



LONMARK[®]

Functional Profile:

Constant Light Controller

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Overview

This document describes the profile for a constant light controller object. The controller input is the ambient light level and the output is the state and illumination level to the lamp actuator.

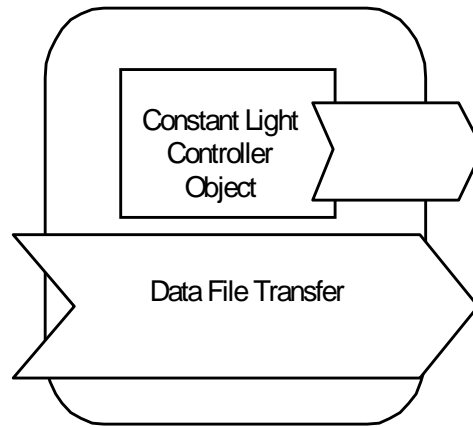
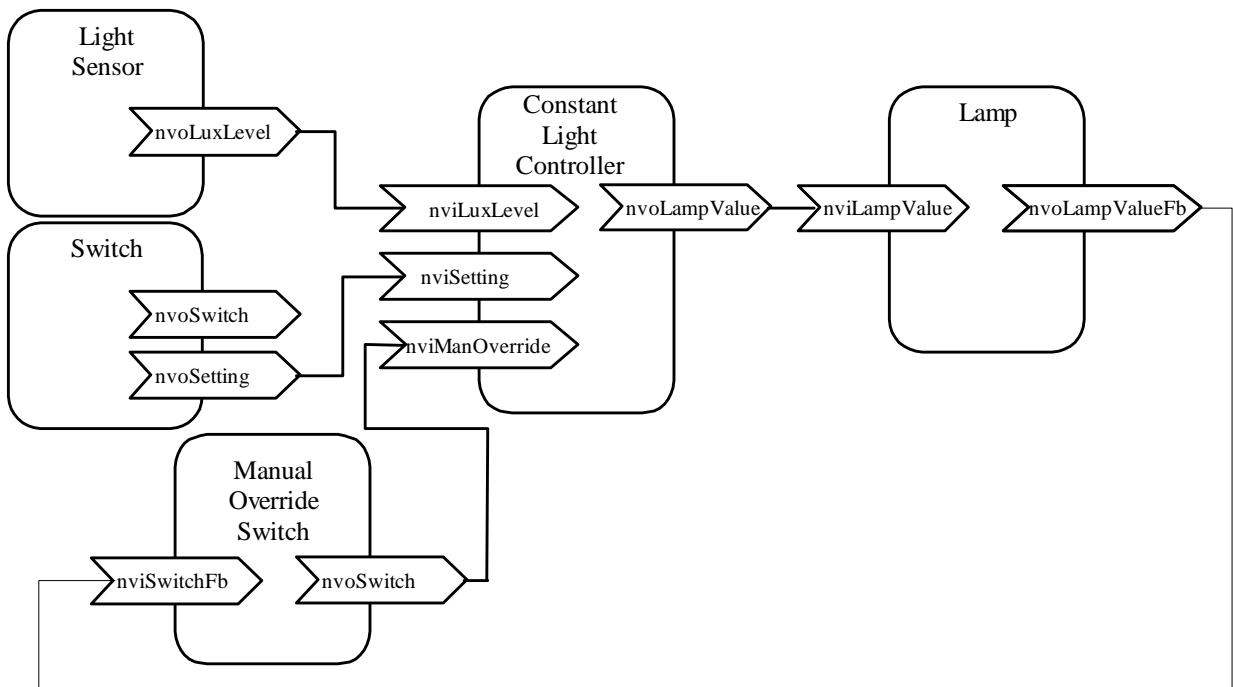


Figure 1.1 Constant Light Controller Functional Profile

Example Usage

Typically the constant light controller input is connected to a light sensor and the output to a lamp. A switch can be used to turn the constant light controller object into AUTO and OFF mode. Also the illumination level setpoint can temporarily be adjusted upwards and downwards. An additional switch can override the controller. When manual override input is written to, the constant light controller object is turned into MANUAL mode and the data is directly passed to the lamp.



