LONMARK®
Functional Profile:
Vertical/Conveyer Transportation

Elevator/Lift Position Indicator and Message Display

Overview

This document describes the Functional Profile of a Position Indicator Object. Use of the standard Node object is implied. The node will most likely include other objects such as Hall Lantern and Car Direction Lantern.

The Position Indicator displays the name of a floor in response to a text input from the elevator controller. The display can be one of a variety of types, including 7- segment, 16 segment, dot matrix, LCD or TFT.All types will respond to the same inputs and interpret the data in a suitable way.
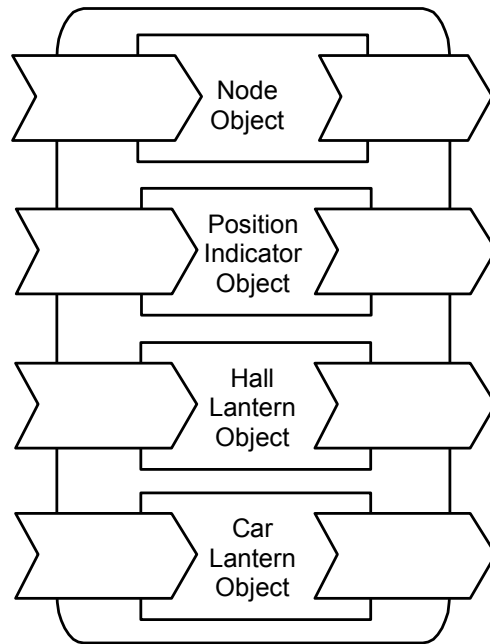

Figure 1 Node Concept

Example Usage

The Position Indicator will display the name of the floor levels served by the elevator car. The nviUpCar and nviDownCar inputs are used to determine the direction of vertical scrolling appropriate for the direction of travel of the car in the hoistway.
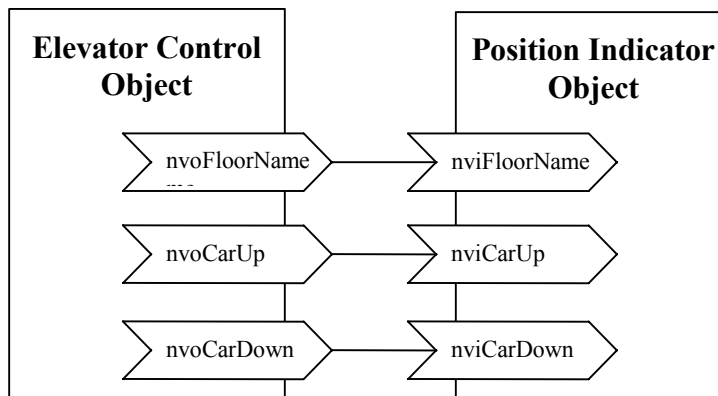

