User manual

LON DALI Gateway REG 4x16 DIM
(art. no. 36236-332)

1 Introduction

The LON DALI Gateway REG 4x16 DIM (36236-332) is for controlling DALI lighting systems using LON. The device has four independent DALI interfaces. In addition it has one TP/FT-10 interface for connecting conventional LON devices such as LON control panels.

Incorporation into a LON network and configuration of the device is preferably performed using Ethernet (LON over IP).

The IRC configuration tool can be downloaded free of charge from the download area in http://www.svea-bcs.de/ for configuration and creation of applications. The application of the device is created by the user from a library using device templates which correspond to the physical devices to be connected. The device templates are constructed of function objects which match the LonMark function profiles. A description of the function objects can be found in Appendix A.

The device templates are sorted into categories which correspond to their physical connections: DALI, TP/FT-10. In addition there is the further category "Internal", which contains controller functions such as "Constant Light Control", "Scene Control", "Logic Control" etc. The category IRC is not supported at the DALI Gateway.

2 System structure

2.1 Network structure

The DALI Gateway can be linked into a LON network in different ways.

2.1.1 Direct coupling to an IP backbone

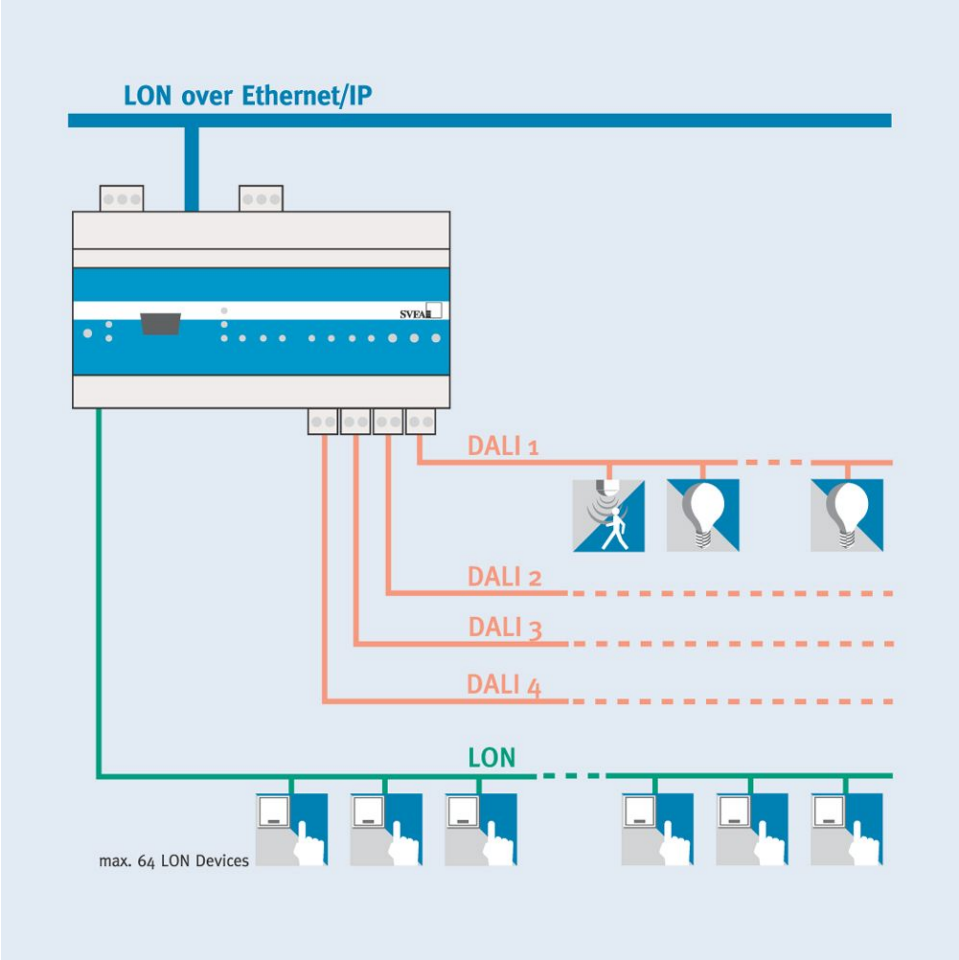


Fig. 2.1: Infrastructure with IP linking

The device is directly connected to the Ethernet using the 100 Base-T interface. Extension devices are connected to the IRC and TP/FT 10 interfaces.

The LON commissioning tool views the IP port as a logical interface. For communication with other devices, the device should be bound into an IP channel by means of a configuration server.

2.1.2 Coupling to a TP/FT 10 line

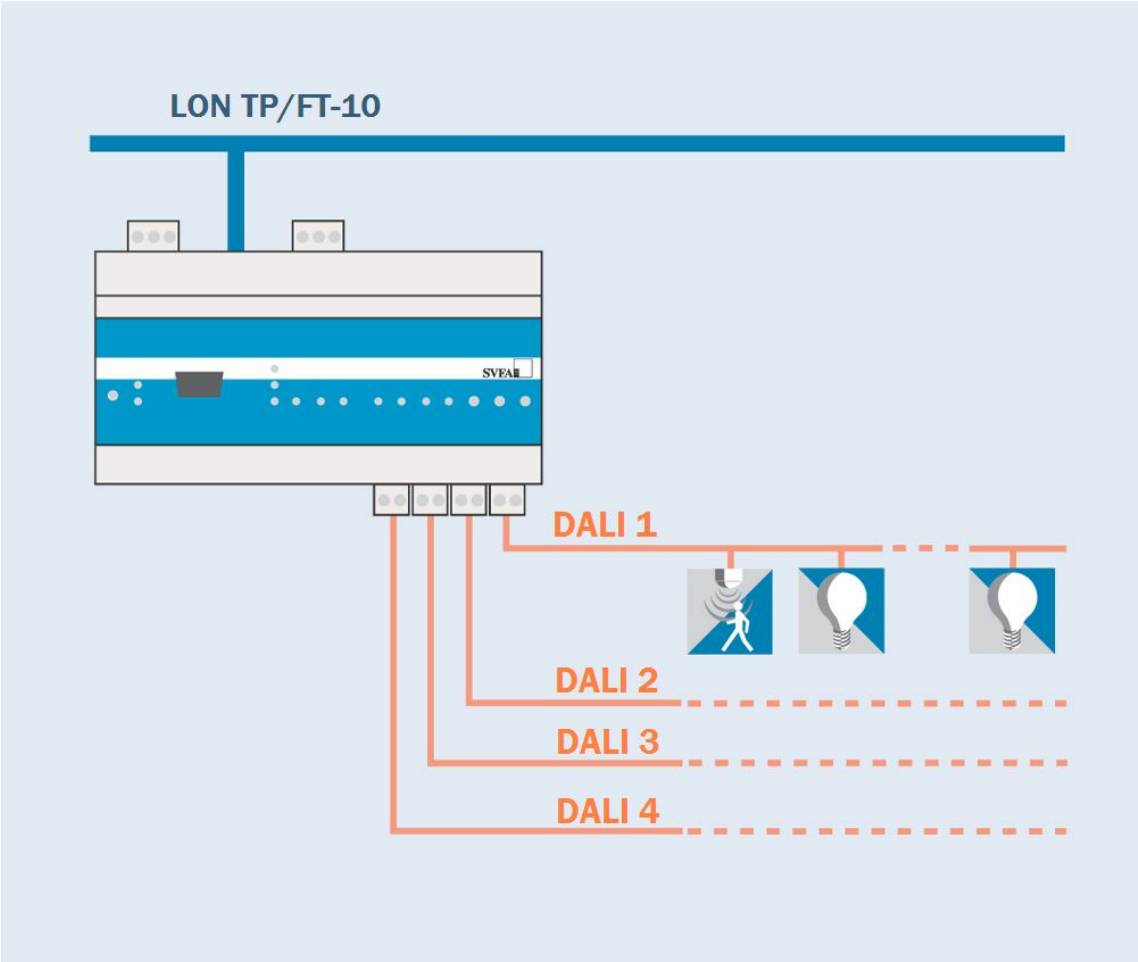


Fig. 2.5: Infrastructure with TP/FT 10 linking

The devices is connected to the LON segment using the TP/FT-10 interface.

The LON commissioning tool views the TP/FT-10 port as a logical interface. Other LON devices that are connected to the same LON segment are managed using the LON management tool.

3 General device characteristics

The device offers interfaces for connection of four DALI segments, one LON interface, preferably for connection of LON control panels and an Ethernet interface for a higher-level system or for networking with other DALI Gateways or IRC controllers.

In accordance with the DALI standard, up to 64 DALI ballasts can be connected to each DALI interface. When a DALI power supply is being used, the power consumption of the devices that are connected should be checked against the available power.

LON devices can be installed on the LON interface. These must be held as templates in the configuration tool. A list of the available templates can be found in Appendix C. Other devices can be added as templates on request.

A maximum total of 60 devices can be connected to the LON interface.

The functions of the LEDs and the device buttons are listed in the tables below.

3.1 Description of the LEDs

Service	
RED	Loading the firmware.
OFF	Application is started – the boot-up process is complete.
Flashing at 1 Hz	Boot-up process (data points created, operating system started)

RUN	
GREEN	IRC is supplied with power.
OFF	No voltage is present.

CFG	
GREEN	IP stack has been configured.
OFF	IP stack has not been configured. 1) Boot-up process running 2) invalid netmask, 3) IP collision.

MSG	
OFF	No data traffic at 100 base T
Random flashing GREEN	Data traffic via 100 base T

LINK	
GREEN	100 base T link.
OFF	No 100 base T link.

CNIP (the CNIP port is relevant only when using a LON over IP network)	
GREEN	CNIP port configuration is fully configured and updated.
YELLOW	CNIP port configuration is fully configured but not updated, e.g. because the configuration server cannot be accessed.
RED	CNIP port configuration is incomplete (i.e. not implemented or the initialisation has failed). In this case check the CNIP configuration using the IRC configurator or check the settings on the configuration server.
OFF	No valid CNIP packet detected.
Flashing RED	CNIP port is unconfigured.
Flashing GREEN or YELLOW	Data traffic via the CNIP.

TP/FT 10	
GREEN	TP/FT 10 port is configured and online. Heavy data traffic at the port.
RED	TP/FT 10 port is defective or a LON management tool has unconfigured this device.
OFF	TP/FT 10 port is configured and online. No data packet was received.
Flashing RED	Data packets were received, but at least one device on this line is defective.
Flashing YELLOW	TP/FT 10 port is unconfigured.
Flashing GREEN	TP/FT 10 port is configured and online. Data traffic at the port and all devices operating normally.

IRC	
GREEN	Port is configured and online. Heavy data traffic at the port.
RED	Port is defective or unused.
Off	Port is configured and online. No data packet was received.
Flashing RED	Data packets were received, but at least one device on this line is defective.
Flashing YELLOW	Port is unconfigured.
Flashing GREEN	TP/FT 10 port is configured and online. Data traffic at the port.
DALI1-DALI4	
Flashing GREEN	Port configured. Data traffic at the port and all addressed DALI devices on the line are OK.
Flashing YELLOW	Manual operating mode active.
Flashing RED	At least one DALI device is defective, but data traffic at the port.
Off	1) BUS mode: No data traffic at the port. 2) Manual mode: All lamps on the DALI channel are off.
GREEN	Manual mode: All lamps on the DALI channel are on.
DALI1-DALI4	
RED	DALI channel is no longer configured or is defective.
YELLOW	Manual mode / programming mode: Exchanging a DALI device. Colour changes when the CHANNEL or ON/OFF/BUS button is pressed.

3.2 Description of the device buttons

Service	Send a "service message" for each LON channel: FTT10, CNIP). If this button is kept pressed during the boot-up process (until the SERVICE LED stops flashing), the standard configuration will be restored.

Channel	DALI manual mode: Activate manual mode with a long button push (more than 3 seconds). A further short button push allows the respective DALI channel to be selected (cycle: channel 1- channel 2- channel 3- channel 4- all channels).

ON/OFF/Bus	This button is effective only in DALI manual mode. A short button push in toggle mode time toggles all devices on the selected DALI channel On or Off. A long button push (> 3s) is necessary in order to switch to channel selection mode.

Program	This button allows manual exchange of a defective DALI device. The command is effective only in manual mode for the respective channel. Procedure for exchange: 1) Mount the exchange device. 2) First select manual mode for the respective channel. 3) A long button push on the "Program" button exchanges the device in the database. Completion of the device exchange is signalled by the exchanged device "blinking". The device will be exchanged only when a new and a defective device are found on the channel.

4 Installation

4.1 Installing the DALI Gateway REG 4x16 DIM

The DALI power supply REG-N 140 (111837-467) is necessary for operating the LON DALI Gateway REG 4x16 DIM.

Connect the devices as described below.

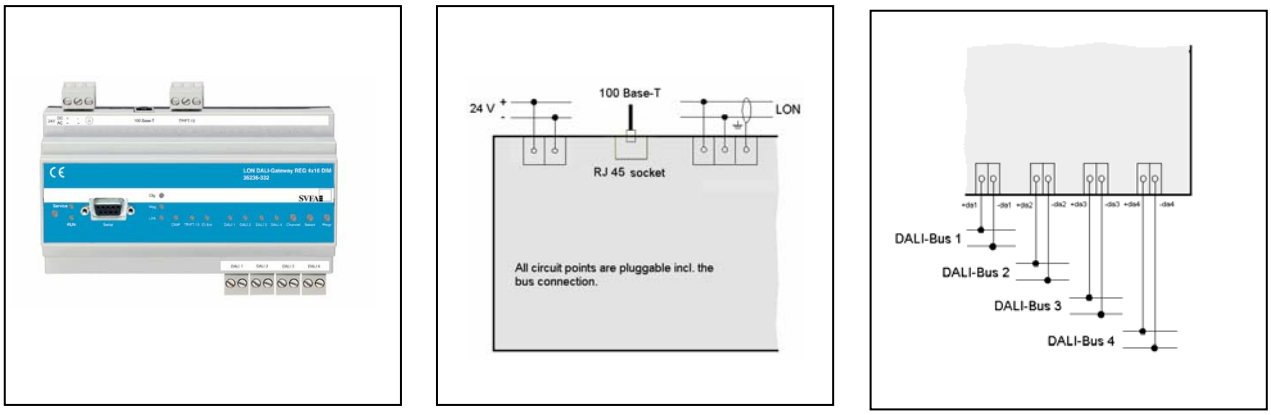


Fig. 4.2: Wiring diagram LON DALI Gateway REG 4x16 DIM

The DALI power supply supplies a maximum of 116mA per DALI line. Under the DALI standard (IEC 60929) each DALI electronic ballast is permitted a maximum current of 2 mA. The value may be exceeded for other types of DALI devices. Information on current consumption is available from the respective manufacturers.

Under normal operating conditions a maximum of 58 DALI devices including the LON DALI Gateway REG 4x16 DIM (36236-332) can be connected to each DALI output of the DALI power supply REG-N 140. Connecting the DALI outputs in parallel to the DALI power supply REG-N 140 allows the maximum power to be increased incrementally. Up to two DALI outputs can be connected in parallel in this way.

4.2 Installing the DALI lines

DALI stands for "Digital Addressable Lighting Interface" and is the definition for the standardised digital operating device interface for an interface standard spanning different companies in the field of lighting systems. The DALI standard is described in the ballasted devices standard IEC 60929.

DALI supplies a simplified digital interface for lighting technology devices. The intelligent components communicate in a simple and interference-proof way within a local system with distributed intelligence. The data communications wiring requires no special features, neither must terminating resistors be fitted.

DALI is defined for a maximum of 64 individual devices (individual addresses), which can be divided into a maximum of 16 groups (group addresses). Furthermore up to maximum 16 scenes (scene light values) can be managed in the DALI devices.

Further information together with an installation guide can be found in the DALI manual from the DALI AG of the ZVEI (DALI AG (Digital Addressable Lighting Interface Activity Group); Internet: www.dali-ag.org).

Under the DALI standard (IEC 60929) each DALI electronic ballast is permitted a maximum current of 2 mA. The value may be exceeded for other types of DALI devices. Information on current consumption is available from the respective manufacturers.

Connecting the DALI outputs in parallel to the IRC power supply REG-N 142 allows the maximum power to be increased incrementally. Up to four DALI outputs can be connected in parallel in this way.

The controller allows up to eight rooms per DALI channel to be controlled depending on daylight. In each room up to two groups (window side and wall side) can be activated with an offset. This gives a maximum number of groups of 4 x 2 x 8 = 64.

The DALI power supply adaptor supplies at least 116 mA per channel (4).
Each DALI electronic ballast requires a maximum of 2 mA
The DALI multi-sensor LA-11 requires a maximum of 12 mA

If you wish to drive 8 LA-11(lamp fitting) multi-sensors per channel, that leaves a current of 20 mA for DALI electronic ballasts, i.e. about 1 electronic ballast per group (1 per room). If this is insufficient, installing a second power supply adaptor in parallel will double the available current. Please pay attention to the fact that only 2 output-channels of one power supply can be connected in parallel.

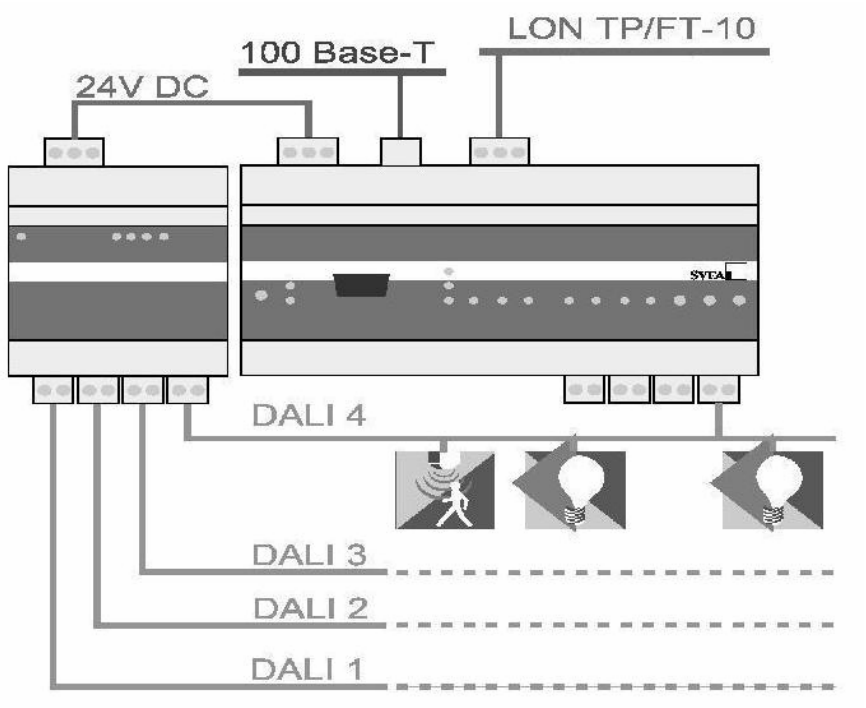


Fig. 4.3: Connection of the DALI line

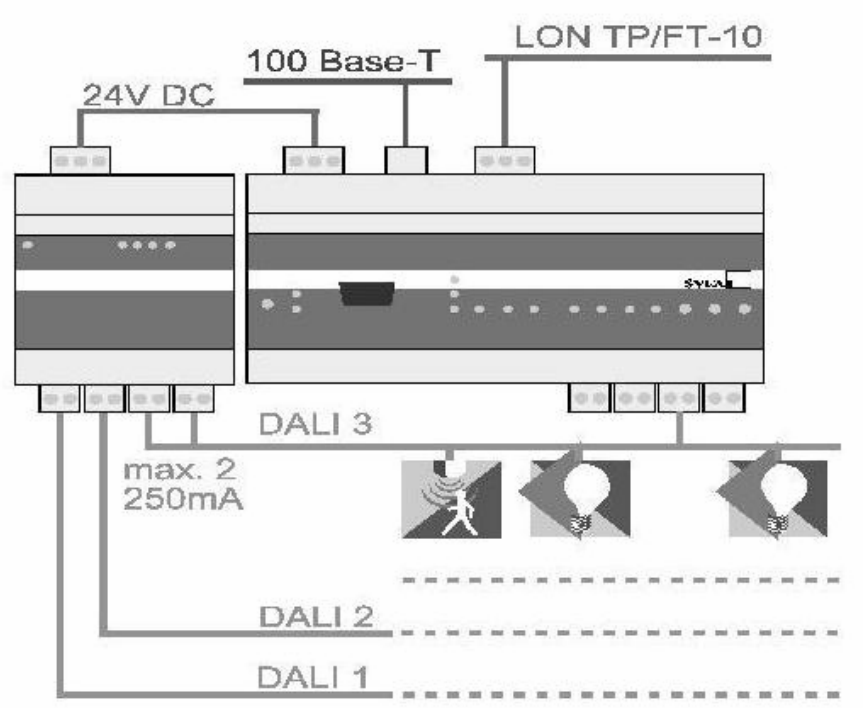


Fig. 4.4: Paralleling two power outputs a to raise the output current for a DALI line

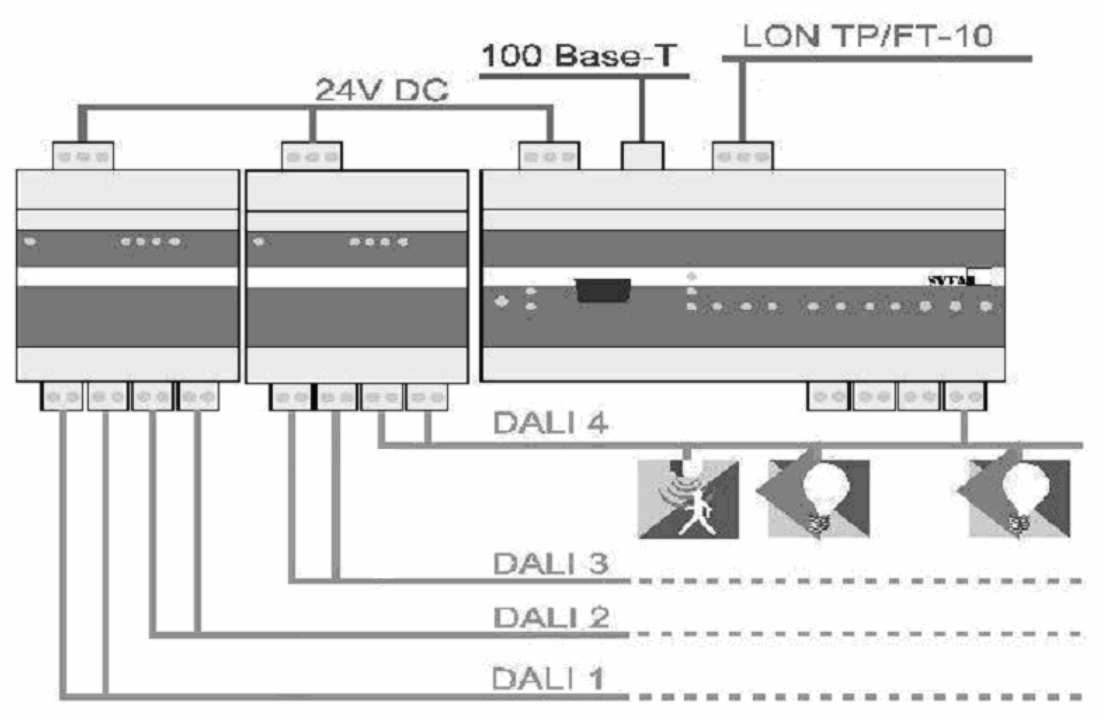


Fig. 4.5: Paralleling two power supply adaptors a to raise the output current for all four DALI lines

4.3 Installing the LON line

The TP/FT 10 connection can be used as an alternative in two application cases:

LON control panels or standard LON devices an be connected to this interface as I/O extensions. This is specially designed for connection of SVEA control panels. The management and configuration of these LON devices is performed using the configuration tool. Links (bindings) between the devices can be created using the configuration tool. When binding the Gateway into an LNS database, these bindings are not pictured there. Retrospective changes must always be performed using the configuration tool. In this case the 100 base T interface acts as the interface for binding into an LNS database. The LON installation guidelines are applicable. We recommend a maximum extension to 10 LON control panels.

Alternatively the LON DALI Gateway can be bound into the LON network using the TP/FT 10 connection. In this case the device functions are depicted at this interface. The LON XIF should be generated accordingly (setting in the IRC configuration menu, program ID settings). The configuration of the LON DALI Gateway R can be performed only via the 100 base T or the RS-232 serial interface.

5 Commissioning

After you have switched on the power supply, the device boot-up process starts. This takes a little time. The process is divided into 2 phases:

1) IRC self-test: During the self-test the green RUN LED is switched on and the red SERVICE LED is switched off.

2) Initialising the interfaces: During this phase the green RUN LED remains switched on and the red SERVICE LED flashes cyclically. All interface LEDs light up red continuously. As soon as each interface has been tested successfully the respective LED goes out. If an LED remains red this indicates a fault at the respective interface. In this case please check the connections.

   In normal operation the data traffic over the interfaces is indicated by short flashing of the respective green LED.

   In some cases it may happen that the CNIP LED shows continuous ORANGE. This indicates that the CNIP configuration server that has been entered cannot be accessed. This is relevant only if an LNS network is being used.

The installation can be checked by taking the following steps:

1) The LEDs DALI1, DALI2, DALI3, DALI4 should be Off. If an LED lights up red, check the connections and the power supply for this channel.

