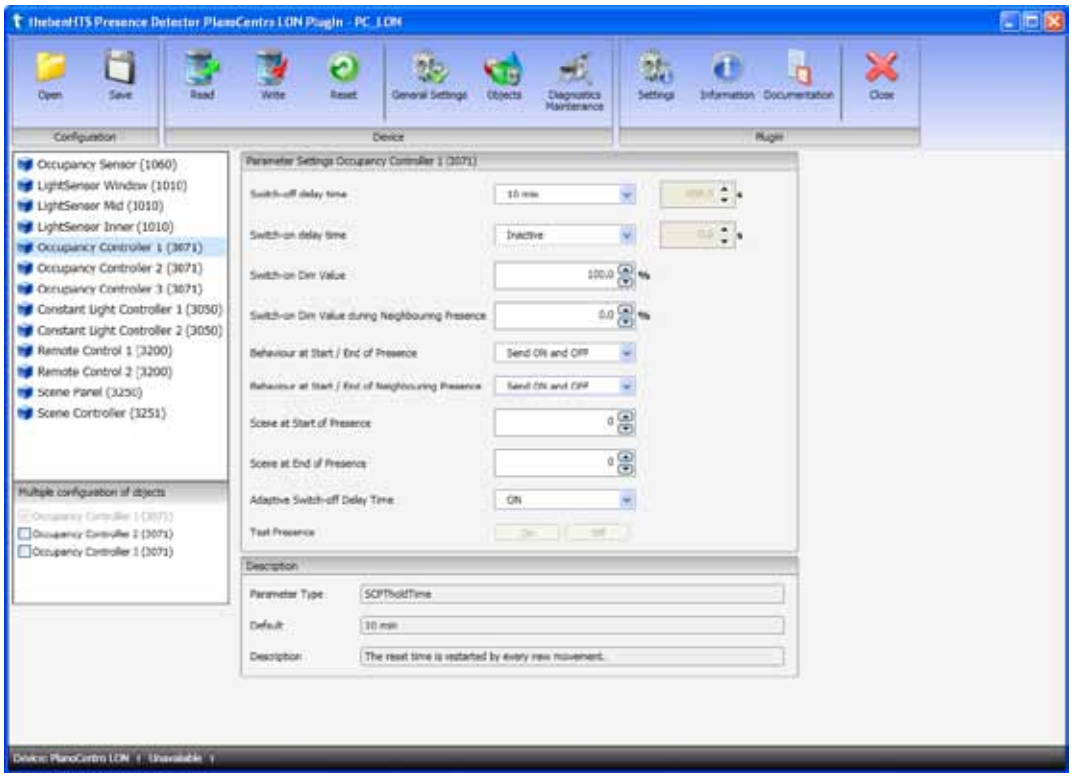
4.3.2.1 Calibration of the light measurement

Proceed as follows to calibration the light measurement. Please note the explanation of calibration in Section 2.3.3:

1. The Lux meter is placed on the work surface below the sensor and the measured lux value is entered.
2. Press the button **Calibrate light measurement**.
3. The reflection factor cpReflection is calculated automatically. The calibrated actual value of the light measurement will be shown.
4. In the *Room correction factor* field *calibrated* is shown and/or the calculated room correction factor is visible.

4.3.3 Occupancy controller

The following object configuration page is available for every occupancy controller

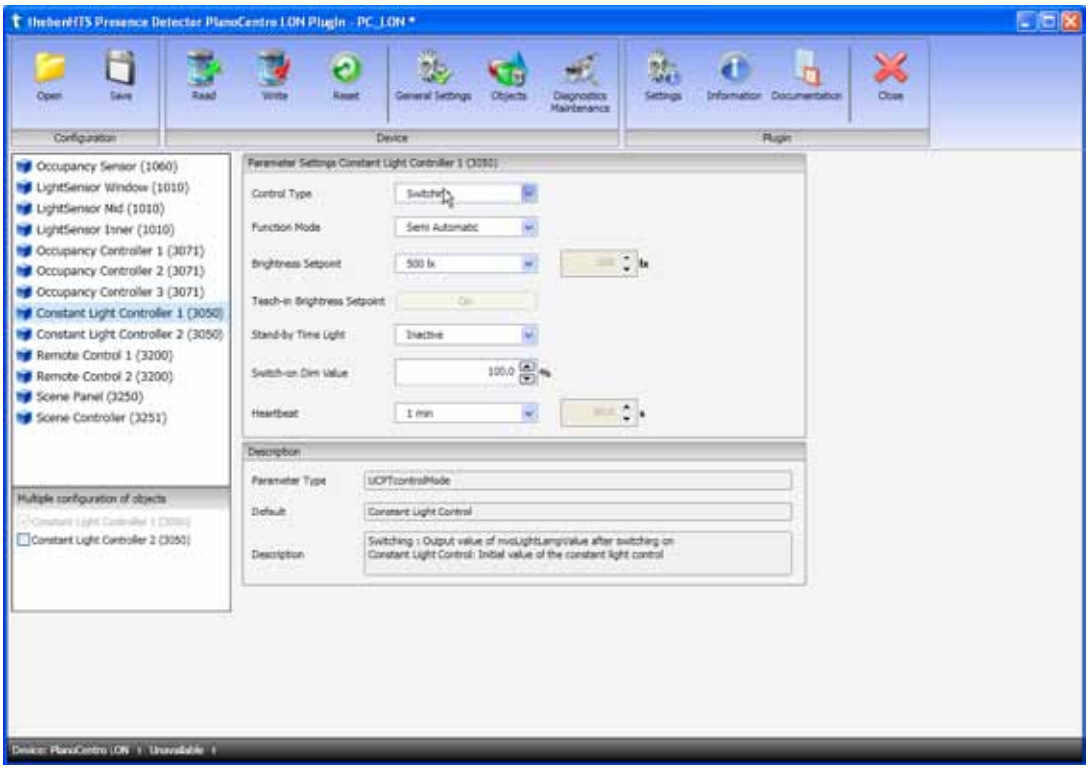


The following parameter settings can be made (**bold**: default):

Name	LON name	Values	Description
Time delay	nciHoldTime	10 s | 30 s | 60 s | 90 s | 2 min | 3 min | 4 min | 5 min | 6 min | 7 min | 8 min | 9 min | **10 min** | 12 min | 15 min | 20 min | 25 min | 30 min | 40 min | 50 min | 60 min | 70 min | 80 min | 90 min | 100 min | user-defined*	The time delay for the outputs nvoOccupLampVal and nvoOccupSetting. nciHoldTime is restarted whenn any motion occurs (OCCUPIED to nviOccup).
Switch-on delay	nciSwitchOnDelay	**inactive** | 10 s | 20 s | 30 s | 45 s | 1 min | 2 min | 3 min | 4 min | 5 min | 6 min | 7 min | 8 min | 9 min | 10 min | 12 min | 15 min | 20 min | 25 min | 30 min | user-defined*	Switch-on delay for the output nvoOccupLampVal.
Switch-on dimming value	cpPrimeVal	1 ... 100%, increment 0.5%, **100%**	Output value from nvoOccLampVal when present via nviOccup
Switch-on dimming value when presence in the vicinity	cpSecondVal	1 ... 100%, increment 0.5%, **0%**	Output value from nvoOccLampVal during presence of adjacent zones ("light island") via nviOccupSecond.
Behaviour at start/end of presence	cpOnOffBehavPri	**Send ON and OFF** | Only send ON | Only send OFF	Describes what telegram is sent when presence begins and ends.
Behaviour at start/end of presence in the vicinity	cpOnOffBehavSec	**Send ON and OFF** | Only send ON | Only send OFF	Describes what telegram is sent (via nviOccupSecond) when presence begins and ends.
Scene when presence begins	cpScenePrimeOn	0 ... 255, **0**	Scene when room occupied
Scene when presence ends	cpScenePrimeOff	0 ... 255, **0**	Scene when room unoccupied
Adaptive time delay	cpAdaptiveDelay	**On** | Off	Recommended setting: For control of a constant light controller: **On** For control of HVAC: **Off**
Test presence	nciTestMode	On | **Off**	For information about test presence see Chapter 7 / Page 46.

