User Manual

LON I/O Module DR-N MCU4-AC

Art. no.: MTN881811

Directory

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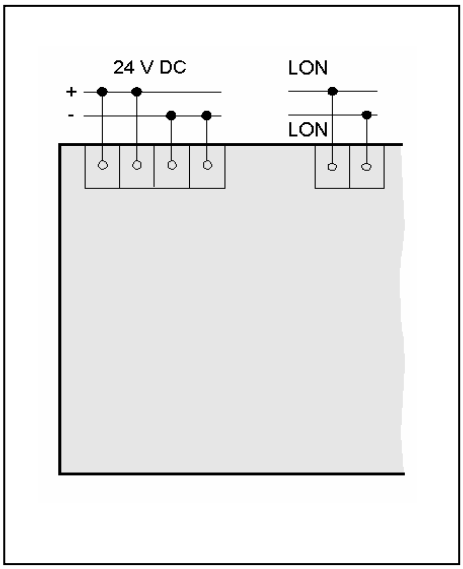
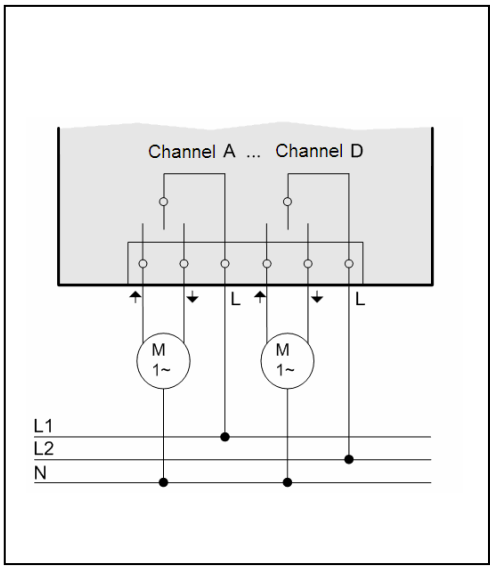
1. Description

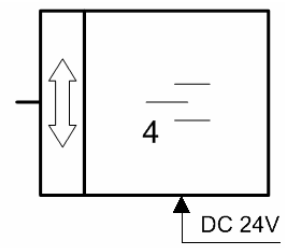




- control of four customary blinds by use of interference-suppressed 230 V standard motors
- eight relay outputs (NO contacts, 10 A)
- manual operation and status indication per output
- power down detection
- supply voltage: DC 24 V
- pluggable screw-type terminals
- width of device: approx. 72 mm (4 pitch)
- software application for control of four independent sunblind drives. Opportunity of prioritised control, analysis of meteorological data for sunblind protection, scene and group control

2. Function

The I/O-module provides independent outputs to control four electric drives with a power supply of DC 230 V.



The device requires a power supply of DC 24 V.

Status LEDs indicate the present state of the outputs.
Control buttons enable a direct control of the outputs.

Service and power LEDs indicate the general device state.

The application software is based on the LonMark Interoperability Guidelines.

3. Mounting

The I/O-module is for mounting on DIN rails according to EN 50 022.

The network cables, the power supply cables and the output cables are connected to the device by pluggable screw-type terminals.
To simplify the mounting, the cables can be screwed to the unplugged terminals in advance. The terminals can then be plugged into the fitted device.

All devices which will be mounted next to the I/O-module have to be fitted with a basic insulation at least.

The green power LED does not light until a valid application program has been loaded into the device.

The I/O-module propagates its Neuron-ID by pressing the service pin.
The service LED indicates the programming state.

For the right operation of the I/O-module an appropriate application program is needed.

Important note:

The device is equipped with bistable relays. The switch contacts of these outputs can be changed to the enabled state due to strong vibrations during transportation. Voltage may be present at the outputs when the mains voltage is connected to the system! Ensure that the relays are switched off before connecting the sunblind drives to the outputs! After commissioning, you can set the outputs to the required position with a simple "ON/OFF" switching cycle.

4. Remarks

Electrical devices may only be fitted and mounted by a skilled person.

For planning and building electrical systems the relevant standards, guidelines, regulations and requirements of the particular country have to be considered. In addition to that, the device-specific instructions have to be considered as well.
For project planning, mounting and commissioning, detailed knowledge about the LON technology is assumed.

The device's function depends on the applied software. Only application programs that are approved for this device may be loaded.

The builder of the LON system has to assure that the loaded application program and the configured parameters accord to the external circuit elements, especially if several programs for various applications are available for one device.