2) A long button push (more than 3 seconds) on the "Channel" button activates button mode. Further short button pushes change the active DALI channel (sequence: 1-2-3-4-all). The "ON/OFF/BUS" button allows all connected DALI devices to the switched On or Off. A short button push on the "Channel" button takes you to the next channel. A long button push (more than 3 seconds) on the "Channel" button exits button mode.

For easy commissioning we recommend connection to the Ethernet network using the "100 base T" interface.

For direct connection between a PC and the LON DALI Gateway please use a crossover cable for Ethernet.

6 Configuration

6.1 IP configuration

It is preferable that the configuration is performed using the "100 base T" interface. The device IP address is factory-set to **192.168.1.111**.

Before you can address the standard IP address you must set it up in your computer, providing your computer has as IP address for a subnet that differs from 192.168.1.xxx.

To do this, open a "command tool" and enter the following route instruction:

1) Windows START -> Execute
2) Command.com
3) Route add 192.168.1.111 %COMPUTERNAME%

Alternatively you can add an IP address for the same subnet to your local TCP/IP settings:
Windows START -> Network connection -> LAN connection -> Properties -> Internet protocol (TCP/IP) -> Properties -> Extended

The IP addresses of the DALI Gateway must not be identical to those for other devices on the network.

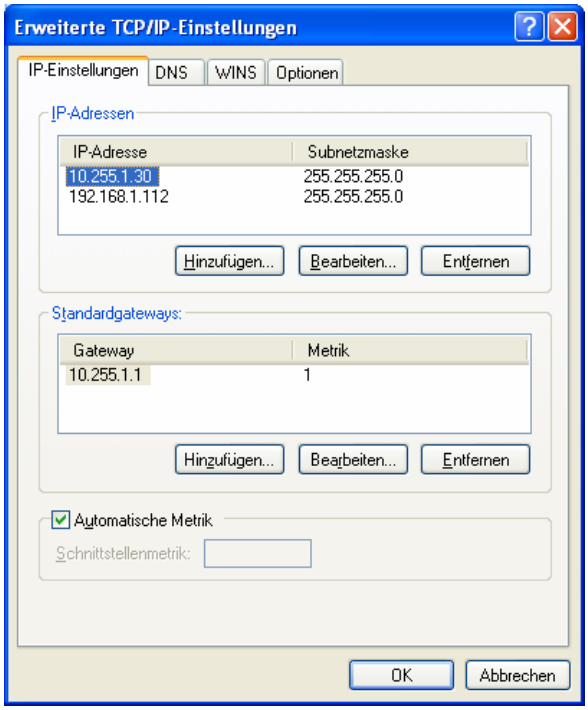


Fig. 6.2: Setting the IP address of your computer in the system control

6.2 Installing the configuration tool

A pre-requirement for installing the configuration tool is an operating system that supports Java JRE 1.4.x. Windows XP, Windows 2000, Linux (release 10.x) are platforms that have been tested for this.

Before installing the configuration tool, please install on your **Windows platform Java(TM) 2 Runtime Environment, Standard Edition 1.4.2_12 (**http://java.sun.com/j2se/1.4.2/download.html **-- J2SE v 1.4.2_12 JRE) or a more recent version.**

After this, perform the setup "irc_install_xxxx" and follow the instructions in the installation program.

We recommend the configuration tool is used over the "100 base T" interface (Ethernet)!

Alternatively the configuration tool can communicate over the RS232 interface, but its functionality will be restricted. For this the "Java Communication Extension" is necessary. Please use the installation supplied. Open a "command tool" and perform the following instruction in the respective directory

1) Windows START -> Execute
2) Command.com
3) java -jar comm_install.jar

Alternatively it is sufficient to double click on this file. However no acknowledgement is supplied in this case.

6.3 Installation and Start of the IRC-Project-Manager and IRC Configurator

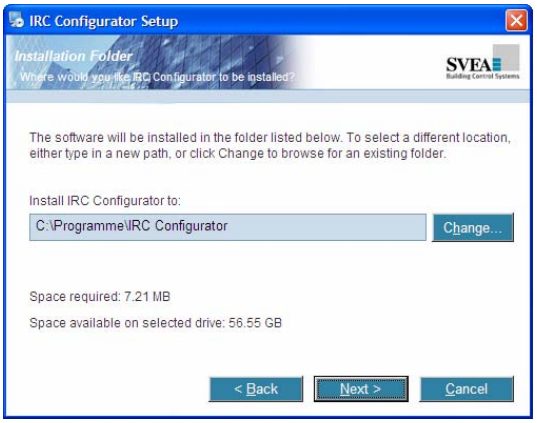


Fig. 6.3.1 und 6.3.2: Installation of the IRC Software and selection of the project folder

For the generation and management of IRC projects the software uses the IRC Project Manager. This management tool is used to create new projects with IRC components respective to open and configure existing projects.

When installing the IRC software the routine requires an individual selected folder. If a previous version of the IRC software is already installed, it is recommended to use the same location for the new installation, to grant to complete update. Otherwise existing links can activate old and therefore reduced software functions.

After the start of the Project Manager you can create and name the first project at the register **Project/Create New.** At **Project/Open** you can start the new project continuing to activate a necessary selection of the requested devices with button [▫] (see arrow).

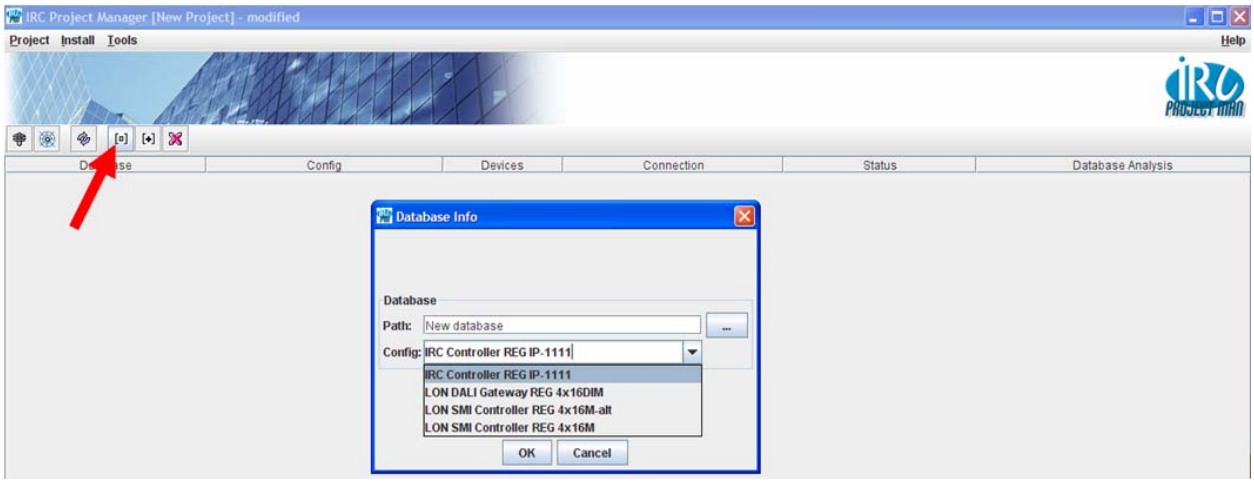


Fig. 6.3.3: Project start and related device selection

When creating a new project, a copy of the folder ‘template’ including all existing templates and standard configurations will be created.

At each project directory only **one** Controller will be managed. Further requested Controllers need additional projects.
Projects can be used as templates and therefore be copied. Direct copies can be done by marking the requested project plus a click on it with the right mouse button and selection of ‘Add database’.

Projects can be started with a double click on the requested project.

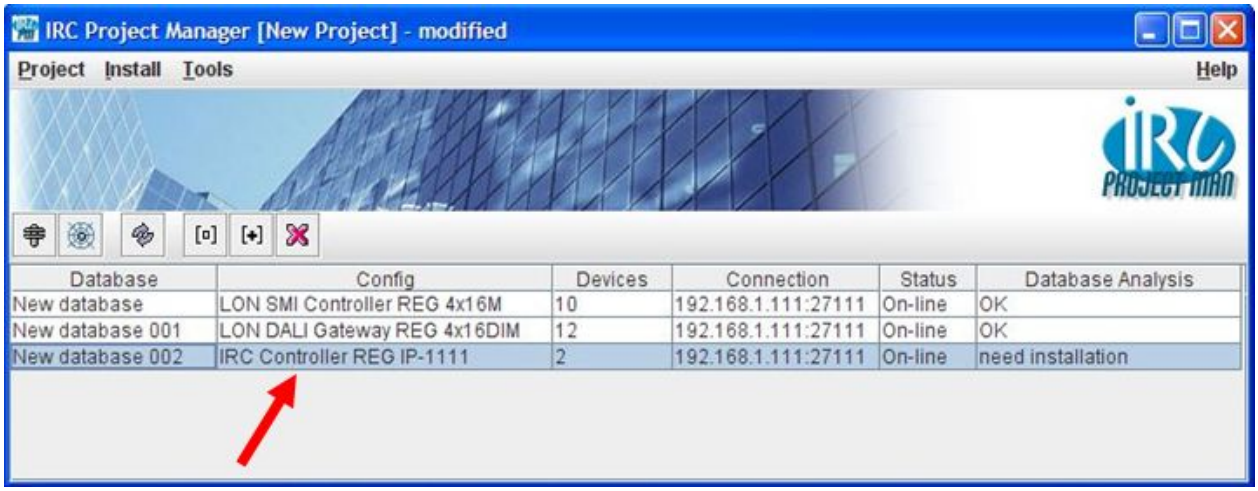


Fig. 6.3.4: Start of the IRC Configurator

Each Project is protected by a password.
At new projects the requested user name and password is:

User name: admin
Password: admin

Fig. 6.3.5: Entering the user password

Now the IRC Configurator starts for a management of the project. User name and password can be changed individually at the register ‘User’.

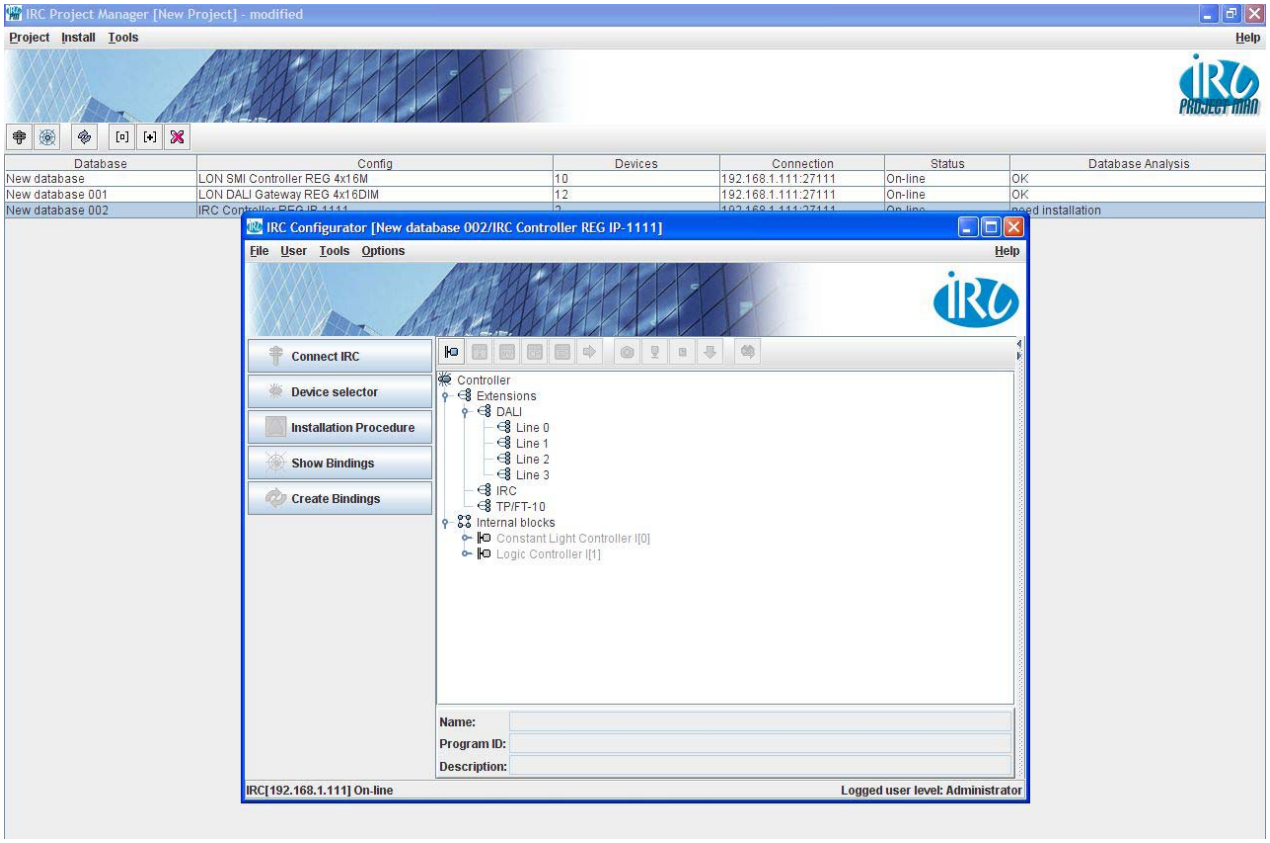


Fig. 6.3.6: Project configuration

At the base status line the current connection status is showing ‘online’ respective ‘offline’.
Only at the ‘online’-mode connection between software and the Controller is realised and configurations can be effected.
The IRC Configurator shows the current project configuration including the ‘virtual’ devices in a tree view. These shown devices are a mapping of their physical devices and divided in relation to their device interfaces DALI, IRC and TP/FT-10, plus some internal function blocks.

At the DALI line you will find the ‚virtual’ device ‚DALI Group Actuator’, including 16 ‘Group’ objects related to the ‘Group Actuator’ profile at LonMark. One ‘Group’ object is related to one DALI group. Each DALI channel allows only one ‚DALI Group Actuator’-object.

The configuration of the IRC and TP/FT-10 lines will be shown in the next chapter.

At the category ‚Internal blocks’ mainly Controller functions can be found. Due to consistent reason these devices are presented also as ‘virtual’ devices, containing several functional objects of a similar type like: e.g. the ‚Constant Light Controller’ containing 8 functional ‚Constant Light Controller’ LonMark-objects for a constant light control.

When abandoning the IRC Configurator and Project Manager, it is necessary to ‘**save**’ the new configuration, otherwise changed configurations get lost.

7 Creating a project

To create a new database configuration or to edit the current configuration, switch to the "Device Selector".

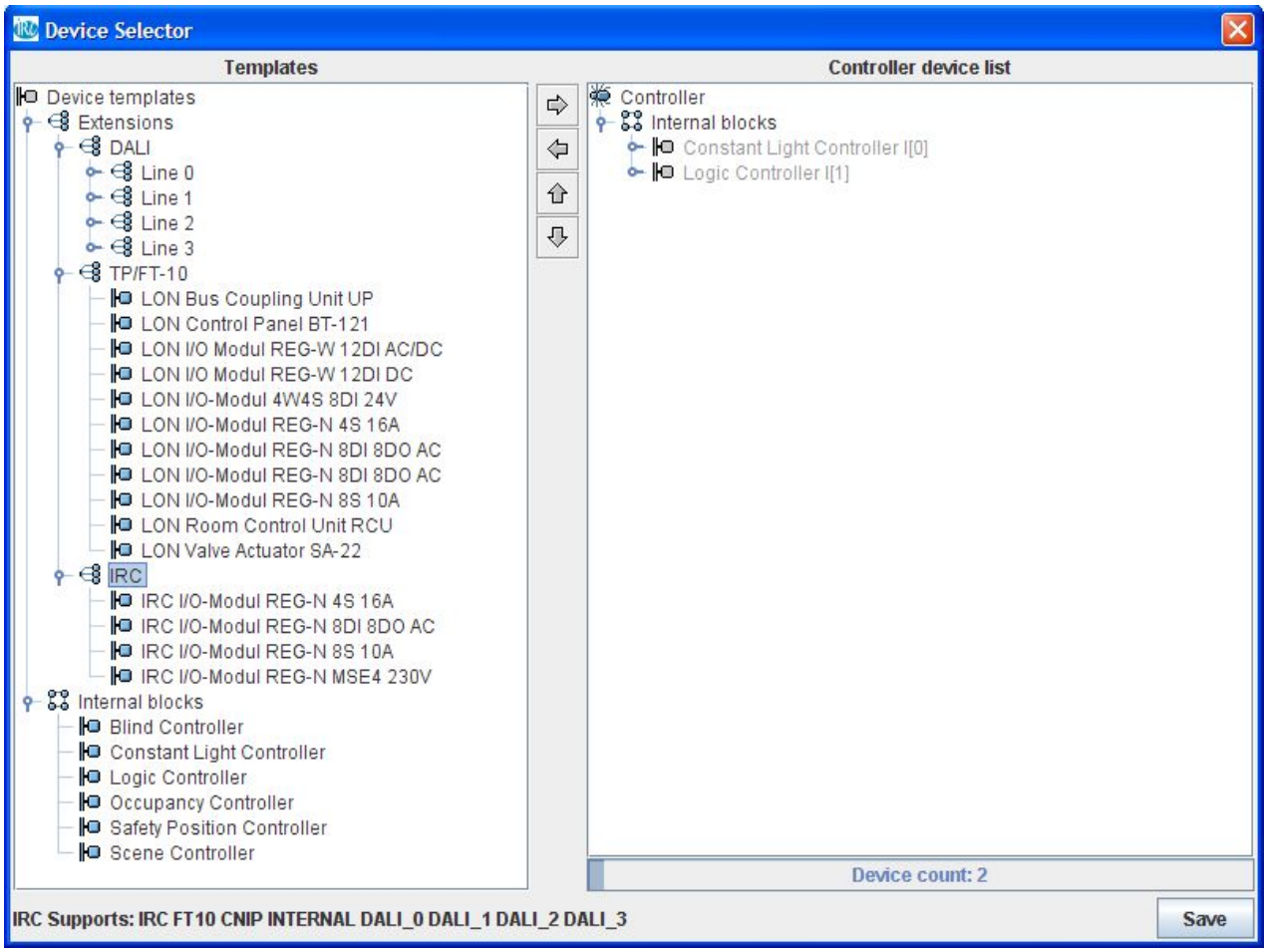


Fig. 7: Creating a device configuration (function) using the "Device Selector"

Down the left side of the "Device Selector" you will find the device templates. Use "drag&drop" or the arrow symbols to move the device templates into the "device list" or to remove devices that have been created (warning: This changes the LNS interface so that it is no longer compatible with an existing LNS interface. In this case the program ID should be modified to suit, see IRC configuration). For all interfaces, insert the devices that are connected to the device. When the "Device Selector" is exited (either with the "Save" button or the "Close" button), the selected project configuration is saved in the database.

7.1 Configuration of the function objects

Select "Configure" in the context menu (right mouse button) to call up the configuration view. In general you will find the configuration parameters listed here in tabular form.

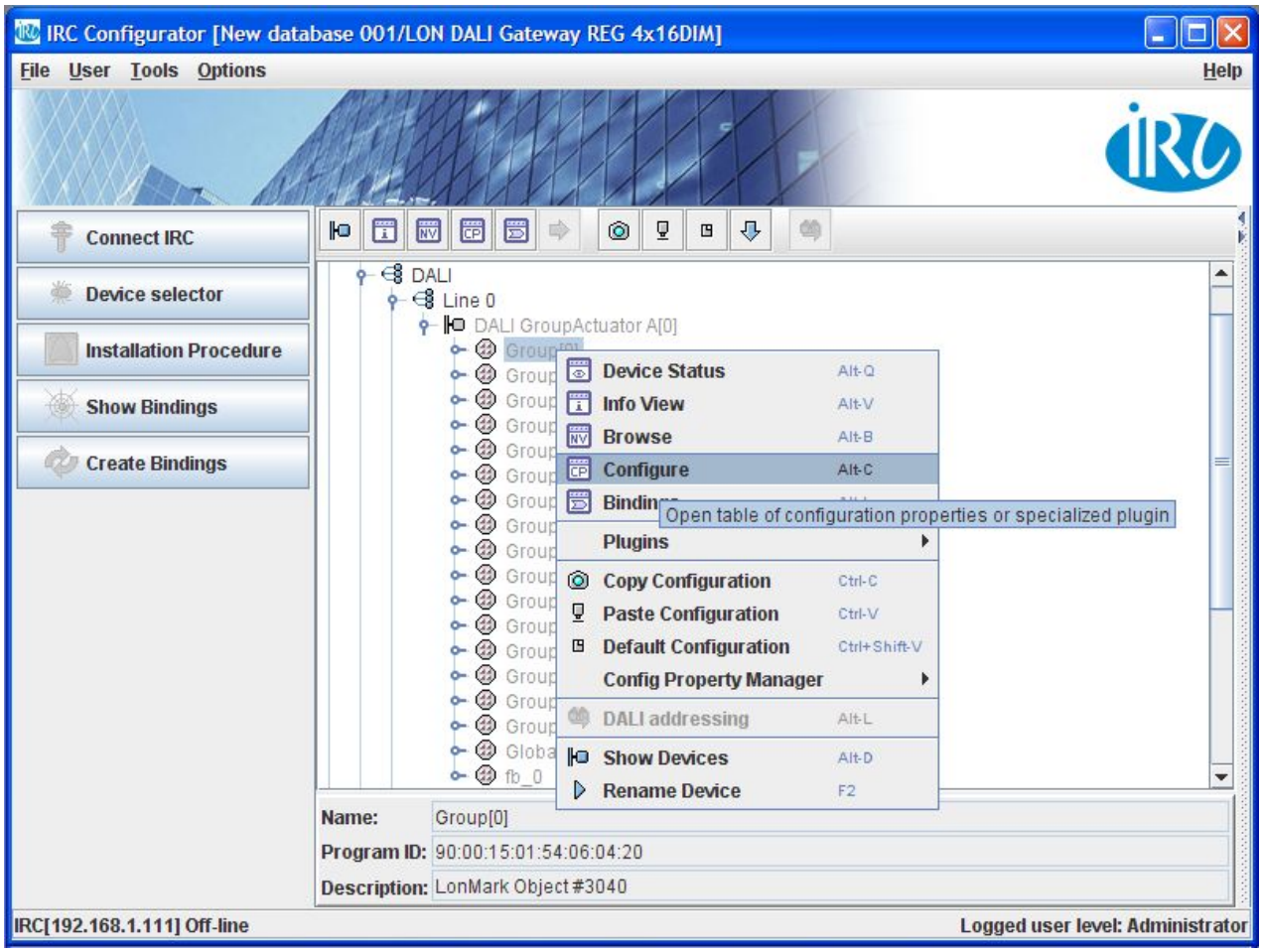
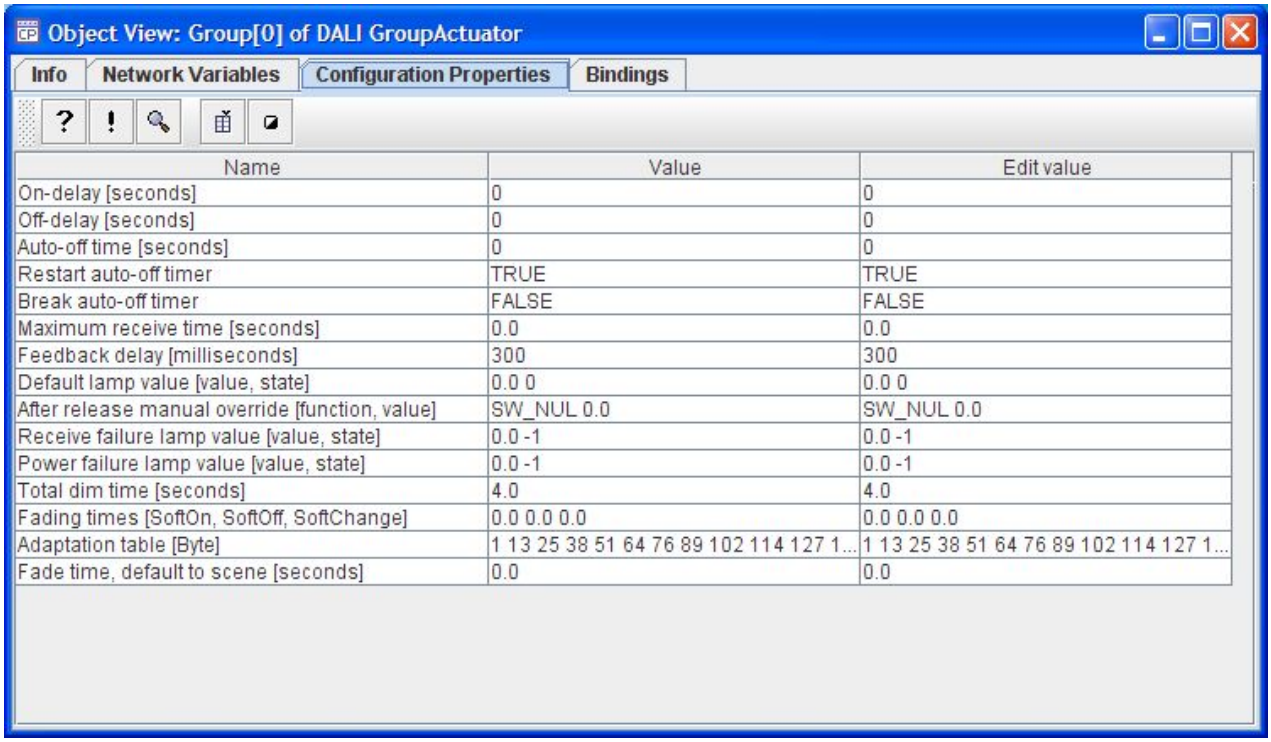


Fig. 7.1.1: Context menu for the function objects



Name	Value	Edit value
On-delay [seconds]	0	0
Off-delay [seconds]	0	0
Auto-off time [seconds]	0	0
Restart auto-off timer	TRUE	TRUE
Break auto-off timer	FALSE	FALSE
Maximum receive time [seconds]	0.0	0.0
Feedback delay [milliseconds]	300	300
Default lamp value [value, state]	0.0 0	0.0 0
After release manual override [function, value]	SW_NUL 0.0	SW_NUL 0.0
Receive failure lamp value [value, state]	0.0 -1	0.0 -1
Power failure lamp value [value, state]	0.0 -1	0.0 -1
Total dim time [seconds]	4.0	4.0
Fading times [SoftOn, SoftOff, SoftChange]	0.0 0.0 0.0	0.0 0.0 0.0
Adaptation table [Byte]	1 13 25 38 51 64 76 89 102 114 127 1...	1 13 25 38 51 64 76 89 102 114 127 1...
Fade time, default to scene [seconds]	0.0	0.0

Fig. 7.1.2: Configuration parameters of the function objects

Enter the desired value in the "New value" field. Quit the input with "Return" or the "!" symbol and the value will be written to the device, provided it is "online". Otherwise the configurations will be written at installation. The configuration can also be written to the device using the device context menu: "Info View" => "Service" => "Write CP file". The command "Read CP file" allows the current device configuration to be read.