4.3.4 Constant Light Controller

The following object configuration page is available for every constant light controller

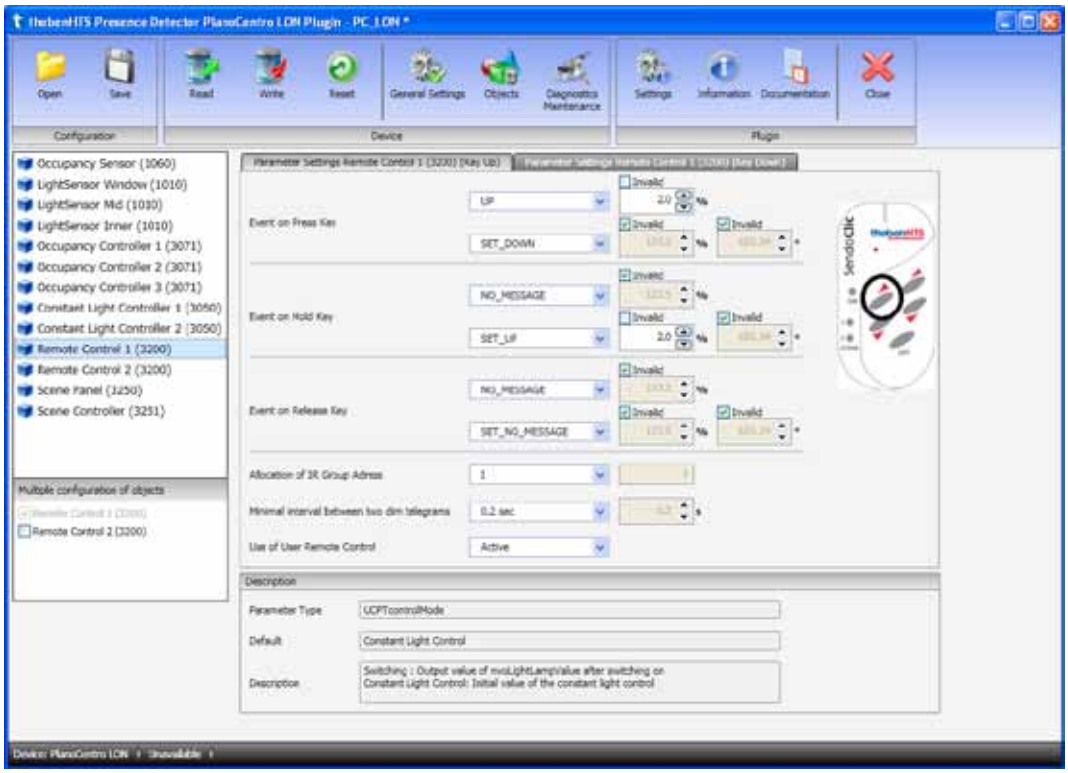


The following parameter settings can be made (**bold**: default):

Name	LON name	Values	Description
Control type	cpControlMode	**Switching** | Constant light control	
Function mode	cpSemiAutomatic	**Fully automatic** | Semi-automatic	
Brightness level	nciLuxSetpoint	10 lx | 12 lx | 14 lx | 16 lx | 20 lx | 22 lx | 24 lx | 26 lx | 28 lx | 30 lx | 35 lx | 40 lx | 45 lx | 50 lx | 55 lx | 60 lx | 65 lx | 70 lx | 80 lx | 90 lx | 100 lx | 110 lx | 120 lx | 130 lx | 140 lx | 150 lx | 160 lx | 170 lx | 180 lx | 190 lx | 200 lx | 220 lx | 240 lx | 260 lx | 280 lx | 300 lx | 320 lx | 340 lx | 360 lx | 380 lx | 400 lx | 420 lx | 440 lx | 460 lx | 480 lx | **500 lx** | 550 lx | 600 lx | 650 lx | 700 lx | 750 lx | 800 lx | 850 lx | 900 lx | 950 lx | 1000 lx | 1100 lx | 1200 lx | 1300 lx | 1400 lx | 1500 lx | 1600 lx | 1700 lx | 1800 lx | 1900 lx | 2000 lx | Measurement off (only dependent on presence) | user-definined	
Teach-in brightness set point value	nciTeachin	Button: Teach-In	Teach-in overwrites the brightness setpoint with the currently measured brightness.
Standby time light	nciStandbyE-nable	**inactive** | active	When the presence ends, the lighting is not switched off, but serves as an orientation light.
Light stand-by time	cpStandbyHoldT	30 s | 1 min | 2 min | 3 min | 4 min | 5 min | 6 min | 7 min | 8 min | 9 min | 10 min | 12 min | 15 min | 20 min | 25 min | **30 min** | 40 min | 50 min | 60 min | on | user-defined*	Faded out when "Standby time light = inactive"
Standby brightness	cpStandbySet-Point	10 lx | 12 lx | 14 lx | 16 lx | 20 lx | 22 lx | 24 lx | 26 lx | 28 lx | 30 lx | 35 lx | 40 lx | 45 lx | **50 lx** | 55 lx | 60 lx | 65 lx | 70 lx | 80 lx | 90 lx | 100 lx | user-defined	Faded out when "Standby time light = inactive"
Standby value	cpStandbyValue	1 ... 25%, increment 0.5%, **10%**	Max. dimming value in stand-by mode
Cyclical transmission	cpMaxSendTime	inactive | 10 s | 20 s | 30 s | 40 s | 50 s | **1 min** | 2 min | 5 min | 10 min | 15 min | 20 min | 25 min | 30 min | user-defined*	Max. time between two updates for the light output
Switch-on dimming value	cpClPrimeVal	1 ... 100%, increment 0.5%, **100%**	Dimming value when switching on (switching) or switch-on value of the control system (constant light control)
Control behaviour	cpControlSpeed	**Standard** | Medium | Fast	Faded out when "control type = switching"

