

User Manual

LON I/O Module DR-N 3DIM 1-10V

Art. No.: MTN881001

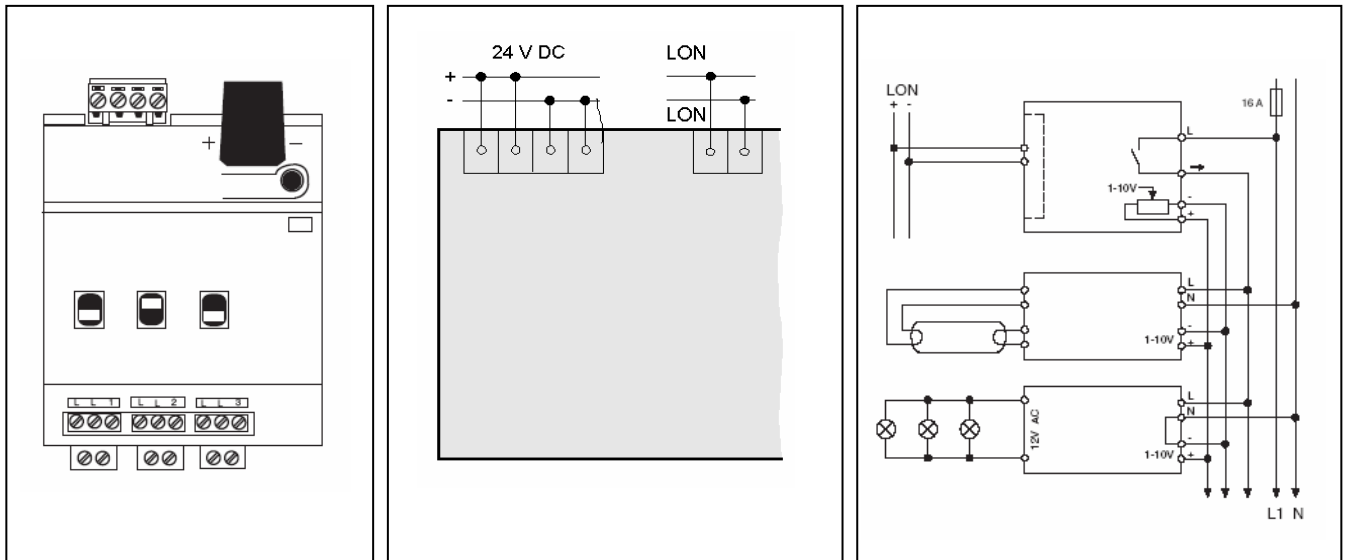
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1. Description



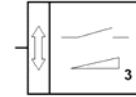
- control of devices with 1-10 V interface (controllable electronic ballasts, electronic transformers etc.)
- three analogue outputs (1-10 V) for dimming and three relay outputs (NO contact, 16 A) for switching
- current load (analogue output): max. 100 mA
- power down detection
- switch for manual control of the relay contact
- status signaling via manual switch
- screw-type terminals
- DIN rail mounting according to EN 50 022
- width of device: approx. 72 mm (4 pitch)
- software application for dimming the light including timers, prioritised control and configurable reaction to power-up/bus reset. Furthermore, the application provides constant light and scene control according to LonMark profile "Lamp Actuator (3040)", "Constant Light Controller (3050)" and "Scene Controller (3251)"

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2. Function

According to the configured properties, the output module translates the messages received via the network into switching and dimming actions. The 1 - 10 V interface is used to control dimming. Switching is realised via relay contact.



The switching status is indicated by the position of the manual switch.

By use of a switch on the casing, the switching state can be adjusted manually without application program being required. In this case, the state of the manually operated relay might differ from the state of the application program.

The input module is suited for switching and dimming fluorescent lamps and electronic transformers with 1 - 10 V interface.

The general device status is indicated by the service and RUN LEDs.

The software application is based on the LonMark profiles.

3. Mounting

The I/O Module has been designed as a device for DIN rail mounting according to EN 50 022.

The device requires a supply power of DC 24 V.

The network is connected via a two-pole bus terminal clamp included in delivery which allows up to 4 pairs of wires to be connected. The clamps are suited for conductor cross sections of 0.6 .. 0.8 mm².

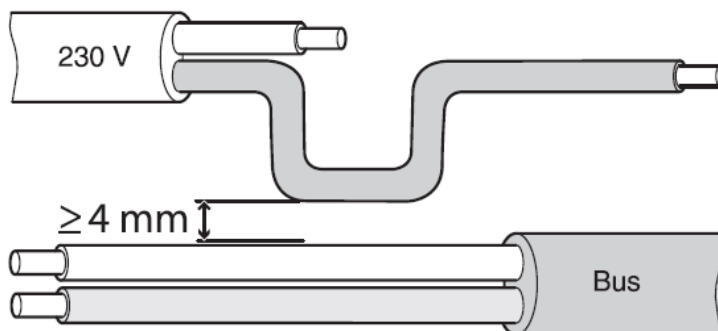
All other devices installed next to the control unit 1-10V must have at least basic insulation. The control unit has to be connected and operated according to the example schematic.

By pushing the service pin, the I/O Module is initiated to propagate its Neuron ID. The service LED indicates the programming state.

To operate the device, an application program is needed. A separate tool is needed to load the application into the device.

!Warning:

Safety clearances according to DIN VDE 0110 Part 1 must be maintained. A clearance of at least 4 mm must exist between individual 230 V conductors and the bus cables.



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!Danger to life due to electric current:

Even when the manual switch is in the "OFF" position, a BUS telegram can switch power to the connections at any time. Always deactivate/remove the upstream fuses before working on the device.

Output connections:

! Danger to life due to electric current:

Vibration during transport can switch on the outputs. Voltage may appear at the outputs when mains voltage is applied!

To switch off outputs:

After commissioning, use bus telegrams to perform a switching cycle (on/off) or set the manual switch to "OFF".

! Warning:

Switching actuators might be damaged. Secure the switching contacts with an upstream 16 A circuit breaker.

Connect the device according to the connection example. The consumer cables and the mains voltage (L1, L2 or L3) are connected using screw terminals rated to a maximum of 16 A.

4. Remarks

Electrical devices may only be fitted and mounted by a skilled person.

For planning and building electrical systems the relevant standards, guidelines, regulations and requirements of the particular country have to be considered. In addition to that, the device-specific instructions have to be considered as well. For project planning, mounting and commissioning, detailed knowledge about the LON technology is assumed.

The device's function depends on the applied software. Only application programs that are released for this device may be loaded.

The builder of the LON system has to assure that the loaded application program and the configured parameters accord to the external circuit elements, especially if several programs for various applications are available for one device.

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5. Technical Data

Power supply

Supply voltage: DC 24 V, max. 45 mA

Network interface

Transceiver type: LON Free Topology Transceiver (FTT-10)

Switching outputs

Number: 3

Type: NO contact, floating

Nominal switch voltage: AC 230 V, 50 Hz

Nominal current: 16 A, $\cos \varphi = 0,6$

Switch capacity

Capacitive loads: AC 230 V, 16 A, 200 μ F

- Incandescent lamps: AC 230 V, max. 3600 W

- HV halogen lamps: AC 230 V, max. 2500 W

Fluorescent lamps: AC 230 V, max. 3600 VA, not compensated

AC 230 V, max. 2.500 VA, parallel compensated

-LV halogen lamps with wound

transformer: AC 230 V, max. 2000 VA

Control Output

Number: 3

Control voltage: -0.5 .. 15 V

Current load: Min. 0 mA, max. 100 mA

Length of input wire: Max. 500 m (0.5 mm²)

Controls

Service pin: Propagates the Neuron- ID

Manual switch: 3x control handle on relays (one per channel)

Indicators

RUN-LED (green): lit: operating power-on, module configured

Service LED (red): lit: network access error

flashes: module unconfigured

Connections

Bus: 2-pole plug-in and branch terminal (Type: WAGO 243)

System power DC 24 V: 4-pin screw plug-in terminal for max. 2,5 mm²

Phase input, switch output: 3-pin screw terminal for max. 2,5 mm²

1-10V control voltage: 4-pin screw plug-in terminal for max. 2,5 mm²

Housing

Dimensions: 68 x 72 x 90 mm (H x W x D), 4 pitch according to DIN 43 880

Protection class: IP20 (EN 60 529/IEC 144))

Ambient conditions

Environment: Up to 2000 m above sea level

Operating temperature: -5 °C... +45 °C

Relative humidity: Max. 93% without moisture condensation

EMC

EC-directives: in accordance with low voltage directive 73/23/EWG

in accordance with EMV-directive 89/336/EWG

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6. Application description

The application "881001LC01B" is for dimming and switching of fluorescence lamps through electronic ballast controllers with 1-10 V interface or of LV-halogen lamps through electronic transformers with 1-10 V interface.

