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Version 1.0  
March 2014  
Profile Number: 4310



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# **LONMARK®**

# **Functional Profile:**

# **Hardwired Gas Detection**

# **Shutdown**

**SFPTHardwiredGasDetection-  
Shutdown**

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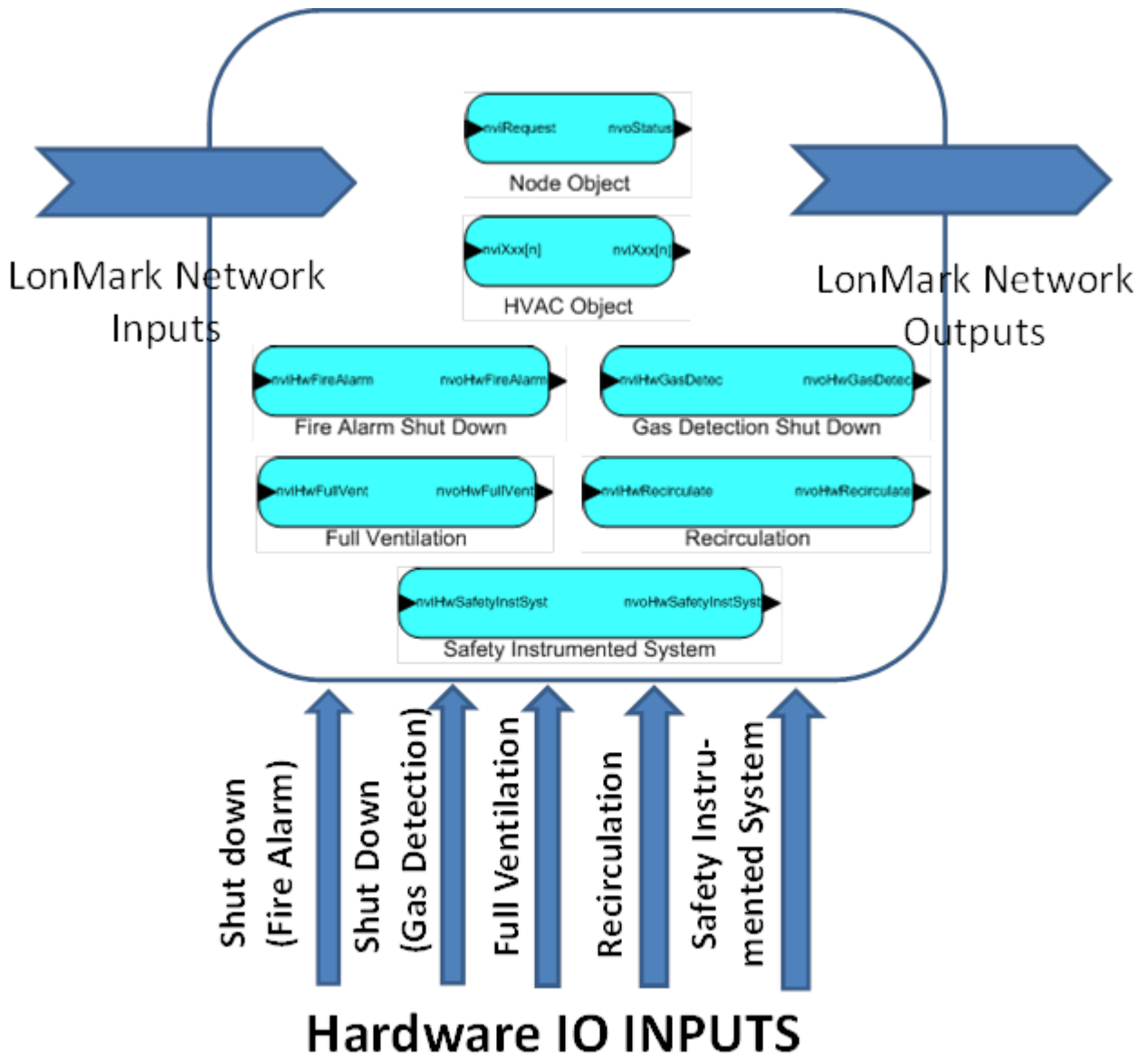
## Example Usage

The hardwired **Gas Detection Shutdown** profile is used to monitor a Hardwired Gas Detection Alarm input which shuts down the HVAC system. The profile is part of an HVAC system in the Oil and Gas industry. A collection of five profiles controlling various system states can be combined into each piece of equipment. It is an engineering design requirement to determine which of the profiles are required in each implementation.

The other profiles options are: Fire Alarm, Safety Instrumented System, Recirculation and Full Ventilation.