4.3.5 Remote control

The following object configuration page is available for every remote controller



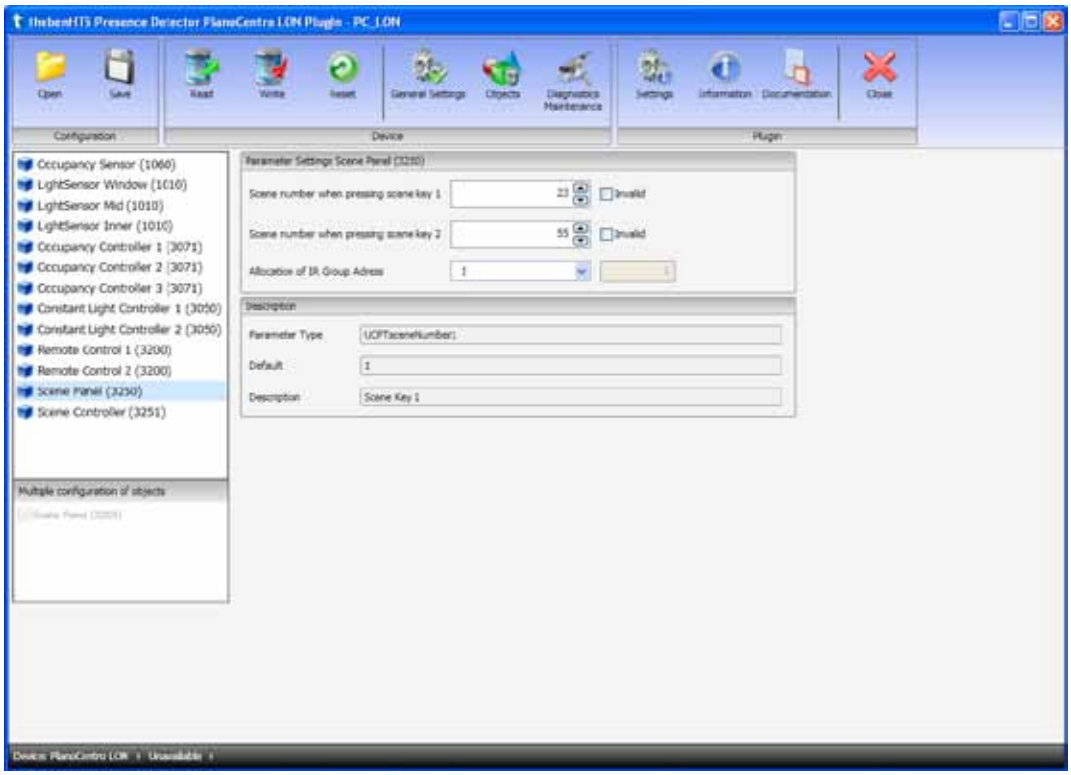
The following parameter settings can be made (**bold**: default):

Name	LON name	Object	Values		
Short button press event ▲	cpPushEvenUp	nvoRemoteSwitch	**ON** | OFF | INVALID | NO_MESSAGE | UP | DOWN	0 ... 100%, **100%**	
		nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100%, **0%**	- 359.98 ° ... 360 °, **invalid**
Long button press event ▲	cpLongPushEventU	nvoRemoteSwitch	ON | OFF | INVALID | NO_MESSAGE | **UP** | DOWN	0 ... 100%, **2%**	
		nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100%, **0%**	- 359.98 ° ... 360 °, **invalid**
Event when released ▲	cpReleaseEventU	nvoRemoteSwitch	ON | OFF | INVALID | **NO_MESSAGE** | UP | DOWN	0 ... 100%, **0%**	
		nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100%, **0%**	- 359.98 ° ... 360 °, **invalid**
Short button press event ▼	cpPushEventDown	nvoRemoteSwitch	ON | **OFF** | INVALID | NO_MESSAGE | UP | DOWN	0 ... 100%, **0%**	
		nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100%, **0%**	- 359.98 ° ... 360 °, **invalid**
Long button press event ▼	cpLongPushEventD	nvoRemoteSwitch	ON | OFF | INVALID | NO_MESSAGE | UP | **DOWN**	0 ... 100%, **2%**	
		nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100%, **0%**	- 359.98 ° ... 360 °, **invalid**
Release event ▼	cpReleaseEventD	nvoRemoteSwitch	ON | OFF | INVALID | **NO_MESSAGE** | UP | DOWN	0 ... 100 %, **0 %**	
		nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100 %, **0 %**	- 359.98 ° ... 360 °, **invalid**
Allocation of IR group address	cpRcGroupAdress		**I** | II | III		
Shortest time between two telegrams	cpMinSendTime		inactive | **0.2 s** | 0.4 s | 0.6 s | 0.8 s | 1 s | 2 s | 5 s | user-defined*		
Use of the user app	cpClicAppEnable		**Active** | inactive		

Note: The commands UP, DOWN are not defined with nvoRemoteSwitch. If the object nviRemoteFb is linked, when UP/DOWN is received the feedback value will be sent plus or minus the defined %value. If the object nviRemoteFb is not linked, when UP/DOWN is received the last output value will be sent plus or minus the defined % value.

4.3.6 Scene panel

The following object configuration page is available for the scene panel

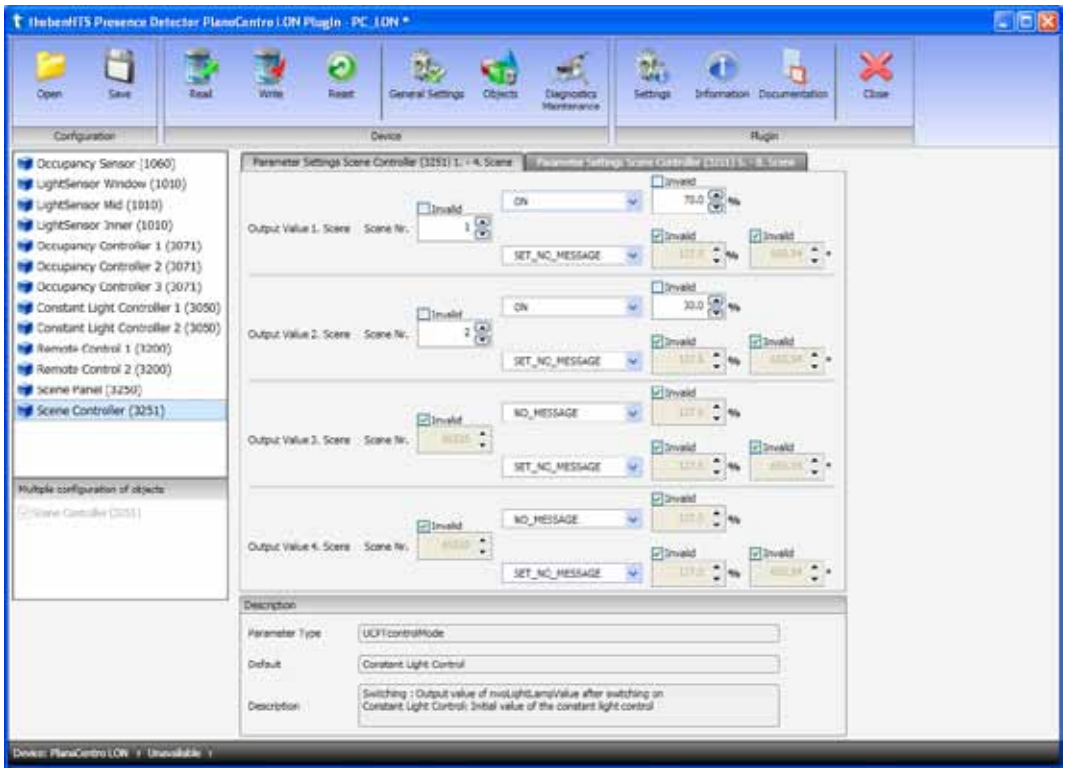


The following parameter settings can be made (**bold**: default):

Name	LON name	Values	Description
Scene button 1	cpSceneNumber1	0 ... 255, **1**	
Scene button 2	cpSceneNumber2	0 ... 255, **2**	
Allocation of IR group address	cpScGrou-pAddress	**I** | II | III	

4.3.7 Scene Controller

The following object configuration page is available for the Scene Controller



The following parameter settings can be made (**bold**: default):