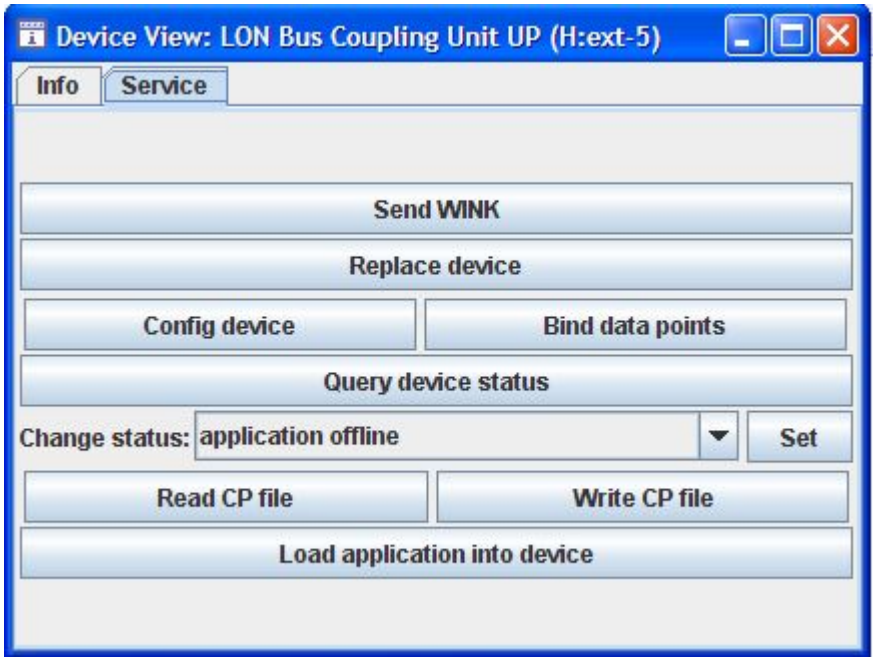


Fig. 7.1.3: Service menu for the device view

More complex devices can be configured using special views. You will find a description below of the device functions for which a special configuration view exists.

7.2 LON control panels

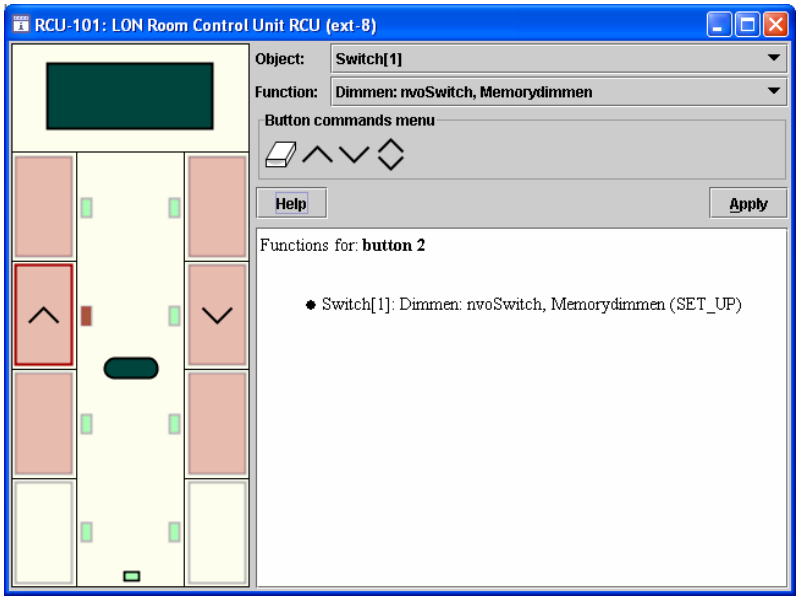
Appendix C contains a list of the devices that are supported by the LON DALI Gateway.

The configuration regarding control panels consists largely in the selection of operating functions and the assignment of control buttons and LEDs. Fur button controls the following function objects are available at the devices: Switch, Scene Panel, Occupancy Sensor. There follows a short description of these function objects. More detailed information can be found in the device documentation for the respective control panel.

Use the "Plug-Ins" context menu for any object to select the application module to be used. The respective view will open.

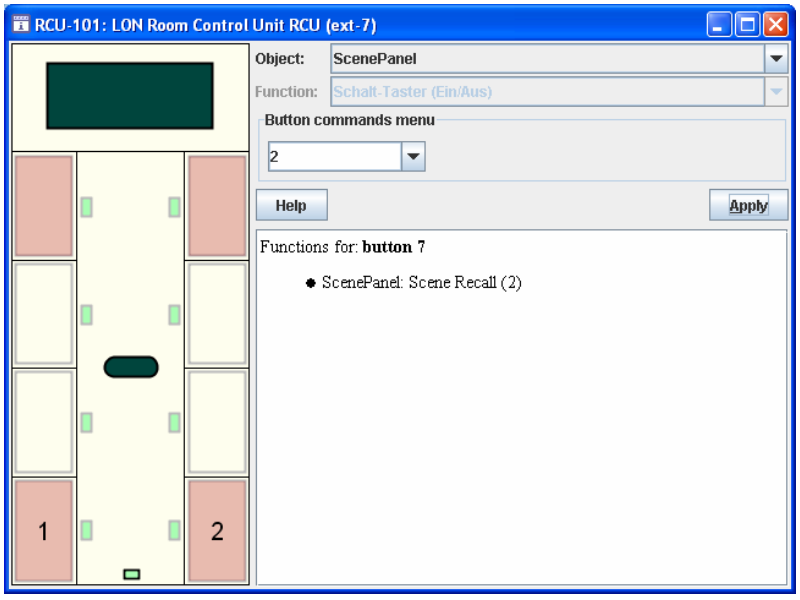
7.2.1 Switch Object

First select the function. Select the desired button function from the symbol menu and use "drag&drop" to move this to the desired button. The selection can be removed using the "Eraser" symbol or can be overwritten by other symbols.
The selection of the LED is performed by double clicking on the LED symbol. After they have been assigned, the selected buttons are highlighted in red.



7.2.2 Scene Panel Object

For configuration of scene calls, first highlight the desired button and then enter the respective scene number into the "Button commands menu" field. Press the "Enter" button to load the value. To delete an existing scene recall, highlight the respective button; the configured scene will appear in the "Button commands menu" field. Delete this value, so that the field no longer shows an entry. Then press the "Enter" button to delete the existing value.

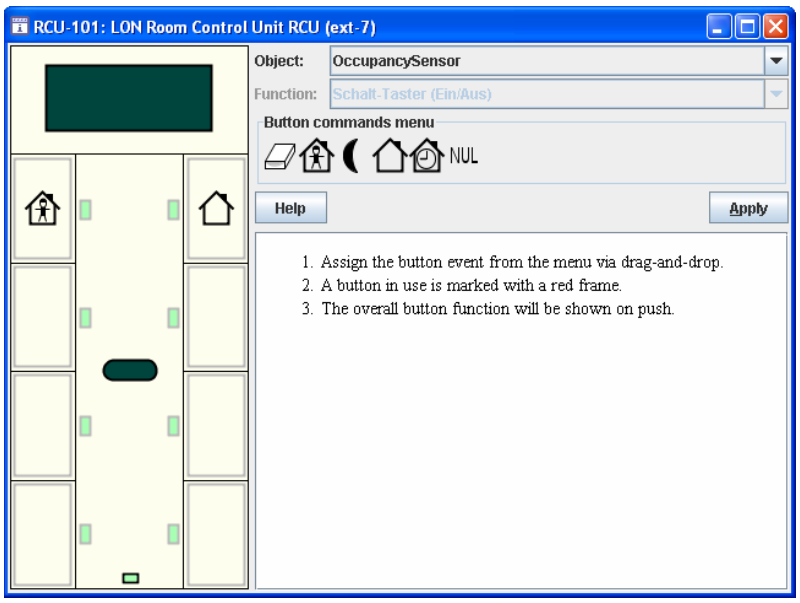


7.2.3 Occupancy Panel Object

Select the desired button function from the symbol menu and use "drag&drop" to move this to the desired button. The selection can be removed using the "Eraser" symbol or can be overwritten by other symbols.

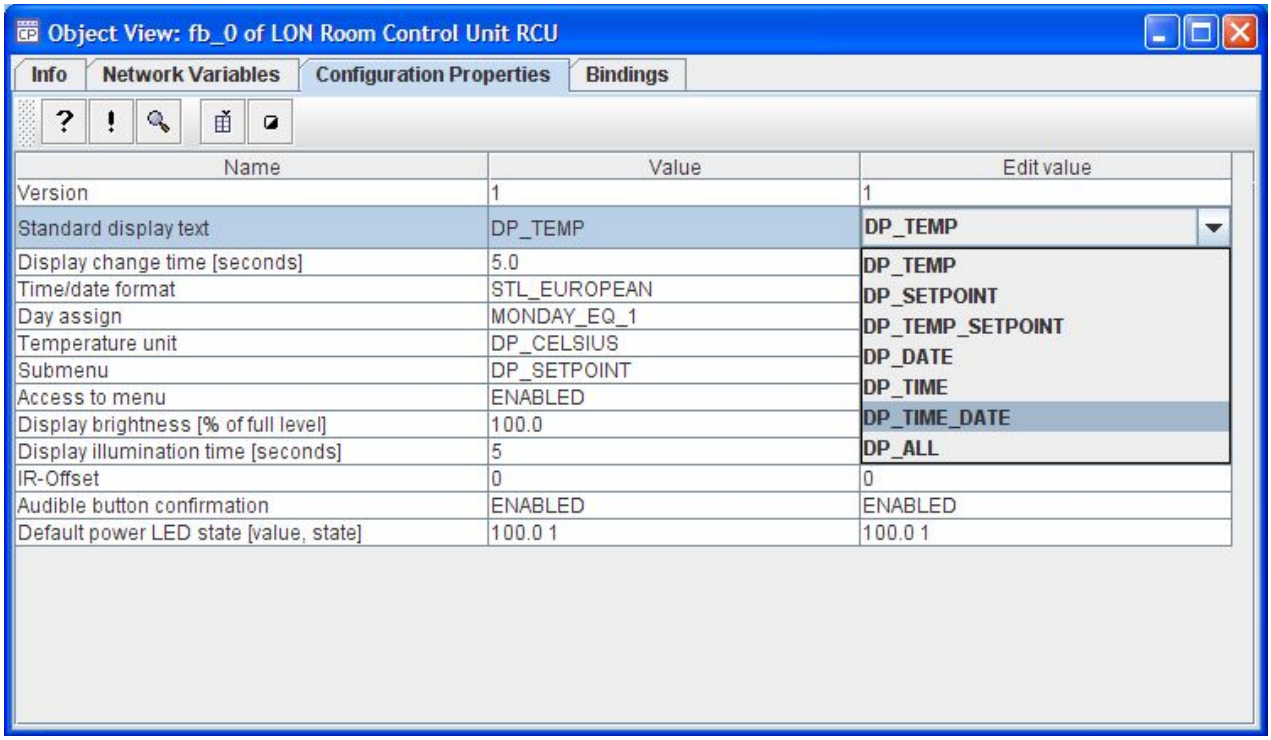
The following functions are available for selection:

Occupied (OC_OCCUPIED)
Unoccupied (OC_UNOCCUPIED)
Standby (OC_STANDBY)
Bypass (OC_BYPASS)
Invalid value (OC_NUL)



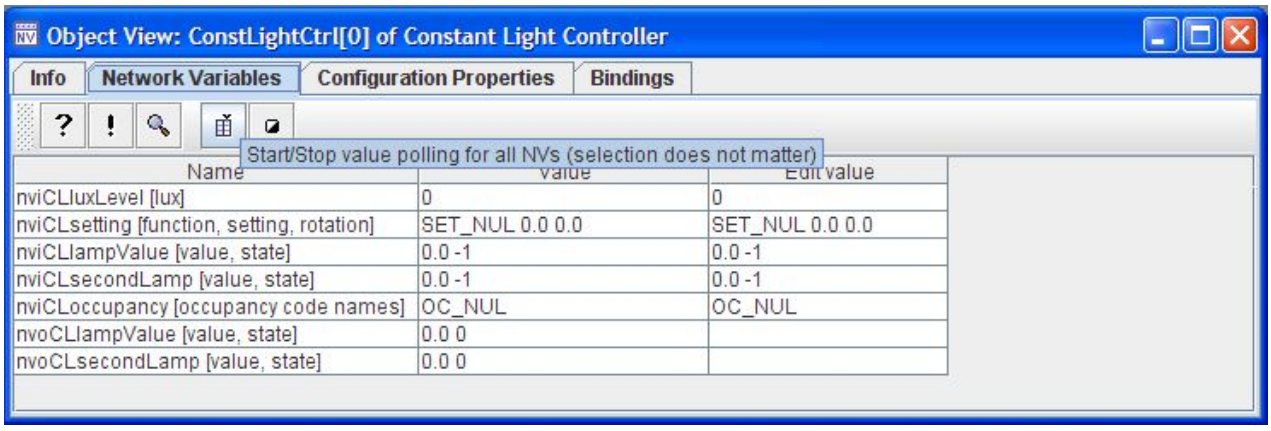
7.2.4 fb_0-Object

The configuration parameters for general device functions, in particular those for setting display behaviour common to multiple objects, can be found in the context menu of the fb_0-Object (-> Configure). The detailed description of the configuration parameters can be found in the device documentation for the respective (control) device.



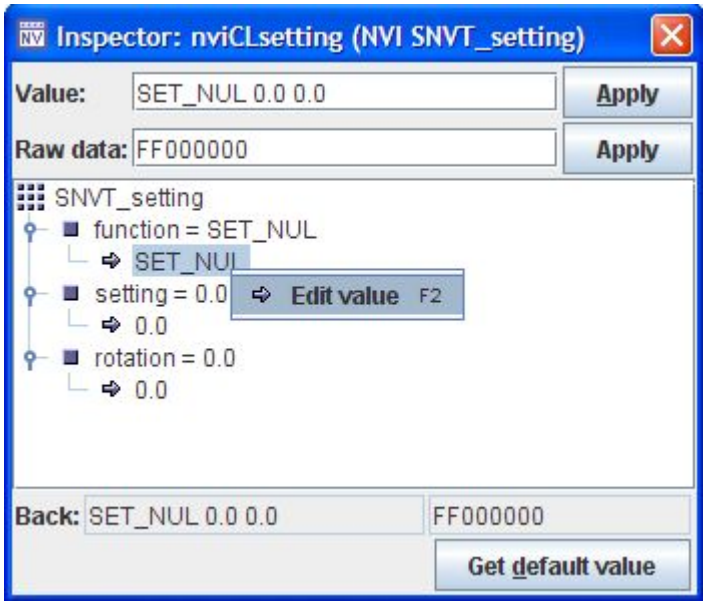
7.3 Simulation and test

You can describe and read the network variables directly in order to test their function. Select the item "Browse" in the context menu of the respective function object. The variables view will open.



First activate the "Polling" option. You will then see the current values of the variables in the “Value" column.

Under the "New Value" item you can set the network input variables. You can also use the value inspector for this.



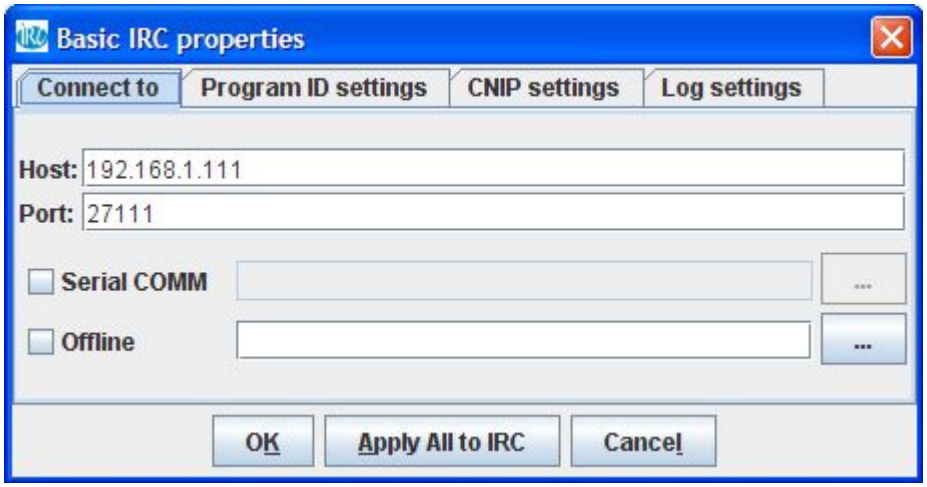
7.4 Saving a project

The current configuration can be saved with File -> Save Database. It is absolutely essential to save project changes during editing and when quitting the configuration tool.
File -> "Save Database Copy as..." allows a copy of the current project database to be made. This copy can be the basis for configuration of another device.

7.5 Basic configuration

The LON DALI Gateway is factory-set to a standard configuration (IP address: 192.168.1.111). This is also the standard setting of the IRC Configurator, so that the device can be addressed during first commissioning.
If the device is directly connected to the computer (not through a switch or hub), a crossover network cable should be used for the connection. Note: Be sure always only to connect a device with the standard address, since otherwise address conflicts can arise.

The IP address of the device with which it will be addressed by the IRC Configurator is entered in "Options -> IRC configuration -> Connect to".



7.6 Configuration of the network address

Each device requires a unique IP address for binding into an IP network. To set the IP address, go to the menu "Options → IP Configuration".

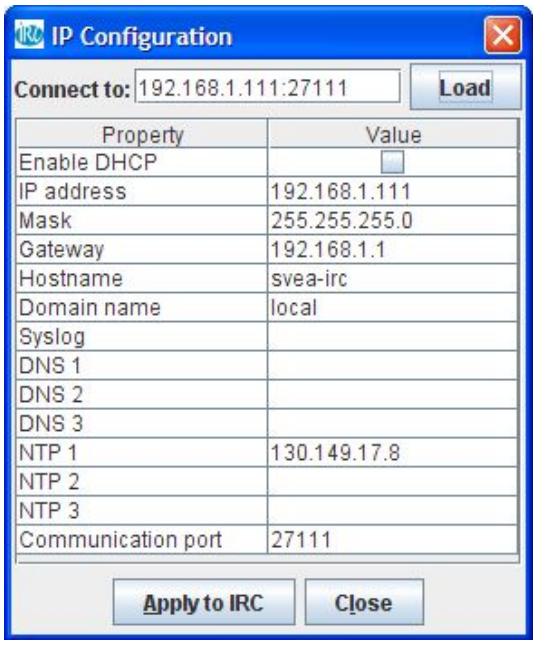


Fig. 7.6: IP settings

The "Load" button is used to read the current device settings from the device.

Assigning an individual address can be done either dynamically using the "Enable DHCP" setting or from static addresses assigned by the network administrator. In the latter case please enter the IP address, the netmask and the default Gateway. Host name and domain name are not required in the current firmware version.

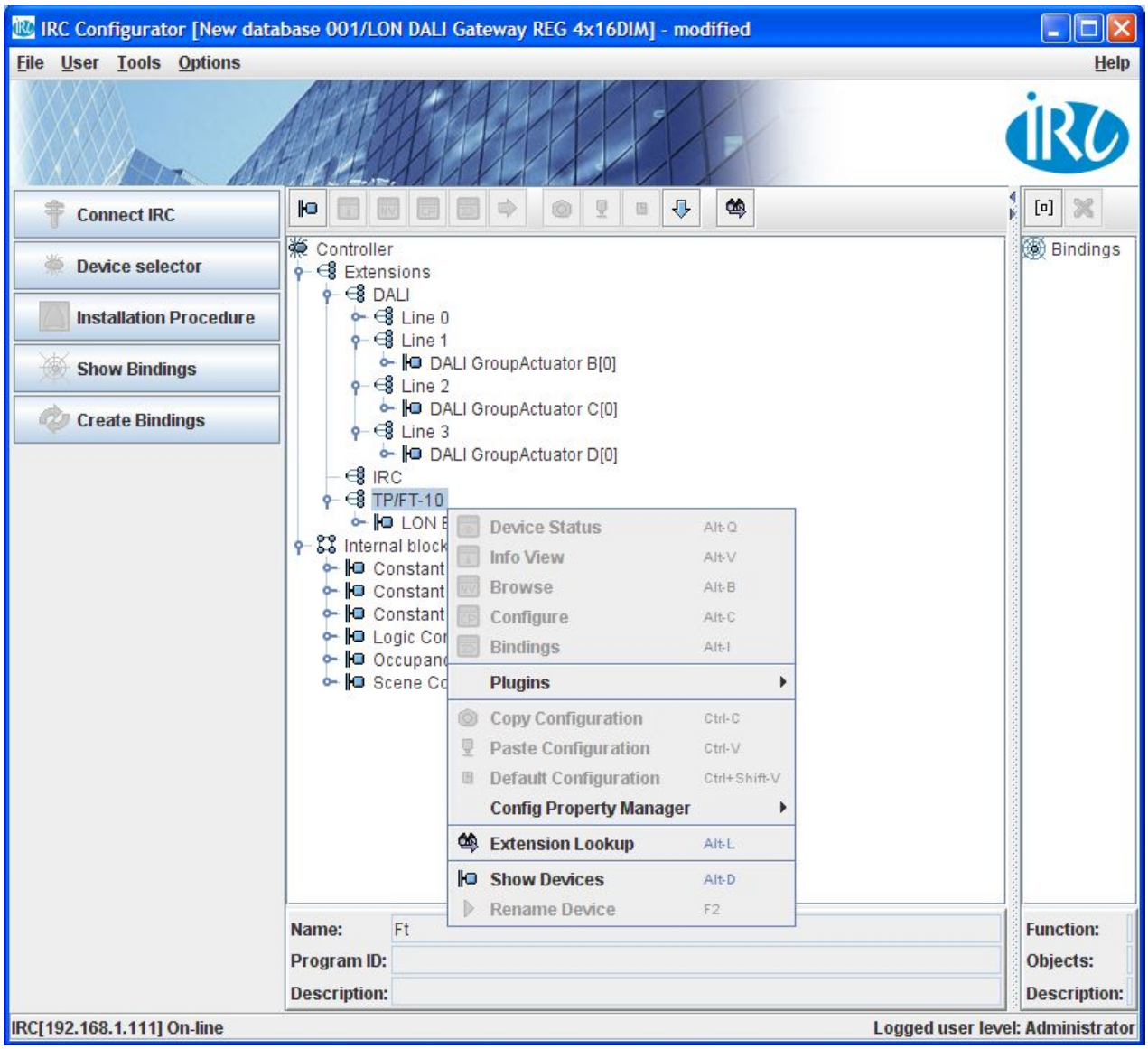
Up to 3 domain name servers can be entered. The DNS server entries are currently not used. In many DHCP configurations however it may be necessary to enter a specific host name. Please contact your system administrator and ask about the necessary DHCP settings.

Under **NTP (Network Time Protocol**) up to three servers for synchronising the internal clock can be entered.

Enter the standard communication port (27111) in the "Communication port" field. In exceptional cases this communication port may be blocked by a firewall. In this case, please enter a free communication port.
After input of the IP address the status "online" should henceforth be displayed in the status bar.

