LONMARK Functional Profile: Universal Fire Initiator

Overview

This document describes the profile of a Universal Fire Initiator (UFI) object (Figure 1). Use of the standard Node object is implied. Each UFI object can control one physical initiator device. Applications that require multiple device control from the same LONWORKS interface (node), can be accommodated by deploying multiple object instances (Figure 2).
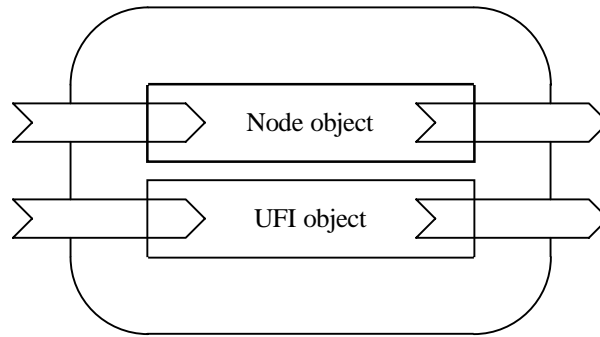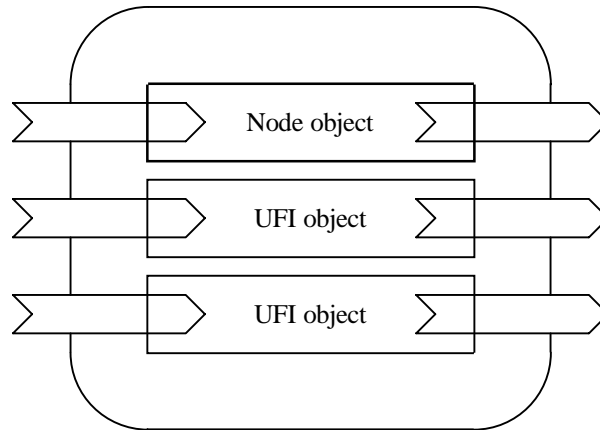
Figure 1 Functional profile

Figure 2 Multiple object instances

Example Usage

The services provided by this profile are intended to facilitate the interaction with one or more of the following LONWORKS devices:

- Intelligent panel.

- Building management system.

Background

Conventional fire initiator devices, display one common characteristic, that is, they provide a normally open or normally closed contact to indicate their condition. These simple devices, do not warrant individual profiles, and therefore require a general object to represent them in the LONWORKS domain. This object is the UFI. The UFI object enhances the functionality of the initiator device, by providing it with a suite of characteristics such as physical location, zone number etc.. In the diagrams below the LONWORKS interface is physically hard wired to the indicator device.
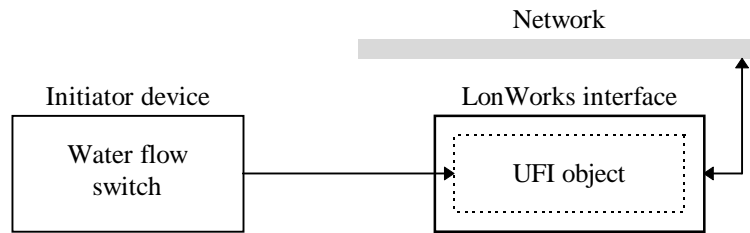
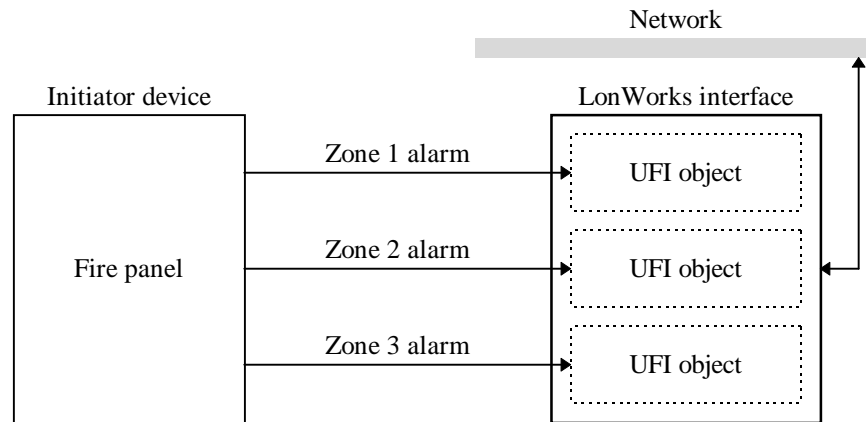**Figure 3** Example 1 - Water flow switch (sprinkler system)

Figure 4 Example 2 - Fire panel alarm indication

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 Fire devices are provided below.

Alarm Output

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.