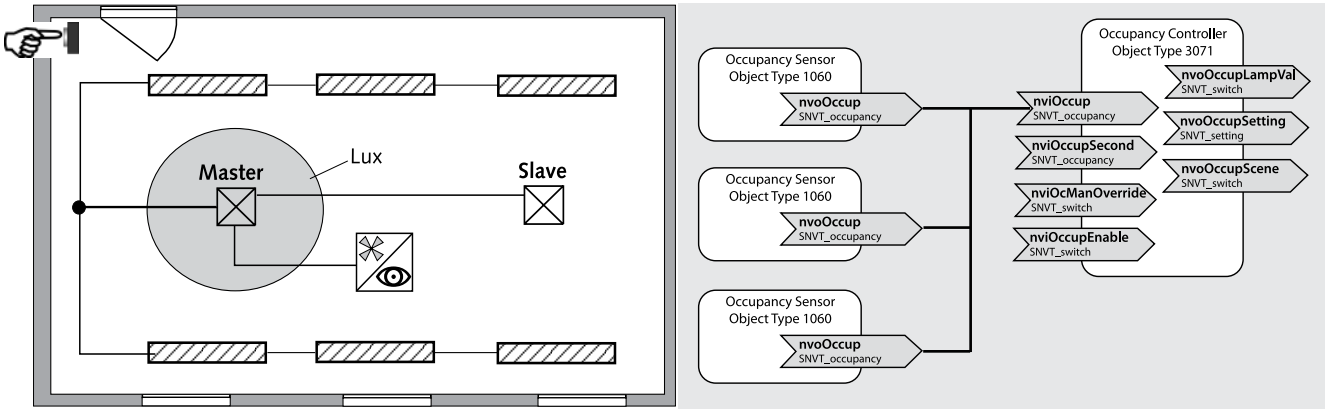
Name	LON name	Scene no.	Object	Values		
Output value 1st scene	cpSceneConfig	1 ... 255, **1**	nvoRemoteSwitch	**ON** | OFF | INVALID | NO_MESSAGE	0 ... 100 %, **70 %**	
			nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100 %, **invalid**	- 359.98 ° ... 360 °, **invalid**
Output value 2nd Scene	cpSceneConfig	1 ... 255, **2**	nvoRemoteSwitch	ON | **OFF** | INVALID | NO_MESSAGE	0 ... 100 %, **30 %**	
			nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100 %, **invalid**	- 359.98 ° ... 360 °, **invalid**
Output value 3rd - 8th scene	cpSceneConfig	1 ... 255, **free**	nvoRemoteSwitch	ON | OFF | INVALID | **NO_MESSAGE**	0 ... 100 %, **invalid**	
			nvoRemoteSetting	**SET_NO_MESSAGE** | SET_ON | SET_OFF | SET_UP | SET_DOWN | SET_STATE | SET_STOP	0 ... 100 %, **invalid**	- 359.98 ° ... 360 °, **invalid**

5. Parallel switching

A number of detectors can be connected in parallel in larger rooms. This makes it possible to extend the overall presence detection area.

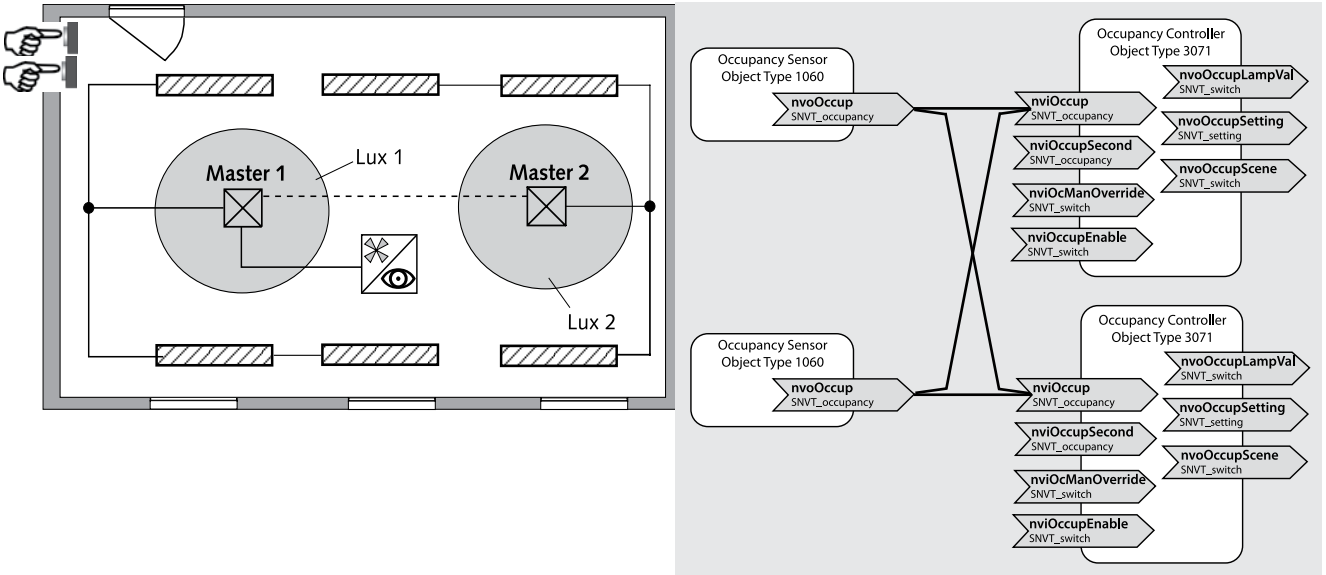
5.1 Master/Slave parallel connection

A "Master" can be connected to several "Slaves". For this purpose the network variable nviOccup of the occupancy controller of the "Master" is linked with the network variables nvoOccup of all "Slaves". The Slaves only supply presence information from their detection area. The Master completes the brightness measurement and the administration of all parameter settings.



5.2 Master/Master parallel connection

Several presence detectors can be linked to one another as "Masters in parallel switching". For this purpose the network variable nviOccup of the occupancy controller of the first "Master" is linked with the network variables nvoOccup of all presence detectors. For this purpose the network variable nviOccup of the occupancy controller of the additional "Master" is linked with the nvoOccup of all other presence detectors. Presence detection is completed jointly while light measurement, parameter settings and lighting control are individually processed by each Master.



6. Start-up

6.1 Identification

The presence detector will be identified during commissioning with the service button on the back of the presence detector or without dismantling the presence detector via the SendoPro 868-A management remote control. A network management message with the Neuron ID of the presence detector will be sent.

6.2 Set device to original condition

The presence detector can be reset to its factory settings by pressing the service button for 10 seconds.

- This puts the device in the "unconfigured" state.
- All parameters are reset to their default values.

6.3 Switching behaviour

After power is switched on or a restart occurs the detector runs through the start-up phase. This is indicated by the LED flashing.

1. Start up phase (30 seconds)

- The LED flashes once per second.
- The outputs nvoLightLampValue of the constant light controller #3050 will be set to 100%/1 after 5 seconds regardless of brightness. After 15 seconds the outputs nvoLightLampValue will be reset to 100 % / 1. Any constant light control that has been set is inactive.
- The occupancy controller #3071 are not controlled.
- During the start-up phase only the following IR commands are permitted:
  - Test On / Off
  - Reset
  - Read parameters (see operating manual Section 4.6, page 14).
- The current status is sent at the end of the start-up phase. When no one is present or there is sufficient brightness after 30 seconds a 0%/0 telegram is sent (light off).

2. Operation mode normal

- The detector is ready for operation (LED off or LED indicates motion).

