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.
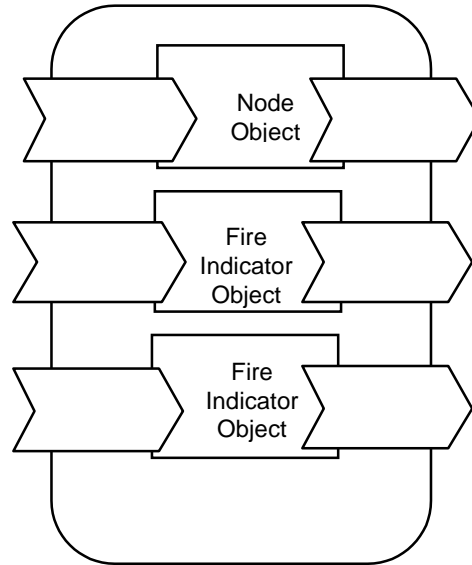
Figure 1 Fire Indicator Objects

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) valid alarm_type_t enumerations as below:

Enum #	Alarm_type Field	Notes*
15	AL_FIR_TRBL	Trouble (fault) condition with an object
0xFF	AL_NUL	

(3) Valid priority_level_t enumerations as follows:

Name	Definition	Notes	BACnet Level
SNVT_alarm	priority_level field	type file SNVT_PR.H	
	PR_4	Fire Trouble/Fault (Display)	BACnet Priority 5
	PR_10	Fire RTN'S (Display)	BACnet Priority 10
	PR_NUL	priority null	

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
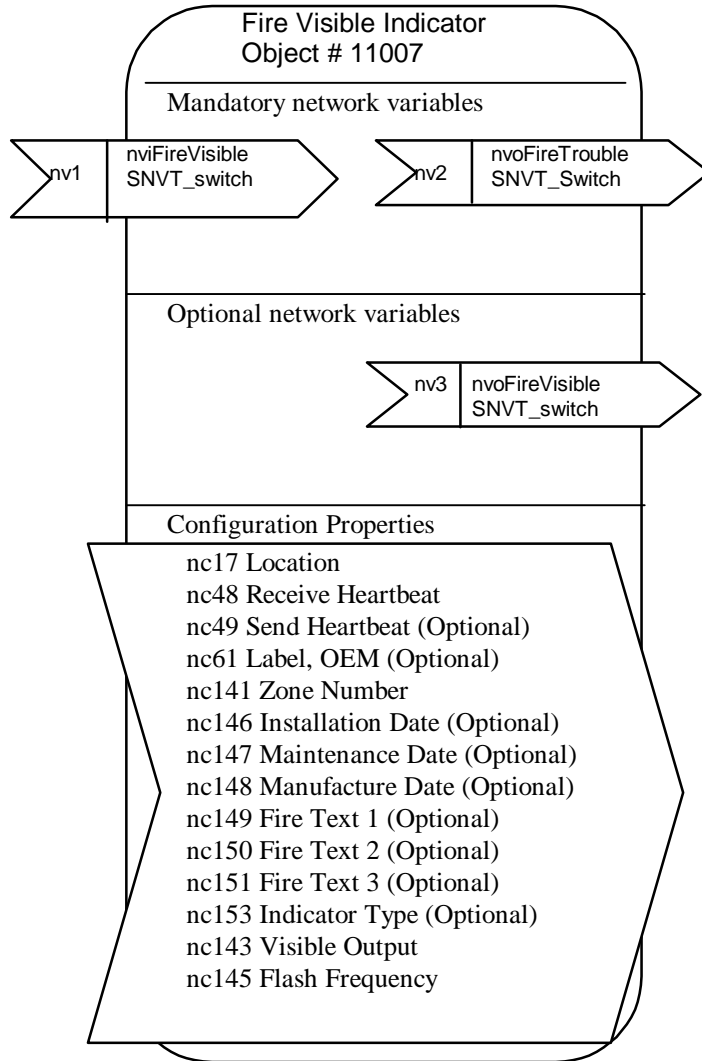capability via SNVT_switch for use by Visible Indicators.

```
                    Fire Visible Indicator
                       Object # 11007

                  Mandatory network variables

   nv1  nviFireVisible              nv2  nvoFireTrouble
        SNVT_switch                      SNVT_Switch


                  Optional network variables

                                    nv3  nvoFireVisible
                                         SNVT_switch


                  Configuration Properties
                      nc17 Location
                      nc48 Receive Heartbeat
                      nc49 Send Heartbeat (Optional)
                      nc61 Label, OEM (Optional)
                      nc141 Zone Number
                      nc146 Installation Date (Optional)
                      nc147 Maintenance Date (Optional)
                      nc148 Manufacture Date (Optional)
                      nc149 Fire Text 1 (Optional)
                      nc150 Fire Text 2 (Optional)
                      nc151 Fire Text 3 (Optional)
                      nc153 Indicator Type (Optional)
                      nc143 Visible Output
                      nc145 Flash Frequency
```

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:

state	val %	general purpose
0	0	No Visible (OFF)
1	1-100	Visible (ON)

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:

state	val %	general purpose
0	0	No trouble
1	1-100	Trouble

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.

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:

state	val %	general purpose
0	0	No Visible (OFF)
1	1-100	Visible (ON)

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)

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)

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)

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.

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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)

Indicator Type

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:

Name	Enum Definition	Notes
SNVT_fire_indcte	Indicator types for fire notification	typedef file: SNVT_FN.H typedef name: fire_indicator_t
	0 Undefined	
	1 Strobe-Unsynchronized	Valid
	2 Strobe-Synchronized	Valid
	0xFF	Null Value

Default Value

Default Value is unspecified.

SCPT Reference

SCPTfireIndicate(153)

Visible Output

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)

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)

Data Transfer

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

Power-up State

None specified.

Boundary and Error Conditions

None specified.