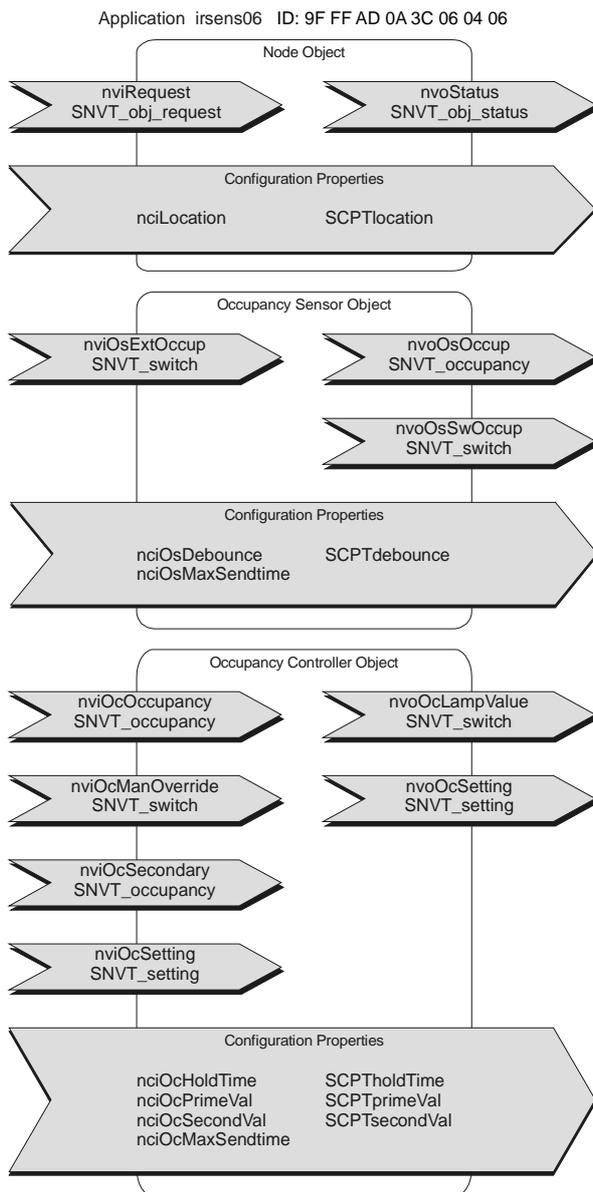


## Software Application irsens06 (Sensors, Occupancy Controller)

For sensor model WRF06ILON



Standard application for occupancy detection in rooms. All functions are converted under consideration of the LonMark<sup>®</sup> function profiles **1060 Occupancy Sensor** and **3071 Occupancy Controller**. The application uses standard network variables (SNVT) and standard configuration parameters (SCPT).

**Occupancy Sensor:** The current room occupancy is output by the variables type SNVT\_occupancy and SNVT\_switch. The output variables are set back with a delay time after detected occupancy (adjustable by nciOsDebounce).

By means of the input / output variables of type SNVT\_switch the occupancy sensor offers the additional option to bind several occupancy detectors or to switch light dependently of occupancy.

**Occupancy Controller:** The occupancy controller can be used as a light switch, in dependently of occupancy (by nvoOcLampValue) or for switching-on/ -off a connected constant light controller (by nvoOcSetting). The output variables are set back with a delay time after detected occupancy (adjustable by nciOcHoldTime).

The input variable nviOcOccupancy can be connected to the output variable nvoOsOccup of the internal occupancy detector. By means of nviOcOccupancy = OCCUPIED the light is switched to the value nciOcPrimeVal. The input variable nviOcSecondary can be connected to a related occupancy sensor. By nviOcSecondary = OCCUPIED the light is switched-on to the value nciOcSecondVal. By means of nviOcSetting the controller can be activated respectively deactivated. By nviOcManOverride it is possible to externally override the controller.

### Node Object

The Node Object supervises and controls the functions of the individual objects within the unit. The basic functions required by the LonMark<sup>®</sup> are supported.