Object Details

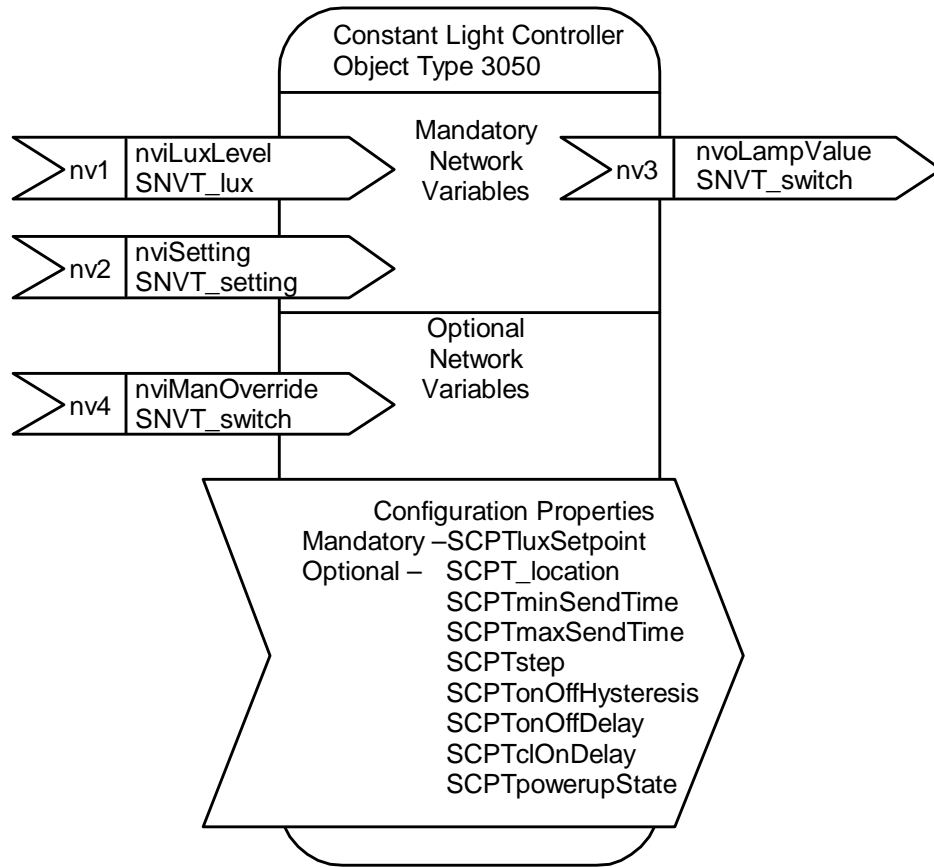


Figure 1.2 Object Details

Table 1 SNVT Details

NV # (M/O)*	Name	In/Out	SNVT Type (SNVT Index)	Class	Description
1 (M)	nviLuxLevel	In	SNVT_lux (79)		Ambient light level input
2 (M)	nviSetting	In	SNVT_setting(117)		mode selection, setpoint adjustment
3 (M)	nvoLampValue	Out	SNVT_switch (95)		Control output for lamp
4 (O)	nviManOverride	In	SNVT_switch (95)		Manual override

* M = mandatory, O = optional

Table 2 SCPT Details

SCPT index (M/O)*	Name	Description
(82) M	SCPTluxSetpoint	Illumination level setpoint
(17) O	SCPT_location	Location label
(52) O	SCPTminSendTime	Minimum period between lamp actuator output updates
(49) O	SCPTmaxSendTime	Maximum period between lamp actuator output updates (heartbeat)
(83) O	SCPTstep	Maximum step of lamp value in AUTO mode
(84) O	SCPTonOffHysteresis	AUTO mode ON/OFF hysteresis
(85) O	SCPTclOffDelay	Delay before switched off if illumination level is too high
(86) O	SCPTclOnDelay	Delay before switched on if illumination level is too low
(87) O	SCPTpowerupState	Controller state after power-up

* M = mandatory, O = optional

Mandatory Network Variables

Illumination Level Input Value

network input SNVT_lux nviLuxLevel;

This input network variable provides the ambient light level.

