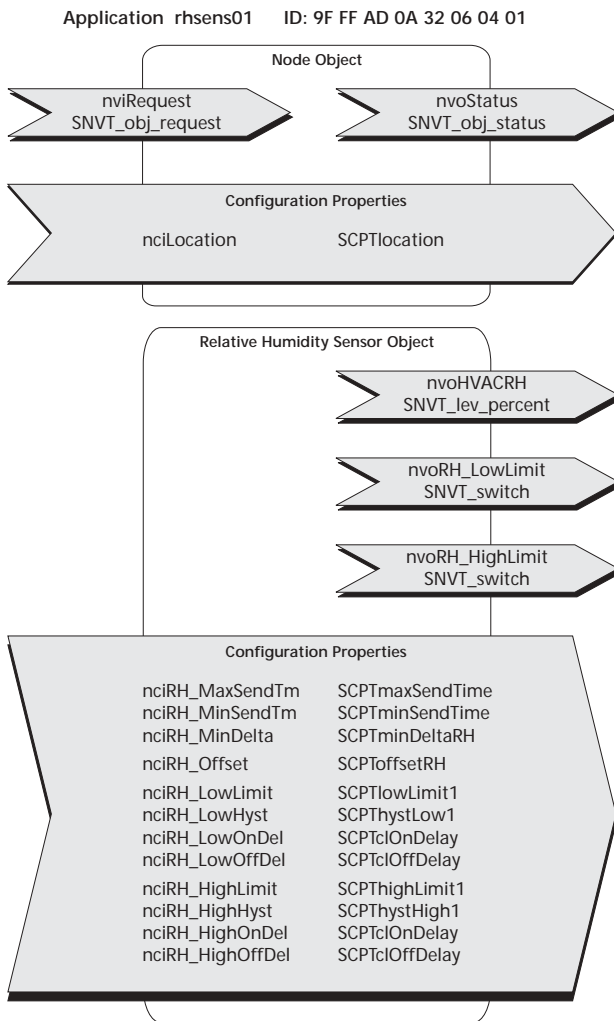


Software Application rhsens01 (Sensors, Limit Switch)

For models FW04 LON, FA54 LON and FK LON



Standard application for detection of relative humidity and data output.

All functions are converted under consideration of the LonMark® function profile **1050 Relative Humidity Sensor**. The application uses standard network variables (SNVT) and standard configuration parameters (SCPT).

Output Variables:

Relative humidity is output by means of the variables **nvoHVACRH** (0 - 100 %) of type SNVT_levpercent.

Limit Switch: The sensor object offers the additional possibility to configure an upper or lower limit switch by means of hysteresis values.

Output is made by means of the variables **nvoRH_LowLimit** and **nvoRH_HighLimit** vom Typ SNVT_switch.

Node Object

The Node Object supervises and controls the functions of the individual objects within the device. The basic functions required by the 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 requested status bits „invalid_id“ and „invalid_request“.

Configuration Parameter Node Object:**nciLocation**

SCPT Type: SCPTlocation, Index 17, SNVT_str_asc

Function: Additional input possibility to store information on location.

Relative Humidity Sensor Object

The object contains the functions for measuring humidity, limit switch and data output.

Network Variables Relative Humidity Sensor Object:

nvoHVACRH

SNVT Type: SNVT_lev_percent, Index 81

Function: Output variable for measured relative humidity in percent. Data output is made depending on the configuration parameters *nciRH_MinSendTm*, *nciRH_MaxSendTm*, *nciRH_MinDelta*, upon change of limit switch and approx. 5 sec. after reset.

nvoRH_LowLimit

SNVT Type: SNVT_switch, Index 95

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

If the lower limiting value ($\text{nciRH_LowLimit} - \text{nciRH_LowHyst} / 2$) is under-run for the time *nciRH_LowOnDel*, *nvoRH_LowLimit* = 100.0 1 is set.