#### Network Variables Node Object:

##### nviRequest

SNVTType: SNVT\_obj\_request, Index 92

Function: Input variable including the functions RQ\_NORMAL, RQ\_UPDATE\_STATUS and RQ\_REPORT\_MASK.

##### nvoStatus

SNVTType: SNVT\_obj\_status, Index 93

Function: Output variable with required status bits „invalid\_id“ and „invalid\_request“.

#### Configuration Parameter Node Object:

##### nciLocation

SCPTType: SCPTlocation, Index 17, SNVT\_str\_asc

Function: Additional input option to store information on location.

## Occupancy Sensor Object

### Network Variables Occupancy Sensor Object:

#### nviOsExtOccup

SNVTType: SNVT\_switch, Index 95

Function: Input variable for external occupancy detector (e.g. disjunction of several occupancy sensors). By means of  $nviOsExtOccup = 100.0$  1 the output variables are set. By  $nviOsExtOccup = 0.0$  0 the output variables are set back after expiration of the delay time „nciOsDebounce“. The internal IR-occupancy sensor is connected to the controller via „nviOsExtOccup“ disjunction.

#### nvoOsOccup

SNVTType: SNVT\_occupancy, Index 109

Function: Output variable occupancy detection. Is set as soon as internal or external occupancy is detected. The setting back is made by nciOsDebounce after expiration of the delay time. Data transmission is made in dependence on the configuration parameters nciOsDebounce and nciOsMaxSendtime. **Modul-Reset:** No data transmission is made for the first 30 sec. after reset (initialization phase of occupancy detector) and nvoOccup receives the value OC\_UNOCCUPIED.

#### nvoOsSwOccup

SNVTType: SNVT\_switch, Index 95

Function: Output variable occupancy detection. Is sent parallel to nvoOsOccup. This variable can be evaluated by another occupancy sensor as an „external occupancy detector“ or it can directly control a light group.

### Configuration Parameter Occupancy Sensor Object:

#### nciOsMaxSendtime

SCPTType: SCPTmaxSendTime, Index 49, SNVT\_time\_sec

Function: Heartbeat function. Stipulates interval time after which the output variables are sent independently of a result change.

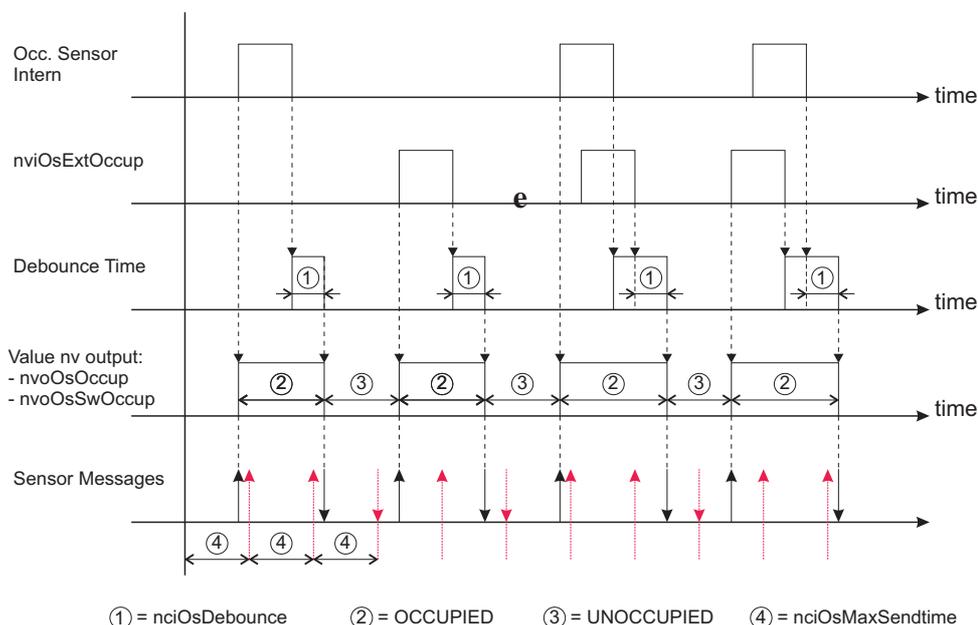
The heartbeat function is deactivated by input value  $< 1$ . (Preset value: 120 sec)

#### nciOsDebounce

SNVTType: SCPTdebounce, Index 139, SNVT\_time\_sec

Function: Time delay for setting back of output variables after detected occupancy. The delay timer is started after status change „Occupancy ==> No Occupancy“. (Preset value: 0 sec.)