7.7 Addressing the extension modules at TP/FT 10

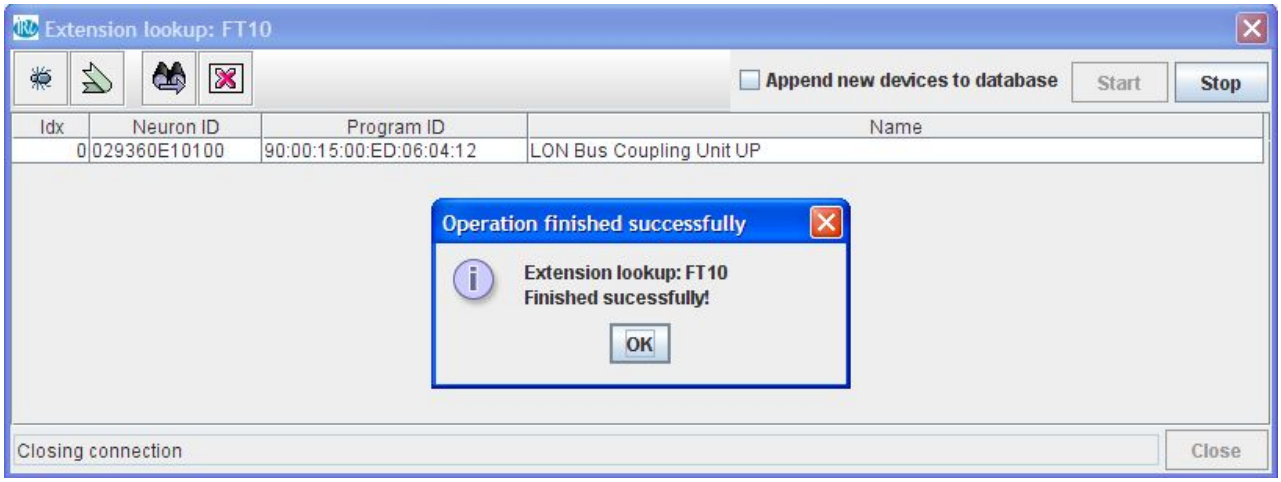
Select "Extension Lookup" in the context menu (right mouse button) for the TP/FT 10 line, to address the devices connected to the TP/FT line.



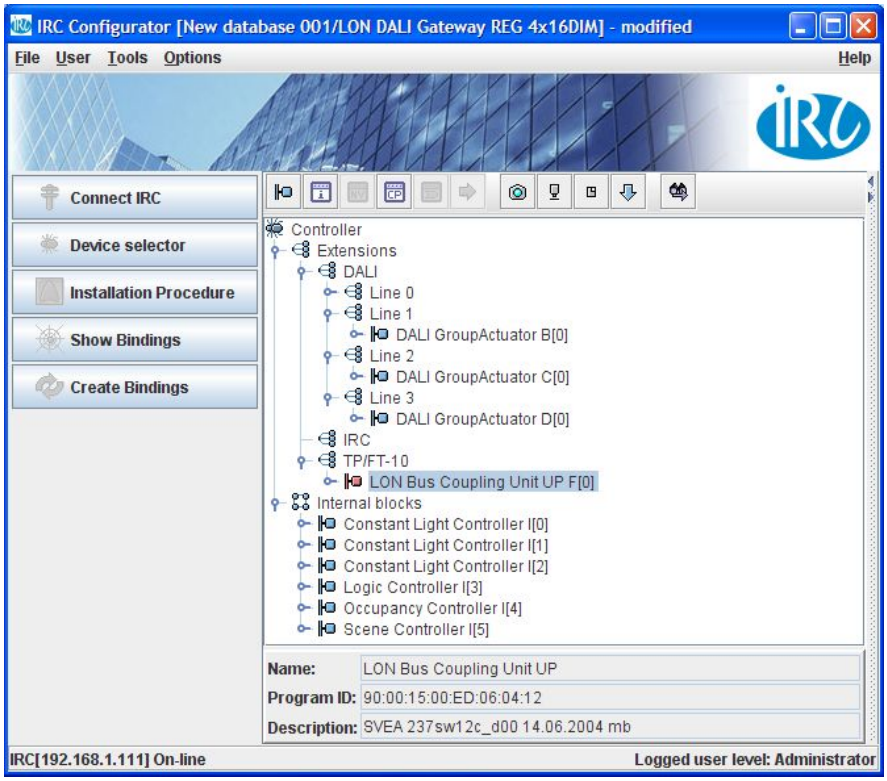
In this process you can bind in devices that previously had been created. To do this proceed as follows:

1) Select "Start".
2) Wait until the user message "Waiting for service pin (1 minute)" appears.
3) Actuate the "service pin" on the first LON device on the TP/FT 10 line.

4) When the devices has been successfully identified, both the neuron ID and the program ID will be shown in the list.
5) If the program ID does not match the anticipated program ID, the correct application must be loaded into the device that was found. The application is loaded under "Options" -> "Info View" -> "Service".
6) Repeat steps 2 and 5 for all LON devices connected to the TP/FT 10.



7) After you have addressed all the devices, end the process with "Stop", close the window and return to the project view. The addressed devices now appear brown in the tree view.



7.8 Installation procedure

After you have created all the devices in the database and have addressed the TP/FT 10 line, the project database must be loaded into the LON DALI Gateway. Amongst other things, this generates the "virtual devices" and also creates the network variables.

Start the installation process with "Tools" → "Installation Procedure". The "virtual devices" are then loaded into the device. Depending on the size of the database, this process may take several minutes. On completion the program reports the successful configuration.

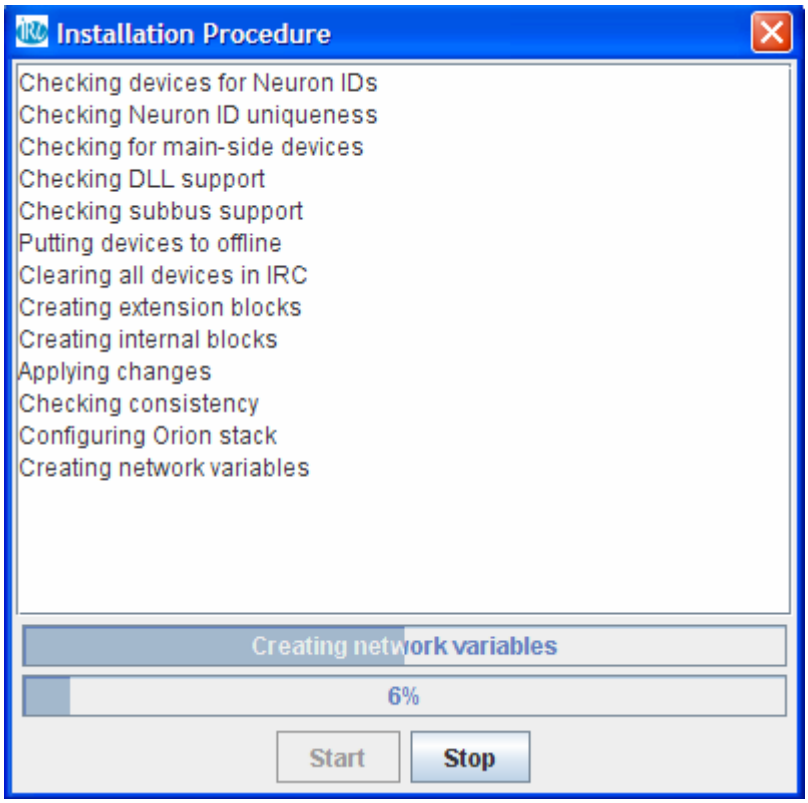


Fig. 7.8: Writing the configuration into the device

7.9 Commissioning the DALI lines

For commissioning the DALI lines the device must be "online" (see status bar). The DALI devices must be connected and in operation.
Highlight the DALI line to be configured (line 0, line 1, ...). Then select "DALI addressing" in the context menu (right mouse button).

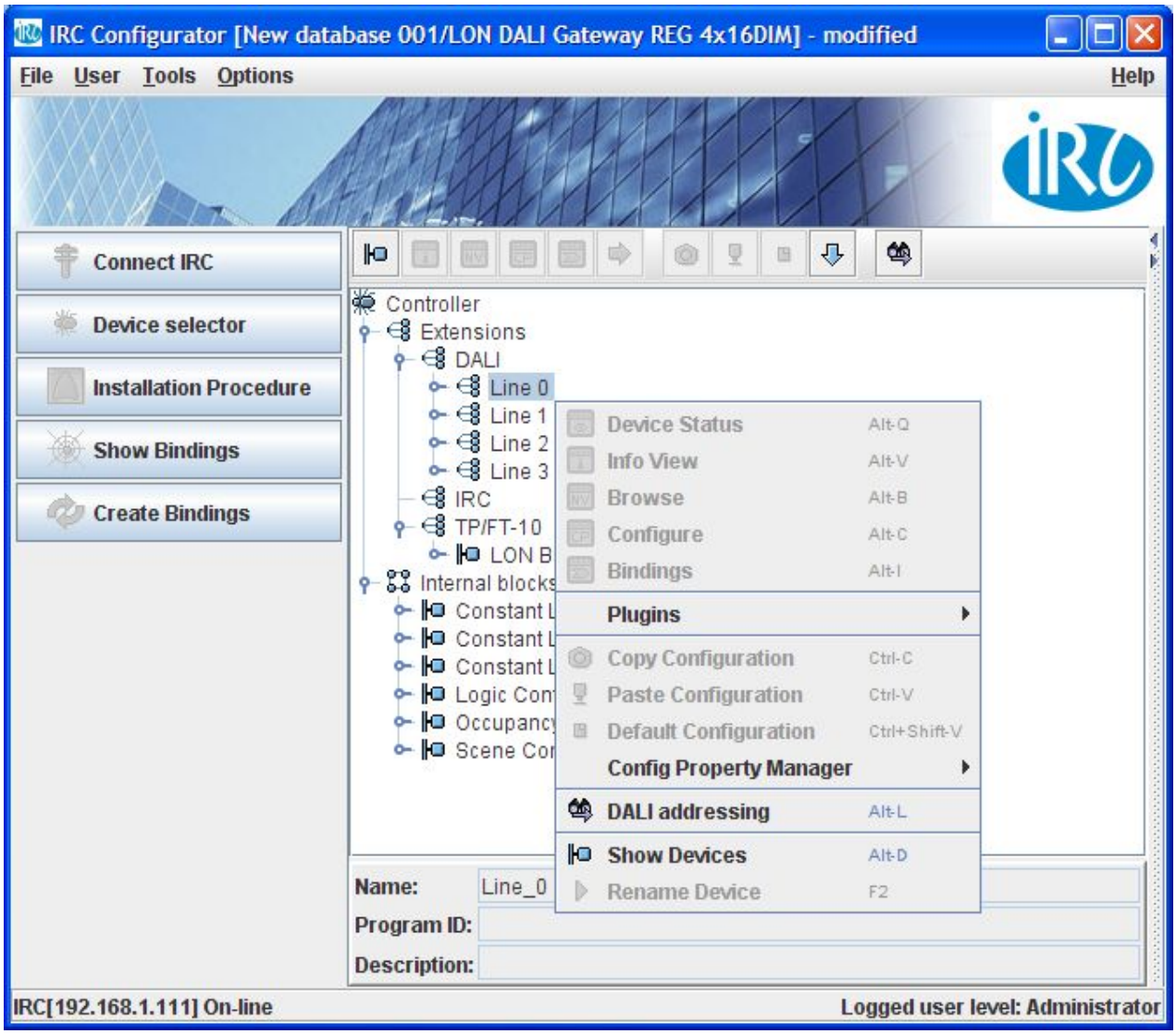


Fig. 7.9: DALI line context menu

7.9.1 Addressing the DALI devices

The commissioning window for the selected DALI line opens. Click on the symbol "Start DALI line scanning". This starts the search process for connected DALI devices. The devices that were found, together with devices contained in the database (e.g. from a previous scan of the DALI line) will be listed, and their device type and status displayed. A name for each device can be edited in the "Name" column. This will be saved as a configuration parameter.

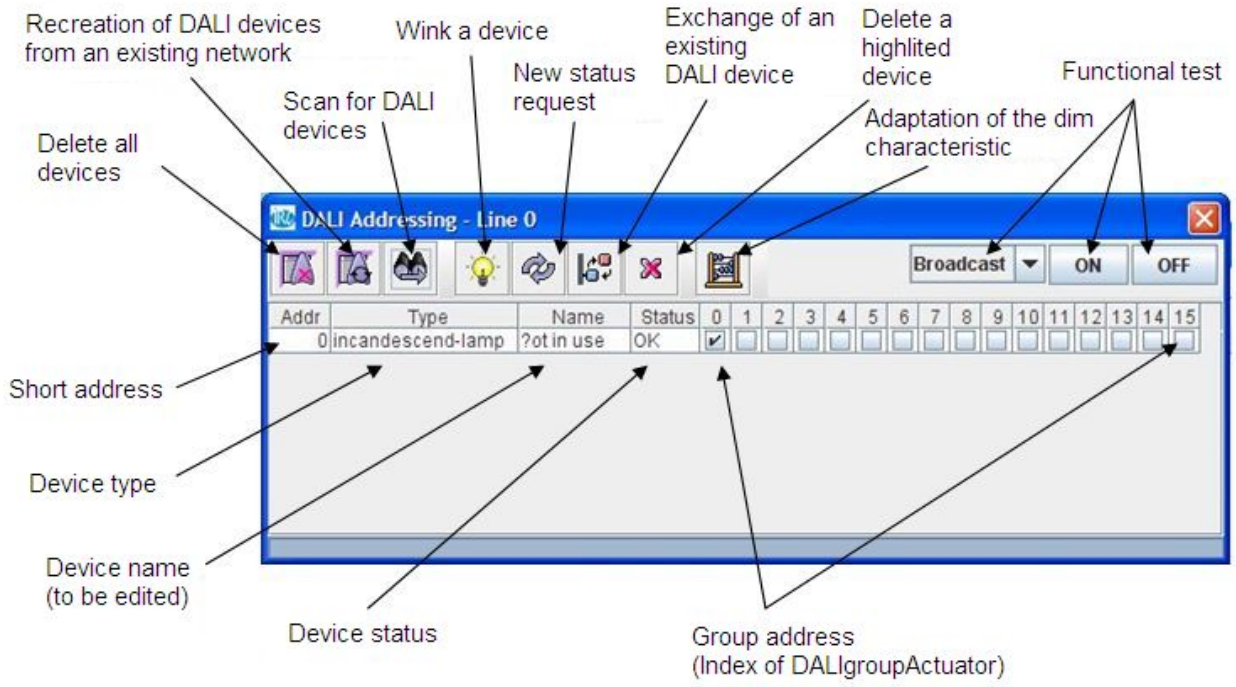


Fig. 7.9.1: DALI addressing

7.9.1.1 Wink a DALI device

The physical position of the DALI devices can be found by the "Wink" command. The selected devices are switched On and Off and thus be identified. The “wink” command initiates the blinking of a LED that is located under the lens of the multi-sensor.

7.9.1.2 Assigning the group address

The assigning of lamps to one of the 16 available groups is performed by activating the checkbox 0...15. In DALI Single Group Mode, each device can be assigned to only one group. Deactivating DALI Single Group Mode allows a device to be assigned also to several groups (the activation or

deactivation of DALI Single Group Mode is performed within the menu Options → GUI properties.) The selected group corresponds to the object index of the "Dali Group Actuator".

7.9.1.3 Direct actuation of DALI devices

For test purposes the groups can be switched individually or collectively by a "broadcast" to all devices.

After quitting DALI addressing it may be necessary to recalculate the dimming curve. This is indicated by the following message.

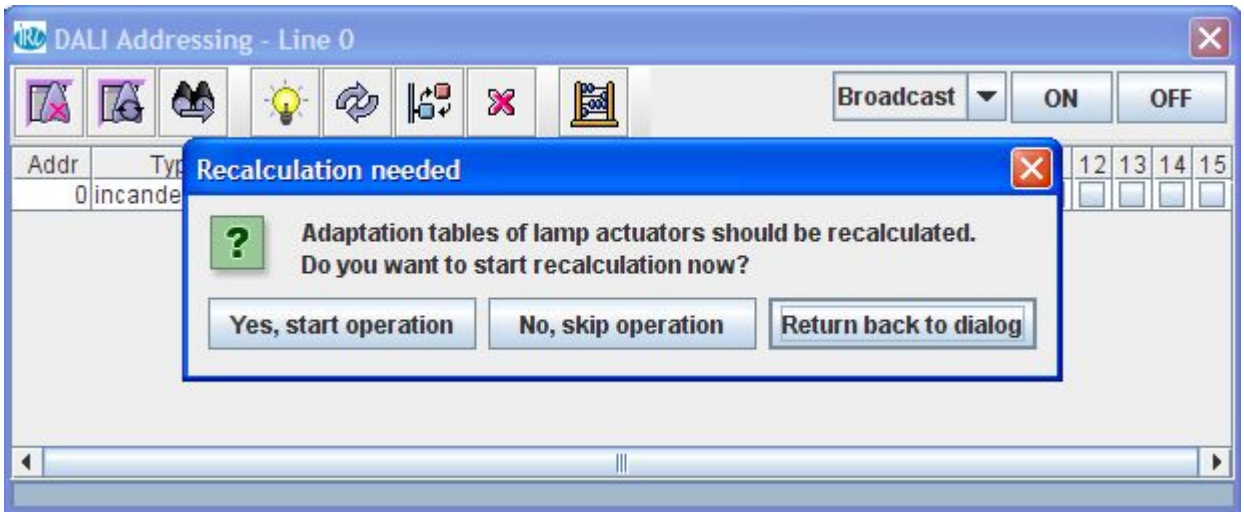


Fig. 7.9.1.3: Modifying the dimming curve

The calculation of the dimming curve takes into account the minimum and maximum dimming values of the DALI devices that are connected, and automatically adjusts them (UCPTadaptiontable in the DALI group actuator).

7.9.1.4 Configuration of DALI multi-sensors

The DALI multi-sensors found during the scan of the DALI lines are assigned as “multi-sensor” in the “type” column of the DALI addressing menu. The addressing of the multi-sensor is done by activating of one of the checkboxes of the DALI group. This addressing is not a reference to a DALI group but an assignment to the consecutive number of the multi-sensor object in the project (related to the specific DALI line). The addressing of DALI multi-sensors is only possible when a sufficient number of multi-sensor objects has been added to the project configuration by the help

of the device selector **before** starting the DALI addressing. Each DALI line maximum 8 multi-sensors can be connected.

For adjustment of the brightness measurement a calibration can be performed. Therefore highlight the specific sensor and activate the context menu “Configure” by a right click.

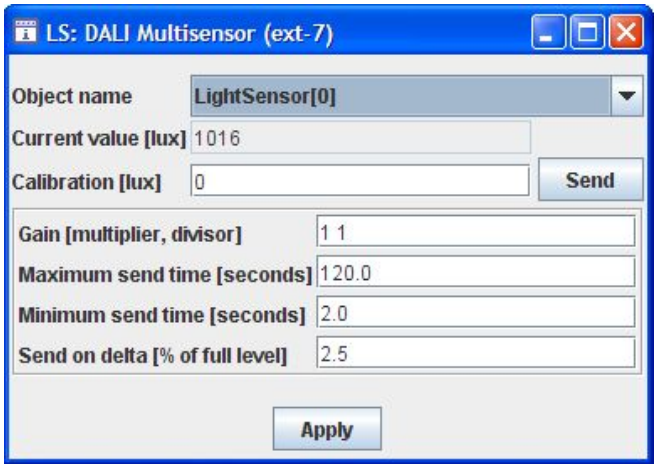


Fig. 7.9.1.4: Configuration of DALI multi-sensors

The measured value is shown in the field “Current value”. To adjust differences between the brightness at the sensor and the brightness at the reference point the conversion factor “SCPTgain” has to be created. To do this enter the measured brightness value at the reference point into the field “Calibration (lux)” and execute the “Send” button. Due to this the value is transmitted to the device and the “SCPTgain” is automatically calculated. If the conversion factor is known it can directly be filled into the filed “Gain”.

Furthermore the sending behaviour can be adjusted:

Maximum send time: the current brightness value is transmitted regularly within this interval.

Minimum send time: Minimum interval between two telegrams.

Send on delta: The minimum change required for an update of the output variable.

7.9.1.5 Network Recovery Function

If the LON DALI Gateway is inserted into an existing DALI network with devices that have already been configured (e.g. on exchanging the controller), you can press the "Recover" button in the "DALI addressing" menu to read the configuration of the entire DALI network into the device database. This contains all the short addresses and group addresses.

7.9.1.6 Exchanging a DALI device.

To exchange a DALI device, proceed as follows:

1) Installing a new DALI device
2) Highlight the device to be exchanged (this should be shown in the status field as "?") and press the "Replace" button. The device will now be replaced with the unconfigured device. Note that for this exchange process only one unconfigured DALI device is connected.
3) Repeat steps 1 and 2 for further DALI devices to be exchanged.

If several unconfigured DALI devices are found, the process will crash. Therefore make sure that only one unconfigured DALI device is connected, or configure these devices using the standard addressing procedure and remove the defective devices from the database.

7.9.1.7 Manually exchanging a DALI device.

It is not absolutely necessary to use the IRC configurator when exchanging a DALI device. You can use the device buttons for this. The pre-requirement however is that this allows only a defective device to be exchanged for an unconfigured device. Other cases require the use of the IRC configurator. If there are several defective DALI Geräte, it will always be the first short address that is replaced with the new DALI device.
For the proceed as follows:

1) Install the exchange device
2) Perform a long button push on "Channel" to switch into manual mode. Then perform a short button push to select the respective DALI channel.
3) Test the connection by pressing the "ON/OFF/BUS" button
4) Press the "Progr" button for longer than 3s.
5) When the exchange has been successfully completed, the LED of the respective DALI channel lights up orange (from IRC version 0.1.3.) and the DALI device that was found "waves" for one cycle. There is no reaction otherwise. (e.g. if more than one unconfigured device was found on the line).
6) Perform a long button push on "Channel" to switch out of manual mode.
7)

7.10 Creating binding links

This function is required only if the LON DALI Gateway is not bound into a LON network!
Until now you have set up connected devices with their associated function objects on the LON DALI Gateway. The application of the LON DALI Gateway is set up by creating a binding link between the function objects and the desired overall function. The function objects contain network variables for communication with other function objects. Network variables "nviYYxxx" are input variables and "nvoYYxxx" are output variables. The connections between the input variables and the output variables are created by "binding". There can only ever be one input variable and one output variable of the same type bound to each other. The type information can be found as the "tool type" by pointing the cursor to the network variables.

The bindings between the object variables can be created using the Binding Editor.

Proceed as follows to create and edit bindings:

1) When "Show Bindings" is selected, the Binding Window opens.
2) Use the "Create New Binding" button to select the desired binding type. (Currently only the binding type "Binding between two data points" is supported.) A binding template will open with wild cards for the network variables to be bound.
3) In the left hand window, select from the project view the first network variable, drag it to a free position in the binding template and drop it.
4) Then select the corresponding network variable and drag this to another free position in the binding template. The variables must both be of the same type. Network variables of differing types cannot be bound to each other.
5) For further binding links, repeat steps 2 to 4.
6) Once all binding links have been generated you can load them to the LON DALI Gateway by pressing the "Create Bindings" button.