Supported by a LON illumination sensor a daylight-dependent control can be realised. Furthermore it is possible to save and recall light scenes. Thus, certain light atmospheres can be restored by LON scene panels.

The application contains the LonMark Objects "Lamp Actuator (3040)" (3x), "Constant Light Controller (3050)" (3x) and "Scene Controller (3251)" (2x).

Function

Lamp Actuator-Object

Switching (with timers)

The hardware output corresponding to the object is usually controlled via the switch input network variable `nviLALampValue[i]`. For this output, an on-delay can be configured in the `UCPTonDelay[i]` parameter, an off-delay in `UCPToffDelay[i]` and an automatic cutoff (staircase lighting timer) in `UCPTautoOffTime[i]`. When the auto-off time is running, the `UCPTrestartAutoOffTimer[i]` parameter defines if the timer can be restarted and `UCPTbreakAutoOffTimer[i]` defines if it can be stopped before the time has expired.

Dimming (with Easy Control)

According to LONMARK the switch input network variable `nviLALampValue[i]` is intended to be also used for dimming.

The Lamp Actuator provides an extra setting input network variable `nviLAEasyControl[i]` for dimmer devices, by which relative changes in brightness and switching-on at a memory value can be realised.

By `.function = SET_UP` or `.function = SET_DOWN` the light is dimmed relatively the amount defined in the corresponding `.setting` field. By `.function = SET_STOP` ongoing fades are stopped. When the light is switched off by `.function = SET_OFF`, the last light level is saved temporarily and next time `.function = SET_ON` is selected the light is switched on at the memory value. An absolute level setting on a certain brightness value is accomplished by `.function = SET_STATE`.

When Easy Control is used, the time to fade from 0 to 100 % is configured in the `UCPTdimTime[i]` parameter.

The different fields of the `UCPTvalueChangeMode[i]` parameter determine individual times for fading-on (`.SoftOn`), fading-off (`.SoftOff`) and cross-fading (`.SoftChange`). Cross-fading is needed e.g. to change brightness when a new scene is recalled during scene control.

To reduce bus load, the `UCPTfeedbackDelay[i]` parameter defines a time between receive of an update and transmission of the corresponding feedback value. So, the feedback value is not transmitted via the `nvoLALampValueFb[i]` output until the ongoing fade is finished.

Simultaneous brightness-dependent control of several Lamp Actuators

The Lamp Actuator object can be used to control several switching/dimming actuators simultaneously, in dependence of a light level.

Via the `nviLALampValue[i]` inputs a percentile light value is demanded e. g. by a constant light controller or a building management and supervising system. The manual control working relative to this default value is caused by the input `nviLAEasyControl[i]`. That can be used to manually switch the light off locally resp. to switch it on at the dimming level demanded.

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When the light is switched off by `nviLAEasyControl[i].function = SET_OFF`, the most recent light level is saved temporarily (memory function) and propagated next time the light is switched on by `.function = SET_ON`. If `nviLALampValue[i]` is updated by a new light value while the light is switched off, the new value will be adopted as new initial switch value. Next time the light is switched on this new light value is propagated.

`nviLALampValue[i]` is disabled when the `nviLAEasyControl` value is `SET_OFF` or `SET_STATE`. If the `nviLALampValue[i]` input is set at an undefined value (`.state = -1`), the light is controlled via `nviLAEasyControl[i]`.

While the light is switched off, the current value of `nviLALampValue` is the same as the memory value. At reset or when `nviLALampValue` receives an undefined value while the light is off, the memory value is set at 100 %.

The light can be dimmed up (`SET_UP`) or down (`SET_DOWN`) locally by `nviLAEasyControl[i]` causing an offset value to the initial set point. This offset will be reused when a new set point value has been received through `nviLALampValue[i]`.

If a light level that has been adjusted locally shall be maintained (the value setting on `nviLALampValue[i]` is disabled), the light has to be controlled by `nviLAEasyControl[i].function = SET_STATE` (e. g. used to recall fixed scene settings).

Prioritised Control

By default configuration, messages received by the `nviLAManOverride[i]` input control the corresponding output directly (without timers) and disable the `nviLALampValue[i]` and `nviLAEasyControl[i]` input. To release the latter, the `.state` field of `nviLAManOverride[i]` has to be set at -1 (undefined). The hardware output then adopts the value configured in `UCPTlampValueAfterOverride[i]`.

Safety functions

The position the actuator adopts at reset is defined in the `UCPTdefaultLampValue[i]` parameter.

The `SCPTlaMaxRcvTime[i]` parameter is used to monitor communication. If the corresponding Lamp Actuator input has not been updated within the time defined in this parameter, a transmission failure is assumed and the actuator adopts the position configured in `UCPTrcvFailureLampValue[i]`.

Constant Light Controller

Daylight-dependent light control

The Constant Light Controller can control several lighting bands daylight-dependently.

The measuring value of a LON brightness sensor in `nviCLluxLevel[i]` is internally converted according to the illumination-level on the reference area (e. g. on the desk surface) and it is used as current value for the control algorithm.

Both inside and shaded outside light sensors (respectively inside light sensors which are aligned in direction to the windows) can be used for control.

The network variable input `nviCLsetting[i]` switches the controller on and off. Furthermore this input can be used for manual control and temporary adaptation of the setpoint value.

The variable `nviCLluxLevel[i]` contains always the current valid setpoint. After reset the configured value of `SCPTluxSetpoint[i]` is displayed. This one can be changed from extern, e. g. to avoid glare effects in floors while switching on with the day setpoint at night.

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Prioritised control

The input `nviCLmanOverride[i]` has got the highest priority. A value received on this input is passed to the first lamp output directly and to the second output with the configured difference. Consequently this input can be also used as extension input for a third lighting band.

Several lighting bands

The inner lighting band is controlled through `nvoCLlampValue[i]`, the window site via `nvoCLsecondLamp[i]`. The maximum difference, resulting when the light band at the window is still switched off, can be configured in `UCPTclMaxDifference`. The second lighting band is switched on and off by the controller too according need.

Further lighting bands can be controlled through additional Constant Light Controllers by means of binding from `nvoCLlampValue[i]` of the active controller to `nviCLmanOverride[i]` of these objects.

The controller

The controller is a nonlinear state controller (Fuzzy based) which can be used both for regulation (with measuring of the room illumination) and for control (with use of an outside light sensor or a measuring aligned in direction to the window).

With an enabled controller the object works always as control in order to switch on the lighting by a lux value close to the setpoint. However, cold lighting ballasts may cause a low initial illumination in the room. This is well accepted, because thus the subjective sensitivity of the user is quite compensated. This proceeding avoids a lower dimming operation by the user (after warm up period) due subjective impression.

After switching on and also with setpoint changes the controller holds the adjusted value to force the lamps on operation temperature or that the light sensor can update the lux value before it starts to control. If its switched off and already switched on within these 30 s, the lamps are switched on the same value.