It is the responsibility of the engineer and vendor to implement the correct priority and sequence of operation based upon the various input alarms. Example: if a fire alarm and gas alarm are received simultaneously, typically the fire alarm would take priority. Likewise if a fire alarm is received and acted upon, and shortly thereafter, while the fire alarm is still active, another alarm is received asking to change the state of the unit, the priority of the active fire alarm should take precedence. The sequence of operation of the alarm handling is an engineering design consideration and should be specified on a per project basis.

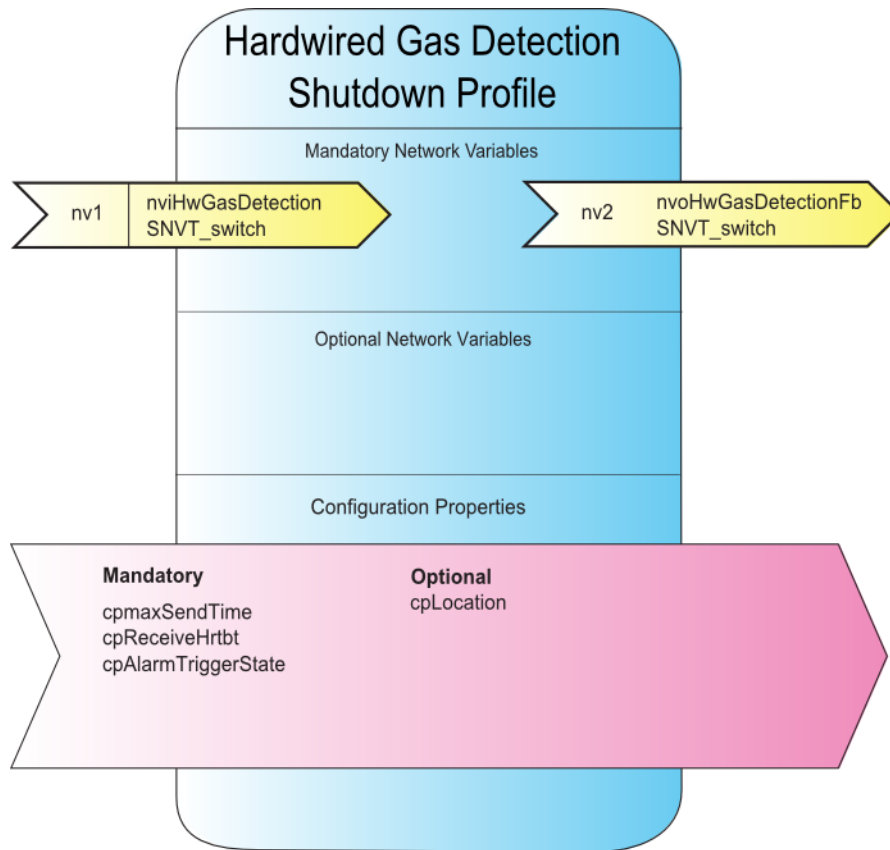
Figure 1 shows an example where these five profiles are used with a Node and a HVAC object in a device.



**Figure 1** Example Usage of the Object

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## Object Details



**Figure 3** Object Details

**Table 1** SNVT Details

<b>NV # (M/O)*</b>	<b>Variable Name</b>	<b>SNVT Name</b>	<b>SNVT Index</b>	<b>Description</b>
1 (M)	nviHwGasDetection	SNVT_switch	95	Input variable that initiate the Gas Detection Shut Down
2 (M)	nvoHwGasDetectionFb	SNVT_Switch	95	Output variable that indicates that a Gas Detection Shutdown has occurred

\* M = mandatory, O = optional

**Table 2** SCPT Details

<b>Man. Opt. *</b>	<b>SCPT Name NV Name Type or SNVT</b>	<b>SCPT Index</b>	<b>Associated NVs **</b>	<b>Description</b>
Man	SCPTmaxSendTime cpMaxSendTime SNVT_time_sec (107)	49	nv2 (M)	Maximum period of time that expires before the Object will automatically update NVs (Heartbeat)
Man	SCPTmaxRcvTime cpReceiveHrtbt SNVT_time_sec (107)	48	nv1 (M)	Maximum period of time that expires before the NVs will use their default values (Receive Heartbeat)
Man	SCPTdefaultstate cpAlarmTriggerState SNVT_switch	71	Entire Object	Indicates which state of the relay is the active
Opt	SCPTlocation nciLocation SNVT_str_asc (36)	17	Entire Object	Used to provide physical location of the node

\* Man = mandatory, Opt = optional

\*\* List of NVs to which this configuration property applies.

