



LONMARK[®]

Functional Profile:

Light Sensor

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Overview

This document describes the profile for a light sensor object. The profile is used for devices that can measure ambient light levels.

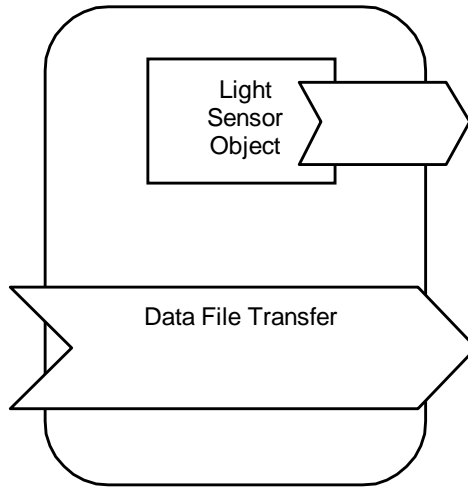


Figure 1.1 Light Sensor Object Functional Profile

Example Usage

The light sensor is used with controller objects such as the constant light controller. Typically the light sensor output is connected to the constant light controller input.

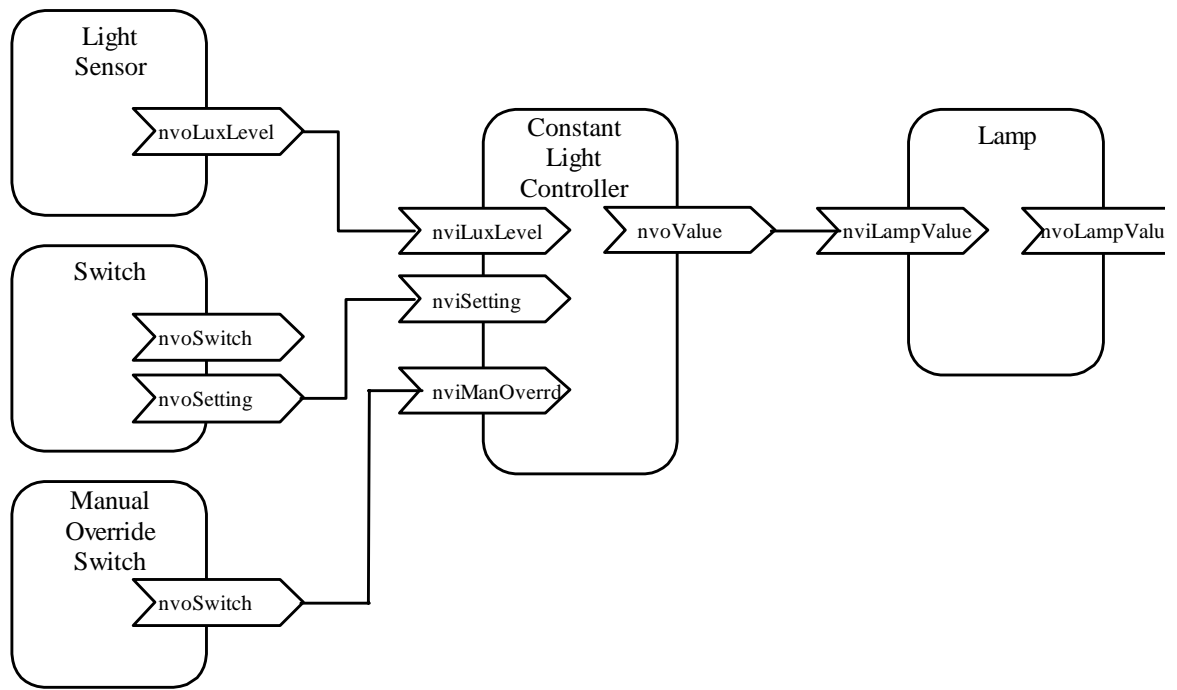


Figure 1.2 Example Usage of Light Sensor Object

Object Details

The light sensor object measures the ambient light level and outputs the corresponding lux value.