5. Technical Data

Power supply	
Supply voltage:	DC 24 V (+/-10%)
Current consumption:	max. 30 mA
Network interface	
Transceiver type:	LON-Free-Topology-Transceiver (TP/FT-10)
	Via pluggable bus clamp
Outputs	
Number:	4 (A .. D)
Type:	NO contacts, floating
Nominal switch voltage:	AC 230 V, 50 .. 60 Hz
Nominal switch current:	10 A, cos φ = 0.6
Switching capacity:	AC 230 V, max. 1000 W
Controls	
Service pin:	Propagates the Neuron-ID
Manual operation:	UP, DOWN for every output
Indicators	
RUN-LED:	ON: operating power-on, module configured; OFF: no power, no application loaded
Service-LED:	OFF: device operates normal; FLASHES: device is unconfigured; ON: network access error, device is applicationless
Connections	
Power supply, outputs:	Pluggable screw-type terminals for cross-sections of 1.5 .. 2.5 mm² (solid)
Bus:	2-pole plug-in and branch terminal (type: WAGO 243)
Housing	
Dimensions:	68 x 72 x 90 mm (H x W x D), 4 pitch according to DIN 43 880
Protection class:	IP20 (EN 60 529/IEC 144)
EMC	
Interference immunity:	according EN 50 090-2-2

6. Application description

6.1 Node object (LONMARK® profile #0)

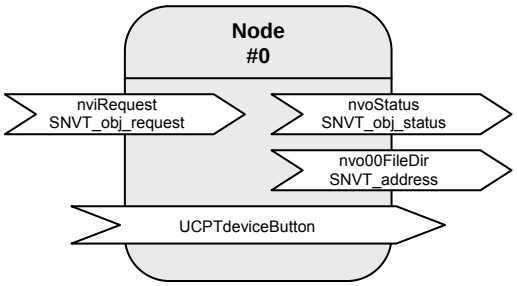


Table: functions, parameters and variables of the Node-Object

Function	Network variables	Type
Object request	nviRequest	SNVT_obj_request
Object status	nvoStatus	SNVT_obj_status
Address for DMA	nvo00FileDir	SNVT_address
Function	**Configuration parameter**	**Type**
Device buttons	UCPTdeviceButton	UNVT_enabled

Input variables

`nviRequest` - Object request

Type	SNVT_obj_request
Range	Valid Object-ID: RQ_NORMAL, RQ_UPDATE_STATUS, RQ_REPORT_MASK
Default	RQ_NORMAL
Description	Object request

Output variables

`nvoStatus` - Object status

Type	SNVT_obj_status
Range	The supported Status-Bits are: .report_mask, .invalid_id, .invalid_request
Default	All bits = 0
Description	Object status

nvo00FileDir - Address for DMA

Type	SNVT_address
Range	16,384 .. 64,767
Default	Not defined
Description	Address for DMA

Configuration variables

UCPTdeviceButton - Device buttons

Type	UNVT_enabled
Range	DISABLED, ENABLED
Default	ENABLED
Description	To disable the device buttons.

6.2 Sunblind Actuator (LonMark® #4)

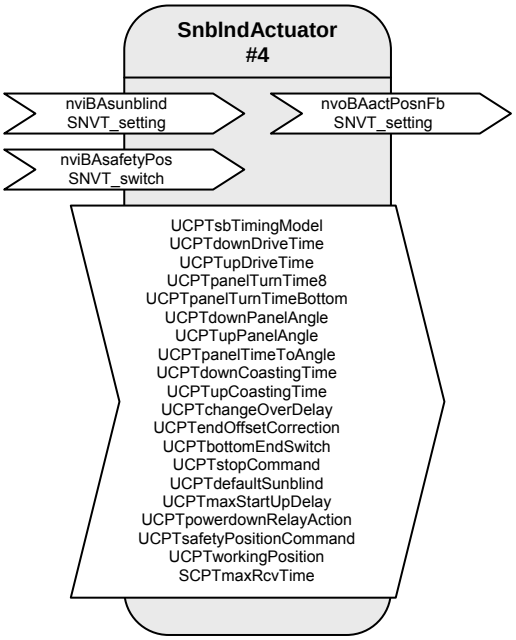


Table: functions, parameters and variables of the SnblndActuator-Object

Function	Network variable	Type
Sunblind setting input	nviBAsunblind	SNVT_setting
Actual position feedback	nvoBAactPosnFb	SNVT_setting
Safety position trigger, priority 1	nviBAsafetyPos	SNVT_switch