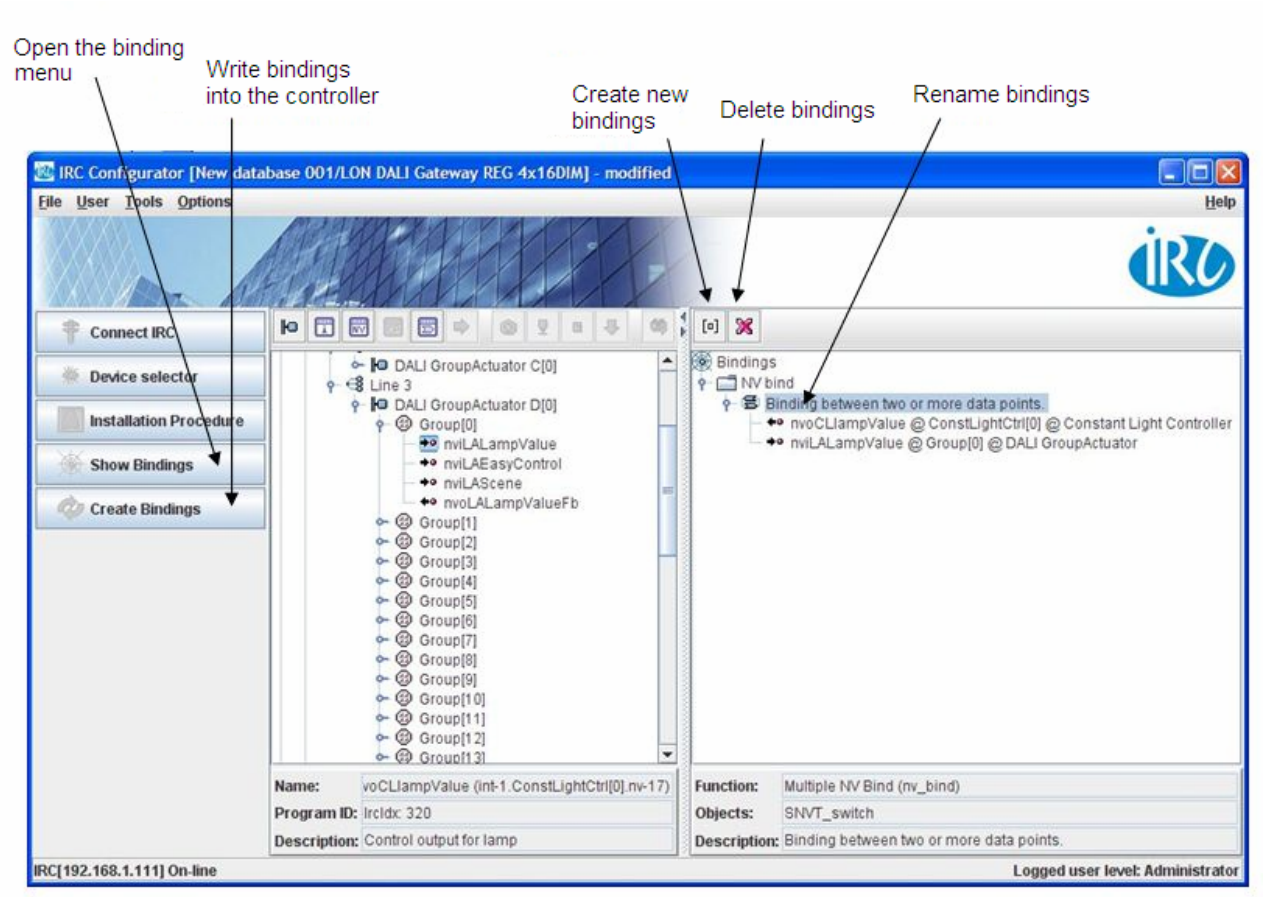
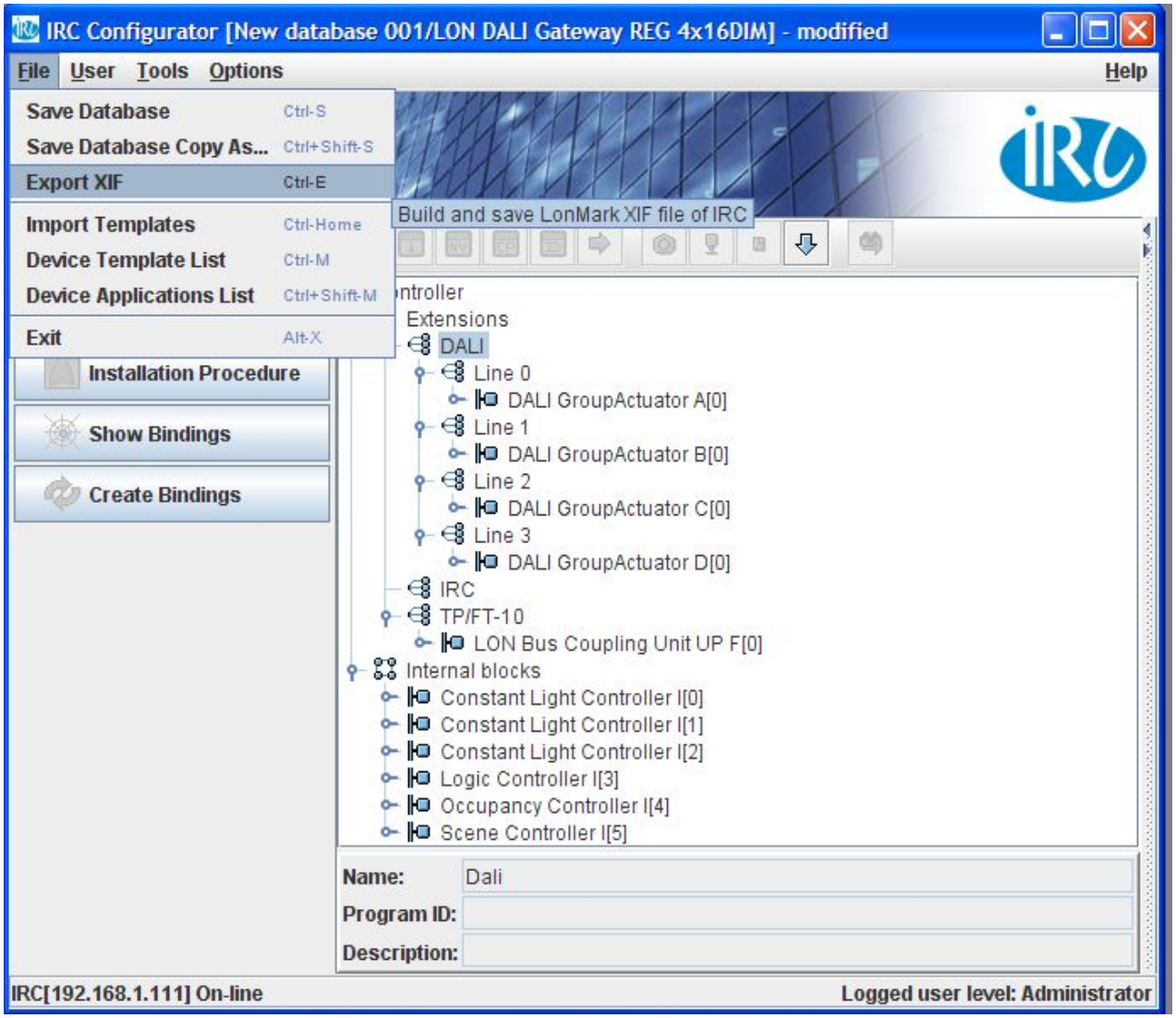


Fig. 7.10: Creating binding links in stand-alone mode

7.11 Application in a LON network

7.11.1 Creating a LON template (XIF)

Pre-requirement for an implementation of the LON DALI Gateway into a LON network is the availability of a device template (XIF). After a project has been created **and loaded into the device,** a device template (XIF) can be created. To do this, select "File -> Export XIF" in the folder and enter the desired path for saving.



This XIF file can be used to integrate the controller into a LON network management tool. It should be noted that configuration within this firmware version can only be performed by use of the configuration tool.

7.11.2 Program ID settings

For binding into a LON network further settings must be performed beforehand.

The LON DALI Gateway can be bound into a LON network either using EIA-852 (Lon over IP) or using EIA-709 (LON). The setting of the respective parameters is performed under "Options" -> "IRC Configuration" -> "Program ID settings" -> "Mainside".

The setting "CNIP" indicates that the implementation into the LON network is performed using the "100 Base T" connection. The setting "FT10" indicates that the binding into the LON network is performed using the TP/FT 10 connection. The program ID is automatically selected in accordance with the interface that is selected, since the transceiver settings are coded into it.
For further management of the program ID the "version" can be modified to suit. This modification is necessary if an existing "template" already integrated into the LON network must be retrospectively changed.

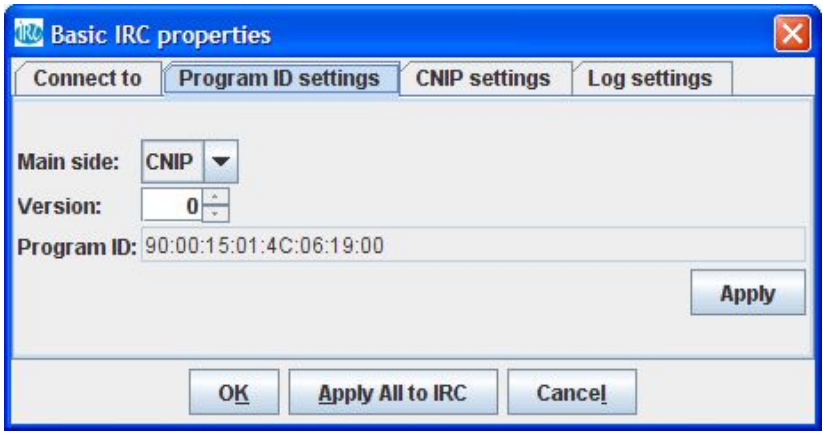


Fig. 7.11.2: Basic settings

7.11.3 Structure of an IP channel

IP is an acronym for Internet Protocol. IP is part of the TCP/IP protocol family (Transmission Control Protocol/Internet Protocol). The IP is the general program basis used for a worldwide exchange of computer messages by the Internet and within many LANs (Local Area Networks) and WANs (Wide Area Networks).

A LonWorks/IP channel is a communication medium which conveys IP packets that contain LonTalk packets. If the computer on which the LON commissioning tool is running is connected to a LONWORKS/IP channel, it must have an IP network interface (such as an Ethernet network card or a modem with PPP software) which it can use for communication with the physical network (extract from the LonMaker manual 1-11, 1-12).

Note: It is essential to have a configuration server for setting up an IP channel. A configuration server is not a component of the LON DALI Gateway. We refer at this point to the use of the configuration servers from Echelon and Loytec.

First create a LONWORKS/IP interface on the computer on which the LON commissioning tool is installed. To create a LONWORKS/IP interface, proceed as follows:

1) Point to Settings in the Windows Start menu, then select the control panel. Windows system control will open.

2) Double click on the system control application LNS IP Configuration (LonWorks/IP Channels) Windows panel control.

3) Click on Add. The dialog field Add an IP Device will open.

4) Input a unique name for the computer and check whether the displayed IP address tallies with your network card. Leave the port address as 1628.

5) Click on OK. The dialog field Add an IP Device will close.

6) Click on OK. The LNS IP configuration system control application will close.

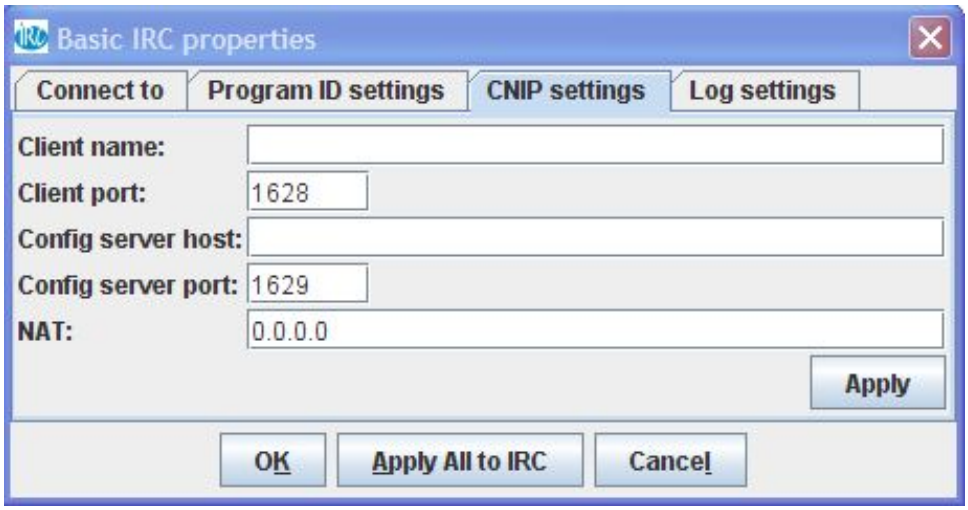
Further information can be found in the Help file for the LNS IP configuration system control application.

Define the LONWORKS/IP channel and the devices in the configuration server. The procedure to use depends on the configuration server in question. In this respect we refer to the respective data sheets issued by Echelon and Loytec.

The LonMaker computer is not fully commissioned on the LONWORKS/IP channel until you execute the LonMaker tool. Further information can be found in the Help file for the Loytec configuration server or in the user manual for the i.LON configuration server.

7.11.4 CNIP settings

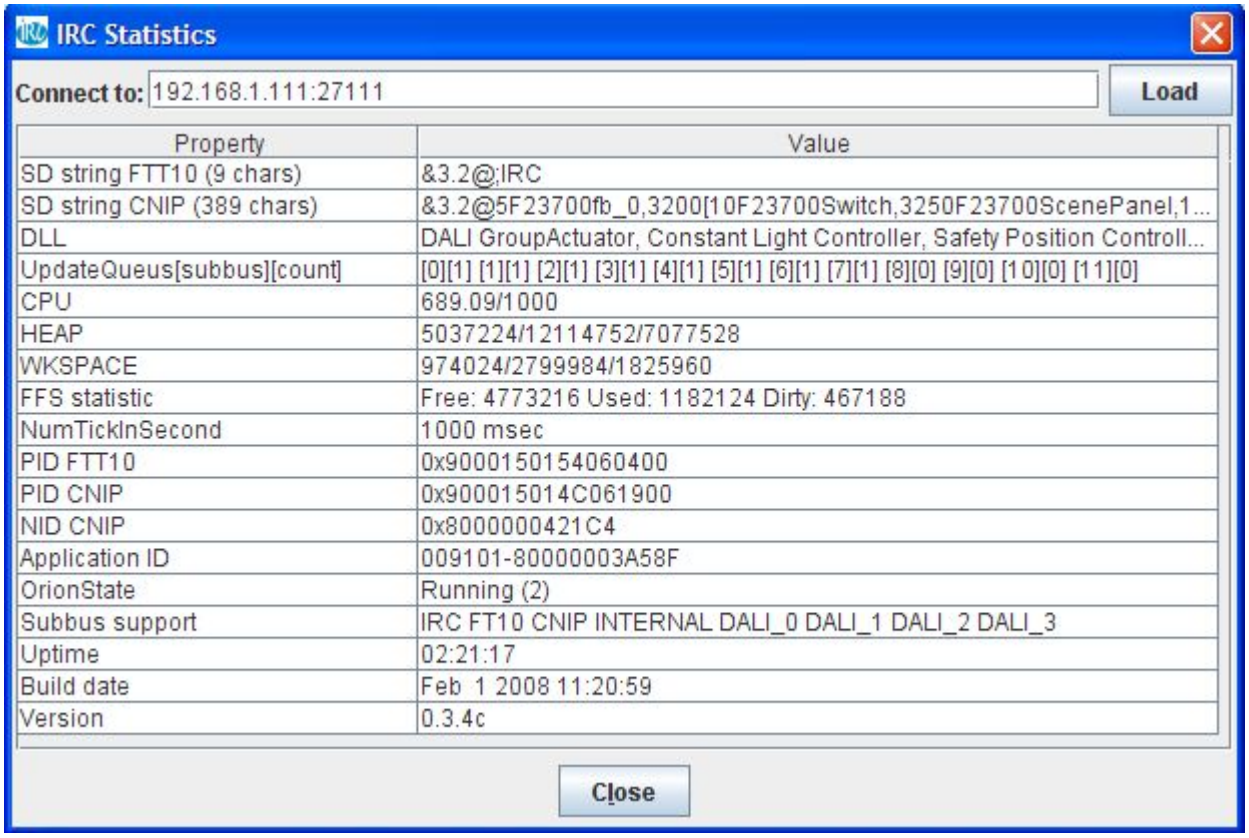
The participants on the IP channel are managed by a "configuration server". Enter under "CNIP settings" the name under which you will log in this device at the configuration server, and enter in "Config server host" the IP address of the configuration server. The port settings should be made as listed below.



7.12 Tools

You will find the following service programs in the "Tools" folder:

- "Check connector": Shows whether the device is online.
- "IRC devices": Shows the current configuration of the device, in case it is "online".
- "IRC Statistics": Shows general information on the device. Version shows the currently loaded firmware version.



- "Clear IRC Tables": Deletes all configuration entries in the device. If a project requires all existing devices to be deleted, please first use this function.
- "Upload IRC Firmware": Loads new firmware. Loading the firmware deletes the configuration data. The device configuration must be renewed (as it must after LNS installations).

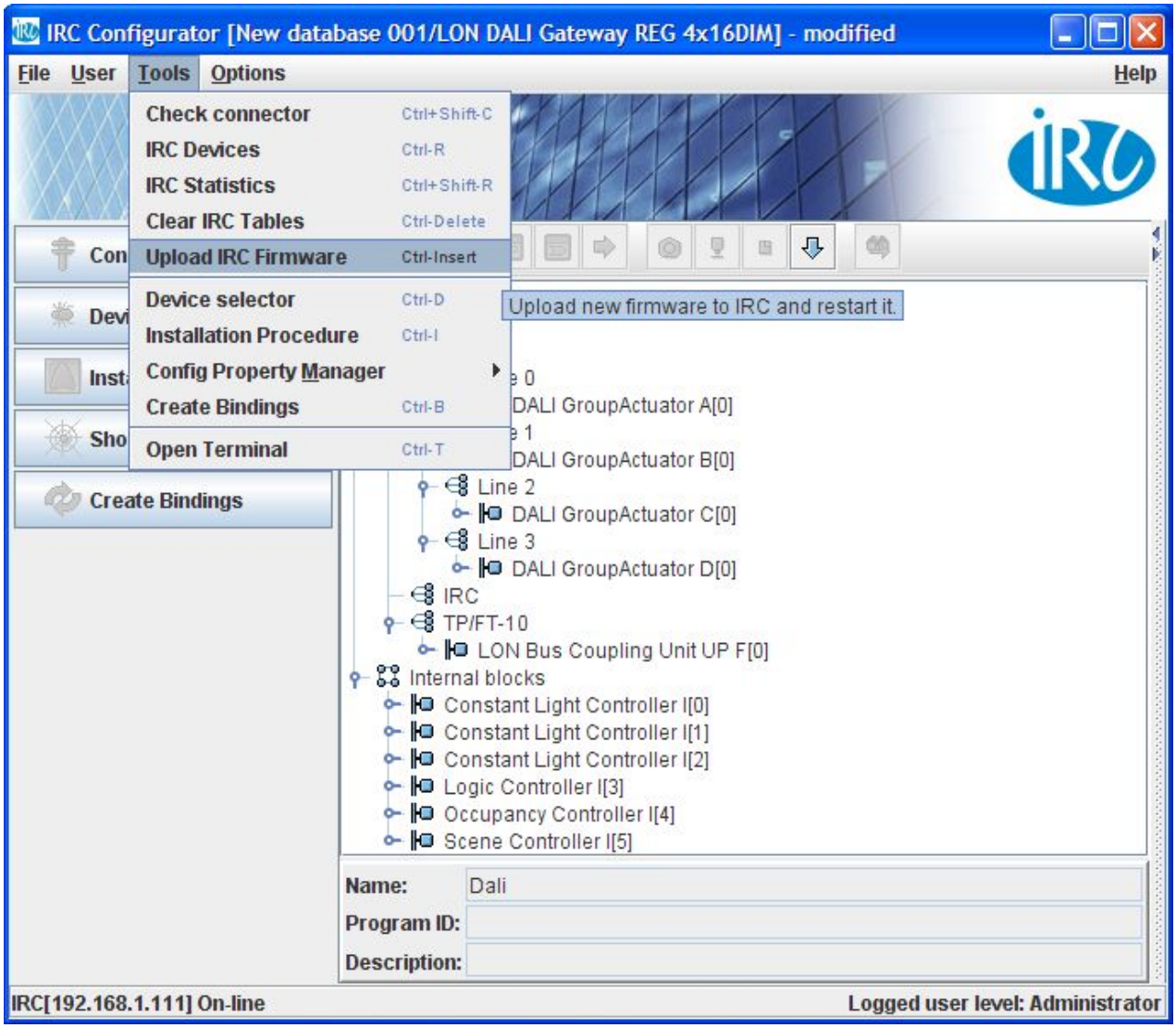


Fig. 7.12: Service programs

7.13 Configuration using the Web browser

The major settings can also be performed using the integral Web server. The following Web browsers are supported: Firefox 1.5 and Internet Explorer from version 6.0.
Enter the IP address of the device (default 192.168.1.111).
Note that in this firmware version it may take a few seconds to generate the pages, since these are created dynamically.

You can then navigate through the various subjects:

7.13.1 IP SETTING

Set the new IP configuration of the device here: IP address, netmask and Gateway - all other settings are optional. The new settings become active only when the device is restarted.

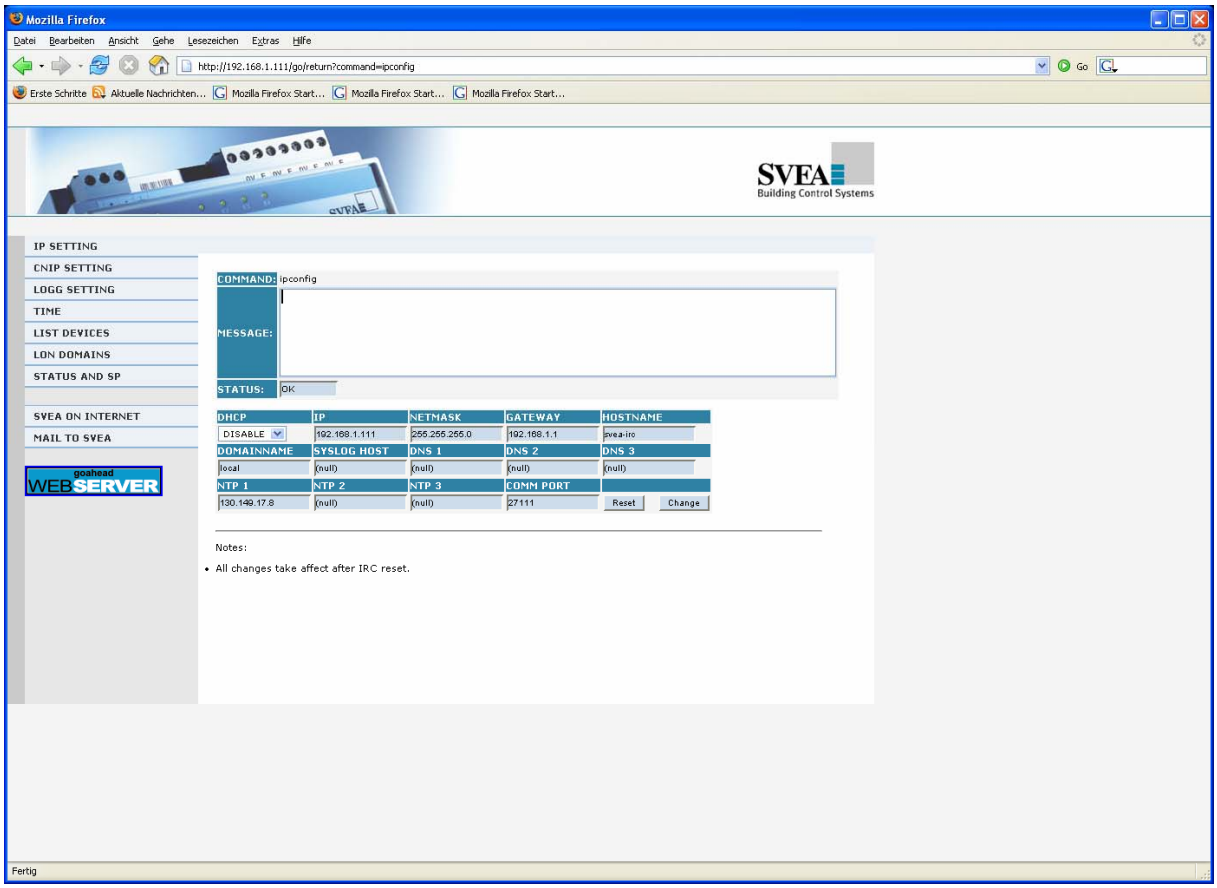


Fig. 7.13.1: Setting the IP configuration: IP address, netmask, Gateway ...

7.13.2 CNIP SETTING

If the device is used in a LON over IP network, the device is logged on to a "Configuration Server". Enter here the IP address of the "Configuration Server".

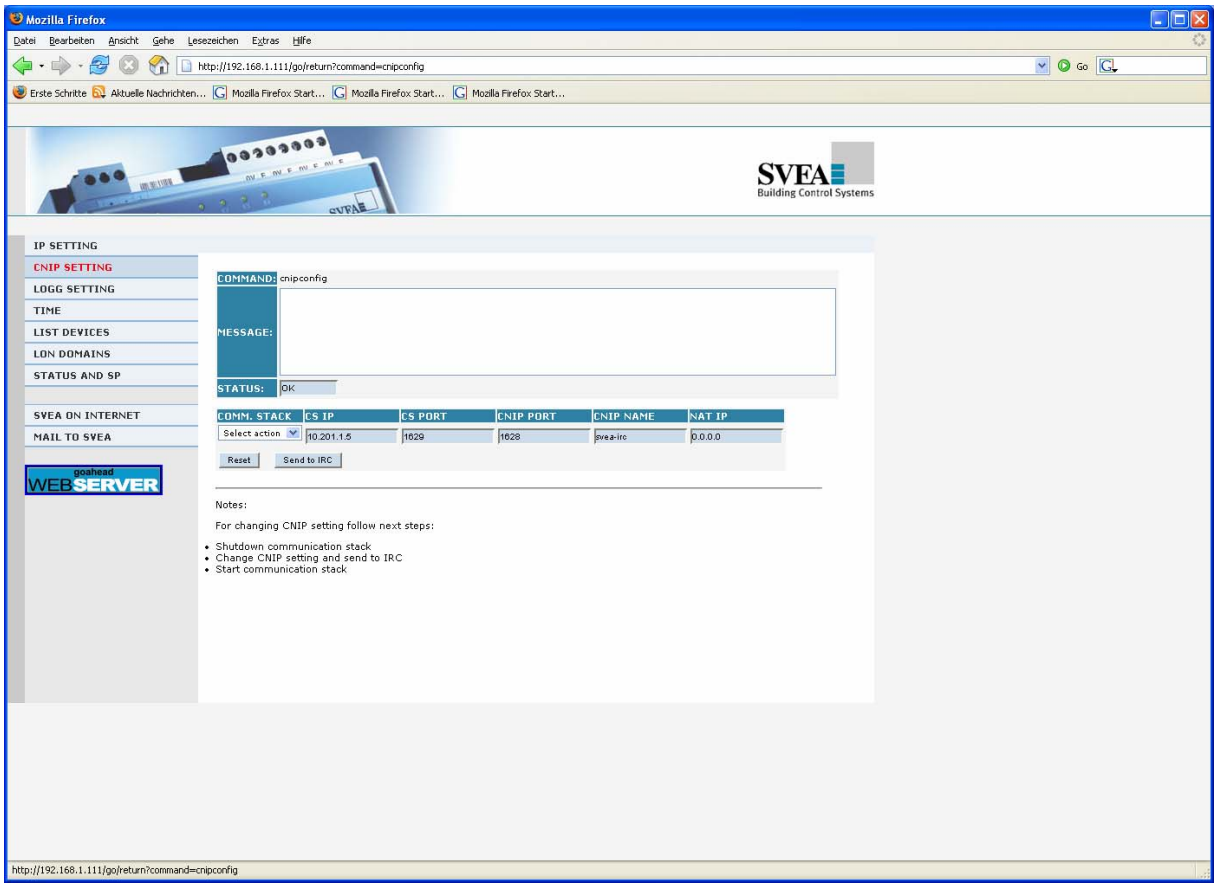


Fig. 7.13.2: Setting the IP address of the configuration server when a device is used in a LON over IP network

7.13.3 LOG SETTING

System and debug information can be saved temporarily in the local file system. Two files are available for this purpose; these are described successively as ring memories. Select here the sort of information that you wish to save.