The control speed is dynamically changed according to control tolerance. The maximum step level in `nvoCLlampValue[i]` can be modified through `SCPTstep[i]`. The step level for `nvoCLsecondLamp[i]` results from that and is a little bit higher if necessary. With a control cycle time of 1 s and a step level of 3 % (default value) the total dimming time (0 .. 100 %) amounts to 33 s.

If the calculated lux value remains close to the reference point for the time configured in `SCPTclOffDelay[i]`, thus it is switched off automatically. This is valid as well for automatic switching on and `SCPTclOnDelay[i]`.

The automatic switching can be each disabled by zero delay time.

Note for observing network variables

The controller does not control on `nviCLluxLevel[i] = nviCLluxSetpoint[i]`, but it controls on the internal calculated lux value on the reference area.

Commissioning as regulator

1. First all required bindings must be established. The room should be completely fitted out to avoid problems through changing reflection conditions after removal.
2. Calibration of the light sensor by a lux-meter, i. e. the lux value on the reference area (e. g. desk plate) must be determined at daylight. The best result is achieved, if the lux value is very close to the setpoint.
3. If `nvoCLsecondLamp[i]` is bound, the maximum difference (`UCPTclMaxDifference[i]`) between both regulating units can be adapted. For this, `UCPTclMaxDifference[i]` (preferably at cloudy weather) must be changed in the way that the lux value measured by the lux-meter is minimized below of both lighting groups after a received SET_ON at the input in `nviCLsetting[i]`.

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In most use cases the previously documented procedure is sufficient for commissioning of the controller and a calibration of the controller is not required (point 3 + 4), since the default settings already achieve good results. However, if there should be any need for further optimization of the control, please follow the next steps.

4. To compensate the light sensor's different sensitivity for day and artificial light, the artificial light factor (UCPTartificialLightFactor) has to be found out. For that the difference of lux value on the reference area caused by the artificial light and its corresponding change, which is measured by the light sensor on the ceiling, has to be determined. Please follow the next steps:
Do the natural light darken (if possible) and set all controlled light bands at the maximum value by `nviCLsetting[i].function = SET_STATE` and `.setting = 100 %`. Measure the lux value on the reference area by means of a lux-meter and determine the output value of the LON light sensor after a warm up time for the lighting ballasts (the measured lux value remains constant). Then switch off the lamps by `nviCLsetting[i].function = SET_STATE` and `.setting = 0` and update both measuring values. Enter the difference of the lux value on the reference area in `.multiplier` and the lux value difference of the light sensor in `.divisor` of the configuration property `UCPTartificialLightFactor[i]`.
5. The configuration is now finished.

With varying weather situations the real value on the reference area may differ from the internally calculated value. If later noticed, that therefore the room is generally too dark, `UCPTartificialLightFactor.divisor` can be a little increased (and vice versa).

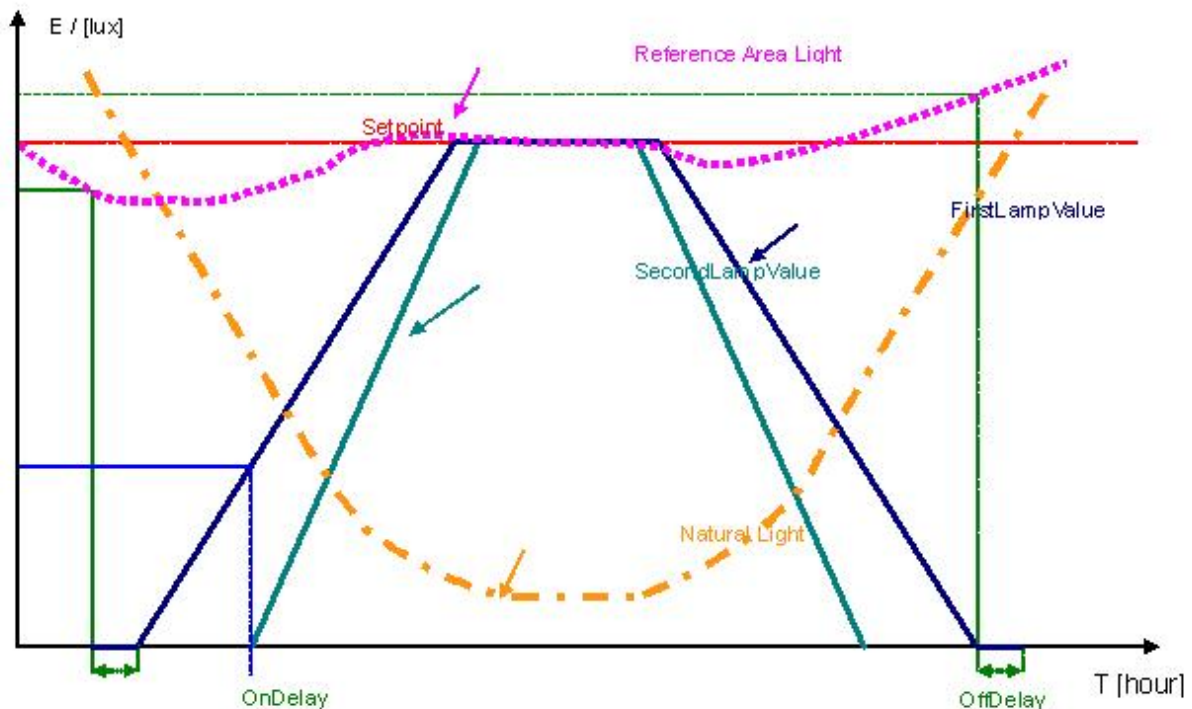
Commissioning as controller

1. First all required bindings must be established. The room should be completely fitted out to avoid problems through changing reflection conditions after removal.
2. Please follow the next steps to determine the artificial light factor `UCPTartificialLightFactor`:
Do the natural light darken (if possible) and set all controlled light bands at the maximum value by `nviCLsetting[i].function = SET_STATE` and `.setting = 100 %`. Measure the lux value on the reference area by means of a lux-meter. Then switch off the lamps by `nviCLsetting[i].function = SET_STATE` and `.setting = 0` and update the measuring value. Enter the difference of the lux value on the reference area in `.multiplier` and set the `.divisor = 1`.
3. Enter the current lux value in the input gain configuration property (`UCPTinputGain.multiplier`) with switched off lighting (`nviCLsetting[i].function = SET_STATE` und `.setting = 0`) on the reference area. Enter the corresponding lux value of the LON light sensor in `.divisor`. The best result is achieved, if the lux value is very close to the setpoint, e. g. at cloudy weather or during dusk.
4. If `nvoCLsecondLamp[i]` is bound, the maximum difference (`UCPTclMaxDifference[i]`) between both regulating units can be adapted. For this, `UCPTclMaxDifference[i]` (preferably at cloudy weather) must be changed in the way that the lux value measured by the lux-meter is minimized below of both lighting groups after a received `SET_ON` at the input in `nviCLsetting[i]`.
5. The operation of light sensor and lamps can be adjusted in 10 % steps to optimize the control characteristic curve. It has to be considered that always a constantly risen characteristic curve must be achieved. Besides of that the sensor type or installation point can influence the control characteristic at different day times and weather situations.
For rough adjustment without consideration of the sensor properties the bound lamps can be dimmed low by 10 % steps and `nviCLsetting[i].function = SET_STATE` (notice the warm up time). Enter the measured difference as 0 % in the corresponding elements of `UCPTsystemCharacteristic[i]`. For that is `i = 0` for 0,5 %; `i = 1` for 10 %; `i = 2` for 20 % and so on. It has to be considered that always a constant sloping characteristic curve must be achieved.
6. The configuration is now finished.

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With varying weather situations the real value on the reference area may differ from the internally calculated value. If later noticed, that therefore the room is generally too dark, UCPTartificialLightFactor.divisor can be a little increased (and vice versa).



