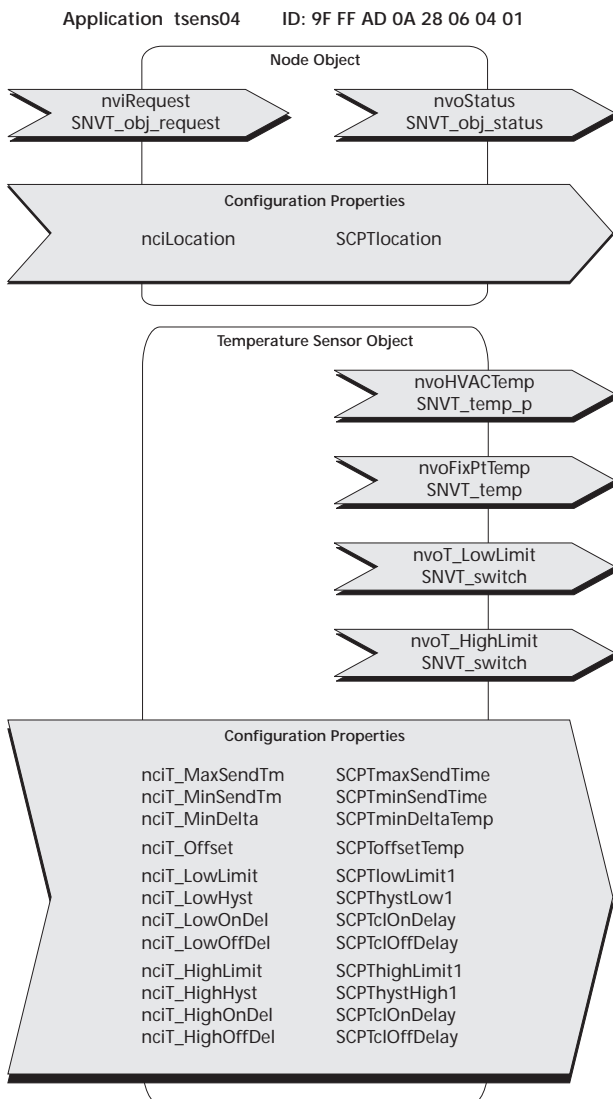


**Software Application tsens04** (Sensing, Limit Switch)

For LON sensors type TF25, RPF40, RPF100, VFG54, AGS54, AKF10, SFK02



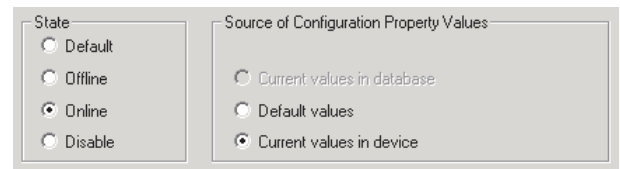
Standard application for temperature measuring and data output.

All functions are converted under consideration of the LonMark® function profile **1040 Temperature Sensor**. The application uses standard network variables (SNVT) and standard configuration properties (SCPT).

**Output Variables Temperature:**

Temperature:      nvoHVACTemp (SNVT\_temp\_p)  
                          nvoFixPtTemp (SNVT\_temp)

**!! The temperature sensor is calibrated by the !! configuration parameter nciT\_Offset during !! production. Thus, the pre-adjusted, device-specific !! values must be taken over when integrating the !! devices to the LON network.**

**Example LonMaker:**

**Limit switch:** The sensor object offers the additional option to configure an upper and lower limiting value by means of hysteresis values.

Output is made by the variables **nvoT\_LowLimit** and **nvoT\_HighLimit** of type SNVT\_switch.

**Node Object**

The Node Object supervises and controls the functions of the individual objects within the unit. 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 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.

## Temperature Sensor Object

The object includes the functions for temperature measuring, evaluation of limit switch and data output.

### Network Variables Temperature Sensor Object:

#### nvoHVACTemp

SNVT Type: SNVT\_temp\_p, Index 105

Function: Output variable for measured temperature value (resolution 1/100 °C). Data output is made depending on the the configuration parameters nciT\_MinSendTm, nciT\_MaxSendTm, nciT\_MinDelta, upon change of limit switch and approx. 5 sec. after reset.

#### nvoFixPtTemp

SNVT Type: SNVT\_temp, Index 39

Function: Output variable for measured temperature value (resolution 1/10 °C). Data output is made analog to nvoHVACTemp.