Valid Range

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

(2) Valid alarm_type_t enumerations are as follows:

Enum #	Alarm_type Field	Notes*
13	AL_FIR_ALM	Alarm condition
14	AL_FIR_PRE_ALM	Pre-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
20	AL_FIR_MONITOR_COND	Abnormal condition with an input object
21	AL_FIR_MAINT_ALERT	Maintenance alert condition for an input object
0xFF	AL_NUL	

(3) 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.

Universal Fire Initiator Object

Universal Fire Initiator
Object Type 11010

Mandatory network variables

nv1 nvoUFIState
SNVT_switch

Optional network variables

nv2 nviDeviceRq
SNVT_fire_test

nv3 nvoFireTrouble
SNVT_switch

Configuration properties

Mandatory

nc38 Initiator Type
nc17 Location Label
nc49 Send Heartbeat
nc141 Zone Number

Optional

nc149 Fire Text Line 1
nc150 Fire Text Line 2
nc151 Fire Text Line 3
nc146 Installation Date
nc16 Invert Output
nc147 Maintenance Date
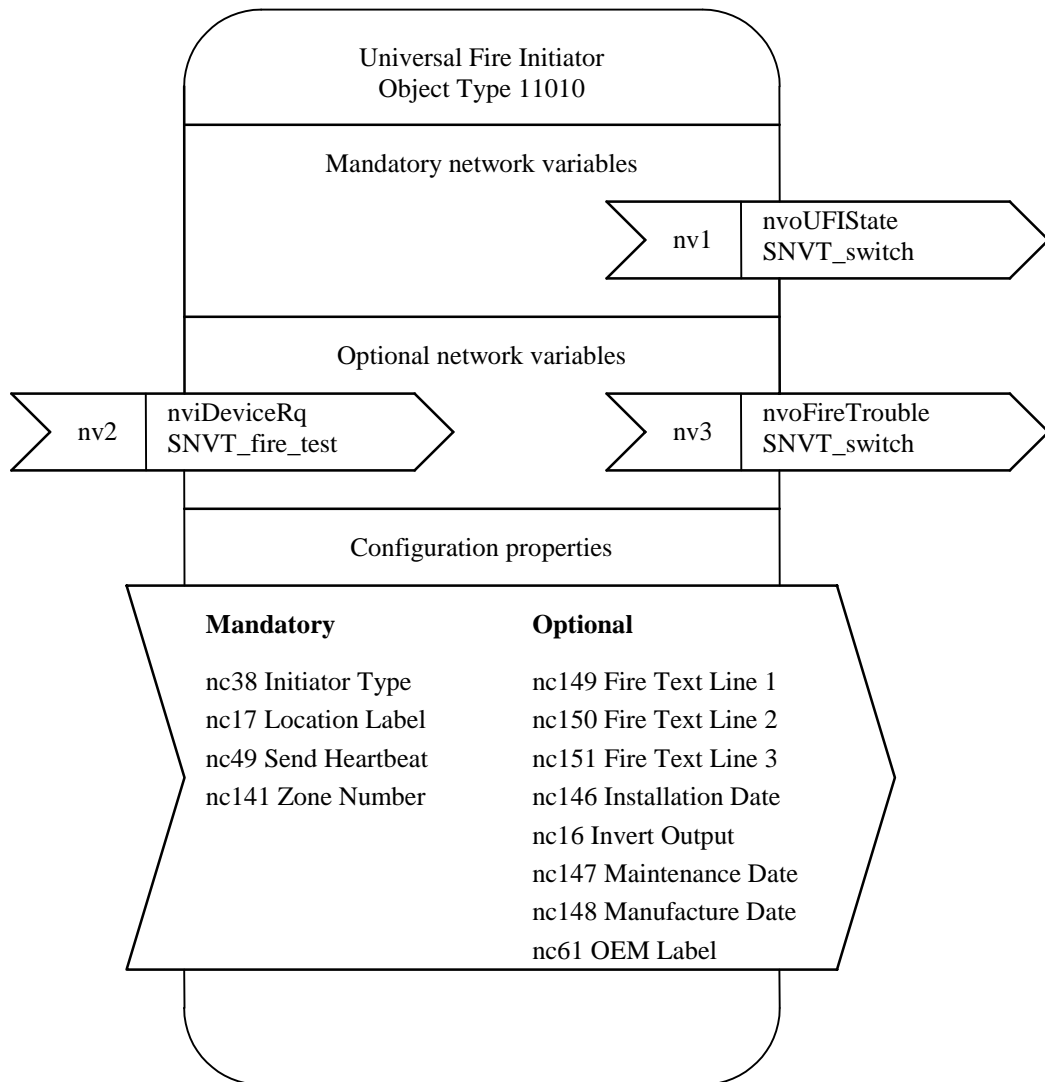nc148 Manufacture Date
nc61 OEM Label

Figure 5 UFI object details

Mandatory Network Variables

Universal Initiator State

network output SNVT_switch nvoUFIState;

This output network variable reflects the condition of the initiator device.