Scene Controller Object

Recalling Scenes (with time function)

After the Scene Controller has been enabled by `nviSCSetting[i]` (SET_ON), the stored scene settings can be recalled by `nviSCScene[i].function = SC_RECALL` and the corresponding scene number. The settings are then propagated via the outputs `nvoSCSwitch[i]`, `nvoSCSetting[i]`, `nvoSCLux[i]`, `nvoSCTemp[i]`, `nvoSCOoccupancy[i]` and if provided `nvoSCOccSchedule[i]` and `nvoSCFanSpeedCmd[i]`. Scenes can be delayed by use of the `UCPTsceneKeeperDlyTime[i]` property.

If an output shall not change when a new scene is recalled, the corresponding parameter has to be set at an undefined value under this particular scene number.

Scene settings, that shall be propagated when the controller is turned off, have to be stored under scene number 20. Next time the controller is turned on the last enabled scene is recalled.

Storing Scenes

There are two ways to configure the scene controller memory:

- The scene memory can be configured directly by use of the `UCPTsceneKeeperXXX[i][j]` property.

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- For lighting scenes, the current values of the `nviSCSwitch[i]` and `nviSCLux[i]` input can be stored in the scene memory unit corresponding to the given scene number by a learn command (`nviSCScene[i].function = SC_LEARN`). A long pulse (e.g. initiated by hold of a make-contact element) usually causes this command.

Cross-fading

The `UCPTsceneKeeperDimStepDelay[i]` property determines the time between two consecutively transmitted dim commands and `UCPTsceneKeeperDimStep[i]` defines the step value for cross-fading between two scenes.

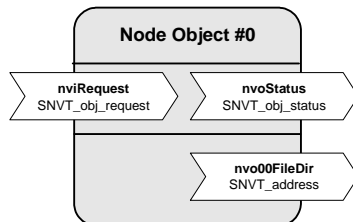
6.1. System requirements

For the configuration of the application a LNS-compatible commissioning tool is needed! All properties are used as "User-defined Configuration Property Types" (UCPT's) by Direct-Memory-Access. For use of these properties, the Device Resource Files" (DRF's) version 1.50 or higher have to be installed **before (!)** a device template is created.

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6.2. Node Objekt (LONMARK[®] profile #0)



Input Network Variables

nviRequest

| | |
|----------------|---|
| Type: | SNVT_obj_request |
| Valid Range: | Valid Object-ID: RQ_NORMAL, RQ_UPDATE_STATUS, RQ_REPORT_MASK |
| Default Value: | RQ_NORMAL |
| Description: | Input, which is used to initiate status messages from the node. |

Output Network Variables

nvoStatus

| | |
|----------------|---|
| Type: | SNVT_obj_status |
| Valid Range: | The supported Status-Bits are: .report_mask, .invalid_id, .invalid_request |
| Default Value: | All bits = 0 |
| Description: | Is sent, when an update occurs in nviRequest. |

Object-global Functions

nvo00FileDir

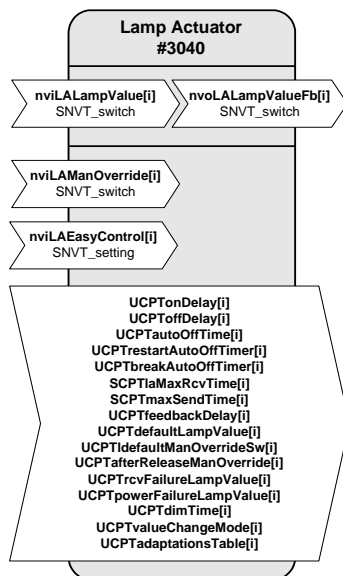
| | |
|----------------|-----------------------------|
| Type: | SNVT_address |
| Valid Range: | 16,384 .. 64,767 |
| Default Value: | Not defined |
| Description: | For internal function only! |

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6.3. Lamp Actuator-Object (LONMARK® profile #3040)

Dimmer Output



Input Network Variables

nviLALampValue[i] – Value input, standard priority

| | |
|----------------|---|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1 On: .state = 1 and .value > 0 Off: .state = 0 and .value = any or .state = 1 and .value = 0 |
| Default Value: | Value of UCPTdefaultLampValue[i]. |
| Description: | Standard input, used to control the corresponding hardware output. This input can only switch on the hardware output if the nviLAEasyControl[i] input is at SET_NUL. If the light has been switched off via nviLAEasyControl[i], the memory light level can be varied by use of this input. (It cannot be set at 0 so that switching-on always remains possible). |

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Input Network Variables

nviLManOverride[i] – Prioritized control

| | |
|----------------|---|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 On: .state = 1 and .value > 0 Off: .state = 0 and .value = any or .state = 1 and .value = 0 Disabled: .state = -1 |
| Default Value: | Value of UCPTdefaultManOverrideSw[i] |
| Description: | This input controls the corresponding hardware output with higher priority than <code>nviLALampValue[i]</code> . Messages received via this input control the corresponding output directly (without timers). To release the output for other commands, the <code>.state</code> field of this input has to be set at -1 (undefined). The output then adopts the position defined in <code>UCPTafterReleaseManOverride[i]</code> . |

nviLEasyControl[i] – Relative light control

| | |
|----------------|--|
| Type: | SNVT_setting |
| Valid Range: | .function: SET_OFF, SET_ON, SET_UP, SET_DOWN, SET_STATE .setting: 0 .. 100 % |
| Default Value: | .function = SET_OFF .setting = 0 |
| Description: | This setting input is used to control the corresponding output. It has the same priority as the <code>nviLALampValue[i]</code> input but provides a greater functional range. If <code>.function =</code> <p>SET_STATE: The <code>.setting</code> value of this input is interpreted like the <code>.value</code> field of a switch input. Depending on further configuration, the light is directly switched or faded at this value.</p> <p>SET_UP/ SET_DOWN: The light level of the corresponding output is increased or decreased relatively by the amount defined in the <code>.setting</code> field. If <code>nviLALampValue[i]</code> is bound, dim commands received at this input cause a temporary offset to the light level demanded there. Next time the light is switched on, this offset is cancelled.</p> <p>SET_STOP: Stops an ongoing fade.</p> <p>SET_OFF: The output is switched off and the last light level is saved temporarily.</p> <p>SET_ON: The output is switched on at the light level saved last resp. the current value of <code>nviLALampValue[i]</code>.</p> <p>When this input is bound, the fade/brightness range is only adjusted by use of the Lamp Actuator object. Configurations in the switch object remain unconsidered.</p> |

Output Network Variables

nvoLALampValueFb[i] – Value feedback output

| | |
|----------------|--|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 On: .state = 1 and .value > 0 Off: .state = 0 and .value = any or .state = 1 and .value = 0 |
| Default Value: | Value of UCPTdefaultLampValue[i]. |
| Description: | Propagates the state of the Lamp Actuator and the percentage level of intensity, either directly with every update or with delay which can be defined in <code>UCPTfeedbackDelayTime[i]</code> . |

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Configuration Properties

UCPTonDelay[i] – On-delay

| | |
|----------------|---|
| Type: | UNVT_time_sec |
| Valid Range: | 0 .. 65,534 s Resolution: 1 s |
| Default Value: | 0 (disabled) |
| Description: | Time between receive and completion of an ON command. This time starts to run when <code>nviLALampValue[i]</code> or <code>nviLAEasyControl[i]</code> receives an ON command. Any ON commands following within this time remain unconsidered. |

UCPToffDelay[i] – Off-delay

| | |
|----------------|--|
| Type: | UNVT_time_sec |
| Valid Range: | 0 .. 65,534 s Resolution: 1 s |
| Default Value: | 0 (disabled) |
| Description: | Time between receive and completion of an OFF command. This time starts to run when <code>nviLALampValue[i]</code> or <code>nviLAEasyControl[i]</code> receives an OFF command. Any OFF commands following within this time remain unconsidered. |