#### nvoT\_LowLimit

SNVT Type: SNVT\_switch, Index 95

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

If the lower limiting value is under-run ( $\text{nciT\_LowLimit} - \text{nciT\_LowHyst} / 2$ ) for the time *nciT\_LowOnDel* **nvoT\_LowLimit = 100.0 1** is set.

If the lower limiting value ( $\text{nciT\_LowLimit} + \text{nciT\_LowHyst} / 2$ ) is exceeded for the time *nciT\_LowOffDel* **nvoT\_LowLimit = 0.0 0** is set.

Data output is made upon change of output value, depending on nciT\_MaxSendTm and approx. 5 sec. after reset.

#### nvoT\_HighLimit

SNVT Type: SNVT\_switch, Index 95

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

If the upper limiting value ( $\text{nciT\_HighLimit} + \text{nciT\_HighHyst} / 2$ ) is exceeded for the time *nciT\_HighOnDel* **nvoT\_HighLimit = 100.0 1** is set.

If the upper limiting value ( $\text{nciT\_HighLimit} - \text{nciT\_HighHyst} / 2$ ) is under-run for the time *nciT\_HighOffDel* **nvoT\_HighLimit = 0.0 0** is set.

Data output is made upon change of output value, depending on nciT\_MaxSendTm and approx. 5 sec. after reset.

### Configuration Parameter Temperature Sensor Object:

#### nciT\_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 on a value change. By means of the input values < 1 the heartbeat function is deactivated. (Preset value: 5 min)

#### nciT\_MinSendTm

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

Function: Stipulates smallest update interval of the temperature output variables. An update is made after expiration of *nciT\_MinSendTm*, if the temperature value has changed by more than *nciT\_MinDelta*. By means of the input values < 1 the function is deactivated. (Preset value: 5 sec)

#### nciT\_MinDelta

SCPT Type: SCPTminDeltaTemp, Index 64, SNVT\_temp\_p

Function: If the temperature changes by the adjusted value *nciT\_MinDelta*, the new temperature values are transmitted. The function is depending on the adjustment of the parameter *nciT\_MinSendTm*. (Range >= 0 °C; Preset value: 0,30 °C)

**nciT\_Offset**

SCPT Type: SCPTOffsetTemp, Index 70, SNVT\_temp\_p

Function: Offset for temperature value. By means of this parameter a software calibration is possible. Please note the remarks on room temperature sensors in our „Infoblatt THK“.

**!! The sensor is calibrated during production. A value change overwrites manufacturer's adjustments.**

**nciT\_LowLimit**

SCPT Type: SCPTLowLimit1, Index 18, SNVT\_temp\_p

Function: Lower limiting value. (Value range = measuring range, preset value: 8,00 °C)

**nciT\_LowHyst**

SCPT Type: SCPTHystLow1, Index 13, SNVT\_temp\_p

Function: Hysteresis value for calculation of lower switching threshold. (Preset value: 1,00 °C)

**nciT\_LowOnDel**

SCPT Type: SCPTclOnDelay, Index 86, SNVT\_time\_sec

Function: Switch-on delay for lower limit switch nvoT\_LowLimit.  
(Range: 0 - 6553 sec., Preset value: 0 sec.)

**nciT\_LowOffDel**

SCPT Type: SCPTclOffDelay, Index 85, SNVT\_time\_sec

Function: Switch-off delay for lower limit switch nvoT\_LowLimit.  
(Range: 0 - 6553 sec., Preset value: 0 sec.)

**nciT\_HighLimit**

SCPT Type: SCPTHighLimit1, Index 9, SNVT\_temp\_p

Function: Upper limiting value. (Value range = measuring range, preset value: 40,00 °C)

**nciT\_HighHyst**

SCPT Type: SCPTHystHigh1, Index 11, SNVT\_temp\_p

Function: Hysteresis value for calculation of upper switching threshold. (Preset value: 1,00 °C)

**nciT\_HighOnDel**

SCPT Type: SCPTclOnDelay, Index 86, SNVT\_time\_sec

Function: Switch-on delay for upper limit switch nvoT\_HighLimit.  
(Range: 0 - 6553 sec., Preset value: 0 sec.)

**nciT\_HighOffDel**

SCPT Type: SCPTclOffDelay, Index 85, SNVT\_time\_sec

Function: Switch-off delay for upper limit switch nvoT\_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 configuration parameters. The configuration parameters are designed configuration network variables. Thus, they are also available in the virtual-functional block. Thus, a parameter change is possible even without installation tool via another LON node.

**!! An update of the variables is directly written into the non-volatile 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).**