Function	Configuration parameter	Type
Sunblind timing model	UCPTsbTimingModel	UNVT_sb_model
Drive-down time	UCPTdownDriveTime	SNVT_time_sec
Drive-up time	UCPTupDriveTime	SNVT_time_sec
Panel turn time	UCPTpanelTurnTime8	UNVT_time_8_msec
Panel turn time bottom	UCPTpanelTurnTimeBottom	UNVT_time_8_msec
Drive-up panel angle	UCPTdownPanelAngle	SNVT_angle_deg
Drive-down panel angle	UCPTupPanelAngle	SNVT_angle_deg
Panel time to angle	UCPTpanelTimeToAngle	UNVT_lin_sin
Drive-down coasting time	UCPTdownCoastingTime	UNVT_time_8_ms_s
Drive-up coasting time	UCPTupCoastingTime	UNVT_time_8_ms_s
Change-over delay	UCPTchangeOverDelay	SNVT_time_sec
End offset correction	UCPTendOffsetCorrection	SNVT_lev_percent
Bottom position switch	UCPTbottomEndSwitch	UNVT_boolean
Stop command	UCPTstopCommand	UNVT_stop_cmd
Default sunblind command	UCPTdefaultSunblind	UNVT_setting
Maximum start-up delay	UCPTmaxStartUpDelay	SNVT_time_sec
Power-down relay action	UCPTpowerdownRelayAction	UNVT_RelayOnPwDn
Safety position command	UCPTsafetyPositionCommand	SNVT_setting
Working position	UCPTworkingPosition	SNVT_setting
Maximum receive time	SCPTmaxRcvTime	SNVT_time_sec

Network variable details:

Input variables

`nviBAsunblind` - Sunblind setting input

Type SNVT_setting

Range .function: SET_OFF, SET_DOWN, SET_UP, SET_STOP, SET_STATE
.setting: 0 .. 100 %
.rotation: -359.98° .. 360.00°

Default .function = SET_NUL
.setting = 0
.rotation = 0

Description Sunblind setting input

`nviBAsafetyPos` - Safety position trigger, priority 1

Type SNVT_switch

Range .value: 0 .. 100 %
.state: 0, 1

Default .value = 0
.state = 0

Description Safety position trigger, priority 1

Output variables

nvoBAactPosnFb - Actual position feedback

Type	SNVT_setting
Range	.function: SET_OFF, SET_DOWN, SET_UP, SET_STOP, SET_STATE .setting: 0 .. 100 % .rotation: -359.98° .. 360.00°
Default	.function = SET_NUL .setting = 0 .rotation = 0
Description	Actual position feedback

Configuration variables

UCPTsbTimingModel - Sunblind timing model

Type	UNVT_sb_model
Range	SM_VENETIAN
Default	SM_VENETIAN
Description	Timing model for the position calculation.

UCPTdownDriveTime - Drive-down time

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	60.0 seconds
Description	Time to drive the blind completely from top to bottom.

UCPTupDriveTime - Drive-up time

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	70.0 seconds
Description	Time to drive the blind completely from bottom to top.

UCPTpanelTurnTime8 - Panel turn time

Type	UNVT_time_8_msec
Range	0.000 ... 524.280 seconds [0.008 seconds]
Default	1.000 seconds
Description	Time for a total turn of the panels.

UCPTpanelTurnTimeBottom - Panel turn time bottom

Type	UNVT_time_8_msec
Range	0.000 ... 524.280 seconds [0.008 seconds]
Default	0.000 seconds
Description	The time for closing the panels at bottom position.

UCPTdownPanelAngle - Drive-up panel angle

Type	SNVT_angle_deg
Range	-359.98 ... 360.00 degrees [0.02 degrees]
Default	-75.00 degrees
Description	Angle of the panels when the blind is lowered. (0° = horizontal position)

UCPTupPanelAngle - Drive-down panel angle

Type	SNVT_angle_deg
Range	-359.98 ... 360.00 degrees [0.02 degrees]
Default	75.00 degrees
Description	Angle of the panels when the blind is raised. (0° = horizontal position)

UCPTpanelTimeToAngle - Panel time to angle

Type	UNVT_lin_sin
Range	LS_LINEAR, LS_SINUS
Default	LS_SINUS
Description	Determined the dependency between the panel turn time and the panel angle. Choose LS_SINUS if the panel angle is controlled by ropes at the edges.

UCPTdownCoastingTime - Drive-down coasting time

Type	UNVT_time_8_ms_s
Range	-262.144 ... 262.136 seconds [0.008 seconds]
Default	0.000 seconds
Description	This correction time is added to each down movement. It may be also negative.

UCPTupCoastingTime - Drive-up coasting time

Type	UNVT_time_8_ms_s
Range	-262.144 ... 262.136 seconds [0.008 seconds]
Default	0.000 seconds
Description	This correction time is added to each up movement. It may be also negative.

UCPTchangeOverDelay - Change-over delay

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	0.5 seconds
Description	The minimum time for change-over.

UCPTendOffsetCorrection - End offset correction

Type	SNVT_lev_percent
Range	-163.840 ... 163.835 % of full level [0.005 % of full level]
Default	15.000 % of full level
Description	Percentage of the driving time added to assure that the end position is reached.

UCPTbottomEndSwitch - Bottom position switch

Type	UNVT_boolean
Range	FALSE, TRUE
Default	TRUE
Description	Bottom position switch exists.

UCPTstopCommand - Stop command

Type	UNVT_stop_cmd
Range	SC_STOP, SC_NEXT, SC_OPPOSITE
Default	SC_STOP
Description	Defines which command stops. (Needed if the blind switch cannot send SET_STOP)

UCPTdefaultSunblind - Default sunblind command

Type	UNVT_setting
Range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_STOP 0.0 0.00
Description	The command the sunblind actuator adopts at power-on or reset.