UCPTautoOffTime[i] – Auto-off time

| | |
|----------------|---|
| Type: | UNVT_time_sec |
| Valid Range: | 0 .. 65,534 s Resolution: 1 s |
| Default Value: | 0 (disabled) |
| Description: | When this time has expired, the output switches off automatically without receiving an OFF command (staircase lighting timer). The time starts to run when <code>nviLALampValue[i]</code> or <code>nviLAEasyControl[i]</code> receives an ON command. |

UCPTrestartAutoOffTimer[i] – Restart auto-off timer

| | |
|----------------|---|
| Type: | UNVT_boolean |
| Valid Range: | TRUE, FALSE |
| Default Value: | TRUE |
| Description: | Defines if the auto-off timer (<code>UCPTautoOffTime[i]</code>) is restarted with every ON command, even if the light already is on (TRUE), or not (FALSE). |

UCPTbreakAutoOffTimer[i] – Break auto-off timer

| | |
|----------------|--|
| Type: | UNVT_boolean |
| Valid Range: | TRUE, FALSE |
| Default Value: | FALSE |
| Description: | Defines if the timer can be stopped/the output can be switched off by an OFF command, even if the auto-off time (<code>UCPTautoOffTime[i]</code>) is running (TRUE), or not (FALSE). |

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Configuration Properties

SCPTlMaxRcvTime [i] – Maximum receive time

| | |
|----------------|--|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553 s (Resolution: 0.1s) |
| Default Value: | 0 (disabled) |
| Description: | The maximum period of time that may expire with no updates on the nviLALampValue [i] or nviLAEasyControl [i] input before a transmission failure is assumed. The output then adopts the position defined in the UCPTrcvFailureLampValue [i] parameter. |

SCPTmaxSendTime [i] – Maximum send time

| | |
|----------------|--|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553 s Resolution: 0.1 s |
| Default Value: | 0 (disabled) |
| Description: | The maximum period of time that does expire before the next recent update value is transmitted through nvoLALampValueFb [i]. |

UCPTfeedbackDelay [i] – Feedback delay

| | |
|----------------|---|
| Type: | UNVT_time_msec |
| Valid Range: | 0 .. 65,534 ms Resolution: 1 ms |
| Default Value: | Dimmer/Control Outputs = 300 ms |
| Description: | Defines the time by which the feedback value transmitted via the nvoLALampValueFb [i] output is delayed. This time restarts to run with every update received. This parameter is needed to reduce bus load whilst fading. Therefore, the time defined here has to be greater than the time between two dim commands. |

UCPTdefaultLampValue [i] – Default lamp value

| | |
|----------------|---|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, (partly also -1) On: .state = 1 and .value > 0 Off: .state = 0 and .value = any or .state = 1 and .value = 0 Disabled: .state = -1 |
| Default Value: | .value = 0 .state = 0 |
| Description: | Determines the position the input adopts at power-on, reset or due to the logic operation. If .state = -1 this parameter is disabled and the output remains its current state. |

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Configuration Properties

UCPTldefaultManOverrideSw[i] – Standard override lamp value

| | |
|----------------|--|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 On: .state = 1 and .value > 0 Off: .state = 0 and .value = any or .state = 1 and .value = 0 Disabled: .state = -1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Value the input adopts when the device's power supply does return, a reset does occur, or the logical operation does generate an appropriated result. If .state = -1, this parameter is disabled and the output remains its current state. |

UCPTafterReleaseManOverride[i] – Override lamp value after release

| | |
|----------------|--|
| Type: | UNVT_switch_cfg |
| Valid Range: | .function: SW_NUL, SW_HOLD, SW_VALUE .value: 0 .. 100 % |
| Default Value: | .function = SW_NUL .value = 0 |
| Description: | Output value when the prioritised Input <code>nviLAManOverride[i]</code> has been released. SW_NUL: Current input value of <code>nviLALampValue[i]</code> is adopted SW_HOLD: Current state of the output channel is remained SW_VALUE: The output channel adopts the configured value in <code>.value</code> |

UCPTrcvFailureLampValue[i] – Receive failure lamp value

| | |
|----------------|---|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 On: .state = 1 and .value > 0 Off: .state = 0 and .value = any or .state = 1 and .value = 0 Disabled: .state = -1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Value the actuator adopts if no update is received within the maximum receive time (<code>SCPTlaMaxRcvTime[i]</code>). If .state = -1, this parameter is disabled and the output remains its current state. |

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Configuration Properties

UCPTpowerFailureLampValue[i] – Power failure lamp value

| | |
|----------------|---|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 On: .state = 1 and .value > 0 Off: .state = 0 and .value = any or .state = 1 and .value = 0 Disabled: .state = -1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Value the actuator adopts at power-down. If .state = -1, this parameter is disabled and the output remains its current state. |

UCPTdimTime[i] – Total dim time

| | |
|----------------|---|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553.5 s (Resolution: 0,1 s) |
| Default Value: | 4s |
| Description: | Defines the time to fade the total range from 0 to 100 % (light level). Needed when the Easy Control function is used in combination with SET_UP/SET_DOWN commands. |

UCPTvalueChangeMode[i] – Fading times

| | |
|----------------|--|
| Type: | UNVT_change_md |
| Valid Range: | .SoftOn: 0 .. 6,553.5 s .SoftOff: 0 .. 6,553.5 s .SoftChange: 0 .. 6,553.5 s |
| Default Value: | .SoftOn = 0 .SoftOff = 0 .SoftChange = 0 |
| Description: | Defines the fading times the output needs to adopt a certain light level. .SoftOn: Defines the time for fading-on when the output is switched on. .SoftOff: Defines the time for fading-off when the output is switched off. .SoftChange: Defines the time for cross-fading when the output value shall be directed to a new light level (e. g. needed when a new scene setting is recalled). |

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Configuration Properties

UCPTadaptationsTable[i] - Adaptation table

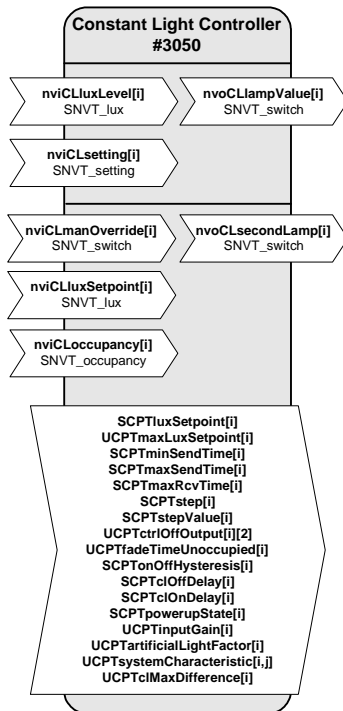
| | | |
|----------------|--|---|
| Type: | UNVT_adapt_tbl | |
| Valid Range: | 0 .. 255, for Byte[0] .. Byte[21] each | |
| Default Value: | for 1 – 10 V electronic ballasts: | Linear correlation of <code>nviXXX.value</code> and 1 – 10 V control voltage (characteristic curve already adjusted logarithmically within the electronic ballast). |
| | for phase controlled dimmers: | Logarithmic characteristic curve of the luminous flux for conventional incandescent and halogen lamps, adjusted to human perception of brightness changes. |
| | for DALI devices: | Logarithmic characteristic curve of the relative luminous flux and <code>nviXXX.value</code> , adjusted to human perception of brightness changes. |
| Description: | Used to adjust the characteristic curve of the connected hardware to human perception of brightness changes so, that the light level transmitted in the LON message is correlated linearly to human perception of brightness. For DALI devices a plug-in is provided which adjusts the characteristic curve to real device data automatically. Further adjustment is usually not necessary. | |

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6.4. Constant Light Controller (LONMARK® profile #3050)