Valid Range

Condition	Description
0, 0	Initiator device inactive
100, 1	Initiator device active

When Transmitted
The variable is transmitted immediately, when its value has changed significantly.

Update Rate
Defined by nciMaxSendT.

Default Service Type
The default service type is acknowledged.

Optional Network Variables

Device Request

network input SNVT_fire_test nviDeviceRq;

This input network variable controls the UFI object.

Valid Range

Request	Description
FT_NORMAL	Defined by SNVT_fire_test
FT_RESET	Defined by SNVT_fire_test
FT_TEST	Defined by SNVT_fire_test
FT_NOTEST	Defined by SNVT_fire_test

Default Value
FT_NORMAL.

Initiator Trouble

```
network output SNVT_switch nvoFireTrouble;
```

This output network variable reflects the operational condition of the initiator device. A trouble condition can include any fault/trouble that can be detected by the device.

Valid Range

Condition	Description
0, 0	Initiator device operational
100, 1	Initiator device is in trouble

When Transmitted
The variable is transmitted immediately, when the operational condition of the initiator device has changed significantly.

Update Rate
Not specified.

Default Service Type
The default service type is acknowledged.

Configuration Properties

Initiator Type

```
network input config SNVT_fire_init nciInitiator;
```
This configuration property describes the initiator device.

Valid Range
Defined by SNVT_fire_init.

Default Value
FI_UNIVERSAL.

SCPT Reference
SCPTfireInitType(38)

Location Label

```
network input config SNVT_str_asc nciLocation;
```
This configuration property describes the physical location of the UFI object.

Valid Range
Defined by SNVT_str_asc.

Default Value
Not specified.

SCPT Reference
SCPTlocation(17)

Send Heartbeat

network input config SNVT_time_sec nciMaxSendT;

This configuration property, defines the maximum period of time that should expire, before the object automatically updates nvoUFIState.

Valid Range
Defined by SNVT_time_sec.

Default Value
Disabled.

SCPT Reference
SCPTmaxSendTime(49)

Zone Number

network input config SNVT_count nciZoneNumber;

This configuration property contains the zone number for the indicator device.

Valid Range
Defined by SNVT_count.

Default Value
Not specified.

SCPT Reference
SCPTzoneNum(141)

Fire Text Line 1

network input config SNVT_str_asc nciFireText1;

This configuration property, contains text information, pertinent during a fire condition. If this string is delimited by the metasymbol '>', nciFireText2 contains additional text information.

Valid Range
Defined by SNVT_str_asc.

Default Value
Not specified.

SCPT Reference
SCPTfireTxt1(149)

Fire Text Line 2

`network input config SNVT_str_asc nciFireText2;`

This configuration property, contains text information, pertinent during a fire condition. If this string is delimited by the metasymbol '>', nciFireText3 contains additional text information.

Valid Range
Defined by SNVT_str_asc.

Default Value
Not specified.

SCPT Reference
SCPTfireTxt2(150)

Fire Text Line 3

`network input config SNVT_str_asc nciFireText3;`

This configuration property, contains text information, pertinent during a fire condition.

Valid Range
Defined by SNVT_str_asc.

Default Value
Not specified.

SCPT Reference
SCPTfireTxt3(151)

Installation Date

`network input config SNVT_time_stamp nciInstallDate;`

This configuration property contains the date of installation.

Valid Range
Defined by SNVT_time_stamp.

Default Value
Not specified.

SCPT Reference
SCPTinstallDate(146)

Invert Output

`network input config SNVT_lev_disc nciInvert;`

This configuration property, defines the logic inversion rules necessary, to sense normally open or normally closed contacts on the initiator device.

Valid Range

nciInvert	Contact
ST_OFF	Normally open
ST_ON	Normally closed

Default Value

Not specified.

SCPT Reference

SCPTinvrtOut(16)

Maintenance Date

network input config SNVT_time_stamp nciMaintDate;

This configuration property contains the last maintenance date.

Valid Range

Defined by SNVT_time_stamp.

Default Value

Not specified.

SCPT Reference

SCPTmaintDate(147)

Manufacture Date

network input config SNVT_time_stamp nciManfDate;

This configuration property contains the date of manufacture. (Factory set and write access disabled).

Valid Range

Defined by SNVT_time_stamp.

Default Value

Not specified.

SCPT Reference

SCPTmanfDate(148)

OEM Label

network input config SNVT_str_asc nciOEMLabel;

This configuration property contains manufacture specific details. (Factory set and write access disabled).

Valid Range
Defined by SNVT_str_asc.

Default Value
Not specified.

SCPT Reference
SCPToemType(61)

Data Transfer

Not supported.

Power-up State

The configuration properties are adopted. nvoUFIState and
nvoAlarm are transmitted immediately.

Boundary and Error Conditions

None specified.

Additional Considerations

None specified.