UCPTmaxStartUpDelay - Maximum start-up delay

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	0.0 seconds
Description	The maximum random time by which the default values is delayed after start-up. (Avoids electrical switching peaks)

UCPTpowerdownRelayAction - Power-down relay action

Type	UNVT_RelayOnPwDn
Range	RA_STOP, RA_UP, RA_DOWN
Default	RA_STOP
Description	The state the relay adopts at power-down.

UCPTsafetyPositionCommand - Safety position command

Type	SNVT_setting
Range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_UP 100.0 360.00
Description	The value to reach the safety position.

UCPTworkingPosition - Working position

Type	SNVT_setting
Range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_NUL 0.0 0.00
Description	The device successively stops at these positions via { SET_UP 0 0 }/{ SET_DOWN 0 0 }. It stops also at position [0] via SET_OFF and at position [1] via SET_ON. Position [0] and [j] are taken after calibration.

SCPTmaxRcvTime - Maximum receive time

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	300.0 seconds
Description	The maximum period of time that may expire with no updates on the associated input network variables before the object goes into heartbeat failure mode. A zero value disables.

6.3 Sunblind Controller (LonMark® #6111)

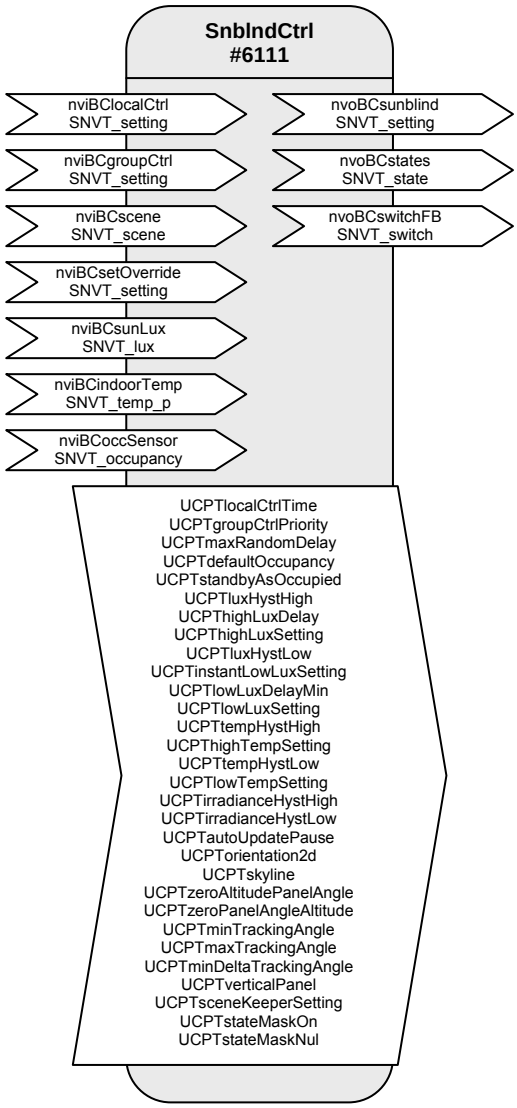


Table: functions, parameters and variables of the SnblndCtrl-Object

Function	Network variable	Type
Controller output	nvoBCsunblind	SNVT_setting
Control input, priority 4	nviBClocalCtrl	SNVT_setting
Control input, priority >user<	nviBCgroupCtrl	SNVT_setting
Scene trigger input	nviBCscene	SNVT_scene
Control input, priority 2	nviBCsetOverride	SNVT_setting
Outdoor brightness input	nviBCsunLux	SNVT_lux
Indoor temperature input	nviBCindoorTemp	SNVT_temp_p
Occupancy input for automatic mode selection	nviBCoccSensor	SNVT_occupancy
Controller states output	nvoBCstates	SNVT_state
Programmable feedback	nvoBCswitchFB	SNVT_switch

