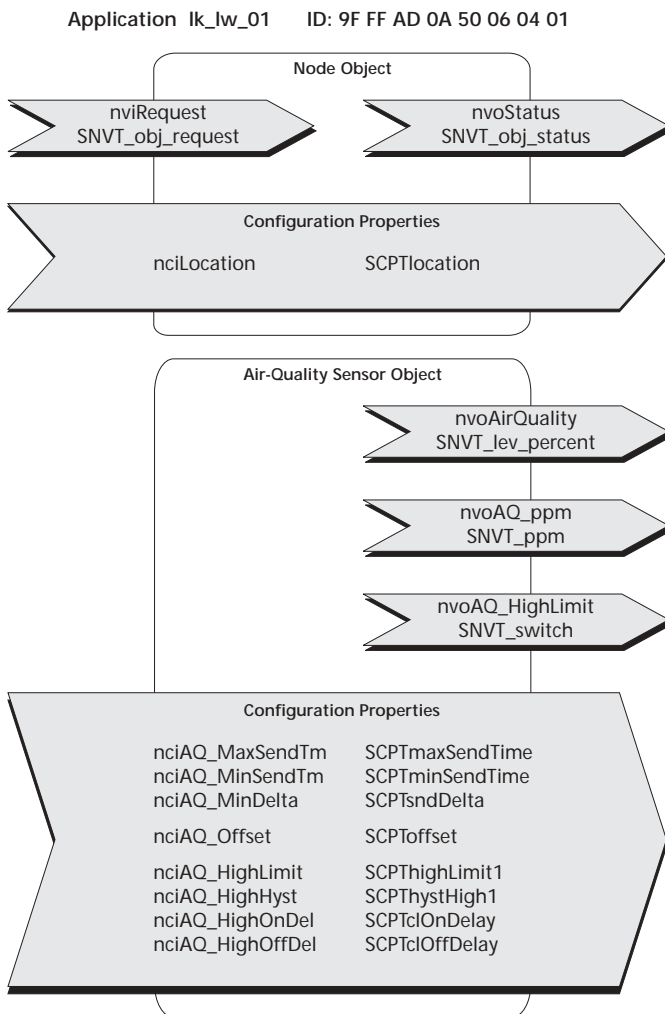


**Software Application lk\_lw\_01** (Sensors, Limit Switch)

For models LW04 LON and LK LON



Standard application for detection of air-quality and data output.

The application uses standard network variables (SNVT) and standard configuration parameters (SCPT) which are in accordance with the LonMark® defaults.

**Air-quality sensor:**

The mixed gas sensor detects gases and vapours, that can be oxidized (burnt):

Body odours, tobacco smoke, perspiration of materials (furnitures, carpets, coats of paint etc.). As experience has shown, these sensors are detecting the main part of air-quality felt by people. For the recent years, they have proved in a variety of applications. (Please see "Infoblatt\_THK").

**Output variables:**

The air-quality is output by means of the variables **nvoAirQuality** (0 - 100 %) and **nvoAQ\_ppm** (0 - 1000) whereas the values increase with worse air.

**Limit switch:** The sensor object offers the possibility to configure a limit switch by means of a hysteresis value. Output is made by means of the variable **nvoAQ\_HighLimit** of type SNVT\_switch.

**Node Object**

The Node Object supervises and controls the functions of the individual objects within a device. The basic functions required by LonMark® are supported.

**Network Variables Node Object:****nviRequest**

SNVT Type: SNVT\_obj\_request, Index 92

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

**nvoStatus**

SNVT Type: SNVT\_obj\_status, Index 93

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

**Configuration Parameter Node Object:****nciLocation**

SCPT Type: SCPTlocation, Index 17, SNVT\_str\_asc

Function: Additional input option to store information on location.

## Air-Quality Sensor Object

The object includes the functions for detection of air-quality, limit switch and data output.

### Network Variables Air-Quality Sensor Object:

#### *nvoAirQuality*

SNVT Type: SNVT\_lev\_percent, Index 81

Function: Output variable for the measured air-quality in percent. The value increases with worse air. Due to the fact, that the sensor is a mixed gas sensor, please note the remarks regarding the interpretation of the sensor signal (Infoblatt\_THK). Data output is made depending on the configuration parameters *nciAQ\_MinSendTm*, *nciAQ\_MaxSendTm*, *nciAQ\_MinDelta*, upon change of limit switch and approx. 3 sec. after reset. (Range: 0 - 100 %)

#### *nvoAQ\_ppm*

SNVT Type: SNVT\_ppm, Index 29

Function: Output variable for measured air-quality in ppm. The value increases with worse air. Due to the fact, that the sensor is a mixed gas sensor, please note the remarks regarding the interpretation of the sensor signal (Infoblatt\_THK). Data output is made depending on the configuration parameters *nciAQ\_MinSendTm*, *nciAQ\_MaxSendTm*, *nciAQ\_MinDelta*, upon change of limit switch and approx. 3 sec. after reset. (Range: 0 - 1000 ppm)

#### *nvoAQ\_HighLimit*

SNVT Type: SNVT\_switch, Index 95

Function: Output variable of limit switch for upper limiting value.

If the upper limiting value ( $nciAQ\_HighLimit + nciAQ\_HighHyst / 2$ ) is exceeded for the time *nciAQ\_HighOnDel*, *nvoAQ\_HighLimit* = 100.0 1 is set.

If the upper limiting value ( $nciAQ\_HighLimit - nciAQ\_HighHyst / 2$ ) is under-run for the time *nciAQ\_HighOffDel*, *nvoAQ\_HighLimit* = 0.0 0 is set.