Daylight-dependent light control



Input Network Variables

nviCLluxLevel[i] – Brightness-level input

| | |
|----------------|--|
| Type: | SNVT_lux |
| Valid Range: | 0 .. 65,535 lux |
| Default Value: | 0 |
| Description: | This input provides the current brightness level measured by the light sensor. |

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Input Network Variables

nviCLsetting[i] – Operating mode input

| | |
|----------------|--|
| Type: | SNVT_setting |
| Valid Range: | .function: SET_OFF, SET_ON, SET_UP, SET_DOWN .setting: 0 .. 100 % .rotation: -359,98° .. 360° |
| Default Value: | UCPTpowerupState[i] |
| Description: | Enables (SET_ON) or disables (SET_OFF) the daylight-dependent light control. SET_OFF turns off the controller and nvoCLlampValue[i] and nvoCLsecondLamp[i] are set at {0; 0}. SET_ON turns on the controller which then starts to control the lamp value closed to the adjusted setpoint. nvoCLlampValue[i] can manually be dimmed by SET_UP and SET_DOWN. The configuration properties SCPTstepValue[i] and SCPTminSendTime[i] define the process time. During this time, the control is disabled. After the manual operation, the current brightness value is used as temporarily setpoint for the restarted control. SET_STATE sets both outputs to the value of .setting. The control is disabled. The next SET_ON command enables the setpoint stored in SCPTluxSetpoint[i] corresponding also the value in nviCLluxSetpoint[i]. |

nviCLmanOverride[i] – Manual override input

| | |
|----------------|---|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 |
| Default Value: | .value: 0 .state: -1 |
| Description: | .state = -1: control enabled .value <= 100, .state = 0/1: control disabled The received value is directly passed to the nvoCLlampValue[i] output. nvoCLsecondLamp[i] is set according to the offset defined in UCPTclMaxDifference[i]. By .state= -1 the priority control is released. |

nviCLluxSetpoint[i] – Brightness-level setpoint input

| | |
|----------------|--|
| Type: | SNVT_lux |
| Valid Range: | 0 .. 65,535 lux |
| Default Value: | SCPTluxSetpoint[i] |
| Description: | Determines the current brightness-level setpoint of the controller. A defined value received at this input disables the setpoint of SCPTluxSetpoint[i] and replaces it. nviCLluxSetpoint[i] = 0 enables the setpoint value in SCPTluxSetpoint[i] again. After reset SCPTluxSetpoint[i] is valid. |

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Input Network Variables

nviCLOccupancy[i] – Occupancy input

| | |
|----------------|---|
| Type: | SNVT_occupancy |
| Valid Range: | OC_NUL, OC_OCCUPIED, OC_UNOCCUPIED; OC_BYPASS; OC_STANDBY |
| Default Value: | OC_OCCUPIED |
| Description: | The nviCLOccupancy is another way how to launch the daylight-dependent controller. Besides the nviCLsetting which turns on and off (SET_ON/SET_OFF), the command OC_OCCUPIED and OC_UNOCCUPIED to nviCLOccupancy can be used in similar way. Nevertheless the nviCLsetting has got higher priority than nviCLOccupancy. Once you send SET_ON, SET_OFF, SET_STATE values to nviCLsetting, the nviCLOccupancy is disabled until the next SET_NUL command. The SET_NUL resets the controller to "initial" state, so right after it, the controller could be turned on/off also by OC_OCCUPIED/OC_UNOCCUPIED command sent to nviCLOccupancy. In this case the SET_UP and SET_DOWN could be used in the way described above in nviCLsetting. However the next SET_ON, SET_OFF, SET_STATE commands sent to nviCLsetting force themselves, take over the control and disable nviCLOccupancy. OC_BYPASS, OC_STANDBY and OC_NUL behave as OC_UNOCCUPIED. |

Output Network Variables

nvoCLlampValue[i] – Lamp value primary output

| | |
|----------------|---|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Provides the state and the percentage level of intensity for a dimm or switch actuator (lamp actuator) calculated by the controller or by manual adjustment. The output is usable to interconnect an additional lighting controller for more than two lighting bands. |

nvoCLsecondLamp[i] – Lamp value secondary output

| | |
|----------------|--|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Secondary output to control another lighting band by reduced brightness-level (e. g. at the window). UCPTmaxDifference[i] defines the value differing from the output value in nvoCLlampValue[i]. The difference works dynamically over the total range (high difference by a high part of daylight; low difference by a high part of artificial light). |

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Configuration Properties

SCPTluxSetpoint [i] – Brightness-level setpoint

| | |
|----------------|---|
| Type: | SNVT_lux |
| Valid Range: | 0 .. 65,534 lux |
| Default Value: | 500 lux |
| Description: | Defines the brightness-level setpoint, which is adopted by <code>nviCLluxSetpoint[i]</code> at reset or when the controller is turned on. This value is operated until <code>nviCLluxSetpoint[i]</code> is updated. |

UCPTmaxLuxSetpoint [i] – Maximum brightness-level setpoint

| | |
|----------------|--|
| Type: | SNVT_lux |
| Valid Range: | 0 .. 65,534 lux |
| Default Value: | 0 (no max setpoint defined) |
| Description: | Maximum brightness-level value which can be manually adjusted via <code>nviCLluxSetpoint[i]</code> |

SCPTminSendTime [i] – Minimum send time

| | |
|----------------|---|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553.5 s |
| Default Value: | 0.2 s |
| Description: | Sets the minimum period of time between output network variable transitions. Reduces the network load. This configuration property is valid for the control only, not for manual dimming. |

SCPTmaxSendTime [i] – Maximum send time

| | |
|----------------|---|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553.5 s |
| Default Value: | 300 s |
| Description: | Sets the maximum period of time before the associated output network variables are automatically updated. A value of zero (0) disables this function. |

SCPTmaxRcvTime [i] – Maximum receive time

| | |
|----------------|---|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553.5 s |
| Default Value: | 0 (disabled) |
| Description: | Sets the maximum time that elapses after an update to the bound <code>nviCLluxSetpoint[i]</code> . If no update value is received, a failure in the LON network is assumed. A value of zero (0) disables this function. |

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Configuration Properties

SCPTstep[i] – Maximum step

| | |
|----------------|--|
| Type: | SNVT_lev_cont |
| Valid Range: | 0 .. 100 % |
| Default Value: | 3 % |
| Description: | Sets the maximum step that the controller is allowed to take to approach the target level. |

SCPTstepValue[i] – Master fade step value

| | |
|----------------|---|
| Type: | SNVT_lev_cont |
| Valid Range: | 0 .. 100 % |
| Default Value: | 5 % |
| Description: | Maximum fade step value which is used for manual control. |

UCPTctrlOffOutput[i] – Output values in OFF state

| | |
|----------------|--|
| Type: | UNVT_switch_cfg |
| Valid Range: | .function: 0, 1, -1 .value: 0 .. 100 % |
| Default Value: | .function: SW_VALUE .value: 0 |
| Description: | The value the controller output adopts, in off or unoccupied. The first value is related to nvoCLlampValue, the second value is related to nvoCLsecvondLamp. |

UCPTfadeTimeUnoccupied[i] – Fade time unoccupied

| | |
|----------------|--|
| Type: | SNVT_time_sec |
| Valid Range: | 0.0 .. 6553.5 sec |
| Default Value: | 0.0 |
| Description: | The desired time to fade to zero, when unoccupied. |

SCPTonOffHysteresis[i] – On/Off hysteresis

| | |
|----------------|--|
| Type: | SNVT_lev_cont |
| Valid Range: | 0 .. 100 % |
| Default Value: | 5 % |
| Description: | Sets the hysteresis for the illumination-level setpoint to switch on and off the lamp brightness-dependently and automatically. A value of zero (0) disables this function. The lamp output is switched off if the ambient level is higher than setpoint value plus relative hysteresis for over a period defined by SCPTc1OffDelay[i]. The lamp output is again switched on if the ambient level is below the setpoint value minus relative hysteresis for over a period defined by SCPTc1OnDelay[i]. |