Function	Configuration parameter	Type
Local control time	UCPTlocalCtrlTime	SNVT_time_min
Group control priority	UCPTgroupCtrlPriority	UNVT_gpc_prio
Maximum random delay	UCPTmaxRandomDelay	SNVT_time_sec
Default occupancy state	UCPTdefaultOccupancy	SNVT_occupancy
Standby as occupied	UCPTstandbyAsOccupied	UNVT_boolean
Lux hysteresis high	UCPTluxHystHigh	SNVT_lux
High lux delay	UCPThighLuxDelay	SNVT_time_sec
High lux setting	UCPThighLuxSetting	SNVT_setting
Lux hysteresis low	UCPTluxHystLow	SNVT_lux
Instant low lux setting	UCPTinstantLowLuxSetting	SNVT_setting
Low lux delay	UCPTlowLuxDelayMin	SNVT_time_min
Low lux setting	UCPTlowLuxSetting	SNVT_setting
Temperature hysteresis high	UCPTtempHystHigh	SNVT_temp_p
High temperature setting	UCPThighTempSetting	SNVT_setting
Temperature hysteresis low	UCPTtempHystLow	SNVT_temp_p
Low temperature setting	UCPTlowTempSetting	SNVT_setting
Irradiance hysteresis high	UCPTirradianceHystHigh	SNVT_lux
Irradiance hysteresis low	UCPTirradianceHystLow	SNVT_lux
Auto update pause	UCPTautoUpdatePause	SNVT_time_min
Orientation 2D	UCPTorientation2d	UNVT_dir_2d
Skyline	UCPTskyline	UNVT_dir_2d
Zero altitude panel angle	UCPTzeroAltitudePanelAngle	SNVT_angle_deg
Zero panel angle altitude	UCPTzeroPanelAngleAltitude	SNVT_angle_deg
Minimum tracking angle	UCPTminTrackingAngle	SNVT_angle_deg
Maximum tracking angle	UCPTmaxTrackingAngle	SNVT_angle_deg
Tracking angle send on delta	UCPTminDeltaTrackingAngle	SNVT_angle_deg
Vertical panel	UCPTverticalPanel	UNVT_boolean
Scene keeper setting	UCPTsceneKeeperSetting	UNVT_setting
State mask on	UCPTstateMaskOn	SNVT_state
State mask nul	UCPTstateMaskNul	SNVT_state

Network variable details:

Input variables

nviBClocalCtrl - Control input, priority 4

Type	SNVT_setting
Range	.function: SET_OFF, SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NUL .setting: 0 .. 100 % .rotation: -359.98° .. 360.00°
Default	.function = SET_NUL .setting = 0 .rotation = 0
Description	Control input, priority 4

nviBCgroupCtrl - Control input, priority >user<

Type	SNVT_setting
Range	.function: SET_OFF, SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NUL .setting: 0 .. 100 % .rotation: -359.98° .. 360.00°
Default	.function = SET_NUL .setting = 0 .rotation = 0
Description	Control input, priority >user<

nviBCscene - Scene trigger input

Type	SNVT_scene
Range	.function: SC_RECALL .scene_number: 1 .. 5
Default	.function: SC_RECALL .scene_number: 0
Description	Scene trigger input

nviBCsetOverride - Control input, priority 2

Type	SNVT_setting
Range	.function: SET_OFF, SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NUL .setting: 0 .. 100 % .rotation: -359.98° .. 360.00°
Default	.function = SET_NUL .setting = 0 .rotation = 0
Description	Control input, priority 2

nviBCsunLux - Outdoor brightness input

Type	SNVT_lux
Range	0 .. 65,534 lux
Default	0
Description	Outdoor brightness input

nviBCindoorTemp - Indoor temperature input

Type	SNVT_temp_p
Range	-273.17 °C ... +327.66 °C
Default	+327.67 °C (0x7FFF, invalid value)
Description	Indoor temperature input

nviBCoccSensor - Occupancy input for automatic mode selection

Type	SNVT_occupancy
Range	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default	OC_NUL
Description	Occupancy input for automatic mode selection

Output variables

nvoBCsunblind - Controller output

Type	SNVT_setting
Range	.function: SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NUL .setting: 0 ... 100 % .rotation: -359.98° … 360.00°
Default	.function = SET_NUL .setting = 0 .rotation = 0
Description	Controller output

nvoBCstates - Controller states output

Type	SNVT_state
Range	.bit0 .. .bit15: 0, 1
Default	all bits = 0
Description	Controller states output

nvoBCswitchFB - Programmable feedback

Type	SNVT_switch
Range	.value: 0 … 100 % ; .state: 0, 1
Default	.value: 0 ; .state: 0
Description	Programmable feedback

Configuration variables

UCPTlocalCtrlTime - Local control time

Type	SNVT_time_min
Range	0 ... 65535 minutes [1 minutes]
Default	120 minutes
Description	The time period, a local control request is valid and the controller is bypassed.

UCPTgroupCtrlPriority - Group control priority

Type	UNVT_gpc_prio
Range	GCP_PRIORITY_3, GCP_PRIORITY_5
Default	GCP_PRIORITY_3
Description	GCP_PRIORITY_3: nviBCgroupCtrl may overrides local settings, GCP_PRIORITY_5: local settings may override nviGroupCtrl for the configured time.

UCPTmaxRandomDelay - Maximum random delay

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	0.0 seconds
Description	Maximum time between receiving a processing global command. (Avoids electrical switching peaks)

UCPTdefaultOccupancy - Default occupancy state

Type	SNVT_occupancy
Range	OC_NUL, OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY
Default	OC_NUL occupancy code names
Description	Occupancy state, adopt at power-on or reset.