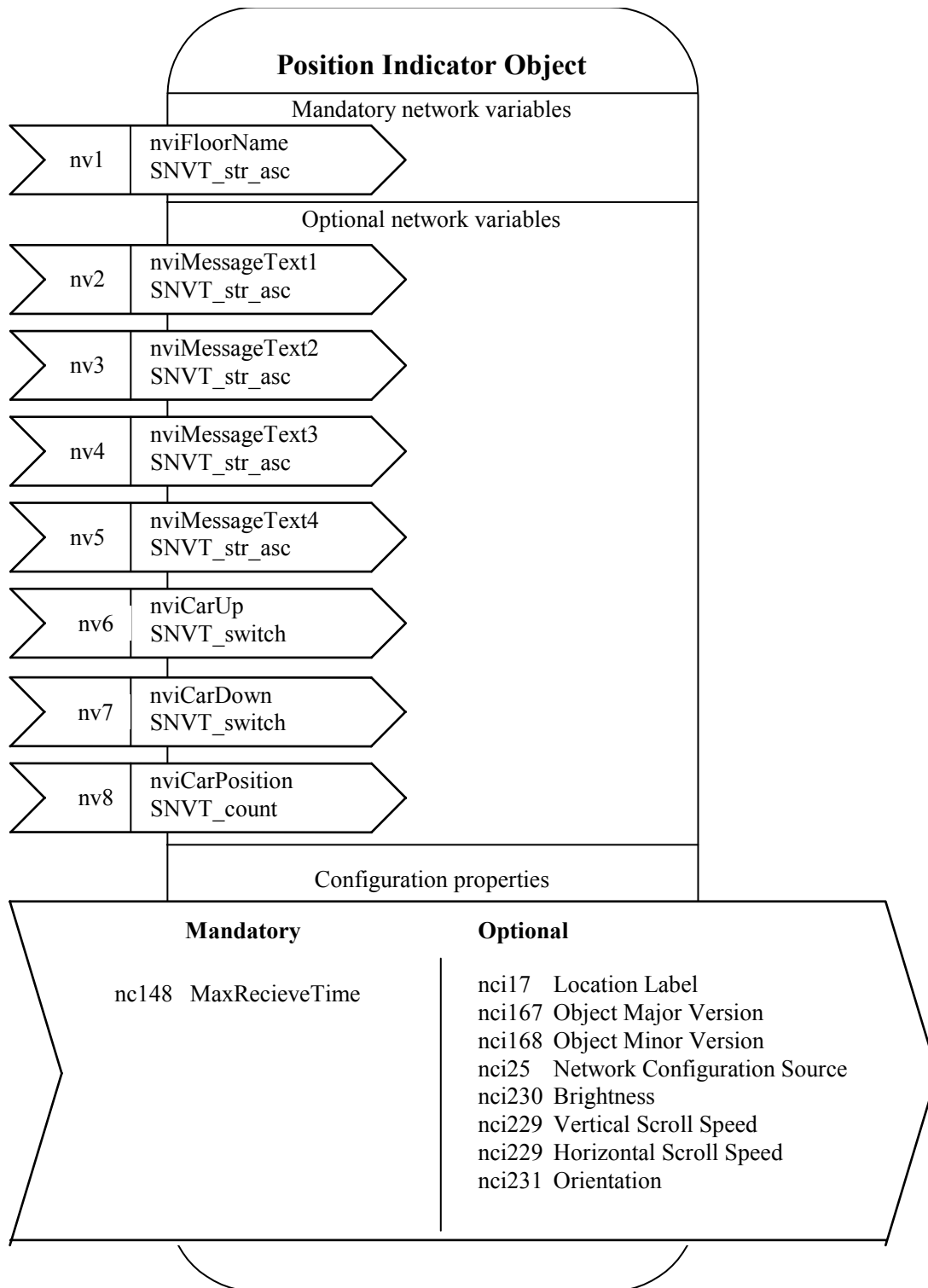**Figure 2** Example Usage of the Object

Object Details

Position Indicator Object

Mandatory network variables

nv1 — nviFloorName SNVT_str_asc

Optional network variables

nv2 — nviMessageText1 SNVT_str_asc

nv3 — nviMessageText2 SNVT_str_asc

nv4 — nviMessageText3 SNVT_str_asc

nv5 — nviMessageText4 SNVT_str_asc

nv6 — nviCarUp SNVT_switch

nv7 — nviCarDown SNVT_switch

nv8 — nviCarPosition SNVT_count

Configuration properties

Mandatory

nc148   MaxRecieveTime

Optional

nci17   Location Label
nci167 Object Major Version
nci168 Object Minor Version
nci25   Network Configuration Source
nci230 Brightness
nci229 Vertical Scroll Speed
nci229 Horizontal Scroll Speed
nci231 Orientation

Figure 3 Object Details

Table 1 SNVT Details

NV # (M/O)*	Variable Name	SNVT Name	SNVT Index	Description
1 (M)	nviFloorName	SNVT_str_asc	36	Chosen Text for Floor Name
2 (O)	nviMessageText1	SNVT_str_asc	36	Scrolling Message Characters 1-29
3 (O)	nviMessageText2	SNVT_str_asc	36	Scrolling Message Characters 30-58
4 (O)	nviMessageText3	SNVT_str_asc	36	Scrolling Message Characters 59-87
5 (O)	nviMessageText4	SNVT_str_asc	36	Scrolling Message Characters 88-116
6 (O)	nviUpCar	SNVT_switch	95	Car traveling in up direction
7 (O)	nviDownCar	SNVT_switch	95	Car traveling in down direction
8 (O)	nviCarPosition	SNVT_count	8	Position of car to nearest floor.

