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# LONMARK<sup>®</sup>

## Functional Profile:

## Light Sensor

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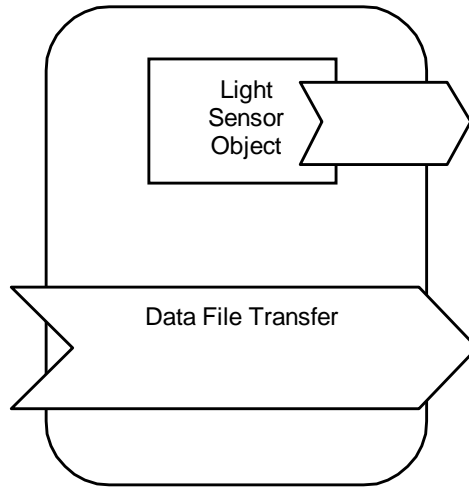
1010-10 © 1997, LONMARK Interoperability Association

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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.

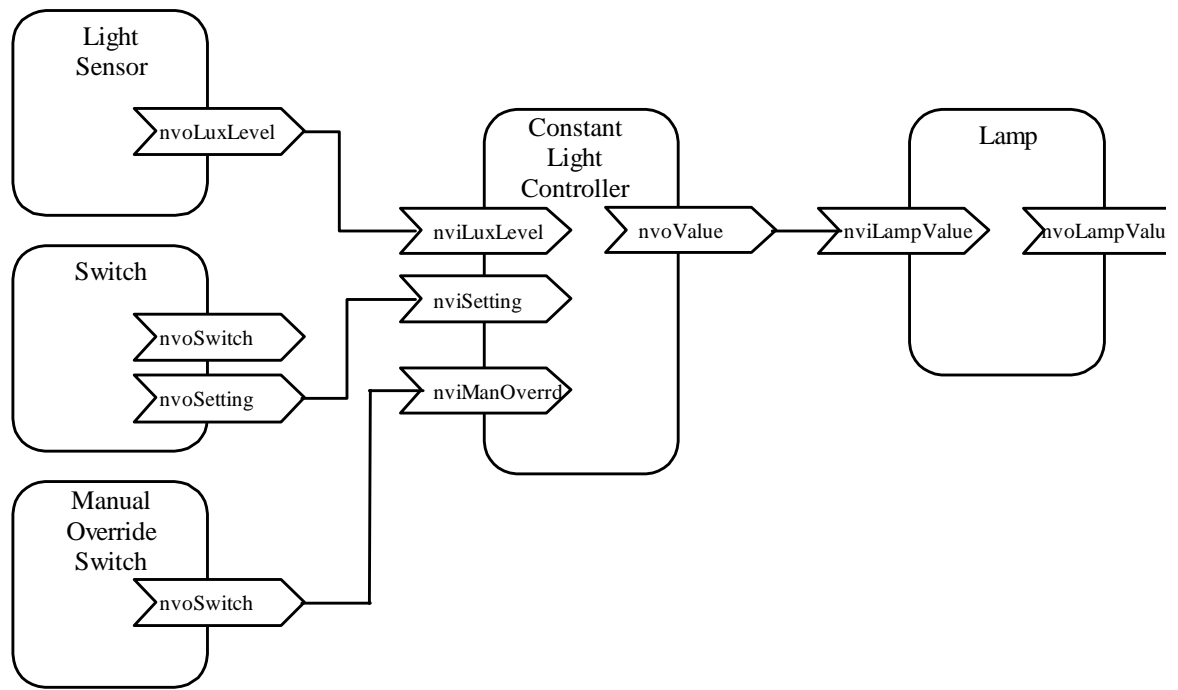


**Figure 1.1** Light Sensor Object Functional Profile

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## Example Usage

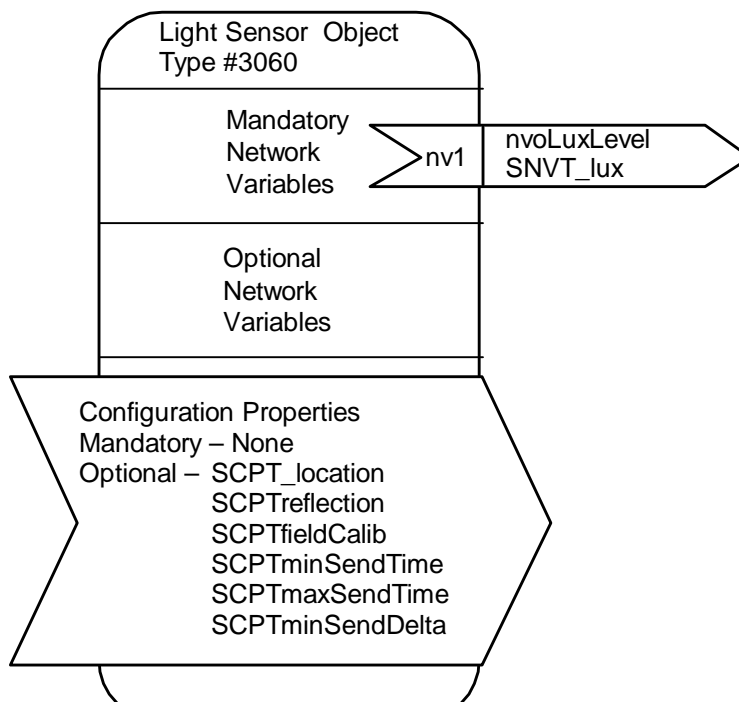
The light sensor is used with controller objects such as the constant light controller. Typically the light sensor output is connected to the constant light controller input.



**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 #<br>(M/O)* | Name        | In/Out | SNVT Type<br>(SNVT Index) | Class | Description        |
|----------------|-------------|--------|---------------------------|-------|--------------------|
| 1 (M)          | nvoLuxLevel | Out    | SNVT_lux (79)             | nv    | Light level output |

\* M = mandatory, O = optional

- Note: in version 1.0 of this document, SNVT\_lux was incorrectly labeled as index 97, rather than 79.

**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

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## *Mandatory Network Variables*

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### **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.

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## *Optional Configuration Properties*

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### **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

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## 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

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## 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

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## 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

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## 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

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## 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



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## Data Transfer

None specified.

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## Power-up State

None specified.

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## Boundary and Error Conditions

None specified.

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## Additional Considerations

Factory calibration is manufacturer dependent.