UCPTstandbyAsOccupied - Standby as occupied

Type	UNVT_boolean
Range	FALSE, TRUE
Default	FALSE
Description	The OC_STANDBY command is interpreted as OC_OCCUPIED.

UCPTluxHystHigh - Lux hysteresis high

Type	SNVT_lux
Range	0 ... 65535 lux [1 lux]
Default	35000 lux
Description	The upper lux level for the hysteresis.

UCPThighLuxDelay - High lux delay

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	20.0 seconds
Description	The time period, the high lux level must exist for, before the message is transmitted.

UCPThighLuxSetting - High lux setting

Type	SNVT_setting
Range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_STATE 100.0 -45.00
Description	This setting value is transmitted when the current lux value exceeds lux hysteresis high.

UCPTluxHystLow - Lux hysteresis low

Type	SNVT_lux
Range	0 ... 65535 lux [1 lux]
Default	15000 lux
Description	The lower lux level for the hysteresis.

UCPTinstantLowLuxSetting - Instant low lux setting

Type	SNVT_setting
Range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_STATE 127.5 0.00
Description	This setting value is transmitted without delay when the current lux value falls below lux hysteresis low.

UCPTlowLuxDelayMin - Low lux delay

Type	SNVT_time_min
Range	0 ... 65535 minutes [1 minutes]
Default	60 minutes
Description	The time period, the low lux level must exist for, before the message is transmitted.

UCPTlowLuxSetting - Low lux setting

Type	SNVT_setting
Range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_OFF 0.0 0.00
Description	This setting value is transmitted when the current lux value falls below lux hysteresis low.

UCPTtempHystHigh - Temperature hysteresis high

Type	SNVT_temp_p
Range	-273.17 ... 327.67 degrees Celsius [0.01 degrees Celsius]
Default	23.00 degrees Celsius
Description	The high temperature level for hysteresis.

UCPThighTempSetting - High temperature setting

Type	SNVT_setting
Range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_STATE 100.0 -45.00
Description	This setting value is transmitted when the current temperature value exceeds temperature hysteresis high.

UCPTtempHystLow - Temperature hysteresis low

Type	SNVT_temp_p
Range	-273.17 ... 327.67 degrees Celsius [0.01 degrees Celsius]
Default	21.00 degrees Celsius
Description	The low temperature level for hysteresis.

UCPTlowTempSetting - Low temperature setting

Type	SNVT_setting
Range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_OFF 0.0 0.00
Description	This setting value is transmitted when the current temperature value falls below temperature hysteresis low.

UCPTirradianceHystHigh - Irradiance hysteresis high

Type	SNVT_lux
Range	0 ... 65535 lux [1 lux]
Default	7500 lux
Description	The upper irradiance level for the hysteresis.

UCPTirradianceHystLow - Irradiance hysteresis low

Type	SNVT_lux
Range	0 ... 65535 lux [1 lux]
Default	5000 lux
Description	The lower irradiance level for the hysteresis.

UCPTautoUpdatePause - Auto update pause

Type	SNVT_time_min
Range	0 ... 65535 minutes [1 minutes]
Default	15 minutes
Description	Pause for automatic commands after any command.

UCPTorientation2d - Orientation 2D

Type	UNVT_dir_2d
Range	.altitude: -90.00 ... 90.00 [0.02]; .azimuth: -359.98 ... 360.00 [0.02]
Default	0.00 0.00
Description	Orientation 2D

UCPTskyline - Skyline

Type	UNVT_dir_2d
Range	.altitude: -90.00 ... 90.00 [0.02]; .azimuth: -359.98 ... 360.00 [0.02]
Default	0.00 0.00
Description	Determines the skyline by points of the neighboring buildings.

UCPTzeroAltitudePanelAngle - Zero altitude panel angle

Type	SNVT_angle_deg
Range	-359.98 ... 360.00 degrees [0.02 degrees]
Default	-45.00 degrees
Description	If the sun is a zero altitude (at sunrise and sunset), this panel angle is adopted.

UCPTzeroPanelAngleAltitude - Zero panel angle altitude

Type	SNVT_angle_deg
Range	-359.98 ... 360.00 degrees [0.02 degrees]
Default	45.00 degrees
Description	If the sun is at this altitude, the panel angle 0° is adopted.

UCPTminTrackingAngle - Minimum tracking angle

Type	SNVT_angle_deg
Range	-359.98 ... 360.00 degrees [0.02 degrees]
Default	-45.00 degrees
Description	Minimum panel angle in tracking mode.

UCPTmaxTrackingAngle - Maximum tracking angle

Type	SNVT_angle_deg
Range	-359.98 ... 360.00 degrees [0.02 degrees]
Default	0.00 degrees
Description	Maximum panel angle in tracking mode..

UCPTminDeltaTrackingAngle - Tracking angle send on delta

Type	SNVT_angle_deg
Range	-359.98 ... 360.00 degrees [0.02 degrees]
Default	5.00 degrees
Description	The minimum tracking angle change required to update the output network variable.

