LONMARK

Functional Profile:
Visible Fire Indicator
Overview

This document describes the use of the Visible Fire Indicator Object for fire alarm notification function. The Fire Indicator object is assumed to reside in devices within the fire system. The role of the Node Object in alarm reporting for Fire Indicator devices is also described in this document.

![Diagram of Fire Indicator Objects](image)

**Figure 1** Fire Indicator Objects

Example Usage

The primary purpose of Fire Alarm systems is to notify occupants in case of a fire condition. Fire Initiator devices perform the function of detecting conditions that accompany fire such as smoke, heat, or manual action (in case of a pull station etc). When a fire has been detected, the fire alarm system notifies the occupants of the fire condition via an audible or visible devices below (this profile applies to the devices marked VISIBLE below):

- Horn (activated by a fixed DC signal) - AUDIBLE
- Chime (activated by a fixed DC signal) - AUDIBLE
- Bell (activated by a fixed DC signal) - AUDIBLE
- Electronic Sounder (powered locally at the device) - AUDIBLE
- Speaker (activated by an AC signal, typically a series of tones or voice messages) - AUDIBLE
- Strobe (activated by a fixed DC signal, can be synchronized or non-synchronized) - VISIBLE

Each device has an audible or visible output rating, and an input voltage/power requirement specification. Indicating devices can also be supervised, and therefore capable of detecting faults, thereby generating trouble conditions.
**Node Object**

The Node object can be used to provide additional alarm reporting, via the nvoAlarm network variable, in devices using the Fire objects. The Node object is fully described in the LONMARK Application Layer guidelines. Details of the use of the nvoAlarm network variable in Fire devices are provided below.

**nvoAlarm**

network output sync SNVT_alarm nvoAlarm;

The structure definition for SNVT_alarm is described in the SNVT Master List and Programmer’s Guide (005-0027-01) however further definition is provided below for its use for Indicator fire conditions.

1. Zone Number (Node Location): Describes the location of the device. 6 characters (ASCII-Numeric, Site/System Specific)
2. (2) valid alarm_type_t enumerations as below:

<table>
<thead>
<tr>
<th>Enum #</th>
<th>Alarm_type Field</th>
<th>Notes*</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>AL_FIR_TRBL</td>
<td>Trouble (fault) condition with an object</td>
</tr>
<tr>
<td>0xFF</td>
<td>AL_NUL</td>
<td></td>
</tr>
</tbody>
</table>

3. Valid priority_level_t enumerations as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
<th>NotesBACnet Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNVT_alarm</td>
<td>priority_level field type file SNVT_PR.H</td>
<td></td>
</tr>
<tr>
<td>Priority 5</td>
<td>PR_4 Fire Trouble/Fault (Display) BACnet</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PR_10 Fire RTN’S (Display) BACnet Priority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PR_NUL priority null</td>
<td></td>
</tr>
</tbody>
</table>

**When Transmitted**

It is transmitted when an alarm condition occurs and also upon receiving an RQ_UPDATE_ALARM request via the nviRequest network variable.

**Valid Range**

The valid range for the value field is any value within the defined limits of the SNVT_alarm output.

**Default Service Type**

The default service type is acknowledged.
**Fire Indicator Object**

The Fire Visible Indicator Object provides basic ON, OFF capability via SNVT_switch for use by Visible Indicators.

**Figure 2** Visible Fire Indicator Object Details
Mandatory Network Variables

**nviFireVisible**

network output SNVT_switch nvoFireVisible;

This input network variable receives the status (ON or OFF) request (command) for an Visible indicating device. It can be bound to the nvoAlarm network variable(s) of initiating device(s).

*When Transmitted*

nviFireVisible is not transmitted.

*Valid Range*

The valid range for the value field is any value within the defined limits of the SNVT_switch.

The following table describes the encoding of SNVT_switch for fire alarm conditions:

<table>
<thead>
<tr>
<th>state</th>
<th>val %</th>
<th>general purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>No Visible (OFF)</td>
</tr>
<tr>
<td>1</td>
<td>1-100</td>
<td>Visible (ON)</td>
</tr>
</tbody>
</table>

The typical indication object will make use of the state value contained in the SNVT_state above to turn its output ON or OFF as requested.

