Version 1.0
Smoke (Conventional) Fire Initiator 11003

LONMARK Functional Profile: Smoke (Conventional) Fire Initiator

Overview

This document describes the use of the Conventional (Non-addressable) Smoke Fire Initiator Object for fire alarm notification and response functions. The Fire Initiator object is assumed to reside in devices within the fire system. The role of the Node Object in Initiator alarm conditions is also described in this document.

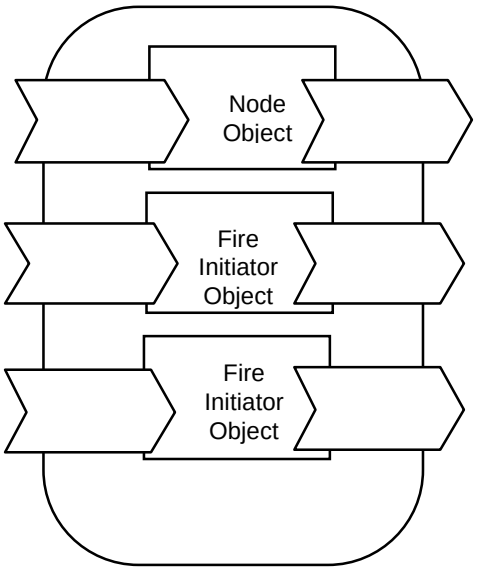

Figure 1 Fire Initiator Objects

Example Usage

The Fire system provides information to other devices within the building control system. Some of these building control system devices are very sophisticated and can make use of extensive alarm notification information from the fire system. Other devices are much simpler in their capabilities such as a light or sounder or damper. The Node object is used to report extensive alarm information from the Fire system, via the network variable of type SNVT_alarm. For simpler devices the Fire Initiator Object using a network variable of type SNVT_switch provides simple ON, OFF, information regarding whether a fire alarm condition exists or not. This information can be input to any Notification object with an input network variable of type SNVT_switch. No assumption is made regarding where the Node Object and/or Fire Initiator Objects and Fire Notification Objects are located. Some of the devices that could contain these objects are

- Fire Panel
- Smoke detector
- Notification Appliances (Bell, Horn, Sounder, Strobe etc)
- Pull Station

Node Object

The Node object can be used to provide additional alarm reporting, via the nvoAlarm network variable, in devices using the Fire Initiator object. The Node object is fully described in the LONMARK Application Layer guidelines. Details of the use of the nvoAlarm network variable in conjunction with Fire Initiator object 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 Initiator fire conditions.

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

(2) The valid alarm_type_t enumerations are as follows:

Enum #	Alarm_type Field	Notes*
13	AL_FIR_ALM	Alarm condition
15	AL_FIR_TRBL	Trouble (fault) condition with an object
16	AL_FIR_SUPV	Supervisory condition with an object (eg. sprinkler pressure)
17	AL_FIR_TEST_ALARM	Alarm condition with an object in Test Mode
21	AL_FIR_MAINT_ALERT	Maintenance alert condition for an input object
0xFF	AL_NUL	

(3) The valid priority_level_t enumerations are as follows:

Name	Definition	Notes	BACnet Level
SNVT_alarm	priority_level field	type file SNVT_PR.H	
	PR_1	Life Safety Fire Alarms	BACnet Priority 2
	PR_4	Fire Trouble/Fault	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 Initiator Object

The Fire Initiator Object provides basic ON, OFF information regarding Fire Alarm conditions via SNVT_switch for use by simple Indicators.