Valid Range

The valid range is 0-65535 lux with 1 lux resolution, as defined for SNVT_lux.

Setting Input

network input SNVT_setting nviSetting;

This input network variable selects the operating mode and adjusts the setpoint of the constant light controller. Modes are ON, OFF, DOWN or UP. The ON mode

turns on the constant light controller which then starts to control the lamp value output so, that the illumination level provided by the `nviLuxLevel` equals to the setpoint value. The OFF mode turns off the controller and the lamp value output.

The setpoint of the controller can temporarily be stepped upwards and downwards. The changes made to the setpoint value are not stored permanently into the memory. Next time when ON mode is selected the original setpoint value is restored.

Valid Range

The variable `nviSetting` uses `SNVT_setting` enumerations ON, OFF, UP and DOWN. With UP and DOWN functions a percentile value (0%-100% in 0.5% steps) is used to define the relative size of an increment/decrement.

Lamp Value Output

```
network output SNVT_switch nvoLampValue;
```

This output network variable provides the state for the lamp actuator (ON or OFF) and the percentage level of intensity.

Valid Range

The valid range of the state is as defined for `SNVT_switch` where 0 means OFF and 1 means ON. The 8-bit intensity value contains a value 0 to 200, representing minimum to maximum (0%-100%) intensity.

When Transmitted

Whenever the state or intensity of the lamp actuator is required to change.

Update Rate

Defined by configuration parameters Min Send Time, Max Send Time and Send On Delta.

Default Service Type

The default service type is unacknowledged.

Optional Network Variables

Manual Override Input

```
network input SNVT_switch nviManOverride;
```

This input network variable provides the possibility to control manually the lamp value output. When `nviManOverride` receives a new value the constant light controller is turned off, and the input value is directly passed to the lamp value output.

If the state of the received data has value 255 (undefined), the constant light controller is again turned on.

Valid Range

The valid range of the state is as defined for SNVT_switch where 0 means off, 1 means on and 255 means undefined. The 8-bit intensity value goes from 0 to 200, representing minimum to maximum (0%-100%) intensity.

Default Value

None.

Mandatory Configuration Properties

Illumination Level Setpoint

```
network input config SNVT_lux nciLuxSetpoint;
```

This configuration property is used to change the illumination level setpoint for the controller. The setpoint value can also be changed temporarily from the control input nviSetting.

Valid Range

The valid range is 0-65535 lux with 1 lux resolution, as defined for SNVT_lux.

Default Value

The default value is manufacturer specific.

SCPT Reference

```
SCPTluxSetpoint #82
```

Optional Configuration Properties

Location Label

```
network input config SNVT_str_asc nciLocation;
```

This configuration property can optionally be used to provide more descriptive physical location information than can be provided by the Neuron Chip's 6 byte location string. The location relates to the object and not the node.

Valid Range

Any NULL terminated ASCII string of 31 bytes total length.

Default Value

An ASCII string containing all zeroes.

SCPT Reference

```
SCPT_location #17
```

Min Send Time

```
network input config SNVT_time_sec nciMinSendT;
```

This configuration network variable is used to control the minimum period between lamp value `nvoLampValue` updates (maximum transmission rate). It provides a way to tailor the output network variable transmission rate to available bandwidth.

Transmission rate limiting may be disabled by setting a value to zero.

Valid Range

Valid range is 0s - 6553.4s with 0.1s resolution.

Default Value

Default value is 0.5s.