*Default Service Type*

The default service type is acknowledged.

**nvoFireTrouble**

network output SNVT_switch nvoFireTrouble;

This output network variable transmits initiator trouble information for use by simple Indicators.

*When Transmitted*

nvoFireTrouble is transmitted when an indicator failure condition occurs. A trouble condition can include any fault/trouble that can be detected by the device.

*Valid Range*

The valid range for the value field is any value within the defined limits of the SNVT_switch output.

The following table describes the encoding of SNVT_switch for Trouble condition reporting:
Depending on the Indicator receiving the information it can make use of only the state field of SNVT_switch or also the value field of SNVT_switch.

**Default Service Type**
The default service type is acknowledged.

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### Optional Network Variables

**nvoFireVisible**

network output SNVT_switch nvoFireVisible;

This output network variable transmits the feedback status (ON or OFF) of indicating device.

**When Transmitted**
nvoFireVisible is not automatically transmitted.

**Valid Range**
The valid range for the value field is any value within the defined limits of the SNVT_switch output.

The following table describes the encoding of SNVT_switch for various fire alarm conditions:

<table>
<thead>
<tr>
<th>state</th>
<th>val %</th>
<th>general purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>No Visible (OFF)</td>
</tr>
<tr>
<td>1</td>
<td>1-100</td>
<td>Visible (ON)</td>
</tr>
</tbody>
</table>

A device such as an operator interface device can make use of the value field for its display, logging etc.

**Default Service Type**
The default service type is acknowledged.
### Configuration Properties

#### Node Location Label

network input config SNVT_str_asc nciNodeLocation;

This configuration property contains the location of the object, and is entered into the device at installation and/or configuration time.

**Valid Range**

The valid range for this configuration property is any value within the defined limits of the SNVT_str_asc network variable type.

**Default Value**

No text strings specified.

**SCPT Reference**

SCPTlocation(17)

#### Receive Heartbeat

network input config SNVT_time_sec nciMaxReceiveT;

This configuration property, defines the maximum period of time that should expire, before the indicator device is deactivated.

**Valid Range**

Defined by SNVT_time_sec.

**Default Value**

Disabled.

**SCPT Reference**

SCPTmaxSendTime(48)

#### Send Hearbeat

network input config SNVT_time_sec nciMaxSendTime;

This configuration property contains the maximum amount of time that may elapse between successive indications from nvoFireAlm to its bound network variables.

**Valid Range**

The valid range for this configuration property is any value within the defined limits of the SNVT_time_sec network variable type.
**Default Value**

No value specified.

**SCPT Reference**

SCPTmaxSendTime(49)

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**OEM Label**

network input config SNVT_str_asc nciOEMLabel;

This configuration property contains the manufacturer specific information, is factory set, and is read only.

**Valid Range**

The valid range for this configuration property is any value within the defined limits of the SNVT_str_asc network variable type.

**Default Value**

No text strings specified.

**SCPT Reference**

SCPToemType(61)

---

**Zone Number**

network input config SNVT_zone_num nciZoneNum;

This configuration property contains the zone number for the indicator.

**Valid Range**

0..65,535

**Default Value**

No value specified.

**SCPT Reference**

SCPTzoneNum(141)

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**Installation Date**

network input config SNVT_time_stamp nciInstallDate;

This configuration property contains the date of installation for the indicator, and is entered into the device at installation and/or configuration time.

**Valid Range**
The valid range for this configuration property is any value within the defined limits of the SNVT_time_stamp network variable type.

**Default Value**

No value specified.

**SCPT Reference**

SCPTinstallDate(146)

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**Maintenance Date**

network input config SNVT_time_stamp nciMaintDate;

This configuration property contains the date of last maintenance (cleaning/inspection/test etc) for the indicator, and is entered into the device at test time.

