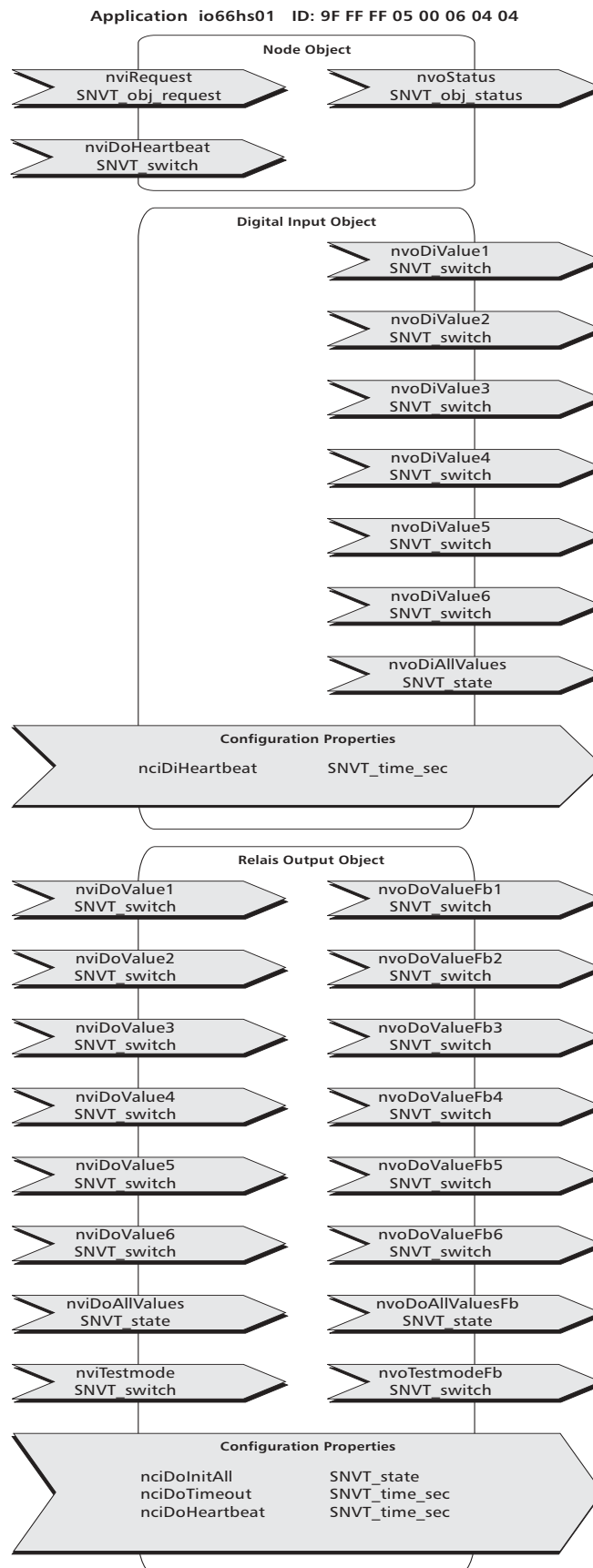


**Software Application io66hs01** (Standard I/O)

For Input/Output Module model IO66HS LON

Standard application for detection of digital inputs status, relay output control and data output.  
Application uses Standard Network Variables (SNVT) according to LonMark® prescriptions.



## 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

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

#### nvoStatus

SNVT Type: SNVT\_obj\_status

Function: Output variable including required status bits "invalid\_id" and "invalid\_request".

#### nviDoHeartbeat

SNVT Type: SNVT\_switch

Function: If input variable is set (100.1 1), the output variables [nvoDiValue[1..6], nvoDiAllValues, nvoDoValueFb[1..6] and nvoDoAllValuesFb are updated and transmitted after a calculated period of time [Node number 1....127] x 10 ms)

## Digital Input Object

Object includes status detection of digital inputs and data output.

### Network Variables Digital Input Object:

#### nvoDiValue[1...6]

SNVT Type: SNVT\_switch

Function: Status of digital inputs. The output variables are edited after change of input status, expiration of heartbeat interval (nciDiHeartbeat) and module reset.

Calculated time after module reset:  $1s + ([Node\ number\ 1...127] \times 10ms)$

Potential-free contact closed ==> nvoDiValue[1...6] = 100.0 1

Potential-free contract open ==> nvoDiValue[1...6] = 0.0 0

#### nvoDiAllValues

SNVT Type: SNVT\_state

Function: Status of all digital inputs in one collective network variable. Data output analog to nvoDiValue.

Potential-free contact closed ==> nvoDiAllValues.bit[0...5] = 1

Potential-free contact open ==> nvoDiAllValues.bit[0...5] = 0

### Configuration Parameter Digital Input Object:

The configuration variables are designed as bindable network variables, stored in EEPROM. Thus parameterization is also possible without installation tool.

