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).

![Functional profile](image1)

**Figure 1** Functional profile

![Multiple object instances](image2)

**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:

<table>
<thead>
<tr>
<th>Enum #</th>
<th>Alarm_type Field</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>AL_FIR_ALM</td>
<td>Alarm condition</td>
</tr>
<tr>
<td>14</td>
<td>AL_FIR_PRE_ALM</td>
<td>Pre-alarm condition</td>
</tr>
<tr>
<td>15</td>
<td>AL_FIR_TRBL</td>
<td>Trouble (fault) condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with an object</td>
</tr>
<tr>
<td>16</td>
<td>AL_FIR_SUPV</td>
<td>Supervisory condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with an object</td>
</tr>
<tr>
<td>17</td>
<td>AL_FIR_TEST_ALARM</td>
<td>Alarm condition with an</td>
</tr>
<tr>
<td></td>
<td></td>
<td>object in Test Mode</td>
</tr>
<tr>
<td>20</td>
<td>AL_FIR_MONITOR_COND</td>
<td>Abnormal condition with an</td>
</tr>
<tr>
<td></td>
<td></td>
<td>input object</td>
</tr>
<tr>
<td>21</td>
<td>AL_FIR_MAINT_ALERT</td>
<td>Maintenance alert condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>for an input object</td>
</tr>
<tr>
<td>0xFF</td>
<td>AL_NUL</td>
<td></td>
</tr>
</tbody>
</table>

3. Valid priority_level_t enumerations are as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
<th>Notes</th>
<th>BACnet Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNVT_alarm</td>
<td>priority_level</td>
<td>type file SNVT_PR.H</td>
<td></td>
</tr>
<tr>
<td>PR_1</td>
<td>Life Safety Fire</td>
<td></td>
<td>BACnet Priority</td>
</tr>
<tr>
<td></td>
<td>Alarms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PR_4</td>
<td>Fire Trouble/Fault</td>
<td>BACnet Priority 5</td>
<td></td>
</tr>
<tr>
<td>PR_10</td>
<td>Fire RTN’S (Display)</td>
<td>BACnet Priority 10</td>
<td></td>
</tr>
<tr>
<td>PR_NUL</td>
<td>priority null</td>
<td></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.

---

**Universal Fire Initiator Object**

![Diagram of UFI object]

**Figure 5** UFI object details
Mandatory Network Variables

Universal Initiator State
network output SNVT_switch nvoUFISate;
This output network variable reflects the condition of the initiator device.

Valid Range

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0, 0</td>
<td>Initiator device inactive</td>
</tr>
<tr>
<td>100, 1</td>
<td>Initiator device active</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Request</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT_NORMAL</td>
<td>Defined by SNVT_fire_test</td>
</tr>
<tr>
<td>FT_RESET</td>
<td>Defined by SNVT_fire_test</td>
</tr>
<tr>
<td>FT_TEST</td>
<td>Defined by SNVT_fire_test</td>
</tr>
<tr>
<td>FT_NOTEST</td>
<td>Defined by SNVT_fire_test</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0, 0</td>
<td>Initiator device operational</td>
</tr>
<tr>
<td>100, 1</td>
<td>Initiator device is in trouble</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>nciInvert</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST_OFF</td>
<td>Normally open</td>
</tr>
<tr>
<td>ST_ON</td>
<td>Normally closed</td>
</tr>
</tbody>
</table>

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_timeStamp 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.