* M = mandatory, O = optional

Table 2 SCPT Details

Man. Opt. *	SCPT Name NV Name Type or SNVT	SCPT Index	Associated NVs **	Description
Man	SCPTmaxRcvTime nciMaxReceiveT SNVT_time_sec	48	Entire Object	Used to define how long indicator will wait before reverting to error display.
Opt	SCPTlocation nciLocation SNVT_str_asc (36)	17	Entire Object	Used to provide physical location of the node
Opt	SCPTobjMajVer nciObjMajVer unsigned short	167	Entire Object	Defines the major version number of the Object
Opt	SCPTobjMinVer nciObjMinVer unsigned short	168	Entire Object	Defines the minor version number of the Object
Opt	SCPTnwrkCnfg nciNetConfig SNVT_config_src	25	Entire Object	Defines the source of network configuration information
Opt	SCPTbrightness nciBrightness SNVT_switch	230	Entire Object	Defines brightness of display as % of max.
Opt	SCPTorientation nciOrientation SNVT_angle_deg	231	Entire Object	Defines portrait or Landscape mode
Opt	SCPTscrollSpeed nciVertScroll SNVT_switch	229	Entire Object	Defines rate of vertical floor label scrolling as % of max, or no scrolling
Opt	SCPTscrollSpeed nciHorizScroll SNVT_switch	229	Entire Object	Defines rate of horizontal text scrolling as % of max, or no scrolling

* Man = mandatory, Opt = optional   ** List of NVs to which this configuration property applies.

Mandatory Network Variables

nviFloorName

```
network input sd_string("@p|1") SNVT_str_asc
nviFloorName;
```

This input network variable is used to allow an external node to instruct the position indicator to display the characters sent. The indicator will convert the ASCII data into the necessary signals to drive whatever type of display is attached.

Valid Range

Any supported ASCII characters.

Some position indicators may, because of limitations of programming of type of display device, be unable to support all the characters defined in the ASCII list.

Unsupported characters should bring up an error display to alert the user to such a problem. This may show itself where position indicators of different capabilities are installed on a particular installation.

Where too many characters are sent for the display to show at once, the indicator may either ignore extra characters or scroll the whole data across the display window.

Default Value

None.

Where no data is received within the heartbeat time, the display will revert to the error display. If heartbeat is disabled, the display will continue to show the last valid data received.

Configuration Considerations

The maximum receive time should be configured if it is intended that a failure of the elevator controller to refresh the floor data will result in an error display. It may be the case that the last valid data should continue to be displayed, in which case the configuration can be left at its default of zero which will disable the receive error display.

Optional Network Variables

nviMessageText1 - nviMessageText4

```
network input sd_string("@p|2(or 3,4,5)") SNVT_str_asc
nviMessageText(x);
```

This input network variable is used to allow an external node to instruct the position indicator to display a series of characters sent as an information message. Each variable contains up to 29 characters of the message. Up to 4 variables may be used for a maximum message length of 116 characters. This information is to be displayed in its entirety. If the total number of characters exceeds the display capacity, the device may scroll the information.

The display device converts the ASCII character information into the necessary signals to drive whatever type of display is attached.

Valid Range, minimum

Any device supports at least all upper case A-Z and 0-9. Lower case a-z would be converted to upper case.

Valid Range, recommended

Any device supporting all 7-bit ASCII characters, numbers, punctuation, and symbols.

Some position indicators may, because of limitations of programming of type of display device, be unable to support all the characters defined in the ASCII list.

Unsupported characters should bring up an error display to alert the user to an information communication problem. This may show itself where position indicators of different capabilities are installed on a particular installation.

Where too many characters are sent exceeding memory and or display capacity, the display device will ignore extra characters.

Default Value

None

Where no data is received within the heartbeat time, the display will revert to the floor display.

nviUpCar, nviDownCar

```
network input sd_string("@p|6") SNVT_switch nviUpCar;

network input sd_string("@p|7") SNVT_switch
nviDownCar;
```

These input network variables are used in conjunction with nviFloorName in a node which supports vertical scrolling of the floor names. The direction of the scrolling is determined by the direction of travel of the elevator car.

Where vertical scrolling is supported, these inputs must also be present.

Valid Range

Value	State	Action
ANY	0	Direction OFF
0	1	Direction OFF
>0	1	Direction ON
ANY	-1 (0xFF)	Undefined, No Action

Default Value

state = 0   value = 0

Car Position Input

```
network input sd_string("@p|8") bind_info(unackdr)
SNVT_Count nviCarPosition;
```

This input network variable reports the position to the nearest opening (floor) of the elevator car.

Valid Range

1 to number of floors in building. 0 means car position unknown. Anything outside this range is an Invalid Value.

Default Value

None.

Configuration Considerations

None.

Configuration Properties

Recieve Heartbeat (Mandatory)

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

This input configuration property sets the maximum period of time that can expire before the Object will automatically give an error display or clear a text message. If not set, the floor display will maintain the last valid data and a text message will clear after the default 10 second time.

Valid Range

The valid range is 1.0 to 30.0 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 30.0 seconds.