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Configuration Properties

SCPTc1OffDelay[i] – Controller off-delay

| | |
|----------------|--|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553.5 s |
| Default Value: | 300 s |
| Description: | This configuration property is used to determine the delay after which the lamp value output is switched off. The controller is only switched off after this delay if the lamp value output is 0% and the ambient level exceeds the setpoint value plus the relative hysteresis level defined by SCPTonOffHysteresis[i]. A value of zero (0) disables this function. |

SCPTc1OnDelay[i] – Controller on-delay

| | |
|----------------|--|
| Type: | SNVT_time_sec |
| Valid Range: | 0 .. 6,553.5 s |
| Default Value: | 0.1 s |
| Description: | This configuration property is used to determine the delay after which the lamp value output is switched on. The controller is only switched on after this delay if the lamp value output was switched off and the ambient level is now lower than the setpoint value minus the relative hysteresis level defined by SCPTonOffHysteresis[i]. A value of zero (0) disables this function. |

SCPTpowerupState[i] – Power-up state

| | |
|----------------|---|
| Type: | SNVT_setting |
| Valid Range: | .function: SET_OFF, SET_ON |
| Default Value: | .function: SET_OFF |
| Description: | The state of the constant light controller after power-up or reset. |

UCPTinputGain[i] – Input gain

| | |
|----------------|--|
| Type: | SNVT_muldiv |
| Valid Range: | .multiplier: 0 .. 65,535 .divisor: 0 .. 65,535 |
| Default Value: | .multiplier: 1 .divisor: 1 |
| Description: | Input gain to adapt the sensor value in nviCLluxLevel[i] to the value on the reference area. Is necessary for the use of one sensor for several controllers. |

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UCPTartificialLightFactor[i] – Artificial light factor

| | |
|----------------|--|
| Type: | SNVT_muldiv |
| Valid Range: | .multiplier: 0 .. 65,535 .divisor: 0 .. 65,535 |
| Default Value: | .multiplier: 700 .divisor: 350 |
| Description: | Configures the artificial light part of the measured illumination-level. The method of the measuring of this value is exactly described by the functional section in this document. |

UCPTsystemCharacteristic[i][j] – System characteristic

| | |
|----------------|--|
| Type: | SNVT_lev_cont |
| Valid Range: | [0] .. [10]: 0 .. 100 % |
| Default Value: | [0] = 1 % [1] = 1.5 % [2] = 2.5 % [3] = 4 % [4] = 6.5 % [5] = 10 % [6] = 16 % [7] = 25 % [8] = 40 % [9] = 64 % [10] = 100 % |
| Description: | Determines the characteristic of the control loop. The method of the finding of these values is exactly described by the functional section in this document. |

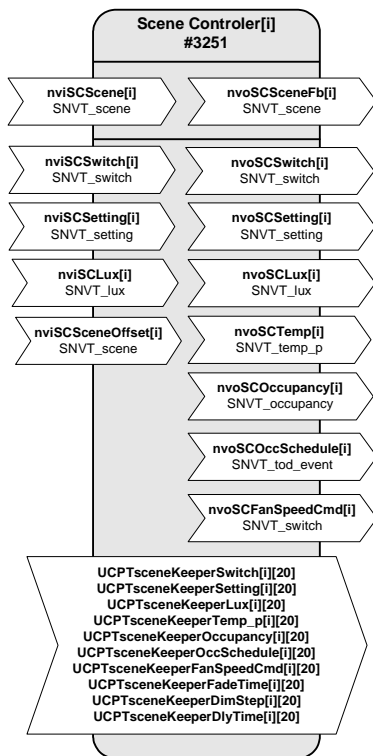
UCPTclMaxDifference[i] – Maximum difference

| | |
|----------------|---|
| Type: | SNVT_lev_cont |
| Valid Range: | 0 .. 100 % |
| Default Value: | 30 % |
| Description: | Maximum difference value between <code>nvoCLlampValue[i]</code> and <code>nvoCLsecondLamp[i]</code> . The second, outer lighting band is switched on when the inner lighting band has met this set value. |

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6.5. Scene Controller Object (LONMARK® profile #3251)



Input Network Variables

nviSCscene [i] – Scene trigger input

| | |
|----------------|--|
| Type: | SNVT_scene |
| Valid Range: | .function: SC_RECALL, SC_LEARN .scene_number: 1 .. 20 |
| Default Value: | .function = SC_RECALL .scene_number = 0 |
| Description: | This input triggers a scene (SC_RECALL) or loads the scene-preset memory with current values (SC_LEARN). Memory units for 20 scenes are provided. By SC_RECALL, the scene settings stored under the chosen .scene_number are recalled. The recall command can be delayed by the time defined in UCPTsceneKeeperDlyTime[i]. An SC_LEARN command stores the current values of nviSCswitch[i] and nviSCLux[i] in the scene memory unit corresponding to the given .scene_number. A scene number zero does not cause any control action (only needed for default before commissioning/at reset). |

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Input Network Variables

nviSCswitch[i] – Direct control input

| | |
|----------------|--|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Updates of this input are directly passed to the <code>nvoSCswitch[i]</code> output. This input overrides other inputs and ongoing fades/delays. Thus, scene settings can be modified e. g. manually. When <code>nviSCscene</code> receives a <code>SC_LEARN</code> command the value in <code>nviSCswitch</code> is stored in the scene memory. Storing is enabled only when the <code>nviSCswitch</code> is connected. |

nviSCsetting[i] – Controller enabling/disabling input

| | |
|----------------|---|
| Type: | SNVT_setting |
| Valid Range: | .function: SET_ON, SET_OFF |
| Default Value: | .function = SET_ON .setting = 0 .rotation = 0 |
| Description: | Used to turn the controller on and off. A <code>SET_ON</code> command recalls the last scene. When the controller is turned off (<code>SET_OFF</code>), the scene stored in memory unit no. 20 is propagated without any configured delays. |

nviSCLux[i] – Brightness input

| | |
|----------------|---|
| Type: | SNVT_lux |
| Valid Range: | 0 .. 65,534 lux |
| Default Value: | 0 |
| Description: | Input for a brightness value [lux], which is stored in the scene memory when <code>nviSCscene</code> receives a <code>SC_LEARN</code> command. Storing is enabled only when the <code>nviSCLux</code> is connected. |

nviSCSceneOffset[i] – Scene offset input

| | |
|----------------|---|
| Type: | SNVT_scene |
| Valid Range: | .function: SC_RECALL .scene_number:1-20 |
| Default Value: | .function =SC_NUL .scene_number=255 |
| Description: | The value stored at <code>.scene_number</code> is added to the <code>.scene_number</code> values of <code>nviSCScene[i]</code> . For invalid values (addition of both scene numbers > 20), a value of 0 is assumed. |

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Output Network Variables

nvoSCsceneFb[i] – Scene feedback value

| | |
|----------------|--|
| Type: | SNVT_scene |
| Valid Range: | .function: SC_RECALL, SC_LEARN .scene_number: 1 .. 20 |
| Default Value: | .function: = SC_NUL .scene_number: = 255 |
| Description: | Propagates the current state of the scene controller to the network. |

nvoSCswitch[i] – Switch output

| | |
|----------------|--|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Provides the value of the UCPTsceneKeeperSwitch[i][j] scene memory for an actuator (e.g. a lamp actuator), whenever a scene change is initiated. |

nvoSCsetting[i] – Setting output

| | |
|----------------|--|
| Type: | SNVT_setting |
| Valid Range: | .function: SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NUL .setting: 0 .. 100 % .rotation: -359.98° .. +360.00° |
| Default Value: | .function = SET_NUL .setting = 0 .rotation = 0 |
| Description: | Provides the value of the UCPTsceneKeeperSetting[i][j] scene memory for a controller (e.g. a sunblind controller). If sunblinds are controlled, information about their position (.setting) and panel angle (.rotation) can be stored in the scene memory. |

nvoSClux[i] – Brightness level output

| | |
|----------------|---|
| Type: | SNVT_lux |
| Valid Range: | 0 .. 65,534 lux |
| Default Value: | 0 |
| Description: | Propagates the brightness level of the UCPTsceneKeeperLux[i][j] scene memory. |