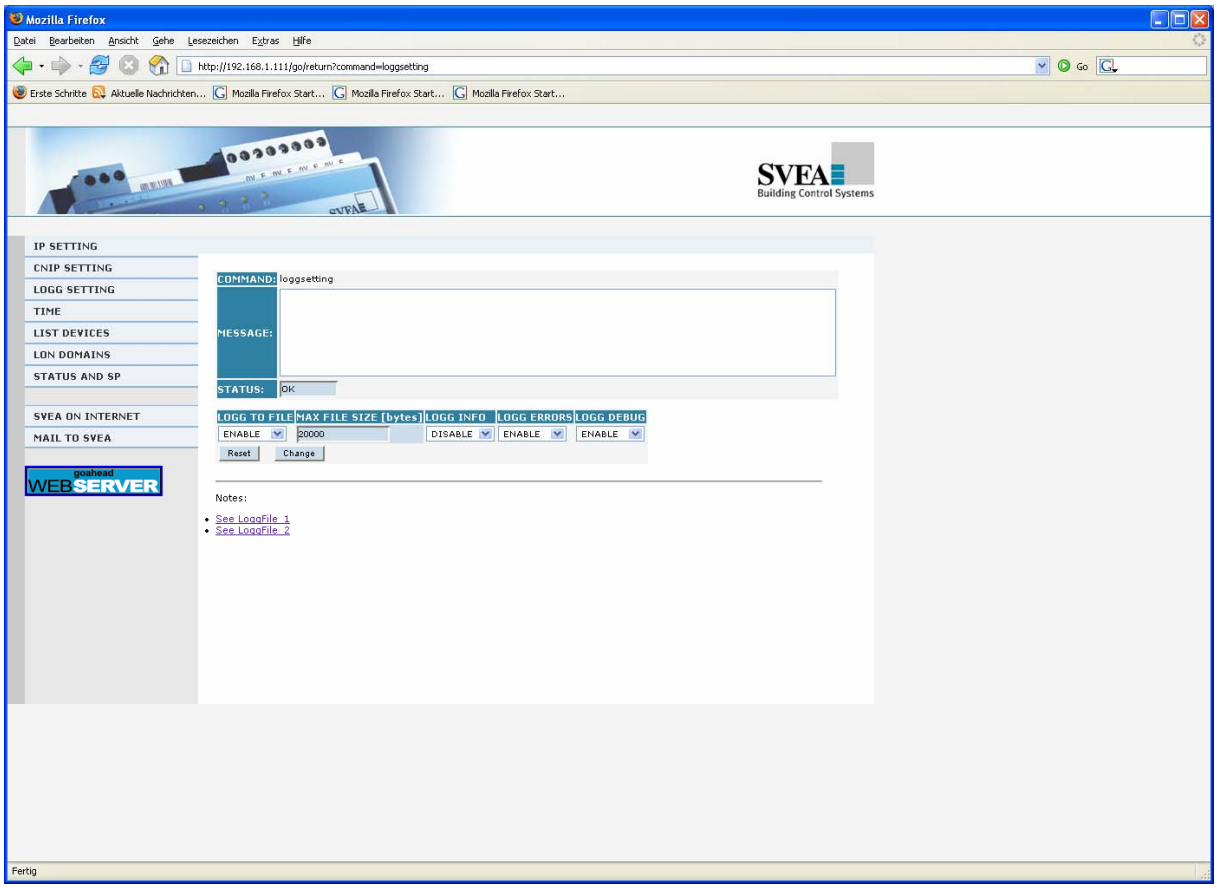


Fig. 7.13.3: Setting the log function. There are two files are available; these are described as ring memories. In the standard setting only system information is saved (the recommended setting).

7.13.4 TIME

If you have not entered an NTP server from which the system time can be obtained, you can here manually set the system time.

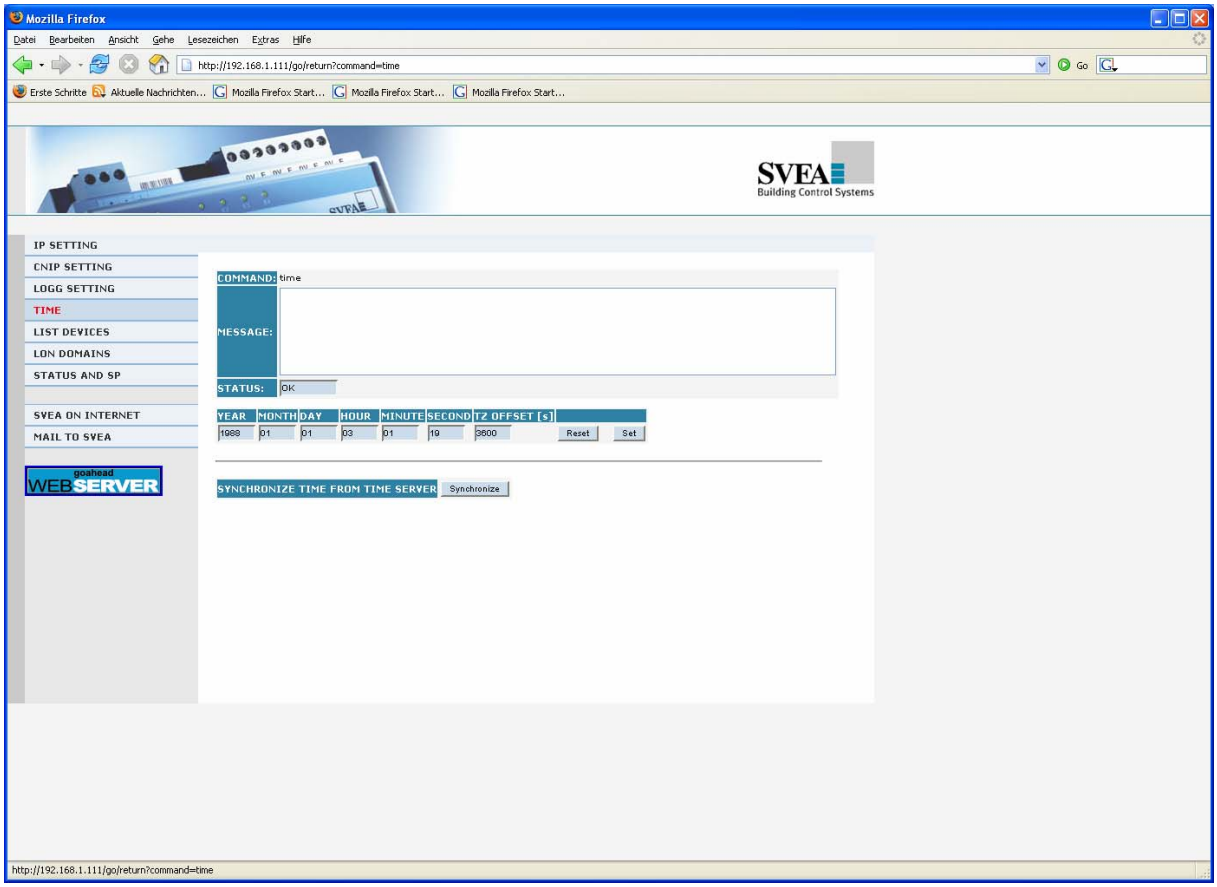


Fig. 7.13.4: Setting the time manually

7.13.5 LIST DEVICES

In this list you will find the "virtual" devices that have been configured. Press the "Datapoints" button to obtain a view of the data points in the "virtual" devices.

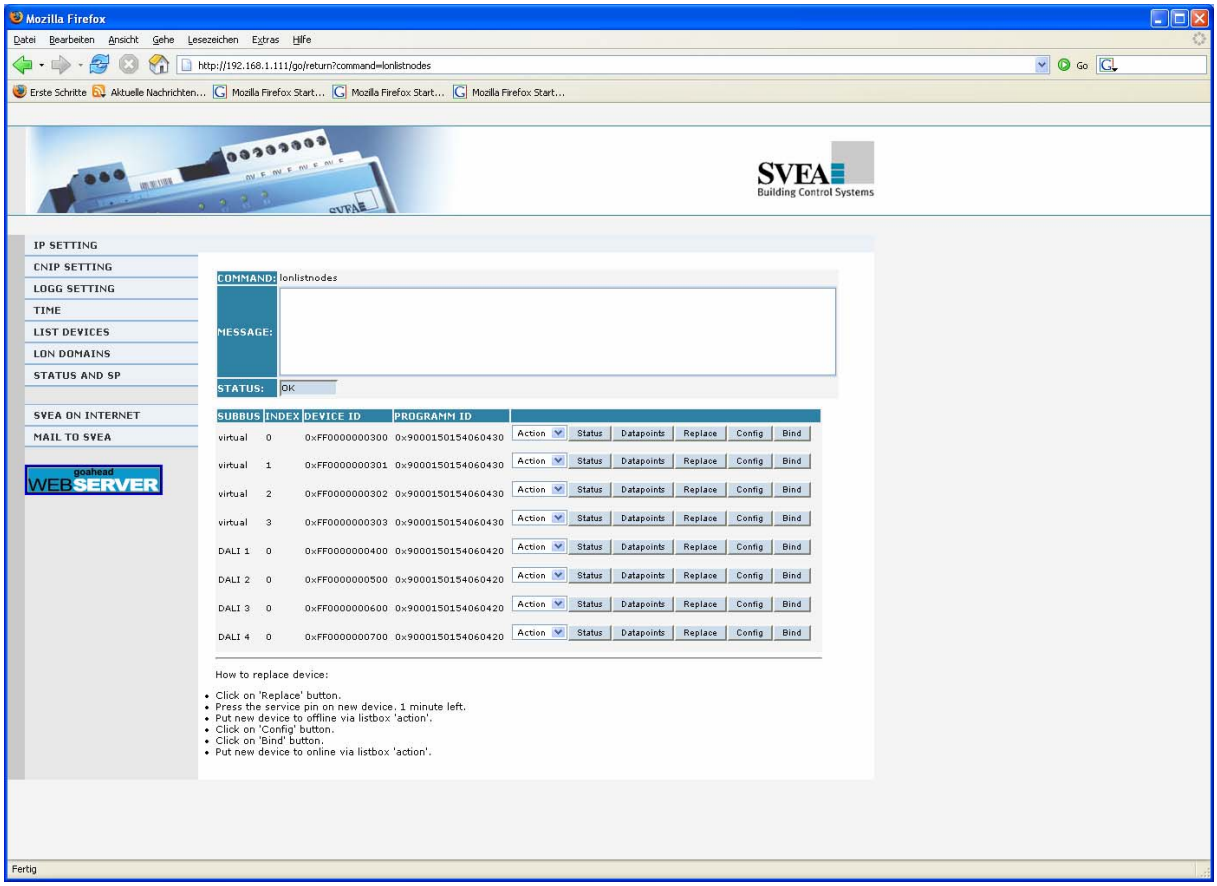


Fig. 7.13.5.1: List of the virtual devices

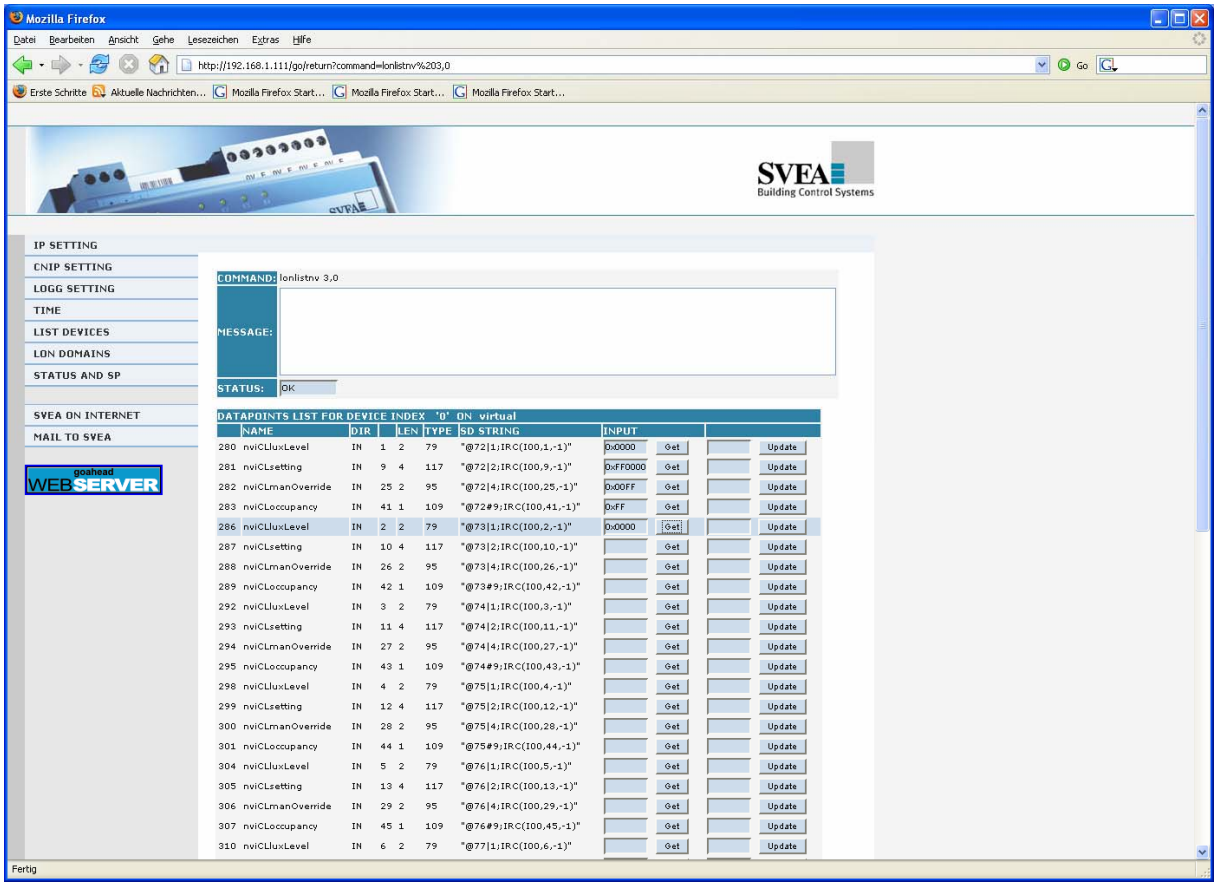


Fig. 7.13.5.2: List of the network variables and configuration parameters of a virtual device

8 Appendix A: Description of the function objects

8.1 LonMark®-object DaliGroupActuator DALI Group (Index = 0 ... 15)

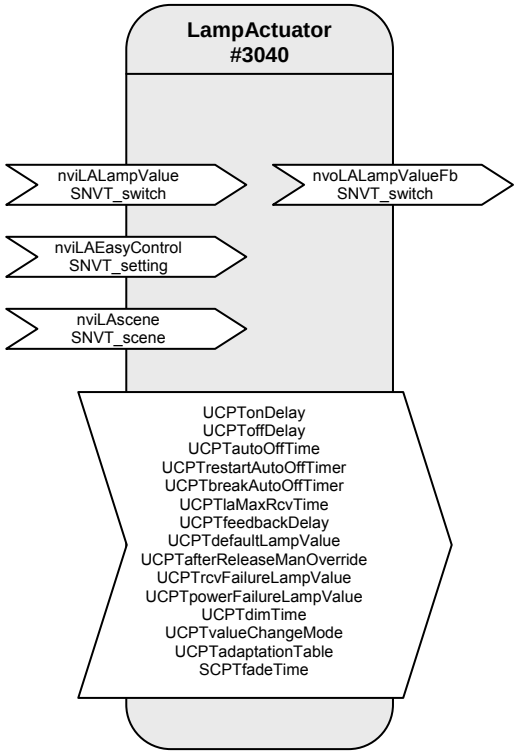


Table: Functions, parameters, and variables of the DALIGroupActuator object

Function	Network variable	Type
Lamp input value	nviLALampValue	SNVT_switch
Lamp feedback output	nvoLALampValueFb	SNVT_switch
Advanced lamp input	nviLAEasyControl	SNVT_setting
Scene trigger input	nviLAscene	SNVT_scene
Function	**Configuration parameters**	**Type**
Switch-on delay	UCPTonDelay	UNVT_time_sec
Switch-off delay	UCPToffDelay	UNVT_time_sec
Automatic switch-off time	UCPTautoOffTime	UNVT_time_sec
Automatic switch-off time extendable	UCPTrestartAutoOffTimer	UNVT_boolean
Automatic switch-off time interruptible	UCPTbreakAutoOffTimer	UNVT_boolean
Maximum reception pause	UCPTlaMaxRcvTime	SNVT_time_sec
Maximum transmission pause	SCPTmaxSendTime	SNVT_time_sec
Feedback delay	UCPTfeedbackDelay	UNVT_time_msec
Default lamp value	UCPTdefaultLampValue	SNVT_switch
Override after release	UCPTafterReleaseManOverride	UNVT_switch_cfg
Lamp value when reception faulty	UCPTrcvFailureLampValue	SNVT_switch
Lamp value when power failure	UCPTpowerFailureLampValue	SNVT_switch
Total dimming time	UCPTdimTime	SNVT_time_sec
Fading times	UCPTvalueChangeMode	UNVT_change_md
Adaptation table	UCPTadaptationTable	UNVT_adapt_tbl

The "DALIGroupActuator" objects represent the DALI groups in LON.

Every SVEA "Lamp Actuator" object has a normal and also a prioritised switch input for controlling the appropriate group. The function range is expanded by a setting input that allows relative brightness control, among other uses.

Different time functions, such as switch-on and switch-off delays, automatic switch-off (stairwell function), and feedback delays can all be set using parameters. The reaction to different power supply events (loss of power, power switch-on, restart) is also configurable.

Functions

Switching (with time functions)

Normally, the associated output is switched via the switch input variable nviLALampValue[i]. A switch-on delay can be set for this output using the UCPTonDelay[i] variable, a switch-off delay can be set using UCPToffDelay[i], and automatic switch-off (stairwell function) can be set using UCPTautoOffTime[i]. If automatic switch-off is running, then the parameter UCPTrestartAutoOffTimer[i] can be set to define whether this period may be extended or not and UCPTbreakAutoOffTimer[i] can be used to defined whether it may be interrupted.

Dimming (with Easy Control)

As well as LonMark, the switch input variable nviLALampValue[i] is also intended for dimming.

For devices with dimming features, SVEA offers the setting input variable nviLAEasyControl[i], which allows relative brightness changes and switching on with stored values (memory function).
Using .function = SET_UP or .function = SET_DOWN the lighting is dimmed relative to the value in .setting. The .function = SET_STOP can be used to prematurely interrupt the process.
When switching off using .function = SET_OFF, the last brightness value is stored and then output again the next time a switch-on occurs via .function = SET_ON (memory function).

When using the "Easy Control" function, the dimming time over the entire brightness range from 0 to 100 % can be defined in the parameter UCPTdimTime[i].
The parameter UCPTvalueChangeMode[i] can be used to individually define "Dimming on" (.SoftOn), "Dimming off" (.SoftOff), and "Fade to new dimming value" (.SoftChange) (e.g. for scene changes in a scene control).

To reduce bus loading, a delay time between reception of a command and sending of the feedback can be set in the parameter UCPTfeedbackDelay[i]. This means that the output feedback value is not unnecessarily sent for every dim telegram, but rather via the output variable nvoLALampValueFb[i] when dimming is finished.

Example: Switching/Dimming using a button sensor

- Short button push: Alternates between SET_ON and SET_OFF. The actuator switches between the temporarily stored brightness value (memory value) and off.
- Longer button push: {SET_UP; 100 %; x*} or {SET_DOWN; 100 %; x}, on release SET_STOP. The actuator dims in the specified direction using the time specified in UCPTdimTime[i]. SET_STOP interrupts the dimming process and the current brightness level is temporarily stored.

Brightness-dependent control of multiple switching/dimming actuators

The SVEA "Lamp Actuator" object allows control of multiple switching/dimming actuators based on a common brightness value.
A percentage brightness value, e.g. from a constant light regulator or a GLT, is specified via the inputs nviLALampValue[i]. Local switch-off, or switching on to this lighting value, is done via the input nviLAEasyControl[i].

When switching off using nviLAEasyControl[i].function = SET_OFF, the last brightness value is stored and then output again the next time a switch-on occurs via .function = SET_ON (memory function). If a new brightness value is specified via nviLALampValue[i] while in a switched off state, the memory value is changed. This new value is then output at the next switch-on.

If an invalid value exists at nviLALampValue[i] (.state = -1) then control is done via the input nviLAEasyControl[i]. The reverse is also true, when nviLAEasyControl[i].function = SET_NUL (but only when!), then the lighting is controlled by nviLALampValue[i].
When the lighting is switched off, nviLALampValue[i] is the same as the memory value. After a reset, or if an invalid value exists at nviLALampValue[i] when the lights are switched off, the memory value is 100 %, so that the lights can be switched on again if necessary.

The lighting can be locally dimmed up (SET_UP) or down (SET_DOWN) via nviLAEasyControl[i]. This creates an offset that is carried over to nviLALampValue[i] when a new brightness value is specified.
If a locally selected brightness value (without an offset by the control system), then nviLAEasyControl[i] must be set using .function = SET_STATE (e.g. to call up scene values). The input nviLALampValue[i] is deactivated during SET_STATE commands.
If the valid brightness range is exceeded through the offset calculations, the brightness is set to 0.5 or 100 %. The offset overhang is internally stored and retained for brightness control via nviLALampValue[i]. For local brightness changes via nviLAEasyControl[i] a new offset is generated each time – based on the actual brightness value.

* x = is ineffective, default setting can be retained.

Global/Effect control

The values from the "GlobalCtrl" object override with the priority of the LampActuator object. Commands with a priority of 0 are only accepted when nviLAlampValue is invalid (.state = -1).

For example, if a "Night effect" is to be implements, the parameter UCPTctrlOffOutput of the Constant Light Controller can be set so that an invalid value is output when absent. This leads to the effect value of the Global Controller being adopted when nobody is in the room.

Safety functions

The value to which the DALI devices are dimmed after a restart of the DALI controller is defined in parameter UCPTdefaultLampValue[i]. This is also additionally directly stored in the DALI devices but may not be zero there. If the DALI devices receive power before the DALI controller comes online, then the DALI devices switch to their minimum brightness when UCPTdefaultLampValue[i] = 0.

The value UCPTpowerFailureLampValue[i] is also transferred to the DALI devices and is adopted when the power supply of the DALI controller fails or the DALI cabling is damaged.

The parameter SCPTlaMaxRcvTime[i] is required for reception monitoring. If the appropriate "Lamp Actuator" input is not updated within the time specified here, then it is assumed that a transmission fault exists. The actuator then adopts the state specified in the parameter UCPTrcvFailureLampValue[i].

The output nvoLALampValueFb[i] can be cyclically sent over the period specified in SCPTmaxSendTime[i]. This allows the functioning of the DALI controller to be monitored with another LON device.

Network variables details:

nviLALampValue - Lamp input value

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	UCPTdefaultLampValue[i]
Description	Control input for switching and dimming the DALI groups.

nvoLALampValueFb - Lamp feedback output

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	UCPTdefaultLampValue[i]
Description	The current value/status of the switching channel is sent to the network here; either immediately upon being changed or after a delay defined in UCPTfeedbackDelay[i]. Switch-on and switch-off delays are regarded as being complete. This output can be cyclically sent over the period specified in SCPTmaxSendTime[i]. When the DALI Controller is operated via the "All On" or "All Off" device buttons, this output is set to {0;-1} until a synchronisation with the LON network is done via the "Sync" button or a valid telegram is received.

nviLAEasyControl – Advanced lamp input

Type	SNVT_setting
Value range	.function: SET_OFF, SET_ON, SET_UP, SET_DOWN, SET_STATE .setting: 0 ... 100 %
Default value	.function = SET_NUL .setting = 0
Description	The input is used for controlling an output via SNVT_setting. If this input is bound to nviLALampValue[i], then it is used for switching and changing the default value stored there (e.g. a regulator/controller). SET_STATE: The .setting portion is interpreted in the same manner as the .value portion of a switch input and directly jumped to or travelled to depending on further parameter values. SET_UP, SET_DOWN: The output is relatively dimmed by the .setting proportion of the specified value in the specified direction. SET_STOP: A running dimming process is stopped. SET_OFF: The output is switched off and the last switch-on value is temporarily stored SET_ON: The output is switched on with the last stored value. SET_NUL: Release for controlling via nviLALampValue[i].

nviLAScene – Scene recall

Type	SNVT_scene
Value range	.function: SC_NUL, SC_RECALL, SC_LEARN, SC_RESET .scene_number: 1 ... 16, 255
Default value	SC_NUL 255
Description	Input for scene recall

Configuration parameter details:

UCPTonDelay - Switch-on delay

Type	UNVT_time_sec
Value range	0 ... 65535 s [1 s]
Default value	0 s
Description	Time between reception of an ON telegram and its execution.

UCPToffDelay - Switch-off delay

Type	UNVT_time_sec
Value range	0 ... 65535 s [1 s]
Default value	0 s
Description	Time between reception of an OFF telegram and its execution.

UCPTautoOffTime - Automatic switch-off time

Type	UNVT_time_sec
Value range	0 ... 65535 s [1 s]
Default value	0 s
Description	The output switches off once this time has expired (Stairwell switch-off). The time begins once an ON telegram is received. The value 0 deactivates this function.