**Valid Range**

The valid range for this configuration property is any value within the defined limits of the SNVT_time_stamp network variable type.

**Default Value**

No value specified.

**SCPT Reference**

SCPTmainDate(147)

---

**Manufacture Date**

network input config SNVT_time_stamp nciManufDate;

This configuration property contains the date of manufacture for the indicator, it is factory set, and is read only.

**Valid Range**

The valid range for this configuration property is any value within the defined limits of the SNVT_time_stamp network variable type.

**Default Value**

No value specified.

**SCPT Reference**

SCPTmanfDate(148)
Fire Text 1

network output config SNVT_str_asc nciFireText1;

This configuration property allows text information relevant to
fire conditions to be read from the device. This text is
defined at installation and/or configuration time.

Valid Range

The valid range for this configuration property is any value within
the defined limits of the SNVT_str_asc network variable type (30 char
max). A " >" char at the end of the text string indicates presence of
nciFireText2.

Default Value

No text strings specified.

SCPT Reference

SCPTfireTxt1(149)

Fire Text 2

network output config SNVT_str_asc nciFireText2;

This configuration property allows text information relevant to
fire conditions to be read from the device. This text is
defined at installation and/or configuration time.

Valid Range

The valid range for this configuration property is any value within
the defined limits of the SNVT_str_asc network variable type (30 char
max). A " >" char at the end of the text string indicates presence of
nciFireText3.

Default Value

No text strings specified.

SCPT Reference

SCPTfireTxt2(150)

Fire Text 3

network output config SNVT_str_asc nciFireText3;

This configuration property allows text information relevant to
fire conditions to be read from the device. This text is
defined at installation and/or configuration time.

Valid Range
The valid range for this configuration property is any value within the defined limits of the SNVT_str_asc network variable type (30 char max).

**Default Value**

No text strings specified.

**SCPT Reference**

SCPTfireTxt3(151)

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**Indicator Type**

```c
network input config SNVT_fire_indcte nciIndicatorType;
```

This configuration property contains the indicator type identifier, and is entered into the device at installation and/or configuration time.

**Valid Range**

The valid range for this configuration property is one of the values within the defined limits of the SNVT_fire_indcte network variable type in the table below:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enum Definition</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNVT_fire_indcte</td>
<td>Indicator types for fire notification</td>
<td>typedef file: SNVT_FN.H</td>
</tr>
<tr>
<td></td>
<td></td>
<td>typedef name: fire_indicator_t</td>
</tr>
<tr>
<td>0</td>
<td>Undefined</td>
<td>Valid</td>
</tr>
<tr>
<td>1</td>
<td>Strobe-Unsynchronized</td>
<td>Valid</td>
</tr>
<tr>
<td>2</td>
<td>Strobe-Synchronized</td>
<td>Valid</td>
</tr>
<tr>
<td>0xFF</td>
<td>Null Value</td>
<td>Null Value</td>
</tr>
</tbody>
</table>

**Default Value**

Default Value is unspecified.

**SCPT Reference**

SCPTfireIndicate(153)

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**Visible Output**

```c
network output config SNVT_light_intensity nciVisibleOut;
```

This configuration property allows visible output (strobe intensity) specification in candela (Cd) to be read from the device.

**Valid Range**
The valid range for this configuration property is any value within the defined limits of the SNVT_sound_db network variable type. Specific to a market, and code jurisdiction, more restricted ranges may be applied to this parameter.

**Default Value**

None specified.

**SCPT Reference**

SCPTvisOutput(143)

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**Flash Frequency**

```
network output config SNVT_freq_hz nciFlashFreq;
```

This configuration property allows flash rate specification in 0.1 Hz resolution to be read from the visible indication (strobe) device.

**Valid Range**

The valid range for this configuration property is 0.1 Hz to 5 Hz.

**Default Value**

None specified.

**SCPT Reference**

SCPTflashFreq(145)

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**Data Transfer**

No data file transfer is associated with the Fire Visible Indicator Object.

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**Power-up State**

None specified.

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**Boundary and Error Conditions**

None specified.