3. Event of malfunction

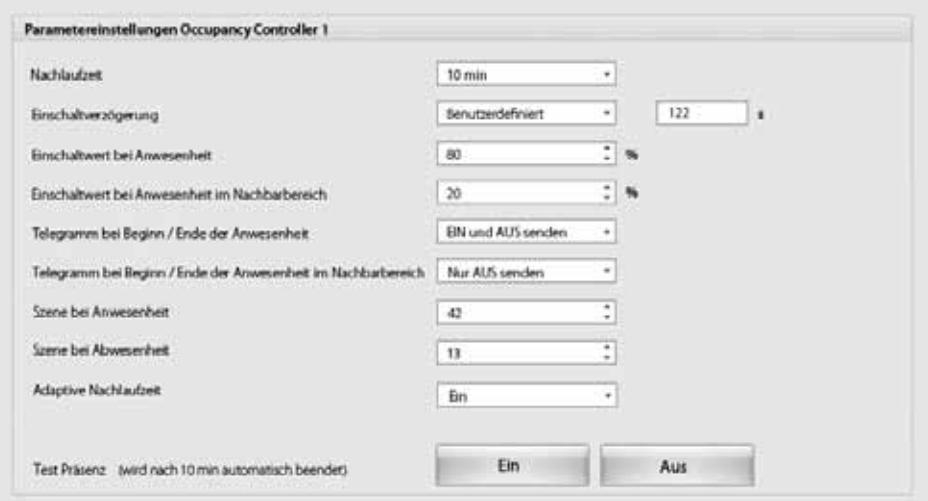
- LED flashes rapidly
- For troubleshooting see „9. Troubleshooting“ Page 55

7. Test mode presence

The test presence serves to test presence detection and parallel connection.

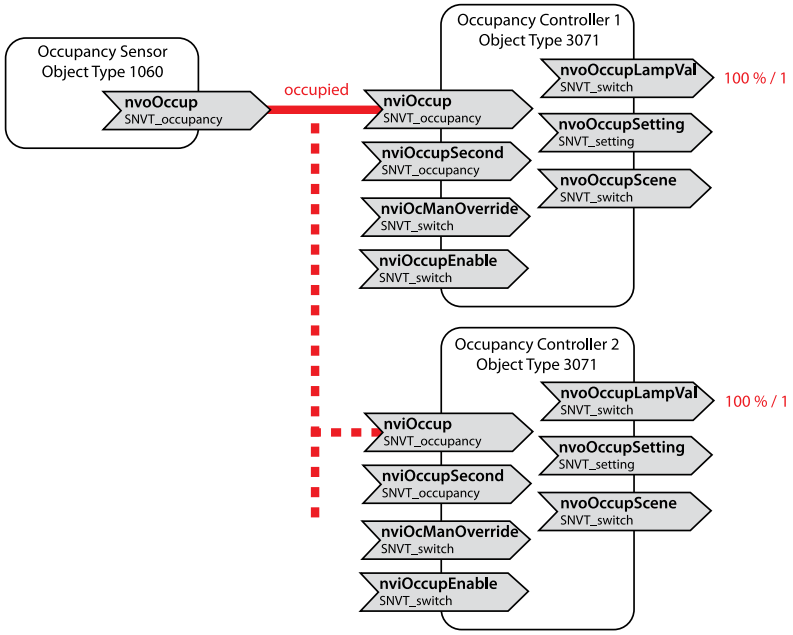
Activation	- Test presence "On" with the SendoPro management remote control 868-A - via plug-in or configuration variable nciTestMode
End	With subsequent restart: - Test presence <Off> command with the SendoPro management remote control 868-A - Power failure and power up - via plug-in or configuration variable nciTestMode - the test-mode presence will be terminated automatically after 10 mins

View of presence test mode in the plug-in:



Bindings

The presence test mode only works correctly when the internal bindings are present. This concerns the bindings between occupancy sensor and the occupancy controllers.



Test response

The presence detector exhibits the following behaviour in test mode:

- The LED shows movements detected by the internal PIR sensor. Movement information sent by slave detectors will not be shown.
- PIR on sensitive as with Present.
- Every occupancy controller must be set to the presence test mode separately.
- The configuration parameters will be set specifically for the duration of the test mode regardless of the bindings.
- The constant light controllers are not affected by the test mode. They continue to work normally.
- The presence detector performs a reset after the end of the test mode.

Display LED	Status nviOccup	Status nvoOccupLampVal	Description
ON	Occupied	100% / 1	When there is movement (LED on) every occupancy controller without time delay switches directly because of nviOccup to 100% / 1
Off	UnOccupied	0% / 0	When absent (LED off) every occupancy controller without time delay switches directly because of nviOccup to 0% / 0

Commands and other parameters

The following commands are possible with the management remote control in test mode presence

- End test presence
- Reset / New start of the detector
- Change detection sensitivity

The selected detection sensitivity is unchanged on activation of test presence. Sensitivity can be adjusted during the test. The presence detector performs a reset after the end of the test mode.

8. Integrate SendoClic user remote control

See the SendoClic operating instructions

8.1 Performance characteristics of the SendoClic user remote control

The SendoClic user remote control makes it easy to switch and dim lighting using the PlanoCentro PCLON presence detector. SendoClic has two channels for controlling lighting groups, blinds or external channels with switching and dimming. SendoClic provides the option of saving two different lighting scenes which can be retrieved anytime at the touch of button.

8.2 Combination of the presence detector and SendoClic

The presence detector channels and the SendoClic user remote control channels are linked via an IR group address. Three IR group addresses are available for linking.

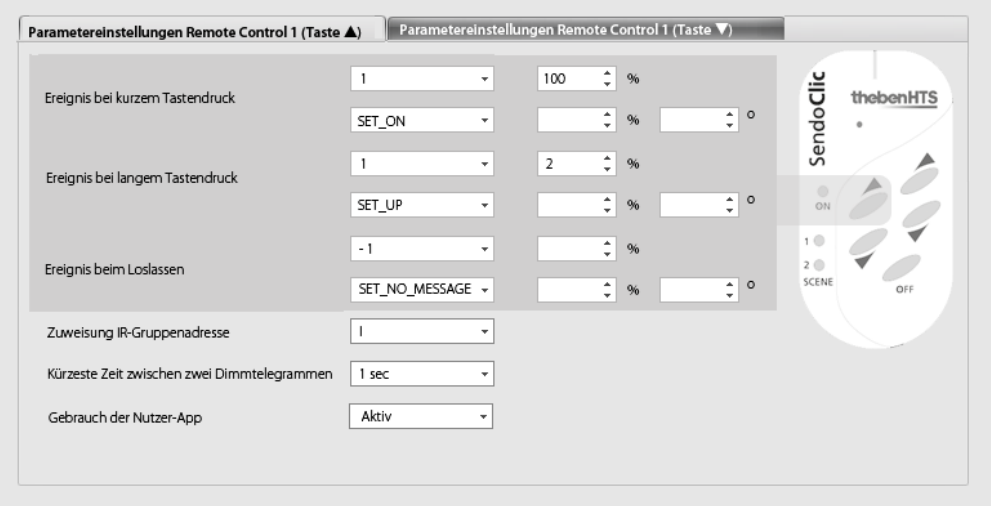
The operation of a lighting group requires that the presence detector channel IR group address and the SendoClic channel correspond.

Selection of IR group addresses enables the separation of neighbouring detectors controlled by the SendoClic user remote control.