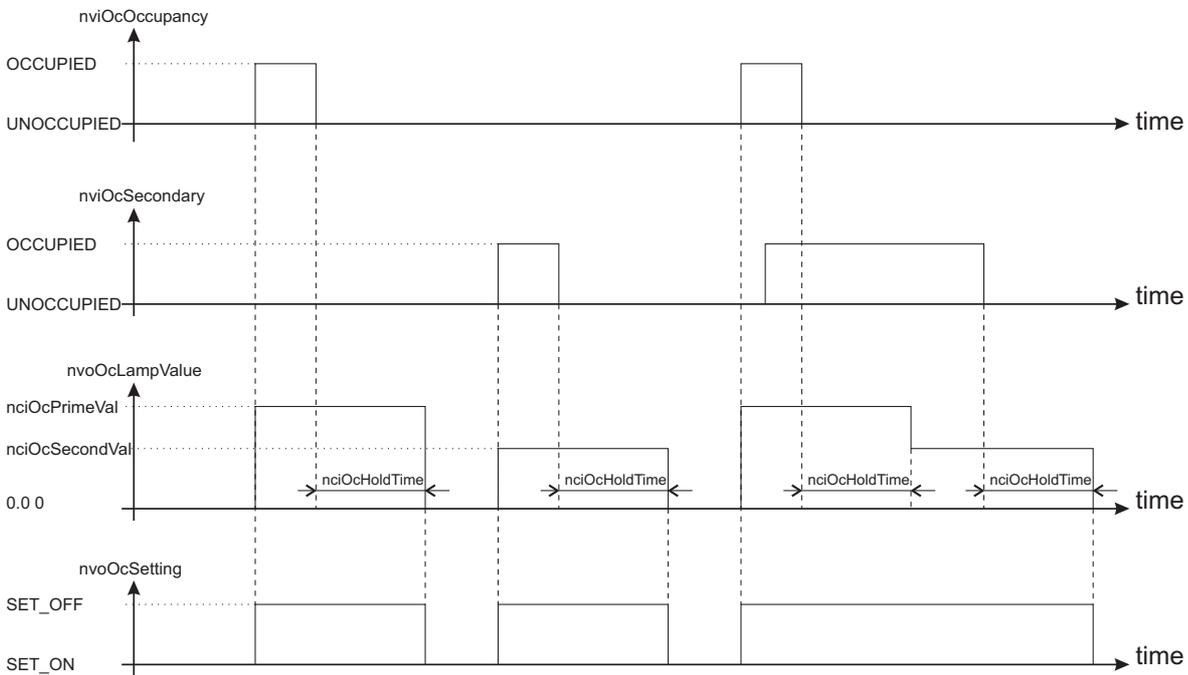
### Function Diagram Occupancy Sensor:



## Occupancy Controller Object

The occupancy controller can be used as a light switch dependently of occupancy (by nvoOcLampValue) or for switching-on or -off a connected constant light controller (by nvoOcSetting).