**!! The new value will be stored directly 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).**

#### nciDiHeartbeat

SNVT Type: SNVT\_time\_sec

Function: Heartbeat interval. After expiration of nciDiHeartbeat the digital inputs are polled and output variables nvoDiValue[1...6] and nvoDiAllValues are transmitted.

Heartbeat function is disabled with input values < 1 sec. (Default: 0 )

## Relais Output Object

Object includes functions relay control and data output.

### Network Variables Relay Output Object:

#### nviDoValue [1...6]

SNVT Type: SNVT\_switch

Function: Input variables with orders for relays (100.0 1 = ON, 0.0 0 = OFF). Each update of this network variable initiates update of respective relay output.

#### nviDoAllValues

SNVT Type: SNVT\_state

Function: Input variable with orders for all relays.

nviDoAllValues.bit[0...5] = 0 ==> Relay = OFF

nviDoAllValues.bit[0...5] = 1 ==> Relay = ON

The variables nviDoValue and nviDoAllValues are treated the same, the last update determines relay status. Each update of this network variable initiates update of respective relay output.

#### nviTestmode

SNVT Type: SNVT\_switch

Function: Input variable for switching ON/OFF test mode. During test mode the relay contacts may only be operated directly via manual operating elements of the unit.

If test mode is left the relays either go to status nviDoValue[1...6] or nviDoAllValues, depending on which network variable was updated at last.

nviTestmode = 0.0 0 ==> Test mode = OFF

nviTestmode = 100.0 1 ==> Test mode = ON

Each of update of this network variable results in an update of nvoTestmodeFb.

#### nvoDoValueFb[1...6]

SNVT Type: SNVT\_switch

Function: Feedback variables for switch status of relays (100.0 1 = ON, 0.0 0 = OFF). Edited after each update of input variable, expiration of heartbeat interval (nciDoHeartbeat), module reset or at reset to initial value due to timeout. Calculated period for output after module reset: 1s+([Node number 1...127] x 10ms)

#### nvoDoAllValuesFb:

SNVT Type: SNVT\_state

Function: Feedback variables for switch status of all relays in one collective network variable. Data transmission analog to nvoDoValueFb. Path allocation like with nviDoAllValues.

#### nvoTestmodeFb

SNVT Type: SNVT\_switch

Function: Feedback variable to check if test mode is switched ON or OFF

nvoTestmodeFb = 0.0 0 ==> Test mode = OFF

nvoTestmodeFb = 100.0 1 ==> Test mode = ON

Data transmission if effected after each update of nviTestmode, upon manual switching at unit and after expiration of Heartbeat interval (nciDoHeartbeat).

### Configuration Parameter Relais Output Object:

The configuration variables are designed as bindable network variables, stored in EEPROM. Thus parameterization is also possible without installation tool.

**!! The new value will be stored directly 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).**

#### nciDoInitAll

SNVT Type: SNVT\_state

Function: Initializing switch status of relays after module reset or after expiration of nciDoTimeout. Path allocation like with nviDoAllValues. Default: 0 (all relays OFF).

***nciDoTimeout***

SNVT Type: SNVT\_time\_sec

Function: Monitoring period within input variable and orders for relays must be compared and updated. If this is not done in time, the relays accept the respective value from nciDoInitAll. Timeout function is disabled with input values < 1 sec.  
An network variable update to nviDoAllValues or one of the relay variables nviDoValue will re-start the supervising timer.  
Preset value: 0 (Timeout function disabled).

***nciDoHeartbeat***

SNVT Type: SNVT\_time\_sec

Function: Heartbeat interval. After expiration of time nciDoHeartbeat the switch statuses of relays are polled and the output variables nvoDoValueFb[1...6], nvoDoAllValuesFb and nvoTestmodeFb are transmitted.  
Heartbeat function is disabled with input values < 1 sec. ( Default: 0 )

***Test Mode:***

During test mode the relay contacts may be operated directly via manual operating elements of the unit.

***Starting Test Mode:***

Press service switch for more than 3 sec. or trip with nviTestmode = 100.0 1.

If LED Test shows red, test mode is activated.

The relay contacts can be manually operatead via the push-buttons at the unit.

***Leaving Test Mode:***

Press service switch for more than 3 sec. or trip with nviTestmode = 0.0 0.

If red LED Test extinguished, test mode is disabled.

(Note: Timeout function is disabled with test mode switched on. Upon leaving test mode the monitoring timer is re-started and the relays show either status nviDoValue[1...6] or nviDoAllValues, depending on which network variable was updated at last.)

***Wink - Event:***

Service LED is tripped and blinking two times.