Coding switch position	IR group address		Buttons Scene 1 and 2
	Channel 1 ▼/▲ (SendoClic)	Channel 2 ▼/▲ (SendoClic)	
0	All	All	All
1	I	I	I
2	I	I I	I + I I
3	I	I I I	I + I I I
4	I I	I	I + I I
5	I I	I I	I I
6	I I	I I I	I I + I I I
7	I I I	I	I + I I I
8	I I I	I I	I I + I I I
9	I I I	I I I	I I I

Procedure:
Set the coding switch in the battery compartment of the SendoClic (see table below) so that the IR group addresses are allocated to the SendoClic channels previously set on the "remote control" parameter page (see page 45, chapter 2.4.13).

Afterwards define the output state for every button in the plug-in for remote control 1 and remote control 2 and in the scene panel:

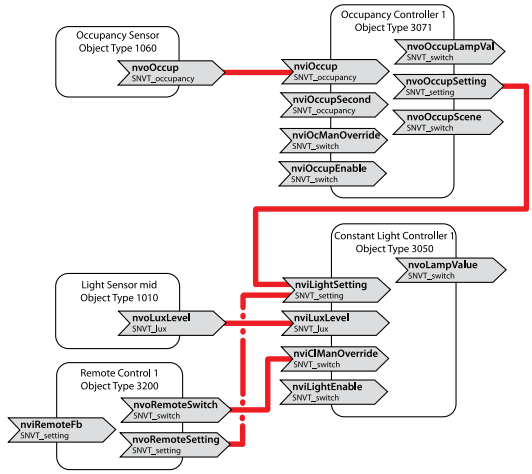
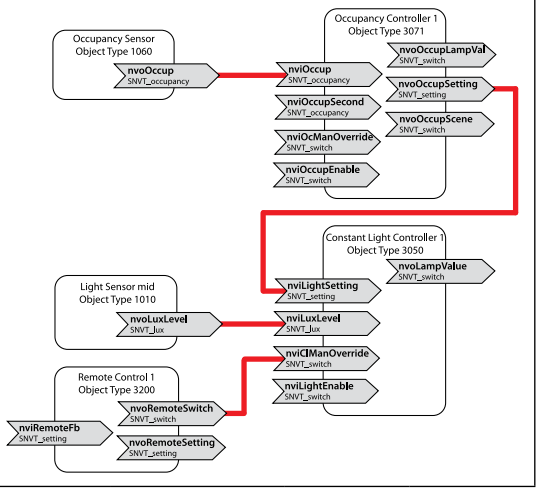


8.3 Examples of set IR group addresses

Subject	Chapter / page
One presence detector, one light channel	Chapter 8.3.1 / Page 49
One presence detector, two light channels	Chapter 8.3.2 / Page 50
A presence detector with one internal and external light channel each	Chapter 8.3.3 / Page 51
A presence detector with an internal light channel and external blinds	Chapter 8.3.4 / Page 52
Two presence detectors, each with a light channel with a shared SendoClic user remote control	Chapter 8.3.5 / Page 53
Two presence detectors, each with one light channel with separate SendoClic user remote control (restriction)	Chapter 8.3.6 / Page 54

8.3.1 One presence detector, one light channel

Description	One light channel of a presence detector is manually controlled with a SendoClic user remote control. The constant light controller 1 of the presence detector is controlled with the left and right series of buttons on the SendoClic.

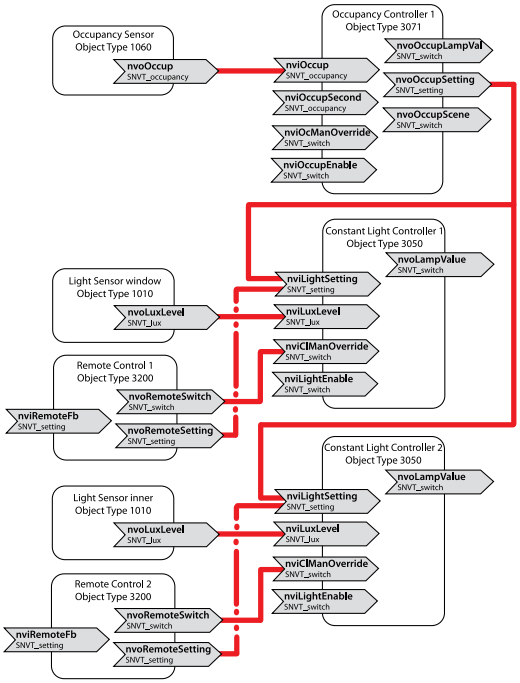
Bindings	PlanoCentro PCLON	
	Via nviSetting	Via nviSwitch
		

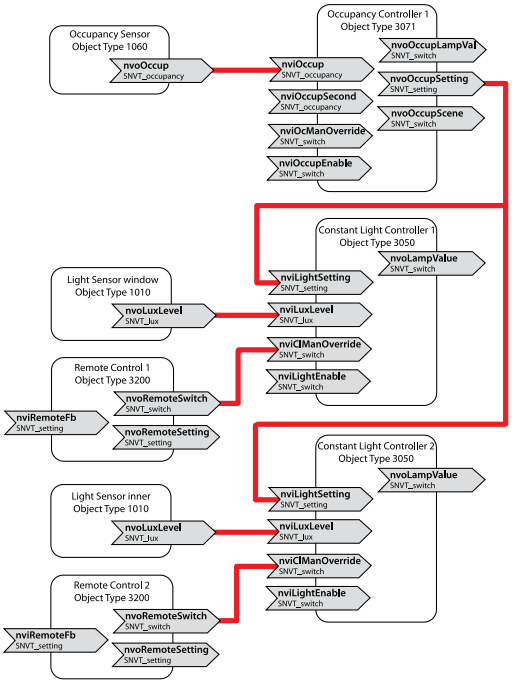
Parameter	PlanoCentro PCLON					
	Remote Control 1					
	Parameter	Button ▲			Button ▼	
	Event when button is pressed briefly	SS_ON	100 %		SS_OFF	0 %
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Long button press event	SS_UP	2 %		SS_DOWN	2 %
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	I				
	Shortest time between 2 telegrams	0.2 secs				
	Use of the user app	Active				
	Remote Control 2					
	see settings for Remote Control 1					
	SendoClic					
	Control element	Setting	Comment			
	Coding switch	1				

8.3.2 One presence detector, two light channels

Description	Two light channels of a presence detector are manually controlled with a SendoClic user remote control. The constant light controller 1 of the presence detector is controlled with the left series of buttons on the SendoClic. The constant light controller 2 of the presence detector is controlled with the right series of buttons on the SendoClic.