### Function Diagram Occupancy Controller:



### Network Variable Occupancy Controller Object:

#### nviOcOccupancy

SNVTType: SNVT\_occupancy, Index 109

Function: The input variable nviOcOccupancy makes the current room occupancy available to the controller and is connected to the output variable nvoOcOccup of the occupancy sensor. (Initialization value after reset: OC\_NUL)

#### nviOcManOverride

SNVTType: SNVT\_switch, Index 95

Function: Input variable for manual light control. An update of nviOcManOverride locks the controller and the output variable nvoOcLampValue takes over the values of nviOcManOverride.

nviOcManOverride.state = 0  $\Rightarrow$  nvoOcLampValue = 0.0 0

nviOcManOverride.state = 1  $\Rightarrow$  nvoOcLampValue = nviOcManOverride

If the occupancy controller is deactivated by nviOcManOverride, the controller is re-switched to the automatic modus after receipt of UNOCCUPIED to nviOcOccupancy and after expiration of the time delay nciOcHoldTime(Initialization value after reset: 0.0 -1)

#### nviOcSecondary

SNVTType: SNVT\_occupancy, Index 109

Function: Input variable of a related occupancy detector including the current room occupancy of a related area. (Initialization value after reset: OC\_NUL)

#### nvoOcSetting

SNVTType: SNVT\_setting, Index 117

Function: The input variable nvoOcSetting activates respectively deactivates the controller.

Initialization status after reset: nviSettingOC.function = SET\_ON

nvoOcSetting.function = SET\_OFF  $\Rightarrow$  Controller = OFF; nvoOcLampValue = 0.0 0 (light OFF)

nvoOcSetting.function = SET\_ON  $\Rightarrow$  Controller = ON;

**nvoOcLampValue**

SNVTType: SNVT\_switch, Index 95

Function: Output variable for light control (see function diagram Occupancy Controller)

nvoOcLampValue.state = 0  $\Rightarrow$  Light OFFnvoOcLampValue.state = 1  $\Rightarrow$  Light ON

nvoOcLampValue.value = Light intensity (0 - 100 %)

Data output is made in dependence of the configuration parameter nciOCMaxSendtime, upon change of output value and 5 s after reset.

**nvoOcSetting**

SNVTType: SNVT\_setting, Index 117

Function: Output variable for control of a re-switched controller, e.g. constant light controller (see function diagram Occupancy Controller). Data output is made analog to nvoOcLampValue.

nviOccupancy or nviSecondary =OCCUPIED  $\Rightarrow$  nvoSettingOC.function = SET\_ONnviOccupancy and nviSecondary =UNOCCUPIED  $\Rightarrow$  nvoSettingOC.function = SET\_OFF**Configuration Parameter Occupancy Controller Object:****nciOcHoldTime**

SCPTType: SCPTHoldTime, Index 91, SNVT\_time\_sec

Function: Time delay for setting back the output variables nvoOcLampValue and nvoOcSetting after nviOcOccupancy and nviOcSecondary turned to the status UNOCCUPIED. The delay timer is started after status change „OCCUPIED $\Rightarrow$ UNOCCUPIED“.

(Preset value: 600,0 sec = 10 min)

**nciOcPrimeVal**

SCPTType: SCPTprimeVal, Index 155, SNVT\_switch

Function: The configuration parameter nciPrimVal defines the output value of nvoOcLampValue if

nviOcOccupancy = OCCUPIED. (Preset value: 100.0 1)

**nciOcSecondVal**

SCPTType: SCPTsecondVal, Index 156, SNVT\_switch

Function: The configuration parameter nciOcSecondVal defines the output value of nvoOcLampValue if

nviOccupancy = UNOCCUPIED and nviSecondary = OCCUPIED. (Preset value: 0.0 0)

**nciOcMaxSendtime**

SCPTType: SCPTmaxSendTime, Index 49, SNVT\_time\_sec

Function: Heartbeat function. Stipulates interval time after which the output variables are sent independently on a status change.

The heartbeat function is deactivated by the input value &lt; 1. (Preset value: 120 sec)

**General Remarks:****Wink - Event**

Service LED is triggered and blinking two times.

**Configuration Parameter**

A download of application overwrites manufacturer's configuration parameters. The configuration variables are designed as configuration network variables are designed as configuration network variables and are therefore also available as bindable network variables in virtual functional block (from LNS 3.0). Thus parameter changes are possible even without installation tool via a LON-bind.

**!!An update of variables is directly written into the non-volatile memory of hardware. User has to make sure, that !! a total number of writing cycles does not exceed maximum capacity of non-volatile memory (dimensions <10000).**