Data output is made upon change of output value, depending on *nciAQ\_MaxSendTm* and approx. 3 sec. after reset.

### Configuration Parameter Air-Quality Sensor Object:

#### *nciAQ\_MaxSendTm*

SCPT Type: SCPTmaxSendTime, Index 49, SNVT\_time\_sec

Function: Heartbeat function. Stipulates interval period, after which all output variables of the object are sent independently of a value change. By means of input values < 1 the heartbeat function is deactivated. (Preset value: 5min.)

#### *nciAQ\_MinSendTm*

SCPT Type: SCPTminSendTime, Index 52, SNVT\_time\_sec

Function: Stipulates smallest update interval of the output variable *nvoAirQuality* und *nvoAQ\_ppm*. An update is made after expiration of *nciAQ\_MinSendTm*, if air-quality has changed by more than *nciAQ\_MinDelta*. By means of input values < 1 the function is deactivated. (Preset value: 5 sec)

#### *nciAQ\_MinDelta*

SCPT Type: SCPTsndDelta, Index 27, SNVT\_lev\_percent

Function: If air-quality is changed by the value *nciAQ\_MinDelta*, the new value is transmitted. The function is depending on the adjustment of the parameter *nciAQ\_MinSendTm*. (Range >= 0 %; Preset value: 1 %)

#### *nciAQ\_Offset*

SCPT Type: SCPToffset, Index 26, SNVT\_lev\_percent

Function: Offset value for additional adjustment of output signal. By means of this parameter a software increase respectively lowering of the output signal is possible.

### ***nciAQ\_HighLimit***

SCPT Type: SCPTHighLimit1, Index 9, SNVT\_lev\_percent  
 Function: Upper limiting value. (Range: 0 - 100 %, : 50 %)

### ***nciAQ\_HighHyst***

SCPT Type: SCPTHystHigh1, Index 11, SNVT\_lev\_percent  
 Function: Hysteresis value for calculation of upper switching treshold (Preset value: 5 %)

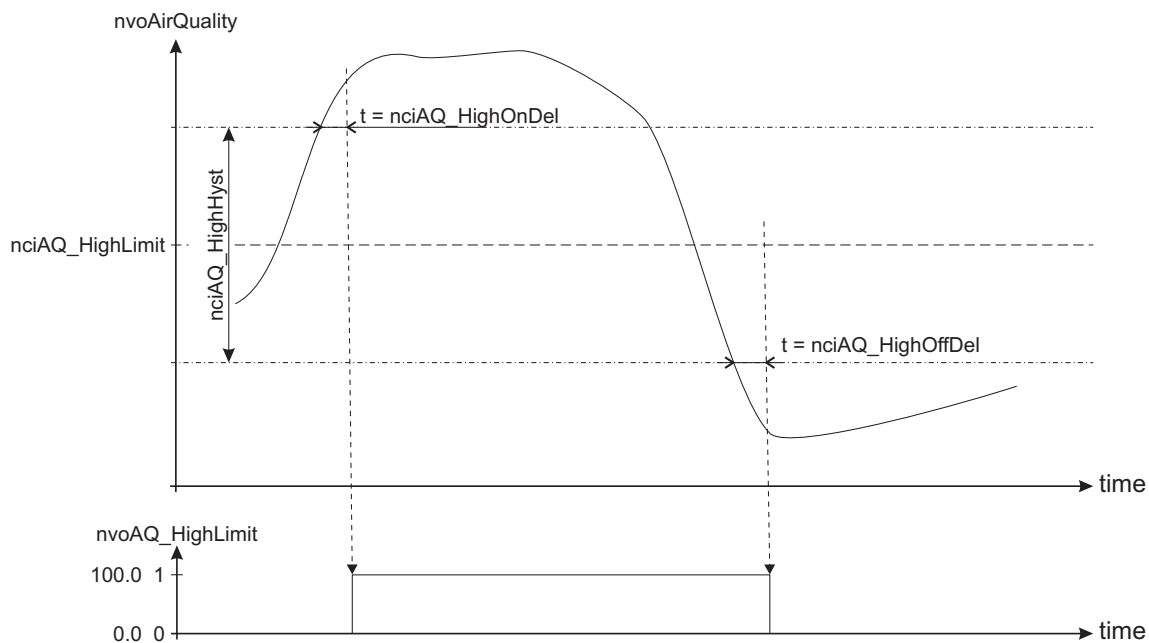
### ***nciAQ\_HighOnDel***

SCPT Type: SCPTclOnDelay, Index 86, SNVT\_time\_sec  
 Function: Switch-on delay for upper limit switch nvoAQ\_HighLimit.  
 (Value range: 0 - 6553 sec., Preset value: 0 sec.)

### ***nciAQ\_HighOffDel***

SCPT Type: SCPTclOffDelay, Index 85, SNVT\_time\_sec  
 Function: Switch-off delay for upper limit switch nvoAQ\_HighLimit.  
 (Value range: 0 - 6553 sec., Preset value: 0 sec.)

## ***Function Diagram Limit Switch***



## ***General Remarks:***

### ***Wink - Event***

The service LED is triggered and blinking two times.

### ***Configuration Parameter:***

A download of the application overwrites manufacturer's parameter adjusted. The configuration parameters are designed as configuration network variables. Thus, they are also available as bindable network variables in the virtual-functional-block. A parameter change can be made even without installation tool via another LON node, thus.

**!! An update of the variables is directly written into the non-volatile program memory of the hardware. User !! must guarantee, that the total number of writing cycles does not exceed maximum capacity of non-volatile !! memory. (dimension <10000).**