If the lower limiting value ($\text{nciRH_LowLimit} + \text{nciRH_LowHyst} / 2$) is exceeded for the time *nciRH_LowOffDel*, *nvoRH_LowLimit* = 0.0 0 is set.

Data output is made upon change of output value, depending on *nciRH_MaxSendTm* and approx. 5 sec. after reset.

nvoRH_HighLimit

SNVT Type: SNVT_switch, Index 95

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

If the upper limiting value ($\text{nciRH_HighLimit} + \text{nciRH_HighHyst} / 2$) is exceeded for the time *nciRH_HighOnDel*, *nvoRH_HighLimit* = 100.0 1 is set.

If the upper limiting value ($\text{nciRH_HighLimit} - \text{nciRH_HighHyst} / 2$) is under-run for the time *nciRH_HighOffDel*, *nvoRH_HighLimit* = 0.0 0 is set.

Data output is made upon change of output value, depending on *nciRH_MaxSendTm* and approx. 5 sec. reset.

Configuration Parameter Relative Humidity Sensor Object:

nciRH_MaxSendTm

SCPT Type: SCPTmaxSendTime, Index 49, SNVT_time_sec

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

nciRH_MinSendTm

SCPT Type: SCPTminSendTime, Index 52, SNVT_time_sec

Function: Stipulates the smallest update interval of the output variables *nvoHVACRH*. An update is made after expiration of *nciRH_MinSendTm*, if relative humidity has changed by more than *nciRH_MinDelta*. By means of input values < 1 the function must be deactivated. (Preset value: 5 sec)

nciRH_MinDelta

SCPT Type: SCPTminDeltaRH, Index 62, SNVT_lev_percent

Function: If relative humidity is changing by the adjusted value *nciRH_MinDelta*, the new value is transmitted. The function is depending on the adjustment of the parameter *nciRH_MinSendTm*.
(Range >= 0 %; Preset value: 1 %)

nciRH_Offset

SCPT Type: SCPToffsetRH, Index 69, SNVT_lev_percent

Function: Offset value for additional calibration of relative humidity.

!! The sensor is calibrated during production. A change of the values overwrites manufacturer's !! adjustments.

nciRH_LowLimit

SCPT Type: SCPTLowLimit1, Index 18, SNVT_lev_percent
Function: Lower limiting value. (Range: 0 - 100 %, Preset value: 20 %)

nciRH_LowHyst

SCPT Type: SCPTHystLow1, Index 13, SNVT_lev_percent
Function: Hysteresis value for calculation of lower switching threshold. (Preset value: 5 %)

nciRH_LowOnDel

SCPT Type: SCPTclOnDelay, Index 86, SNVT_time_sec
Function: Switch-on delay for lower limit switch nvoRH_LowLimit.
(Range: 0 - 6553 sec., Preset value: 0 sec.)

nciRH_LowOffDel

SCPT Type: SCPTclOffDelay, Index 85, SNVT_time_sec
Function: Switch-off delay for lower limit switch nvoRH_LowLimit.
(Range: 0 - 6553 sec., Preset value: 0 sec.)

nciRH_HighLimit

SCPT Type: SCPTHighLimit1, Index 9, SNVT_lev_percent
Function: Upper limiting value. (Range: 0 - 100 %, Preset value: 80 %)

nciRH_HighHyst

SCPT Type: SCPTHystHigh1, Index 11, SNVT_lev_percent
Function: Hysteresis value for calculation of upper switching threshold. (Preset value: 5 %)

nciRH_HighOnDel

SCPT Type: SCPTclOnDelay, Index 86, SNVT_time_sec
Function: Switch-on delay for upper limit switch nvoRH_HighLimit.
(Range: 0 - 6553 sec., Preset value: 0 sec.)

nciRH_HighOffDel

SCPT Type: SCPTclOffDelay, Index 85, SNVT_time_sec
Function: Switch-off delay for upper limit switch nvoRH_HighLimit.
(Range: 0 - 6553 sec., Preset value: 0 sec.)

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).