UCPTrestartAutoOffTimer - Automatic switch-off time extendable

Type	UNVT_boolean
Value range	FALSE, TRUE
Default value	TRUE
Description	The automatic switch-off time can be restarted by further ON telegrams, even when it is already switched on.

UCPTbreakAutoOffTimer - Automatic switch-off time interruptible

Type	UNVT_boolean
Value range	FALSE, TRUE
Default value	FALSE
Description	The output is prematurely switched off when an OFF telegram is received, also when an automatic switch-off time is set.

UCPTlaMaxRcvTime - Maximum reception pause

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	0.0 s
Description	The maximum time that may pass without an update to nviLampValue or nviEasyControl before the lamp value is output during a reception fault. The value 0 deactivates this function.

UCPTfeedbackDelay - Feedback delay

Type	UNVT_time_msec
Value range	0 ... 65535 ms [1 ms]
Default value	300 ms
Description	Time by which the feedback value is delayed before being sent. Begins anew with every received telegram. Required to reduce the bus load when dimming. Must be greater than the time between two dim telegrams.

UCPTdefaultLampValue - Default lamp value

Type	SNVT_switch
Value range	.value: 0 ... 100 % [0.5 %] .state: -1 ... 0 [1]
Default value	0.0 0
Description	The value adopted by nviLampValue after power is restored or a reset is performed. The output value is the result of the logical linking of the default input variable values. For -1 the output retains its current setting.

UCPTafterReleaseManOverride - Override after release

Type	UNVT_switch_cfg
Value range	.function: SW_NUL, SW_HOLD, SW_VALUE; .value: 0.0 ... 100.0 % [0.5 %]
Default value	SW_NUL 0.0
Description	The value adopted by the output after releasing via nviManOverride. SW_NUL -> last valid value of nviLampValue, SW_HOLD -> current state is retained.

UCPTrcvFailureLampValue - Lamp value when reception faulty

Type	SNVT_switch
Value range	.value: 0 ... 100 % [0.5 %] .state: -1 ... 0 [1]
Default value	0.0 -1
Description	Value adopted by the output when no telegram is received within the maximum reception pause period. (used for monitoring the data transfer.)

UCPTpowerFailureLampValue - Lamp value in case of power failure

Type	SNVT_switch
Value range	.value: 0 ... 100 % [0.5 %] .state: -1 ... 0 [1]
Default value	0.0 -1
Description	Value adopted by the output when the power fails. When .state = -1 the output retains its current setting.

UCPTdimTime - Total dimming time

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	4.0 s
Description	The time required to dim from 100 % to 0 %.

UCPTvalueChangeMode - Fading times

Type	UNVT_change_md
Value range	SoftOn: 0,0 ... 6553.5 s [0,1 s]; SoftOff: 0,0 ... 6553.5 s [0,1 s]; SoftChange: 0,0 ... 6553.5 s [0.1 s]
Default value	0.0 0.0 0.0
Description	Defines the cross-fade times for switch-on, switch-off, and value changes.

UCPTadaptationTable - Adaptation table

Type	UNVT_adapt_tbl
Value range	Byte[0 ... 20]: 0 ... 255 [1];
Default value	1 13 25 38 51 64 76 89 102 114 127 140 152 165 178 191 205 216 229 241 254
Description	Table used to adapt the software to suit different hardware. (do not modify!)

SCPTfadeTime – Scene fade time

Type	SNVT_time_sec
Value range	0,0 ... 6553,5 s [0,1 s]
Default value	0,0 s
Description	Time to fade from one scene to another **This value is directly stored in the DALI devices and thus will also be valid after a direct command to the input in the DaliGroupActuator object!**

8.2 LonMark®-object GlobalControl

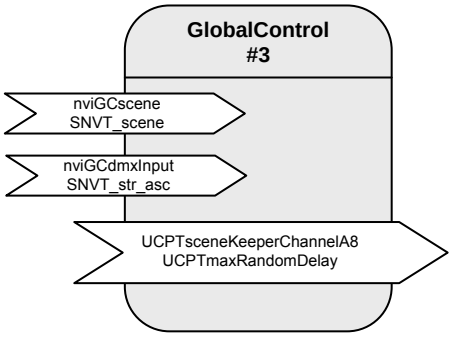


Table: Functions, parameters, and variables of the GlobalControl object

Function	Network variable	Type
Global scene input	nviGCscene	SNVT_scene
Multiplex Input	nviGCdmxInput	SNVT_str_asc
Function	**Configuration parameters**	**Type**
Scene storage for group switching	UCPTsceneKeeperChannelA8	UNVT_skca_8
Maximum random delay	UCPTmaxRandomDelay	SNVT_time_sec

Central control

The "Global Control" object allows all DALI groups to be switched by a central binding. The "Global Control" object directly affects the actuator-channels. This allows implementation of group switching or lighting effects.

At the nviGCscene input, freely definable scenes can be called up that define a separate brightness value for each actuator channel. Priorities of 0 (only adopted in absence mode), 1 (normal) and 2 (override) can be selected.

For temporal correction of central switching commands, the activation of the requested scenes can be parameterised with a configurable random period (UCPTmaxRandomDelay).

All actuator channels can be combined into an effects control system via nviGCdmxInput.
However, the values are only adopted when the nviLAlampValue of the relevant object is invalid (-1).

Network variables details:

nviGCscene - Global scene input

Type	SNVT_scene
Value range	.function: SC_RECALL .scene_number: 1 ... 10
Default value	.function = SC_NUL .scene_number= 0
Description	Input for central activation/deactivation of functions (ON/OFF) of the individual actuator channels. UCPTmaxRandomDelay can be used to define a device-specific random delay to avoid load peaks in the central control system.

nviGCdmxInput - Multiplex Input

Type	SNVT_str_asc
Value range	0 ... 200
Default value	0
Description	This input allows transfer of the dimming values for all channels at the same time. The element .ascii[0] is the dimming value for nvoLClampValue[0], the element ascii[1] is the dimming value for nvoLCsecondLamp[0] and so on. The brightness values are only adopted when the affected channel is not overridden and is in the absent state. The values in .ascii[i] are interpreted as follows: .ascii[i] = 0 → from .ascii[i] = 1 ... 200 → Dimming value 0.5 ... 100 % in 0.5 % steps .ascii[i] > 200 → Current brightness is not changed.

Configuration parameter details:

UCPTsceneKeeperChannelA8 - Scene storage for group switching

Type	UNVT_skca_8		
Value range	.scene:	0 ... 255 [1]	
	.priority:	0, 1	
	.chanel[8] :	0 ... 100 % [0.5 %]	Dim value
		100.5 % ... 127 % [0.5]	Brightness is not changed
		127.5 %	Override release
	.fadetime:	0 ... 6.553 s [0.1 s]	without function
Default value	.scene	= i +1	
	.priority	= 0	
	.chanel[8]	= 0	
	.fadetime	= 0	
Description	Scenes for common switching of the actuator channels: When setting nviGCscene = .scene, the actuator channels are switched according to the entries in .channel[i]. The priority of the scene is defined in the .priority field. 0: low priority, only adopted in the absent state. 1: high priority, the same as nviLVmanOverride.		

UCPTmaxRandomDelay - Maximum random delay

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	0.0 s
Description	Maximum time between reception of a global telegram and its execution. (avoids electronic switching spikes)

8.3 LonMark®-object Node #0

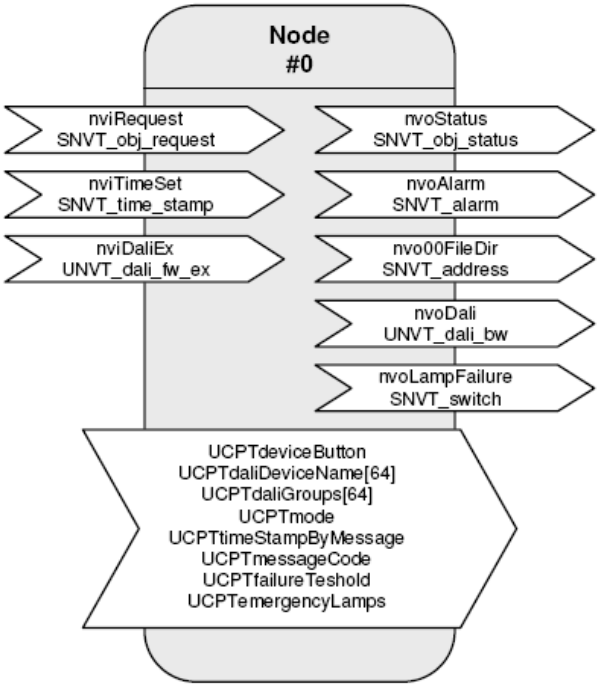


Table: Functions, parameters, and variables of the node object

Function	Network variable	Type
Object status queries	nviRequest	SNVT_obj_request
Object status outputs	nvoStatus	SNVT_obj_status
Time values for alarm messages	nviTimeSet	SNVT_time_stamp
Alarm messages for logging	nvoAlarm	SNVT_alarm
Address of the configuration parameter	nvo00FileDir	SNVT_address
DALI plugin interface	nviDali	UNVT_dali_fw_ex
DALI plugin interface	nvoDali	UNVT_dali_bw
Lamp failure collective message	nvoLampFailure	SNVT_switch
Function	**Configuration parameters**	**Type**
Device buttons	UCPTdeviceButton	UNVT_enabled
DALI device names	UCPTdaliDeviceName	UNVT_str_asc_15
DALI groups	UCPTdaliGroups	SNVT_state
Operating mode	UCPTmode	SNVT_state
Timestamp without "binding"	UCPTtimeStampByMessage	UNVT_enabled
'Explicit Message' identification code	UCPTmessageCode	UNVT_message_code
Fault limit	UCPTfailureTreshold	SNVT_lev_cont
Emergency lighting lamps	UCPTemergencyLamps	SNVT_state_64

Lamp faults and fault messages

If a lamp fault is detected by a device on the DALI cable, then this is notified via the network variable nvoLampFailure = {100,0 1}and the "L-Fail" LED.
The network variable nvoAlarm can also be written at the same time to provide detailed information on the nature of the fault. This contains the following data:

nvoAlarm.location : Mounting location of the LON DALI Controller as a 6 byte location ID.
nvoAlarm.object_id : object_id of the LA object having a lamp fault.
nvoAlarm.alarm_type : AL_NO_CONDITION = Alarm removed;
AL_WARNING = Fault proportion below the critical threshold;
AL_ERROR = Fault proportion above the critical threshold;
AL_FATAL_ERROR = Emergency lighting faulty.
nvoAlarm.value[0] : Group address of the newly affected DALI EVGs
nvoAlarm.value[1] : Index of the newly affected DALI EVGs (255 = not yet determined)
nvoAlarm.value[2] : Device status; 1 = Status not OK; 2 = Lamp fault;
245 = DALI cable occupied for too long; 250 = DALI short circuit ;
254 = DALI device does not answer
nvoAlarm.value[3] : Proportion of faults in the affected group in 0...200 -> 0...100% (0 when not yet determined)
nvoAlarm.alarm_limit[0] : Alarm counter, counts the emitted messages. It begins at zero after 255 messaged. If nvoAlarm is cyclically polled then this value can be used to define whether alarm messages are recorded.

A cyclic time telegram to the input **nviTimeSet** or broadcast messages from an SVEA system clock can be used to provide the messages at the **nvoAlarm** output with a timestamp of the actual time. The internal clock has an accuracy of ±1 %.

When all lamps in a group function once more, the alarm is removed using nvoAlarm.alarm_type = AL_NO_CONDITION.
The alarm types can be influenced using the parameters **UCPTfailureTreshold** and **UCPTemergencyLamps**.
nviRequest can be used to repeat the output of the current fault messages of individual objects (RQ_UPDATE_ALARM).

Lamps designated as emergency lighting can be separately tested using this input. (RQ_OVERRIDE / RQ_RMV_OVERRIDE)
All devices together, a group, and an individual device are tested approximately every two seconds.

This makes the collective fault message via **nvoLampFailure** current within 2 seconds. A group fault message occurs with **nvoAlarm.value[2] = 255.** Up to 3 minutes can pass until the index of the affected device is displayed. The group fault messages can be suppressed by setting **UCPTmode.bit0 = 1**.

Energy saving mode

When all lamps on the LON DALI Controller are switched off (the "All off" LED illuminates) and no lamp failure has been reported, the test and the continuous sending of the current dimming value is interrupted so that the DALI devices can switch to the energy saving mode. However, this can be suppressed by setting **UCPTmode.bit1 = 1**.

nviRequest – Object status queries

Type	SNVT_obj_request
Default value	Valid object id together with RQ_NORMAL, RQ_UPDATE_STATUS, RQ_REPORT_MASK, RQ_UPDATE_ALARM, RQ_OVERRIDE, RQ_RMV_OVERRIDE
Default	0 RQ_NORMAL [ID, request]
Description	Input used to initiate the node status functions: 0, RQ_NORMAL All brightness values are synchronised with the LON input values, reflects the "Sync" button on the front of the device. 1-4, RQ_NORMAL The brightness value of the specified channel is synchronised with the LON input value. 0, RQ_SELF_TEST An internal self-test LON DALI Controller is performed, during the tests all status LEDs and lamps are briefly switched on, and once the test is finished the controller is returned to the starting state, reflects the "Self Test" device button. 0-4, RQ_UPDATE_ALARM The last alarm message for the specified object is repeated. 0, RQ_OVERRIDE The devices marked as emergency lighting are switched on. 0 RQ_RMV_OVERRIDE The devices marked as emergency lighting are switched off.

nviDaliEx – DALI Plug-In Schnittstelle

Type	UNVT_dali_fw_ex
Default value	0x000000 ... 0xffffff
Default	DT_DALI 65280
Description	Interface for the LON DALI Controller plugin, required exclusively for internal functionality and may not be bound!

Output variables

nvoStatus – Object status output

Type	SNVT_obj_status
Default value	The status bits supported by the object: .report_mask .invalid_id .invalid_request .in_override
Default	All Bits = 0
Description	Sends the result of a query via `nviRequest` **Not supported.** Parameters will not be shown when integrated into an LNS-Tool.

nvoAlarm – Object status output

Type	SNVT_alarm
Default value	.location[6]: 0x00 ... 0xff (Location string) .object_id: 1 ... 4 .alarm_Typee: AL_NO_CONDITION, AL_WARNING; AL_ERROR; AL_FATAL_ERROR .priority_level: PR_LEVEL_0 .index_to_SNVT: 95 .value[0]: 0 ... 15 (DALI group address) .value[1]: 0 ... 64; 255 (DALI short adresse) .value[2]: 0 ... 255 (device status) .value[3]: 0 ... 200 (0 ... 100% proportion of affected devices) .year: -1 ... 3.000 .month: 0 ... 12 .day: 0 ... 31 .hour: 0 ... 23 .minute: 0 ... 59 .second: 0 ... 59 .milisecond: 0 ... 999 .alarm_limit[0]: 0 ... 255 (alarm number, distinguishing poll characteristic) .alarm_limit[1]: 0 .alarm_limit[2]: 0 .alarm_limit[3]: 0
Default	Alle Elemente = 0
Description	This output can be logged to provide exact details of lamp faults. The interpretation of the values is described above.

nvo00FileDir – Address of the configuration parameter

Type	SNVT_address
Default value	0x0000 ... 0xffff
Default	0x0000
Description	Is required exclusively for internal functionality. **Not supported.** Parameters will not be shown when integrated into an LNS-Tool.

nvoDali – Plugin interface

Type	UNVT_dali_bw
Default value	DALI_NO 0
Default	Application-dependent
Description	Interface for the LON DALI Controller plugin, required exclusively for internal functionality and may not be bound!

nvoLampFailure – Lamp failure collective message

Type	SNVT_switch
Default value	.value: 0; 100 % .state: 0; 1
Default	.value = 100 .state = 1
Description	This output emits {100,1} when at least one lamp is recognised as faulty. Details of the fault can be taken from nvoAlarm. Fault-free DALI hardware is indicated by {0,0}.

Configuration parameters

UCPTdaliDeviceName - DALI device names

Type	UNVT_str_asc_15
Default value	ascii
Default	not in use
Description	Individual name for each DALI device. (do not modify!)

UCPTdaliGroups - DALI groups

Type	SNVT_state
Default value	0, 1
Default	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Description	Dali group information for internal management. (do not directly modify!)

UCPTmode – Operating mode

Type	SNVT_mode
Default value	0, 1
Default	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Description	Individual device properties can be switched on and off. .bit0 = 1: Alarm messages without a device index are not output. .bit1 = 1: No energy saving mode for "All off" .bit2 = 1: No continuous repetition of the current dimming value

UCPTtimeStampByMessage - Time stamp without 'binding'

Type	UNVT_enabled
Default value	DISABLED, ENABLED
Default	ENABLED
Description	The timestamp is sent/received as 'Explicit Message' (broadcast) without network variable linking.

UCPTmessageCode - 'Explicit Message' identification code

Type	UNVT_message_code
Default value	0 ... 62 [1]
Default	43
Description	'Explicit Message' identification code. This code must be set identically for the sender and transmitter.

UCPTfailureTreshold - Failure limit

Type	SNVT_lev_cont
Default value	0,0 ... 100,0 % [0,5 %]
Default	0,0 %
Description	If the number of faulty lamps in a group is more than the percent value specified here, then a fault message instead of a warning is output.

UCPTemergencyLamps - Emergency lighting lamps

Type	SNVT_state_64
Default value	0, 1
Default	All bits 0
Description	The lamps marked here are treated as emergency lighting.

8.4 LonMark®-object ConstLightCtrl #3050

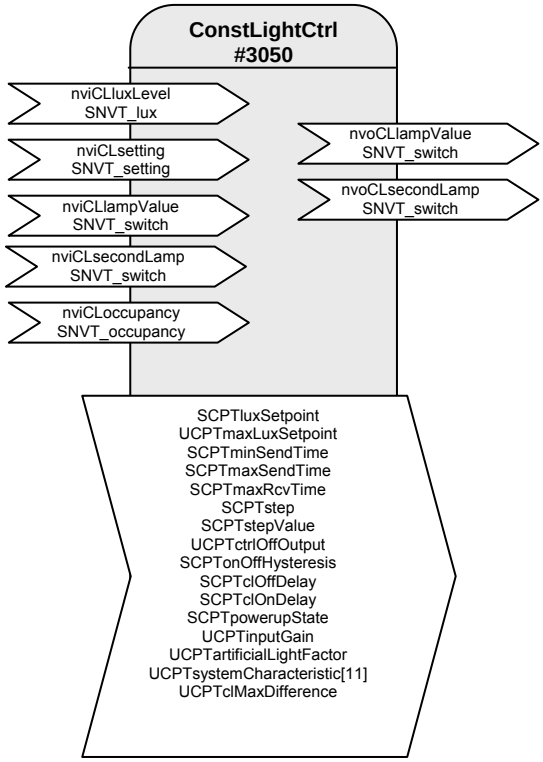


Table: Functions, parameters, and variables of the ConstLightCtrl object

Function	Network variable	Type
Ambient light level input	nviCLluxLevel	SNVT_lux
Mode selection, setpoint adjustment	nviCLsetting	SNVT_setting
Manual override	nviCLlampValue	SNVT_switch
Manual override	nviCLsecondLamp	SNVT_switch
Anwesenheitsstatus	nviCLoccupancy	SNVT_occupancy
Control output for lamp	nvoCLlampValue	SNVT_switch
Reduced lamp control value	nvoCLsecondLamp	SNVT_switch
Function	**Configuration parameters**	**Type**
Desired brightness value	SCPTluxSetpoint	SNVT_lux
Maximum desired value	UCPTmaxLuxSetpoint	SNVT_lux
Minimum transmission interval	SCPTminSendTime	SNVT_time_sec
Maximum transmission pause	SCPTmaxSendTime	SNVT_time_sec
Maximum reception pause	SCPTmaxRcvTime	SNVT_time_sec
Maximum step size	SCPTstep	SNVT_lev_cont
Dimming step size	SCPTstepValue	SNVT_lev_cont
Output: Controller off	UCPTctrlOffOutput[2]	SNVT_switch_cfg
Switching hysteresis	SCPTonOffHysteresis	SNVT_lev_cont
Light switch-off delay	SCPTclOffDelay	SNVT_time_sec
Light switch-on delay	SCPTclOnDelay	SNVT_time_sec
Controller state on restoration of power	SCPTpowerupState	SNVT_setting
Input gain	UCPTinputGain	SNVT_muldiv
Artificial light factor	UCPTartificialLightFactor	SNVT_muldiv
Closed-loop control characteristic line	UCPTsystemCharacteristic[11]	SNVT_lev_cont
Maximum difference	UCPTclMaxDifference	SNVT_lev_cont

Daylight-dependent regulation/control

With a Constant Light Controller it is possible to regulate or control up to two lighting groups on a daylight-dependent basis.
To do this, the measurement value of a LON brightness sensor at nviCLluxLevel[i] is internally converted to a brightness value with regard to a reference surface (e.g, a desktop) and used as a current value for the regulation algorithm.
Both indoor lighting sensors and shadowed outdoor lighting sensors (e.g. an indoor lighting sensor pointed at the window) can be used for control.

Operation

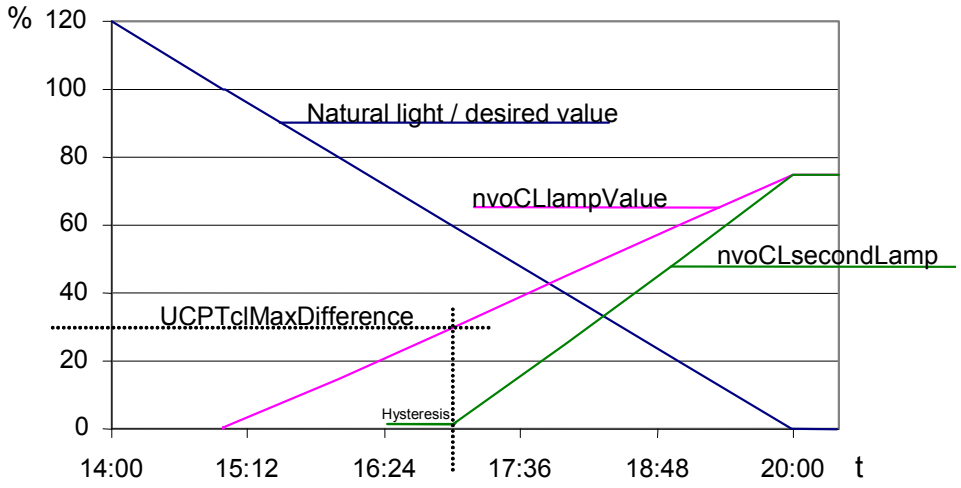
nviCLsetting[i] can be used to set the controller, and the lighting, on and off (SET_ON/SET_OFF), dimmed (SET_UP/SET_DOWN) or overwritten (SET_STATE). After dimming, the current value is stored as the new desired value and is then limited to a maximum value of UCPTmaxLuxSetpoint. After a restart, or a SET_ON value via nviCLsetting[i] the desired regulation value defined in SCPTluxSetpoint[i] is used.

Prioritised control

The input nviCLmanOverride[i] has the highest priority. A value at this input is directly forwarded to the first lamp output and, with the defined difference, to the second output. The input can thus be used as an additional input for a third lighting band.

Multiple lighting strips

The inner lighting band is controlled via nvoCLlampValue[i], the window side via nvoCLsecondLamp[i]. The maximum difference that occurs when the light band at the window is still off can be set UCPTclMaxDifference. The second light band is switched on and off by the regulator as required.
Additional light bands can be controlled with additional Constant Light Controllers by binding the nvoCLlampValue[i] of the active regulator to the nviCLmanOverride[i] of these objects.



The regulator

The regulator is a non-linear state regulator (fuzzy based), that can be used for both regulation (based on room brightness measurements) and control (by using an outdoor light sensor or measurements focused on a window).

On activation of the regulator, the object always operates as a controller to directly switch on the lighting with brightness near to the desired value. Cold light sources can result in an initially lower starting brightness in the room. This is intentionally accepted to take account of the subjective perception of the user. This behaviour avoids the user having the (subjective) impression that it is too dark in a situation where dimming is normally required (when the warm-up phase is finished).

After switching on and the desired value has been changed, the regulator maintains the set value for 30 s to allow the lighting to reach operating temperature or the light sensor to transmit the new brightness value, before beginning regulation. If switch-off and switch-on again occurs within this 30 s, then the lamps are switched on with the same brightness.

The regulation speed is dynamically adjusted depending on the regulation deviation. This can be changed as required via SCPTstep[i], which defines the maximum step size within 1 s for nvoCLlampValue[i]. The step size for nvoCLsecondLamp[i] is derived from this and may be somewhat larger.

If the calculated brightness value at the reference point lies above the value defined in SCPTonOffHysteresis[i] for the time specified in SCPTclOffDelay[i] then an automatic switch-off occurs. This also applies to automatic switch-on and SCPTclOnDelay[i]. The automatic switching can be deactivated by setting the respective delay time to 0.

Notes on observing the network variables

The regulator does not regulate to nviCLluxLevel[i] = SCPTluxSetpoint[i] but rather to the internally calculated brightness of the reference surface.

Commissioning as a regulator

1. All required bindings must first be established. The room should be furnished to avoid any possible problems with furnishing-dependent reflections.
2. Calibrate the light sensor with a lux meter so that the brightness of the reference surface (e.g. desktop) is displayed under **daylight** conditions. The best result is achieved when this is done at a brightness close to the desired value.
3. Once nvoCLsecondLamp[i] is bound, the maximum difference (UCPTclMaxDifference[i]) between the two control values can be adjusted. To do this, adjust UCPTclMaxDifference[i] (preferably in cloudy weather) so that after SET_ON at the nviCLsetting[i] input the brightness difference measured with a lux meter below the two lighting groups is as small as possible.