Bindings	Via nviSetting	Via nviSwitch



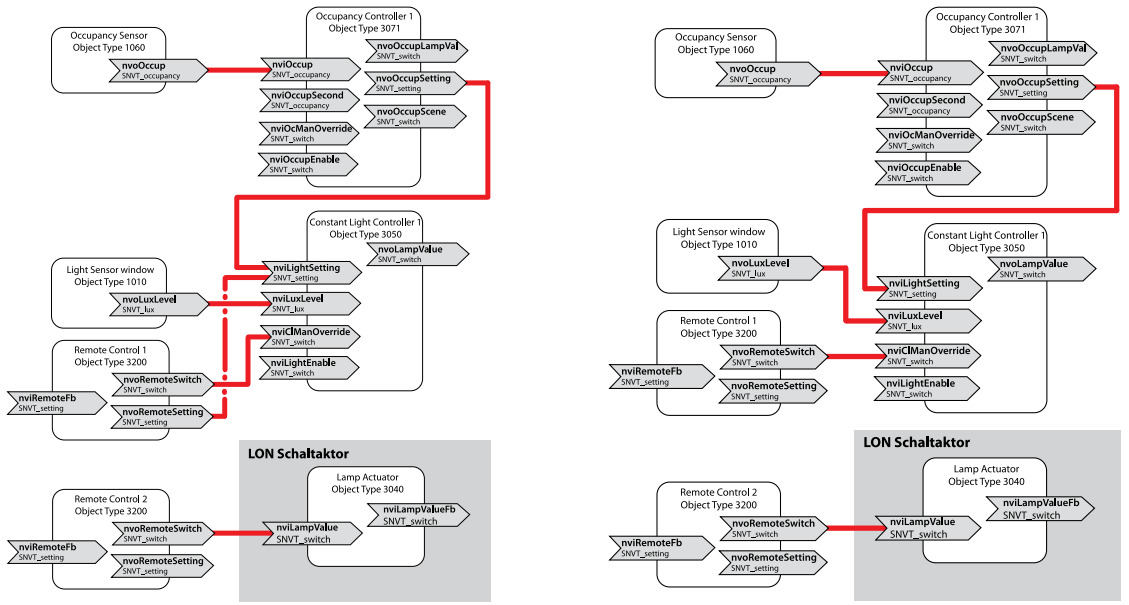


Parameter	PlanoCentro PCLON					
	Remote Control 1					
	Parameter	Button ▲			Button ▼	
	Event when button is pressed briefly	SS_ON	100 %		SS_OFF	0 %
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Long button press event	SS_UP	2 %		SS_DOWN	2 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	I					
	Shortest time between 2 telegrams	0.2 secs					
	Use of the user app	Active					
	Remote Control 2						
	IR group address	II					
	All other parameters as with Remote Control 1						
	SendoClic						
	Control element	Setting	Comment			
	Coding switch	2	The allocation of the SendoClic channels is changed via setting 4.			

8.3.3 A presence detector with one internal and external light channel each

Description	One light channel of a presence detector, and an additional consumer, for example a switching or dimming actuator, is manually controlled with a SendoClic user remote control. The constant light controller 1 of the presence detector is controlled with the left and right series of buttons on the SendoClic. The channel of the switching or dimming actuator is controlled with the right series of buttons on the SendoClic.

Bindings	Via nviSetting	Via nviSwitch

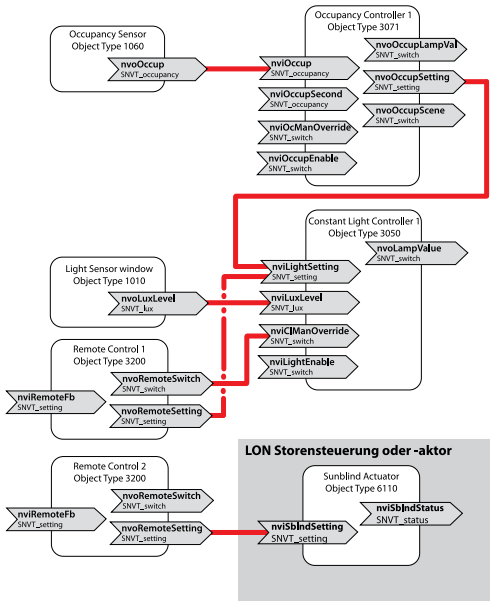


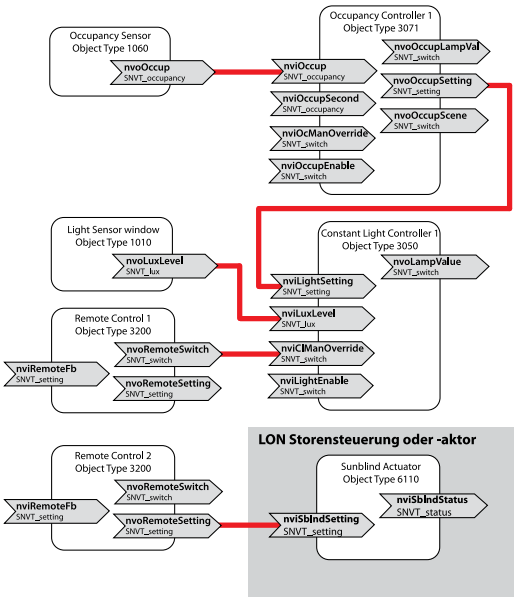
Parameter	PlanoCentro PCLON detector 1						
	Parameter Remote Control 1	Button ▲			Button ▼		
	Event when button is pressed briefly	SS_ON	100 %		SS_OFF	0 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Long button press event	SS_UP	2 %		SS_DOWN	2 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	I					
	Shortest time between 2 telegrams	0.2 secs					
	Use of the user app	Active					
	Parameter Remote Control 2	Button ▲			Button ▼		
	Event when button is pressed briefly	SS_ON	100 %		SS_OFF	0 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Long button press event	SS_UP	2 %		SS_DOWN	2 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	II					
	All other parameters as with Remote Control 1						
	SendoClic						
	Control element	Setting	Comment				
	Coding switch	2	The allocation of the SendoClic channels is changed via setting 4.				

8.3.4 A presence detector with an internal light channel and external blinds

Description	One light channel of a presence detector, and blinds, are manually controlled with a SendoClic user remote control. The constant light controller 1 of the presence detector is controlled with the left series of buttons on the SendoClic. The channel of the blinds actuator is controlled with the right series of buttons on the SendoClic.