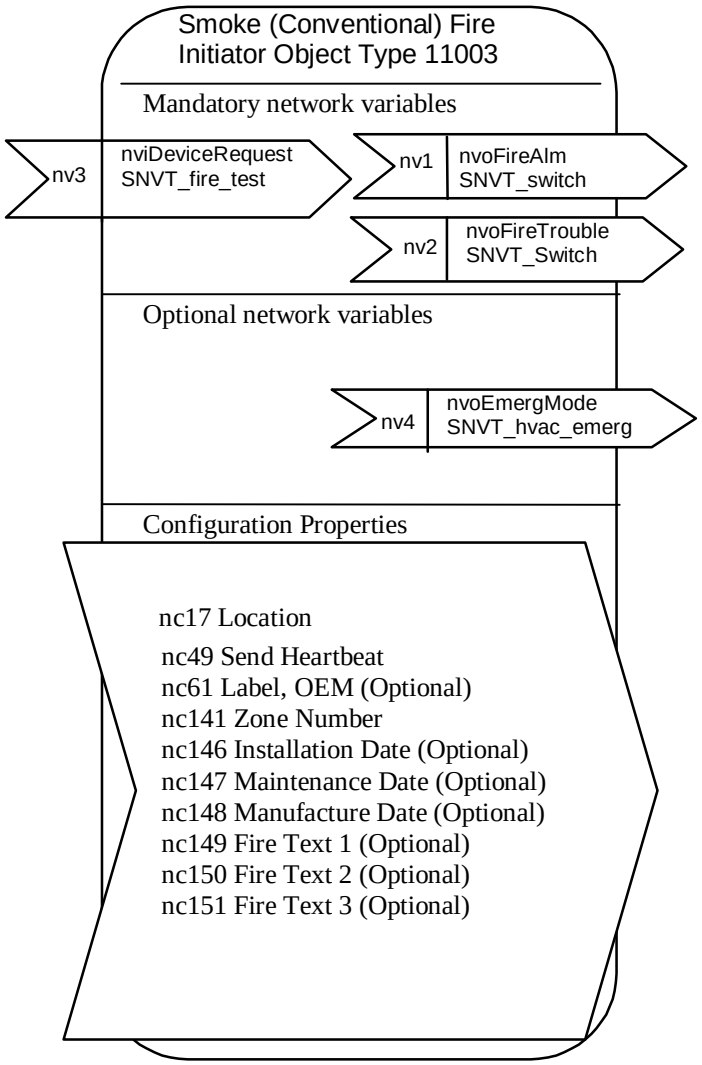

Figure 2 Conventional Smoke Initiator Fire Object Details

Mandatory Network Variables

nvoFireAlm

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network output SNVT_switch nvoFireAlm;
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This output network variable transmits fire information for use by simple Indicators.

When Transmitted

nvoFireAlm is transmitted when a fire alarm condition occurs.

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 alarm
1	1-100	Alarm - operational setting

The typical notification object will make use of the state value contained in the SNVT_state above. Another 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.

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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 initiator 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.

nviDeviceRequest

network input SNVT_fire_test nviDeviceRequest;

This input network variable receives requests intended to perform smoke detector operations, initiated from operator.

Valid Range

The valid range for the value field device_request is as follows:

Value Field	Request	Meaning
0	FT_NORMAL	Return object to normal status
1	FT_RESET	Perform a RESET function (for smoke detectors)
2	FT_TEST	Go into TEST mode
3	FT_NOTEST	Exit TEST mode
0xFF		Null Value

RESET Function: When a smoke detector goes into alarm, the alarm condition is latched ON (its state is indicated by the active (non-zero) value of SNVT_Alarm for the smoke detector object). Following the management of the alarm message at an operator device, a RESET request is issued by the operator to the smoke detector. This request causes a sequence of actions to take place within the detector, including sampling of the smoke chamber. If the smoke is no longer present, the SNVT_Alarm returns to normal and a return-to-normal message is issued. If smoke is still present, the smoke detector can, based upon its local programming, either do nothing and continue to maintain active value in SNVT_Alarm, or issue a fresh alarm message, and continue to maintain active value in SNVT_Alarm. An alarmed smoke detector can not clear until a RESET request is received, and smoke has cleared.

TEST Request: A fire alarm system is required to be periodically tested (using near-actual conditions such as canned smoke etc.) to verify it for continued operation. The TEST request places a fire initiator device in TEST mode. In this mode, when the intiating device is operated, a predefined notification action takes place. This action typically excludes annunciation of an alarm at the fire department premises. When the fire alarm system (or device) test is over, the NOTEST request returns the initiator device to normal operational mode.

Default Value

The default value is FT_NORMAL.

Optional Network Variables

Emergency Mode

network output SNVT_hvac_emerg nvoEmergMode;

This input network variable controls the (actuator) position for smoke control devices

Valid Range

nviActuDrv	Actuator Position
EMERG_NORMAL	90° position
EMERG_FIRE	0° position

Default Value

The default value is state = 0 (*Failsafe Position*).

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)

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(496)

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 initiator.

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 initiator, 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 initiator, 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

SCPTmaintDate(147)

Manufacture Date

network input config SNVT_time_stamp nciManufDate;

This configuration property contains the date of manufacture for the initiator, 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

SCPTfireText1(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

SCPTfireText2(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

SCPTfireText3(151)

Data Transfer

No data file transfer is associated with the Fire Initiator Object.

Power-up State

None specified.

Boundary and Error Conditions

None specified.

Additional Considerations

None specified.