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Output Network Variables

nvoSCtemp[i] – Temperature output

| | |
|----------------|--|
| Type: | SNVT_xxx (Default: SNVT_temp_p) |
| Valid Range: | -273.17 °C .. +327.66 °C |
| Default Value: | 327.67 °C (undefined) |
| Description: | Propagates the temperature value of the UCPTsceneKeeperTemp[i][j] scene memory [°C]. |

nvoSCoccupancy[i] – Occupancy state output

| | |
|----------------|--|
| Type: | SNVT_occupancy |
| Valid Range: | OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL |
| Default Value: | OC_NUL |
| Description: | Propagates the occupancy state defined in the UCPTsceneKeeperOccupancy[i][j] scene memory. |

nvoSCoccSchedule[i] – Occupancy schedule output

| | | | | | | | |
|----------------------|--|-----------------|---|--------------|---|----------------------|---------------|
| Type: | SNVT_tod_event | | | | | | |
| Valid Range: | <table border="0" style="margin-left: 20px;"> <tr> <td>.current_state:</td> <td>OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL</td> </tr> <tr> <td>.next_state:</td> <td>OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL</td> </tr> <tr> <td>.time_to_next_state:</td> <td>0 .. 65,534 s</td> </tr> </table> | .current_state: | OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL | .next_state: | OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL | .time_to_next_state: | 0 .. 65,534 s |
| .current_state: | OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL | | | | | | |
| .next_state: | OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL | | | | | | |
| .time_to_next_state: | 0 .. 65,534 s | | | | | | |
| Default Value: | <table border="0" style="margin-left: 20px;"> <tr> <td>.current_state</td> <td>= OC_NUL</td> </tr> <tr> <td>.next_state</td> <td>= OC_NUL</td> </tr> <tr> <td>.time_to_next_state</td> <td>= 0</td> </tr> </table> | .current_state | = OC_NUL | .next_state | = OC_NUL | .time_to_next_state | = 0 |
| .current_state | = OC_NUL | | | | | | |
| .next_state | = OC_NUL | | | | | | |
| .time_to_next_state | = 0 | | | | | | |
| Description: | Propagates the occupancy states defined in the UCPTsceneKeeperOccSchedule[i][j] scene memory. Uses a different SNVT type than nvoSCoccupancy[i]. In this parameter can be defined after which time the occupancy state changes within the current scene. Needed to control a regulator (e.g. for the “start scene” in a conference room: use heating at full level for 5 minutes, then reduce heat). | | | | | | |

nvoSCfanSpeedCmd[i] – Relative fan speed output

| | | | | | |
|----------------|--|---------|------------|---------|----------|
| Type: | SNVT_switch | | | | |
| Valid Range: | <table border="0" style="margin-left: 20px;"> <tr> <td>.value:</td> <td>0 .. 100 %</td> </tr> <tr> <td>.state:</td> <td>0, 1, -1</td> </tr> </table> | .value: | 0 .. 100 % | .state: | 0, 1, -1 |
| .value: | 0 .. 100 % | | | | |
| .state: | 0, 1, -1 | | | | |
| Default Value: | <table border="0" style="margin-left: 20px;"> <tr> <td>.value</td> <td>= 0</td> </tr> <tr> <td>.state</td> <td>= -1</td> </tr> </table> | .value | = 0 | .state | = -1 |
| .value | = 0 | | | | |
| .state | = -1 | | | | |
| Description: | Propagates the relative fan speed (percentile value) defined in the UCPTsceneKeeperFanSpeedCmd[i][j] scene memory [%]. | | | | |

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UCPTsceneKeeperSwitch[i][j] – Scene keeper switch

| | |
|----------------|--|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Provides direct access to the scene memory to configure SNVT_switch values for every scene. If the switch output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (.state = -1), which is not propagated. |

UCPTsceneKeeperSetting[i][j] – Scene keeper setting

| | |
|----------------|--|
| Type: | UNVT_setting |
| Valid Range: | .function: SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NO_MESSAGE, SET_NUL .setting: 0 .. 100 % .rotation: -359.98° .. +360.00° |
| Default Value: | .function = SET_NUL .setting = 0 .rotation = 0 |
| Description: | Provides direct access to the scene memory to configure SNVT_setting values for every scene. If the setting output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (.function = SET_NUL), which is not propagated. |

UCPTsceneKeeperLux[i][j] – Scene keeper lux

| | |
|----------------|---|
| Type: | SNVT_lux |
| Valid Range: | 0 .. 65,534 lux |
| Default Value: | 0 |
| Description: | Provides direct access to the scene memory to configure brightness levels for every scene. If the brightness level output lux shall not change when a new scene is recalled, this parameter has to be set at an undefined value (0), which is not propagated. |

UCPTsceneKeeperTemp[i][j] – Scene keeper temperature

| | |
|----------------|---|
| Type: | SNVT_temp_p |
| Valid Range: | -273.17 °C .. +327.66 °C |
| Default Value: | 327.67 °C (undefined) |
| Description: | Provides direct access to the scene memory to configure temperatures [°C] for every scene. If the temperature output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (327.67 °C), which is not propagated. Attention: If the type of nvoSCTemp[i] has been changed, the type of this parameter has to be adjusted as well. |

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UCPTsceneKeeperOccupancy[i][j] – Scene keeper occupancy

| | |
|----------------|---|
| Type: | SNVT_occupancy |
| Valid Range: | OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL |
| Default Value: | OC_NUL |
| Description: | Provides direct access to the scene memory to configure occupancy states for every scene. If the occupancy state output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (OC_NUL), which is not propagated. |

UCPTsceneKeeperOccSchedule[i][j] – Scene keeper occupancy schedule

| | |
|----------------|--|
| Type: | SNVT_tod_event |
| Valid Range: | .current_state: OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL .next_state: OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL .time_to_next_state: 0 .. 65,534 s |
| Default Value: | .current_state = OC_NUL .next_state = OC_NUL .time_to_next_state = 0 |
| Description: | Provides direct access to the scene memory to configure changing occupancy states for every scene. If the occupancy schedule output shall not change when a new scene is recalled, this parameter has to be set at an undefined value {OC_NUL; OC_NUL; 0}, which is not propagated. |

UCPTsceneKeeperFanSpeedCmd[i][j] – Scene keeper fan speed command

| | |
|----------------|--|
| Type: | SNVT_switch |
| Valid Range: | .value: 0 .. 100 % .state: 0, 1, -1 |
| Default Value: | .value = 0 .state = -1 |
| Description: | Provides direct access to the scene memory to configure relative fan speeds for every scene. If the relative fan speed output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (.state = -1), which is not propagated. |

UCPTsceneKeeperFadeTime[i][j] – Scene keeper dim step delay

| | |
|----------------|---------------------|
| Type: | UNVT_time_msec |
| Valid Range: | 0 .. 65535 ms |
| Default Value: | 0 (disabled) |
| Description: | Fade time to scene. |

UCPTsceneKeeperDimStep[i][j] – Scene keeper dim step

| | |
|----------------|---|
| Type: | SNVT_lev_cont |
| Valid Range: | 0 .. 100 % |
| Default Value: | 3.5 % |
| Description: | Sets the step value of nvoSCswitch[i].value for cross-fading. |

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UCPTsceneKeeperDlyTime[i][j] – Scene keeper delay

Type: SNVT_time_sec

Valid Range: 0 .. 6,553.4 s

Default Value: 0 (disabled)

Description: Defines the time between recall and performance of the corresponding scene. Only affects the `nvoSCswitch[i]output`.