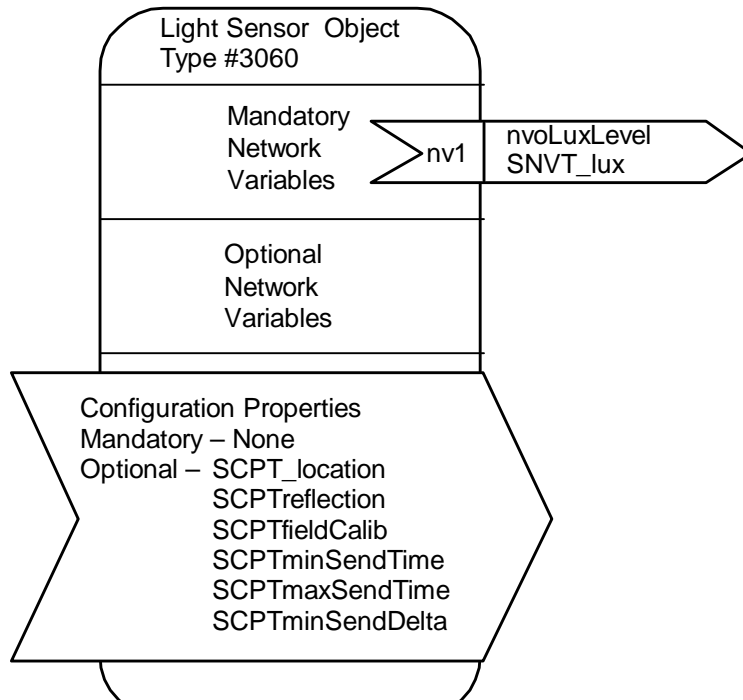


Figure 1.2 Object Details

Table 1 SNVT Details

NV # (M/O)*	Name	In/Out	SNVT Type (SNVT Index)	Class	Description
1 (M)	nvoLuxLevel	Out	SNVT_lux (97)	nv	Light level output

* M = mandatory, O = optional

Table 2 SCPT Details

17 (O)	SCPT_location	Location label
89 (O)	SCPTreflection	Reflection factor
90 (O)	SCPTfieldCalib	Ambient lux value for self calibration
52 (O)	SCPTminSendTime	Minimum send time between nvoLuxLevel updates
49 (O)	SCPTmaxSendTime	Heartbeat rate of nvoLuxLevel
88 (O)	SCPTminSendDelta	Minimum change before updating nvoLuxLevel

* M = mandatory, O = optional

Mandatory Network Variables

Sensor Output Value

network output SNVT_lux nvoLuxLevel;

This output network variable provides the value of the hardware input.

Valid Range

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

When Transmitted

Whenever the hardware state changes more than defined by configuration parameter Send On Delta.

Update Rate

Defined by configuration parameters minSendTime and maxSendTime

Default Service Type

The default service type is acknowledged.

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

Reflection Factor

```
network input eeprom SNVT_lev_percent nciReflection;
```

This configuration property is used to adjust the internal gain factor for the measured illumination level. Adjusting is needed because the amount of the light reflected back to the sensor element from the alight surface differs.

Valid Range

The valid range for the reflection factor is 0.0-100.0% in 0.5% increments.

Default Value

The default value is manufacturer specific.

SCPT Reference

SCPTreflection #89

Field Calibration

```
network input config SNVT_lux nciFieldCalibr;
```

This configuration property is used by the light sensor to self calibrate the hardware. The ambient lux value measured with an external lux meter is given as input to the light sensor which then can adjust its reflection factor to give exactly the same output value.

Valid Range

The valid range for the SNVT_lux is 0-65535 lux with 1 lux resolution.

Default Value

There is no default value.

SCPT Reference

SCPTfieldCalib #90

Min Send Time

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

This configuration network variable is used to control the minimum period between output network variable transmissions (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 0 - 6553.4s.

Default Value

Default value is 1s.

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 value of the `nvoLuxLevel` output network variable. 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 0 - 6553.4s.

Default Value

The default value is 1 min.

SCPT Reference

SCPTmaxSendTime #49

Send on Delta

```
network input config SNVT_lev_cont nciMinDelta;
```

This configuration property is used to determine the amount by which the value obtained by the data acquisition application must change before `nvoLuxLevel` is transmitted.

Valid Range

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

Default Value

The default value is manufacturer specific.

SCPT Reference

SCPTminSendDelta #88

Data Transfer

None specified.

Power-up State

None specified.

Boundary and Error Conditions

None specified.

Additional Considerations

Factory calibration is manufacturer dependent.