SCPT Reference

SCPTminSendTime #52

Max Send Time

```
network input config SNVT_time_sec nciMaxSendT;
```

This configuration property is used to control the maximum period of time that expires before the object automatically transmits the current lamp value `nvoLampValue`. This provides a heartbeat output that can be used by destination objects to ensure that the object is still healthy. The heartbeat output may be disabled by setting a value to zero.

Valid Range

The valid range is 0s - 6553.4s with 0.1s resolution.

Default Value

The default value is 5 min.

SCPT Reference

SCPTminSendTime #49

Step

```
network input config SNVT_lev_cont nciStep;
```

This configuration property is used to determine the maximum step that the constant light controller is allowed to take to approach the target illumination level. The bigger the steps are, the shorter the response time is for light level changes. The response time is also affected by the configuration property Min Send Time.

Valid Range

The valid range is 0% - 100% in 0.5% steps.

Default Value

The default value is manufacturer specific.

SCPT Reference

SCPTstep #83

Send On Delta

```
network input config SNVT_lev_cont nciSendOnDelta;
```

This configuration property is used to determine the amount by which the lamp value output must change before `nvoLampValue` is transmitted. The lamp value output is always updated when the state (ON/OFF) is changed.

Valid Range

The valid range is 0.0% - 100.0% in 0.5% steps.

Default Value

The default value is 0.5%.

SCPT Reference

```
SCPTminSendDelta #88
```

ON/OFF Hysteresis

```
network input config SNVT_lev_cont nciOnOffHyster;
```

This configuration property sets the hysteresis for the illumination level setpoint. The hysteresis is used in AUTO mode to switch off and on the lamp. The lamp is switched off if following conditions are met:

- the illumination level is higher than setpoint value plus relative hysteresis
- the lamp value has already been at minimum level for over a period defined by `nciClOffDelay`

The lamp is again switched on to minimum level if:

- the illumination level is below the setpoint value minus relative hysteresis
- the lamp has been switched off for over a period defined by the `nciClOnDelay`

If the ON/OFF hysteresis value is set to 0%, then automatic switching off and on is disabled.

Valid Range

The valid range is 0-100% with 0.5% resolution.

Default Value

The default value is 0% (no ON/OFF switching).

SCPT Reference

```
SCPTonOffHysteresis #84
```

Light Off Delay

```
network input config SNVT_time_sec nciClOffDelay;
```

This configuration property is used to determine the delay after which the lamp value output is switched off. The lamp is only switched off after this delay if the following conditions are met: the lamp actuator output is at 0% level and the

illumination level exceeds the setpoint value plus the relative hysteresis level
nciOnOffHyster.

Valid Range

The valid range is 0 s - 6553.4 s.

Default Value

The default value is 300 s (5 min).

SCPT Reference

SCPTclOffDelay #85

Light On Delay

```
network input config SNVT_time_sec nciClOnDelay;
```

This configuration property is used to determine the delay after which the lamp value output is switched on. The lamp is only switched on after this delay if the following conditions are met:

- the lamp has been switched off by the constant light controller object because of too high illumination level
- the illumination level now is lower than the setpoint value minus the relative hysteresis value (On-Off-Hysteresis).

Valid Range

The valid range is 0 s - 6553.4 s.

Default Value

The default value is 0 s.

SCPT Reference

SCPTclOnDelay #86

Power-up State

```
network input config SNVT_setting nciPowerupSt;
```

This configuration property is used to determine the state (mode) of the constant light controller object after power-up or reset. The state can either be ON or OFF.

Valid Range

The valid range is ON or OFF.

Default Value

The default value is OFF.

SCPT Reference

SCPTpowerupState #87

Data Transfer

Manufacturer specific.

Power-up State

The state of the constant light controller object after power-up or reset condition is defined by the configuration property Power-up State (`nciPowerupSt`).

Boundary and Error Conditions

None specified.

Additional Considerations

None specified.