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## Mandatory Network Variables

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### Gas Detection Shutdown Input

```
network input sd_string("@p|1") SNVT_switch  
nviHwGasDetection;
```

This input network variable is used to initiate a Gas Detection shut down. The input can come from a Gas Detection system or from the main control system which is monitoring the hard wired inputs.

#### *Valid Range*

SNVT\_switch

#### *Default Value*

SNVT\_switch = 0.0 0

#### *Configuration Considerations*

Receive Heartbeat.

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### Gas Detection Shutdown Output

```
network output sd_string("@p|2") bind_info(ackd)  
SNVT_switch nvoHwGasDetectionFb;
```

This output network variable is used to indicate that a Gas Detection shutdown has occurred. The hardware input for this event comes from a digital input and is hardwired to the Gas Detection system.

#### *Valid Range*

The valid range of SNVT\_switch.

#### *Default Value*

SNVT\_switch = 0.0 0 which indicates that there is no alarm

## *Configuration Considerations*

The transmission of this NV is regulated by the time specified in the nciMaxSendTime CP, unless the nciMaxSendTime CP has a value of 0.0, or other invalid value; in which case, the NV is not regulated by the nciMaxSendTime value.

## *When Transmitted*

The output variable is transmitted:

- Upon node reset, after obtaining valid data.
- When the 'state' has changed.
- Regularly at the interval defined by the configuration variable nciMaxSendTime.

## *Default Service Type*

The default service type is acknowledged.

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## Configuration Properties

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### Send Heartbeat (Mandatory)

```
network input config sd_string("&2,2,0\x80,49")
SNVT_time_sec nciMaxSendTime;
```

This input configuration property sets the maximum period of time that can expire before the Object will automatically update the following network variables:

nv2 – nvoHwGasDetection (Mandatory)

#### *Valid Range*

The valid range is 1.0 to 3600.0 seconds.

Values outside this range are invalid and will disable the automatic update mechanism. A value of zero (0) will be used for the internal timer in cases where configured values are above 3600.0 seconds.

#### *Default Value*

The default value is 30.0 .

#### *Configuration Requirements/Restrictions*

This CP has no modification restrictions (no\_restrictions). It can be modified at any time.

#### *SCPT Reference*

SCPTmaxSendTime (49)

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### Receive Heartbeat (Mandatory)

```
network input config sd_string("&2,1,0\x80,48")
SNVT_time_sec nciMaxRcvTime;
```

This configuration property is used to control the maximum time that elapses after the last update to a bound network input.

nv2 – nviHwGasDetection



## *Valid Range*

The valid range is 1.0 to 3600.0 seconds.

## *Default Value*

The default value is 30.0

Setting SCPTmaxRcvTime to zero disables the receive failure detect mechanism.

## *Configuration Requirements/Restrictions*

This CP has no modification restrictions (no\_restrictions). It can be modified at any time.

## *SCPT Reference*

SCPTmaxRecTime (48)

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## **Alarm Trigger state (Mandatory)**

```
network input config sd_string("&2,p,0\x80,71")
SNVT_switch cpAlarmTriggerState;
```

This input configuration indicates the default state of the input signal. With this configuration property you could set if the alarm signal will be defected while ACTIVE HIGH or ACTIVE LOW.

## *Valid Range*

SNVT\_switch

## *Default Value*

The default value is 100.0 1 (Active High)

## *Configuration Requirements/Restrictions*

This CP has no modification restrictions

## *SCPT Reference*

SCPTdefltBehave (71)

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## Location Label (Optional)

```
network input config sd_string("&1,p,0\x80,17")
SNVT_str_asc nciLocation;
```

This configuration property can be used to provide the location of the Object/node, where **p** is the Object index. The above code declaration is for providing the location of the Object. If it is preferred, the location of the node can be represented with the following code declaration:

```
network input config sd_string("&0,,0\x80,17")
SNVT_str_asc nciLocation;
```

### *Valid Range*

Any NULL-terminated ASCII string up to 31 bytes of total length (including NULL). The string must be truncated if the length does not allow the 31<sup>st</sup> character to be the NULL (0x00).

### *Default Value*

The default value is an ASCII string containing 31 NULLs (0x00).

### *Configuration Requirements/Restrictions*

This CP has no modification restrictions (no\_restrictions). It can be modified at any time.

### *SCPT Reference*

SCPTlocation (17)

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## Key for Unresolved References

*i . j . k* are the indices of the CP-associated NVs in relation to their declaration order within the node, when implemented.

*p* is this Object's index relative to the node *sd\_string* declaration, when implemented.

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## Data Transfer

None specified.

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## Power-up State

There is no immediate network action on Power-up State.

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## Boundary and Error Conditions

None specified.

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## Additional Considerations

None specified.

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