Default Value

The default value is 0.0 (default 10 second time).

Configuration Requirements/Restrictions

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

SCPT Reference

SCPTmaxSendTime (48)

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 31st character to be the NULL (0x00).

Default Value

The default value is an ASCII string containing all zeroes.

Configuration Requirements/Restrictions

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

SCPT Reference

SCPTlocation (17)

Object Major Version (Optional)

```
network input config sd_string("&1,p,0\x84,167")
unsigned short nciObjMajVer;
```

This configuration property can be used to provide the major version number of the Object when implemented on a device.

Valid Range

Any integer number from 1 to 255. Only 1-byte of information is accepted.

Default Value

The default value is one (1).

Configuration Requirements/Restrictions

This CP is a constant (const_flg). It is not to be modified except that it is allowable to modify the value in a download of new code to the device.

SCPT Reference

SCPTobjMajVer (167)

Object Minor Version (Optional)

```
network input config sd_string("&1,p,0\x84,168")
unsigned short nciObjMinVer;
```

This configuration property can be used to provide the minor version number of the Object when implemented on a device.

Valid Range

Any integer number from 0 to 255. Only 1-byte of information is accepted.

Default Value

The default value is zero (0).

Configuration Requirements/Restrictions

This CP is a constant (const_flg). It is not to be modified except that it is allowable to modify the value in a download of new code to the device.

SCPT Reference

SCPTobjMinVer (168)

Network Configuration Source (Optional)

```
network input config sd_string("&1,p,0\x80,25")
SNVT_config_src nciNetConfig;
```

All nodes that support self-installation must provide this configuration property to allow a network tool to also install the node.

Valid Range

When a node is self-installed this variable should be set to CFG_LOCAL when the node is manufactured. A variable set to CFG_EXTERNAL signifies that a network tool will assign network addresses for the node.

Default Value

For a self-installed node the default value is CFG_LOCAL.

Configuration Requirements/Restrictions

This CP has no modification restrictions (no_restrictions). It can be modified at any time. If a change is made from External to Local (unlikely), the node will need to be reset.

SCPT Reference

SCPTnwrkcnfg(25)

Brightness (Optional)

```
network input config sd_string("&1,p,0\x80,230")
SNVT_switch nciBrightness;
```

This configuration property can be used to adjust the brightness level of the display of a Position Indicator.

Valid Range

Value	State	Action
ANY	0	Display OFF
0	1	Display OFF
>0	1	Minimum Brightness, (0.5% to 100%)
200	1	Maximum Brightness, (100%)
ANY	0xFF	Undefined, No Action

Default Value

not defined

Configuration Requirements/Restrictions

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

Horizontal Scrolling Speed (Optional)

```
network input config sd_string("&1,p,0\x80,229")
SNVT_switch nciHorizScroll;
```

This configuration property can be used to adjust the speed at which the display of a Position Indicator scrolls text horizontally. Any Position Indicator, which supports horizontal text scrolling, must include this configuration property

Valid Range

Value	State	Action
ANY	0	Display OFF
0	1	Display OFF
>0	1	Min Scroll Speed, (0.5% to 100%)
200	1	Max Scroll Speed, (100%)
ANY	0xFF	Undefined, No Action

Default Value

not defined.

Configuration Requirements/Restrictions

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

Vertical Scrolling Speed (Optional)

```
network input config sd_string("&1,p,0\x80,229")
SNVT_switch nciVertScroll;
```

This configuration property can be used to adjust the speed at which the display of a Position Indicator scrolls floor labels vertically. Any Position Indicator, which supports vertical scrolling, must include this configuration property

Valid Range

Value	State	Action
ANY	0	Display OFF
0	1	Display OFF
>0	1	Min Scroll Speed, (0.5% to 100%)
200	1	Max Scroll Speed, (100%)
ANY	0xFF	Undefined, No Action

Default Value

not defined

Configuration Requirements/Restrictions

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

Orientation (Optional)

```
network input config sd_string("&1,p,0\x80,231")
SNVT_angle_deg nciOrientation;
```

This configuration property can be used to specify the orientation of the display of a Position Indicator, which is capable of operating in alternate modes.

Valid Range

Landscape mode is 0 degrees and Portrait mode is +90 degrees.

(any value greater than 0 will be interpreted as Portrait mode, and 0 or below will be interpreted as Landscape mode)

Default Value

The default value 0 degrees for Landscape mode.

Configuration Requirements/Restrictions

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

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.

Power-up State

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

The display will show the error display until an input is received.

Boundary and Error Conditions

None specified.

Additional Considerations

None specified.