UCPTverticalPanel - Vertical panel

Type	UNVT_boolean
Range	FALSE, TRUE
Default	FALSE
Description	Tracking angle is calculated for vertical panels

UCPTsceneKeeperSetting - Scene keeper setting

Type	UNVT_setting
Range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % of full level [0.5 % of full level]; .rotation: -359.98 ... 360.00 degrees [0.02 degrees]
Default	SET_NO_MESSAGE 0.0 0.00
Description	Values, that are transmitted via nvoSCSetting when a scene is recalled. SET_NO_MESSAGE is not transmitted. The last scene memory unit contains the value which is transmitted when the controller is turned off.

UCPTstateMaskOn - State mask on

Type	SNVT_state
Range	.bit0: 0 ... 1 boolean [1 boolean]; .bit1: 0 ... 1 boolean [1 boolean]; .bit2: 0 ... 1 boolean [1 boolean]; .bit3: 0 ... 1 boolean [1 boolean]; .bit4: 0 ... 1 boolean [1 boolean]; .bit5: 0 ... 1 boolean [1 boolean]; .bit6: 0 ... 1 boolean [1 boolean]; .bit7: 0 ... 1 boolean [1 boolean]; .bit8: 0 ... 1 boolean [1 boolean]; .bit9: 0 ... 1 boolean [1 boolean]; .bit10: 0 ... 1 boolean [1 boolean]; .bit11: 0 ... 1 boolean [1 boolean]; .bit12: 0 ... 1 boolean [1 boolean]; .bit13: 0 ... 1 boolean [1 boolean]; .bit14: 0 ... 1 boolean [1 boolean]; .bit15: 0 ... 1 boolean [1 boolean]
Default	0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
Description	This mask is bit by bit AND-conjunct with the object status and the result is transmitted for feedback.

UCPTstateMaskNul - State mask nul

Type	SNVT_state
Range	.bit0: 0 ... 1 boolean [1 boolean]; .bit1: 0 ... 1 boolean [1 boolean]; .bit2: 0 ... 1 boolean [1 boolean]; .bit3: 0 ... 1 boolean [1 boolean]; .bit4: 0 ... 1 boolean [1 boolean]; .bit5: 0 ... 1 boolean [1 boolean]; .bit6: 0 ... 1 boolean [1 boolean]; .bit7: 0 ... 1 boolean [1 boolean]; .bit8: 0 ... 1 boolean [1 boolean]; .bit9: 0 ... 1 boolean [1 boolean]; .bit10: 0 ... 1 boolean [1 boolean]; .bit11: 0 ... 1 boolean [1 boolean]; .bit12: 0 ... 1 boolean [1 boolean]; .bit13: 0 ... 1 boolean [1 boolean]; .bit14: 0 ... 1 boolean [1 boolean]; .bit15: 0 ... 1 boolean [1 boolean]
Default	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Description	This mask is bit by bit AND-conjunct with the object status and the result is transmitted for feedback.

6.4 Safety Position Controller (LonMark® #5)

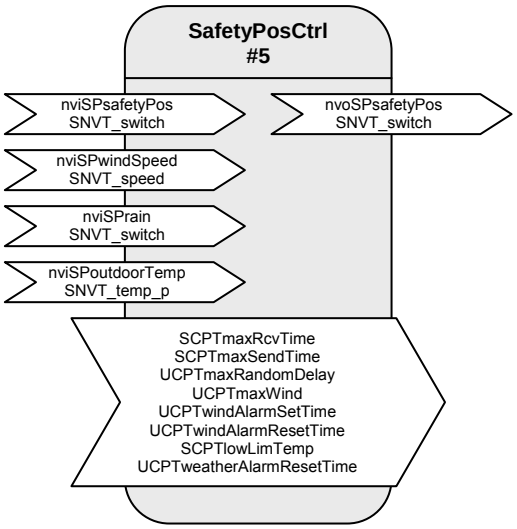


Table: functions, parameters and variables of the SafetyPosCtrl-Object

Function	Network variable	Type
Safety position trigger	nviSPsafetyPos	SNVT_switch
Safety position trigger output	nvoSPsafetyPos	SNVT_switch
Wind speed sensor input	nviSPwindSpeed	SNVT_speed
Rain sensor input	nviSPrain	SNVT_switch
Outdoor air temperature input	nviSPoutdoorTemp	SNVT_temp_p
Function	**Configuration parameter**	**Type**
Maximum receive time	SCPTmaxRcvTime	SNVT_time_sec
Maximum send time	SCPTmaxSendTime	SNVT_time_sec
Maximum random delay	UCPTmaxRandomDelay	SNVT_time_sec
Maximum wind speed	UCPTmaxWind	SNVT_speed
Wind alarm set time	UCPTwindAlarmSetTime	SNVT_time_sec
Wind alarm reset time	UCPTwindAlarmResetTime	SNVT_time_min
Low limit temperature	SCPTlowLimTemp	SNVT_temp_p
Weather alarm reset time	UCPTweatherAlarmResetTime	SNVT_time_min