Bindings	Via nviSetting	Via nviSwitch



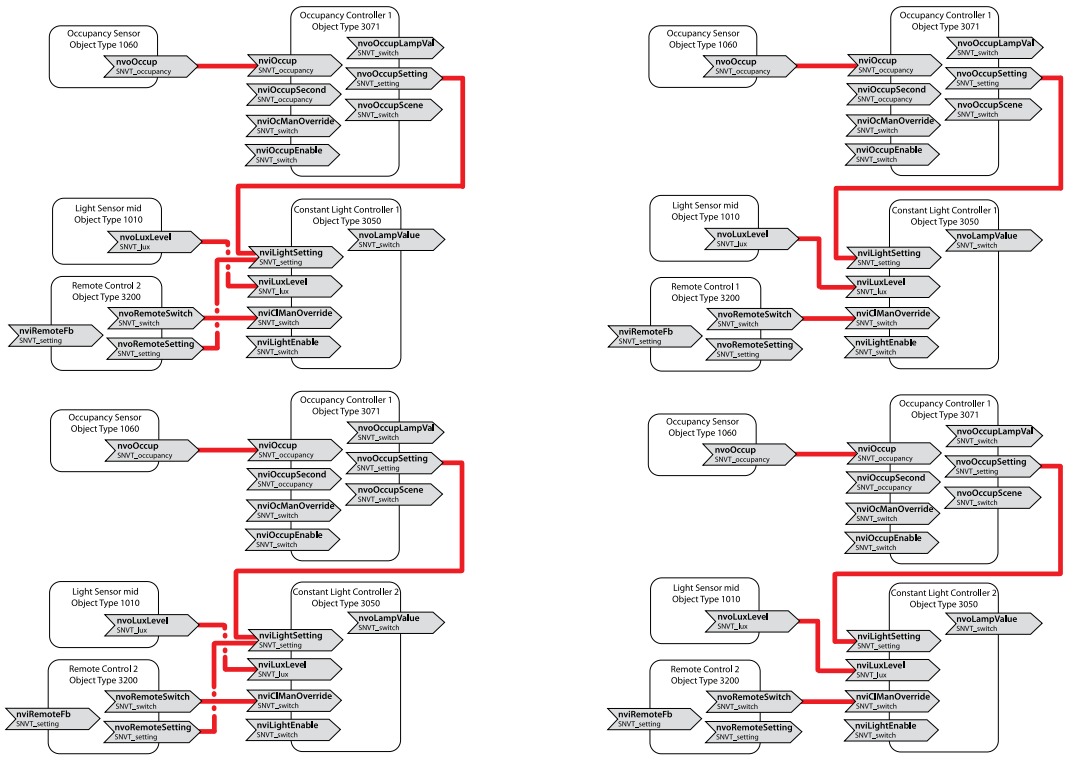


Parameter	PlanoCentro PCLON detector 1					
	Parameter Remote Control 1	Button ▲			Button ▼		
	Event when button is pressed briefly	SS_ON	100 %		SS_OFF	0 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Long button press event	SS_UP	2 %		SS_DOWN	2 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	I					
	Shortest time between 2 telegrams	0.2 secs					
	Use of the user app	Active					
	Parameter Remote Control 2	Button ▲			Button ▼		
	Event when button is pressed briefly	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	- 10 °	SET_NO_MESSAGE	invalid	+ 10 °
	Long button press event	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	0 %	invalid	SET_NO_MESSAGE	100 %	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	II					
	All other parameters as with Remote Control 1						
	SendoClic						
	Control element	Setting	Comment				
	Coding switch	2	The assignment of the SendoClic channels is changed via setting 4.				

8.3.5 Two presence detectors, each with a light channel with a shared SendoClic user remote control

Description	One light channel can be manually controlled by two presence detectors using a SendoClic user remote control. The constant light controller 1 of the first presence detector is controlled with the left series of buttons on the SendoClic. The constant light controller 1 of the presence detector is controlled with the second series of buttons on the SendoClic.

Bindings	Via nviSetting	Via nviSwitch

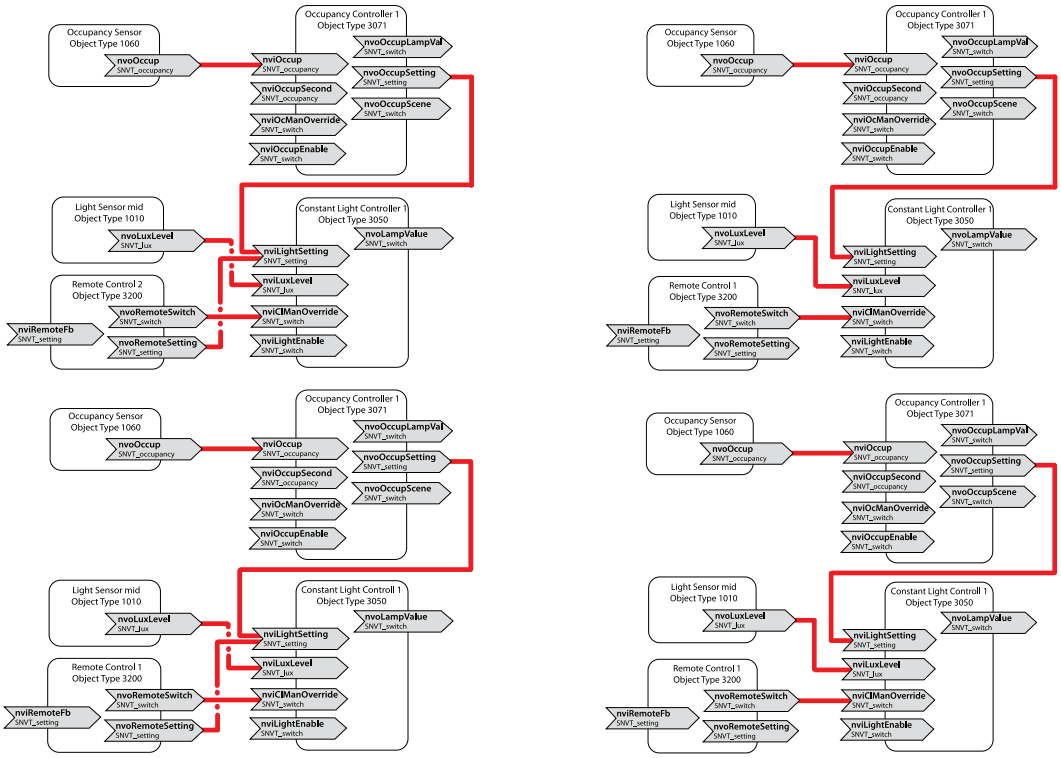


Parameter	PlanoCentro PCLON detector 1						
	Parameter Remote Control 1	Button ▲			Button ▼		
	Event when button is pressed briefly	SS_ON	100 %		SS_OFF	0 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Long button press event	SS_UP	2 %		SS_DOWN	2 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	I					
	Shortest time between 2 telegrams	0.2 secs					
	Use of the user app	Active					
	PlanoCentro PCLON detector 2						
	Parameter Remote Control 1	Button ▲			Button ▼		
	IR group address	II					
	All other parameters as with detector 1						
	SendoClic						
	Control element	Setting	Comment				
	Coding switch	2	The assignment of the SendoClic channels is changed via setting 4.				

8.3.6 Two presence detectors, each with one light channel with separate SendoClic user remote control (restriction)

Description	One light channel each is manually controlled by two presence detectors in the same room using two SendoClic user remote controls. The constant light controller 1 of the first presence detector is controlled with the series of buttons on one SendoClic. The constant light controller 1 of the second presence detector is controlled with the series of buttons on another SendoClic.

Bindings	Via nviSetting	Via nviSwitch



Parameter	PlanoCentro PCLON detector 1					
	Parameter Remote Control 1	Button ▲			Button ▼		
	Event when button briefly pressed	SS_ON	100 %		SS_OFF	0 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Long button press event	SS_UP	2 %		SS_DOWN	2 %	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	Event when released	SS_NO_MESSAGE	invalid		SS_NO_MESSAGE	invalid	
		SET_NO_MESSAGE	invalid	invalid	SET_NO_MESSAGE	invalid	invalid
	IR group address	I					
	Shortest time between 2 telegrams	0.2 secs					
	Use of the user app	Active					
	PlanoCentro PCLON detector 2						
	Parameter Remote Control 1	Button ▲			Button ▼		
	IR group address	II					
	All other parameters as with detector 1						
	SendoClic 1						
	Control element	Setting	Comment				
	Coding switch	2					
	SendoClic 2						
	Control element	Setting	Comment				
	Coding switch	5					

9. Troubleshooting

Fault / error	Cause
Light does not switch on and/or switches off if presence is detected and in darkness	Lux value is set too low; detector set on semi-automatic; light was switched off manually via push button or SendoClic; person not within detection range; obstruction(s) interfere with detection; time delay set too short
Light stays on with detection of presence despite sufficient brightness	Lux value is set too high; the light was just switched on manually via push button or SendoClic (wait 30 minutes); detector is in test mode
Light does not switch off and/or light switches on spontaneously when no one is present	Wait for time delay (self-learning); thermal sources of interference in the detection area: fan heaters, incandescent lamps / halogen spotlight, moving objects (e.g. curtains hanging in an open window)
Error flashing (4 x per second)	Malfunction during start-up phase or during operation; device is not fully functional!
Display of the error bits of the device status in the node object	3 error bits can be shown: Bit 0: invalid configuration variables (nci) in the EEPROM Bit 1: invalid configuration parameters (cp) Bit 2: Hardware malfunction Error bits 0 and 1 can be cleared by parameter download (resync with LNS database)