Network variable details:

Input variables

`nviSPsafetyPos` - Safety position trigger

Type	SNVT_switch
Range	.value: 0 .. 100 % .state: 0, 1
Default	.value = 0 .state = 0
Description	Safety position trigger

nviSPwindSpeed - Wind speed sensor input

Type	SNVT_speed
Range	0.0 .. 6,553.4
Default	0
Description	Wind speed sensor input

nviSPrain - Rain sensor input

Type	SNVT_switch
Range	.value: 0 .. 100 % .state: 0, 1
Default	.value = 0 .state = 0
Description	Rain sensor input

nviSPoutdoorTemp - Outdoor air temperature input

Type	SNVT_temp_p
Range	-273.17 °C .. +327.66 °C
Default	+327.67 °C (0x7FFF, invalid value)
Description	Outdoor air temperature input

Output variables

nvoSPsafetyPos - Safety position trigger output

Type	SNVT_switch
Range	.value: 0 .. 100 % .state: 0, 1
Default	.value = 0 .state = 0
Description	Safety position trigger output

Configuration variables

SCPTmaxRcvTime - Maximum receive time

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	300.0 seconds
Description	The maximum period of time that may expire with no updates on the associated input network variables before the object goes into heartbeat failure mode. A zero value disables

SCPTmaxSendTime - Maximum send time

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	60.0 seconds
Description	The maximum period of time between consecutive transmissions of the current value

UCPTmaxRandomDelay - Maximum random delay

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	0.0 seconds
Description	Maximum time between receiving a processing global commands. (Avoids electrical switching peaks)

UCPTmaxWind - Maximum wind speed

Type	SNVT_speed
Range	0.0 ... 6553.5 meters/second [0.1 meters/second]
Default	14.0 meters/second
Description	The maximum wind speed allowed before alarm is raised.

UCPTwindAlarmSetTime - Wind alarm set time

Type	SNVT_time_sec
Range	0.0 ... 6553.5 seconds [0.1 seconds]
Default	2.0 seconds
Description	The time period, the maximum wind speed must be exceeded for, before the alarm state is activated.

UCPTwindAlarmResetTime - Wind alarm reset time

Type	SNVT_time_min
Range	0 ... 65535 minutes [1 minutes]
Default	30 minutes
Description	The time period, the maximum wind speed must be undershot for, before the alarm state is deactivated.

SCPTlowLimTemp - Low limit temperature

Type	SNVT_temp_p
Range	-273.17 ... 327.67 degrees Celsius [0.01 degrees Celsius]
Default	3.00 degrees Celsius
Description	The low alarm set point for the alarm air temp network variable

UCPTweatherAlarmResetTime - Weather alarm reset time

Type	SNVT_time_min
Range	0 ... 65535 minutes [1 minute]
Default	60 minutes
Description	The time period, that good weather must exist for, before the alarm state is deactivated.

6.5 Shared Input (LonMark® #3)

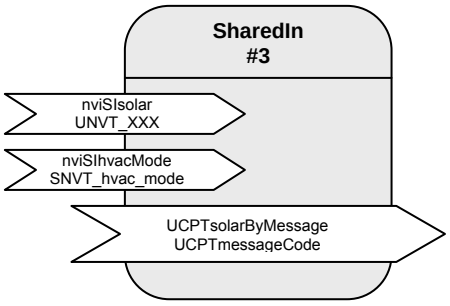


Table: functions, parameters and variables of the SharedIn-Object

Function	Network variable	Type
Sun data	nviSIsolar	UNVT_XXX
HVAC mode	nviSIhvacMode	SNVT_hvac_mode
Function	**Configuration parameter**	**Type**
Solar without binding	UCPTsolarByMessage	UNVT_enabled
Identification code for explicit messages	UCPTmessageCode	UNVT_message_code

Network variable details:

Input variables

nviSIsolar - Sun data

Type UNVT_XXX

Range .brightness: 0;1;..;63000 = 0;2;..;126000 lux
.elevation: 0 .. 89°
.azimuth: 0 .. 359°

Default .brightness: 0
.elevation: 0
.azimuth: 0

Description Sun data

nviSIhvacMode - HVAC mode

Type SNVT_hvac_mode

Range HVAC_HEAT, HVAC_COOL

Default HVAC_HEAT

Description HVAC mode

Configuration variables

UCPTsolarByMessage - Solar without binding

Type	UNVT_enabled
Range	DISABLED, ENABLED
Default	DISABLED
Description	Solar is send/received as broadcast message without network variable connection.

UCPTmessageCode - Identification code for explicit messages

Type	UNVT_message_code
Range	0 ... 62 [1]
Default	45
Description	Identification code for explicit messages without network variable connection. This code has to be the same for transmitter and receiver.