In most cases the procedure described above is sufficient for commissioning the regulator, and calibration of the regulator (steps 3 + 4) is not required, since the factory settings usually provide very good results.

If further optimisation of the regulation is nevertheless required, then proceed as follows:

4. Directed artificial light is often not so strongly measured by a sensor on the ceiling as highly diffused natural light. This sensitivity difference can be compensated for using an artificial light factor (UCPTartificialLightFactor). To do this, the brightness change on the reference surface caused by artificial light and the associated change measured by the light sensor on the ceiling must be determined. Proceed as follows:
   Remove the daylight source (if possible) and use nviCLsetting[i].function = SET_STATE and .setting = 100 % to switch-on all regulated light bands to the maximum value. After a warm-up time for the lighting (brightness remains constant), measure the brightness on the reference surface with a lux meter and note the output value of the LON light sensor. Then use nviCLsetting[i].function = SET_STATE and .setting = 0 to switch off the lights and measure both values again. Enter the change (difference) of the brightness on the reference surface into the .multiplier field, and the change in the brightness at the light sensor into the .divisor field of UCPTartificialLightFactor[i].
   multiplier = Reference surface (lux meter) divisor = Ceiling (LON light sensor)

5. This completes the configuration process.

In weather situations with different levels of daylight diffusion, the actual value of the reference surface may differ from the internally calculated value. If it is later determined that this causes the room to tend to be too dark, then you can increase UCPTartificialLightFactor.divisor somewhat (and vice versa).

Commissioning as a controller

1. All required bindings must first be established. The room should be furnished to avoid any possible problems with furnishing-dependent reflections.
2. To determine the artificial light factor (UCPTartificialLightFactor), proceed as follows:
   Remove the daylight source (if possible) and use nviCLsetting[i].function = SET_STATE and .setting = 100 % to switch-on all regulated light bands to the maximum value. After a warm-up time for the lighting (brightness remains constant), measure the brightness on the reference surface with a lux meter.
   Then use nviCLsetting[i].function = SET_STATE and .setting = 0 to switch off the lights and measure the value again. The measured change (difference) is then entered into the .multiplier field, the .divisor is set to 1.
   multiplier = Reference surface
   divisor = 1
3. Enter this current brightness value on the reference surface with the lighting switched off (nviCLsetting[i].function = SET_STATE and .setting = 0) into the input gain parameter (UCPTinputGain.multiplier). The associated current brightness value of the LON light sensor is entered into .divisor. The best result is achieved when this is done at a brightness close to the desired value, e.g. in cloudy weather or at dusk.
4. Once nvoCLsecondLamp[i] is bound, the maximum difference (UCPTclMaxDifference[i]) between the two control values can be adjusted. To do this, adjust UCPTclMaxDifference[i]

(preferably in cloudy weather) so that after SET_ON at the nviCLsetting[i] input the brightness difference measured with a lux meter below the two lighting groups is as small as possible.

5. For optimisation of the closed-loop control characteristic line, the behaviour of the light sensor and lamps can be adjusted in 10 % steps. It should be noted that a continuously increasing characteristic line must be present, otherwise the behaviour can fluctuate significantly at different times of day and under different weather conditions, depending on the sensor type and installation location.
   For approximate adjustment without accounting for sensor properties, one can use nviCLsetting[i].function = SET_STATE to dim the bound lamps in 10 % steps (take account of warm-up times) and the determined difference to 0 % can then be entered into the appropriate fields of UCPTsystemCharacteristic[i]. When doing this, i = 0 for 0.5 %; i = 1 for 10 %; i = 2 for 20 % etc. Note that a constantly falling characteristic line must result.
6. This completes the configuration process.

General notes on fluorescent lamps

- The energy consumption of fluorescent lamps dimmed to the minimum value is approx. 13 %
- The lifetime of fluorescent lamps is heavily dependent on the switching frequency. For this reason, the lamps should only be switched off when the pause is longer than 15 minutes.
- Modern fluorescent lamps still have 90 % of their light flux after 10,000 operating hours. In the case of simpler models, the maximum light flux can sink to 75 %.
- New lamps must be burned-in for 100 hours at 100 % brightness before commissioning the object. This provides basic stabilisation of the lamps.

(Source: http://www.osram.de/service_corner/faq/allgemein/leuchtstoff.html)

Network variables details:

nviCLluxLevel - Ambient light level input

Type	SNVT_lux
Value range	0 ... 65535 lux [1 lux]
Default value	0 lux
Description	Input for the current brightness value.

nviCLsetting - Mode selection, setpoint adjustment

Type	SNVT_setting
Value range	.function: SET_OFF, SET_ON, SET_UP, SET_DOWN .setting: 0 ... 100 %
Default value	UCPTpowerupState[i]
Description	Activate (SET_ON) or deactivate (SET_OFF) the daylight-dependent regulation. On deactivation nvoCLlampValue[i] and nvoCLsecondLamp[i] are set to {0, 0}, on activation both outputs are switched on with a value calculated by the regulator that is close the the desired value . SET_UP or SET_DOWN allow manual dimming of nvoCLlampValue[i]. Time delays for this dimming process are defined by the parameters SCPTstepValue[i] and SCPTminSendTime[i]. Regulation is deactivated during this time. Once the manual control is finished, the current brightness becomes the temporary desired value and regulation is reactivated. SET_STATE sets both outputs to the value defined in .setting and regulation is deactivated. A new SET_ON reactivates the desired value stored in SCPTluxSetpoint[i].

nvoCLlampValue - Control output for lamp

Type	SNVT_switch
Value range	.value: 0 ... 100 % [0.5 %] .state: -1 ... 0 [1]
Default value	0.0 -1
Description	Provides the value for a dimming or switching actuator (lamp actuator) that was calculated by the regulation process or manually set. The output is suitable for binding another lighting regulator for additional lighting bands (up to 2 lighting groups).

nviCLlampValue - Lamp input value

Typ	SNVT_switch
Wertebereich	.value: 0 ... 100 % [0,5 %] .state: -1 ... 0 [1]
Defaultwert	0,0 -1
Beschreibung	At .value <= 100, .state = 0/1 the output 'nvoCLlampValue' is deactivated. The received value will be transmitted to the nvoCLlampValue[i] directly. The control for nvoCLsecondLamp[i] stays active. If the prioritiy control has to be deactivated and this output reactivated, the .state has be set on -1.

nviCLmanOverride - Manual override

Type	SNVT_switch
Value range	.value: 0 ... 100 % [0.5 %] .state: -1 ... 0 [1]
Default value	0.0 -1
Description	For. value <= 100, .state = 0/1 the regulation is deactivated. The received value is directly forwarded to nvoCLlampValue[i], and nvoCLsecondLamp[i] is set under consideration of the offset defined in UCPTclMaxDifference[i]. If priority control is removed once more and regulation reactivated, then .state must be set to -1.

nvoCLsecondLamp - Reduced lamp control value

Type	SNVT_switch
Value range	.value: 0 ... 100 % [0.5 %] .state: -1 ... 0 [1]
Default value	0.0 -1
Description	Second, slaved output of the controller for controlling another lighting band at reduced intensity (usually window side). The deviation from the output at nvoCLlampValue[i] is defined by the value set in UCPTmaxDifference[i] and is dynamic over the entire range (high deviation with a high proportion of outdoor light, low deviation with a high proportion of artificial light).

nviCLoccupancy - Occupancy status input

Type	SNVT_occupancy
Value range	OC_OCCUPIED, OC_UNOCCUPIED, OC_STANDBY, OC_NUL
Default value	OC_NUL
Description	This input is only valid at nviCLsetting = SET_NUL. With OC_OCCUPIED the controller will be activated. The outputs will be set as far as the current brightness-value allows this. At OC_UNOCCUPIED, OC_STANDBY, OC_BYPASS , OC_NUL the light will be dimmed to zero by UCPTfadetimeUnoccupied.

Configuration parameter details:

SCPTluxSetpoint - Desired brightness value

Type	SNVT_lux
Value range	0 ... 65535 lux [1 lux]
Default value	500 lux
Description	The desired brightness value for the controller.

UCPTmaxLuxSetpoint - Maximum desired value

Type	SNVT_lux
Value range	0 ... 65535 lux [1 lux]
Default value	0 lux
Description	Maximum brightness value by which the desired value can be shifted (0 = unlimited).

SCPTminSendTime - Minimum transmission interval

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	0.2 s
Description	The minimum interval between two consecutive telegrams. Used to limit the bus loading, among other purposes.

SCPTmaxSendTime - Maximum transmission pause

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	300.0 s
Description	The maximum interval for continuous transmission of the current value.

SCPTmaxRcvTime - Maximum reception pause

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	0.0 s
Description	If no update to the lux value in nviCLluxLevel[i] is received within the time specified here, then a fault in the LON network is assumed and the regulation assumes a sensor value of 0. The value 0 deactivates this function.

SCPTstep - Maximum step size

Type	SNVT_lev_cont
Value range	0.0 ... 100,0 % [0.5 %]
Default value	3.0 %
Description	The maximum step size used by the regulator to reach the desired value.

SCPTstepValue - Dimming step size

Type	SNVT_lev_cont
Value range	0.0 ... 100.0 % [0.5 %]
Default value	5.0 %
Description	Step size for consecutive dim commands.

UCPTctrlOffOutput - Output: Controller off.

Type	UNVT_switch_cfg
Value range	.function: SW_INVALID; SW_HOLD; SW_VALUE .value: 0.0 ... 100.0 % [0.5 %]
Default value	SW_HOLD 0.0 %
Description	This value is output when the regulator is switched off or the state changes to vacant.

SCPTonOffHysteresis - Switching hysteresis

Type	SNVT_lev_cont
Value range	0,0 ... 100.0 % [0.5 %]
Default value	5.0 %
Description	Relative deviation from the desired value causing the regulator output to be automatically switched on or off. The value 0 deactivates the automatic switching. The lamp output is switched off when the lighting level lies above the desired value, plus this hysteresis value, for the time specified in SCPTclOffDelay[i]. The lamp output automatically switches on when the brightness value lies below the desired value, minus the hysteresis value, for the time specified in SCPTclOnDelay[i].

SCPTclOffDelay - Light switch-off delay

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	300.0 s
Description	Time after which the regulator output is switched off when adequate brightness exists. The controller remains active.

SCPTclOnDelay - Light switch-on delay

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	0.1 s
Description	Time after which the regulator output is switched on when inadequate brightness exists.

SCPTpowerupState - Controller state on restoration of power

Type	SNVT_setting
Value range	.function: SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5]
Default value	SET_ON 0.0 0.00
Description	State of the light regulator object after restoration of power or a reset.

UCPTinputGain - Input gain

Type	SNVT_muldiv
Value range	multiplier: 0 ... 65535 [1]; divisor: 1 ... 65535 [1]
Default value	1 1
Description	Level of input amplification for adjusting the sensor values with regard to the measured values on the reference surface. Required when one sensor is bound to multiple controllers.

UCPTartificialLightFactor - Artificial light factor

Type	SNVT_muldiv
Value range	multiplier: 0 ... 65535 [1]; divisor: 1 ... 65535 [1]
Default value	700 350
Description	Factor used to calculate the artificial light component of the measured brightness value. Settings: see above.

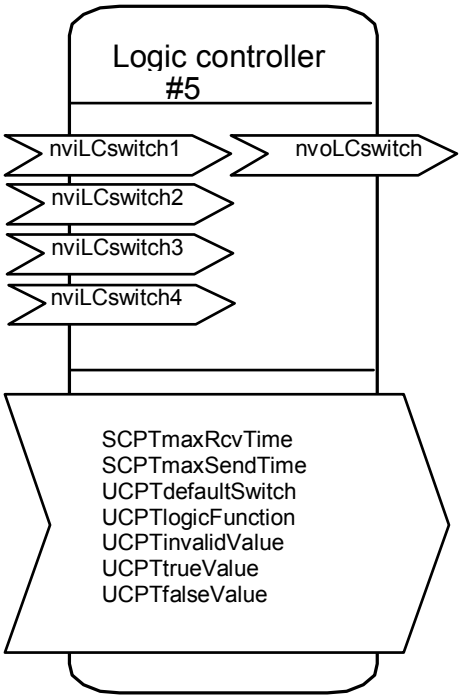
UCPTsystemCharacteristic[11] - Closed-loop control characteristic line

Type	SNVT_lev_cont
Value range	0.0 ... 100.0 % [0.5 %]
Default value	1.0 1.5 2.5 4.0 6.5 10.0 16.0 25.0 40.0 64.0 100.0
Description	Defines the behaviour of the closed-loop control system. Settings: see above.

UCPTclMaxDifference - Maximum difference

Type	SNVT_lev_cont
Value range	0,0 ... 100.0 % [0.5 %]
Default value	30.0 %
Description	Maximum difference between the two setting values. nvoCLsecondLamp will only be switched on when nvoCLlampValue has reached this value.

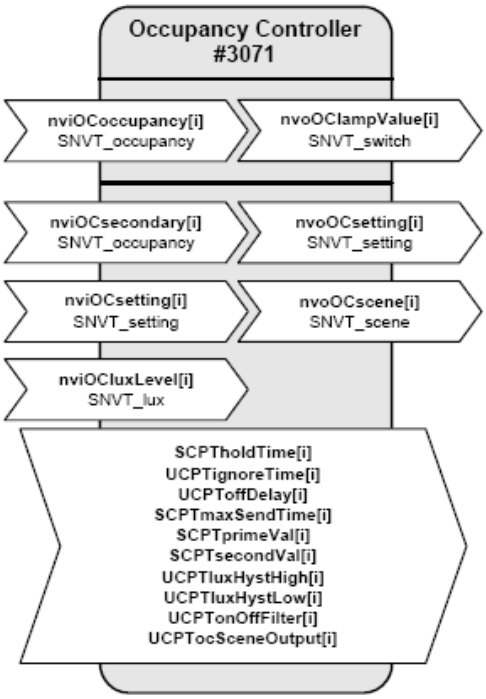
8.5 LonMark®-object Logic controller (#) switch



Inputs/outputs	Type / SNVT index	Value range	Default value	Description
nviLCswitch1	SNVT_switch	default	{-1,0}	Switch input 1.
nviLCswitch2	SNVT_switch	default	{-1,0}	Switch input 2.
nviLCswitch3	SNVT_switch	default	{-1,0}	Switch input 3.
nviLCswitch4	SNVT_switch	default	{-1,0}	Switch input 4.
nvoLCswitch	SNVT_switch	default	{-1,0}	Switch output.

Configuration	Type / CPT index	Value range	Default value	Description
SCPTmaxSendTime	SNVT_time_sec	0 .. 6553 s in 1s	0 s (Off)	The maximum interval of time that can be sent using the variable nvoLWswitch .
LCmaxRcvTime	SNVT_time_sec	0 .. 6553 s in 1s	0 s (Off)	The maximum interval of time between two update of a variable. When this time has been exceeded, the output nvoLCswitch takes the status "invalid" (UCPTinvalidValue).
UCPTdefaultSwitch	SNVT_switch	default	{ 0, -1 }	Value taken by the nviLCswitch after a reset.
LClogicFunction	UNVT_logic_fnc	LF_AND, LF_OR, LF_XOR, LF_NXOR, LF_NAND, LF_NOR, LF_OVRIDE, LF_TRSHLD		Setting the logic function. Account is taken only of those variables which have one value at variance from (0,-1).
UCPTinvalidValue	UNVT_switch_cfg	.function:	{SW_NUL, 0}	Value for the output if the result of the logic is invalid. The result is invalid if 1) no variable has received an update, 2) LcmaxRcvTime has been exceeded for a variable.
UCPTonValueSW	UNVT_switch_cfg		{SW_NUL, 100}	Value for the output if the result of the logic is TRUE.
UCPToffValueSW	UNVT_switch_cfg		{SW_NUL, 0}	Value for the output if the result of the logic is FALSE.

8.6 LonMark®-object Occupancy Controller #3071



Input Network Variables

nviOCoccupancy[i]

Type:	SNVT_occupancy
Value range:	OC_OCCUPIED, OC_UNOCCUPIED
Default value:	OC_NUL
Description:	Provides the occupancy status of the main/primary control area received from the Occupancy Sensor.

nviOCsecondary[i]

Type:	SNVT_occupancy
Value range:	OC_OCCUPIED, OC_UNOCCUPIED
Default value:	OC_NUL
Description:	Provides the occupancy status of a neighbouring/secondary area received from another Occupancy Sensor. This input has lower priority than nviOCoccupancy[i] so its current value is only processed if the value received via nviOCoccupancy[i] is OC_UNOCCUPIED.

nviOCsetting[i]

Type:	SNVT_setting
Value range:	.function: SET_OFF, SET_ON
Default value:	.function = SET_ON
Description:	Selects the operation mode, enables/disables the Occupancy Controller.

nviOCluxLevel[i]

Type:	SNVT_lux
Value range:	0 ... 65.535 lux
Default value:	0
Description:	Used to receive an illumination value, e. g. of a Light Sensor.

Output Network Variables

nvoOClampValue[i]

Type:	SNVT_switch
Value range:	value: 0 ... 100 % state: 0,1, -1
Default value:	.value = 0 .state = -1
Description:	Provides the state and the percentage level of intensity to control an actuator. If nviOCoccupancy[i] receives “occupied”, the value defined in SCPTprimeVal[i]is propagated. If nviOCoccupancy[i] receives “unoccupied” the output switches off automatically {0; 0} after the time parameterised in SCPTholdTime[i]has expired, except for when nviOCsecondary[i] receives “occupied”. Then, the value of SCPTsecondVal[i]is transmitted.

nvoOCsetting[i]

Type:	SNVT_setting
Value range:	.function: SET_ON, SET_OFF
Default value:	.function = SET_NUL
Description:	This output is mainly used to enable/disable another controller, e. g. a Constant Light Controller. SET_ON is transmitted once when the current value of nviOCoccupancy[i]or nviOCsecondary[i] changes to “occupied” and the value of this output has been SET_OFF. This output transmits SET_OFF if nviOCoccupancy[i] as well as nviOCsecondary[i] receive “unoccupied” and the time parameterised in SCPTholdTime[i] has expired.

nvoOCscene[i]

Type:	SNVT_scene
Value range:	.function: SC_ RECALL, SC_NUL .scene_number: 1 ... 255
Default value:	.function = SC_NUL .scene_number = 255
Description:	This output is mainly used to drive a scene controller. The output values are configured in UCPTocSceneOutput[i].

Configuration Properties

SCPTholdTime[i] - Hold time value

Type:	SNVT_time_sec
Value range:	1 ... 6.553,5 s
Default value:	900 s
Description:	If the monitored area becomes “unoccupied”, the nvoOClampValue[i] output transmits {0; 0} resp. the value specified by SCPTsecondVal[i] (if nviOCsecondary[i]= OC_OCCUPIED) when this time has expired. The hold time is restarted with every OC_UNOCCUPIED received.

UCPTignoreTime[i] - Ignore time

Type:	SNVT_time_sec
Value range:	1 ... 6.553,5 s
Default value:	0
Description:	When the light has been switched off, every command received by nviOCoccupancy[i] or nviOCsecondary[i] during this time is ignored. Needed because the change in brightnessmight be wrongly interpreted as motion by the sensor.

UCPToffDelay[i] - Off-delay

Type:	UNVT_svea_time_sec
Value range:	0 ... 65.535 s
Default value:	300 s
Description:	When the detected illumination level exceeds the upper threshold of the lux hysteresis, the light is not switched off until this time has expired.

SCPTmaxSendTime[i] - Maximum send time

Type:	SNVT_time_sec
Value range:	0 ... 6.553,5 s
Default value:	0 (deaktiviert)
Description:	Defines the maximum period of time between consecutive transmissions of the current value. When this time expires, the current values of nvoOClampValue[i] and nvoOCsetting[i] are transmitted automatically/cyclically.

SCPTprimeVal[i] - Output value primary area

Type:	SNVT_switch
Value range:	value: 0 ... 100% state: 0, 1, -1
Default value:	.value =100 % .state = 1
Description:	Used to set the default value transmitted via nvoOClampValue[i] when the monitored area becomes occupied (nviOCoccupancy[i] = OC_OCCUPIED).

SCPTsecondVal[i] - Output value secondary area

Type:	SNVT_switch
Value range:	value: 0 ... 100% state: 0, 1, -1
Default value:	.value = 50 % .state = 1
Description:	Used to set the default value transmitted via nvoOClampValue[i] when the neighbouring area becomes occupied (nviOCsecondary[i] = OC_OCCUPIED), cp. SCPTholdTime[i].

UCPTluxHystHigh[i] - Lux high level limit (hysteresis)

Type:	SNVT_lux
Value range:	0 ... 65.535 lux
Default value:	700 lux
Description:	Determines the upper illumination threshold for the lux hysteresis. If the detected illumination level exceeds the value defined here, the light is switched off (nvoOClampValue[i]= {0; 0} and nvoOCsetting[i] = SET_OFF) after the time set in UCPToffDelay[i] has expired (cp. functional description). Remark: The upper illumination threshold value has to be defined so, that it is not exceeded when the light is switched on!

UCPTluxHystLow[i] - Lux low level limit (hysteresis)

Type:	SNVT_lux
Value range:	0 ... 65.535 lux
Default value:	500 lux
Description:	Determines the lower illumination threshold for the lux hysteresis. If the detected illumination level falls below the value defined here, the controller is enabled. The connected load is switched on and off occupancy-dependently (cp. functional description).

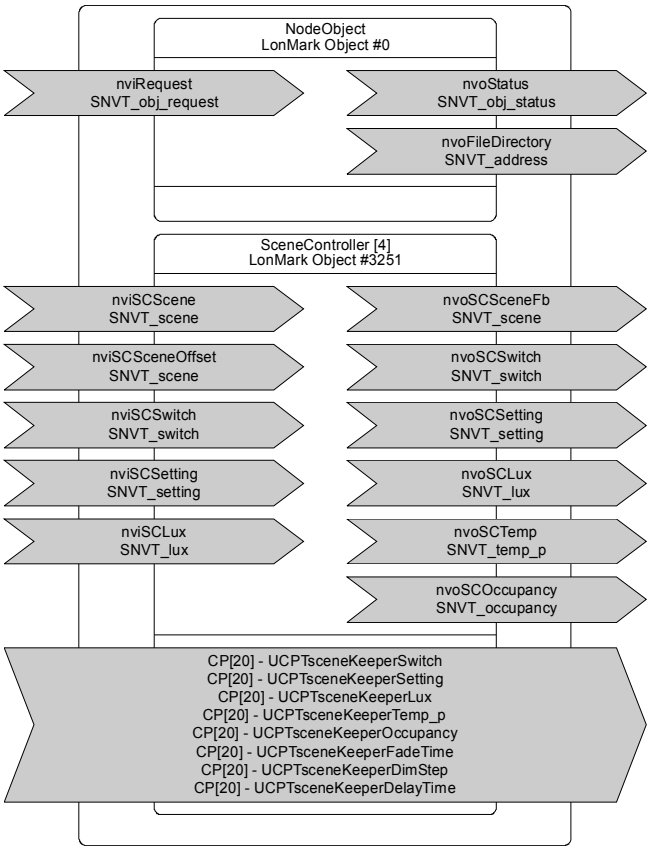
UCPTonOffFilter[i] - On off output filter

Type:	UNVT_on_off_filter
Value range:	FL_NO_FILTER, FL_NO_ON_CMD, FL_NO_OFF_CMD
Default value:	FL_NO_FILTER
Description:	By use of this parameter, switching commands can be filtered: FL_NO_FILTER: Disables the filter. The controller switches on and off in dependence of the occupancy status detected. FL_NO_ON_CMD: On commands of the controller are not transmitted (e. g. manual switching-on/automatic switching-off, energy saving function). FL_NO_OFF_CMD: Off commandsof the controller are not transmitted (e. g. automatic switching-on/manual switching-off).

UCPTocSceneOutput[i] - Scene Output

Type:	UNVT_oc_scene
Value range:	.oc_off: 0 ... 255 .oc_secondary: 0 ... 255 .oc_primary: 0 ... 255
Default value:	.oc_off = 1 .oc_secondary = 2 .oc_primary = 3
Description:	By use of this parameter, switching commands of the conroller can be configured to drive a Scene Controller. The configured scene numbers are propagated, depent on the controller state. .oc_off: This scene number is propagated, when the timer in SCPTholdTime[i] has expired .oc_secondary: This scene number is propagated, when the secondary area has been occupied and the primary area has not been occupied .oc_primary: This scene number is propagated, when the primary area has been occupied

8.7 LonMark®-object Scene Controller



8.7.1 Introduction

Recalling Scenes

After the Scene Controller has been enabled by nviSCsetting[i] (SET_ON) the stored scene settings can be recalled by nviSCscene[i].function = SC_RECALL and the corresponding scene number. The settings are then propagated via the outputs nvoSCswitch[i], nvoSCsetting[i], nvoSClux[i], nvoSCtemp[i] and nvoSCoccupancy[i]. Scenes can be delayed by use of the UCPTsceneKeeperDlyTime[i] property.

If an output shall not change when a new scene is recalled, the corresponding parameter has to be set at an SW_HOLD and/or SET_NO_MESSAGE values under this particular scene number. Scene settings that shall be propagated when the controller is turned off have to be stored under scene number 20. Next time the controller is turned on the last enabled scene is recalled.

Storing Scenes

There are two ways to configure the scene controller memory:

1. The scene memory can be configured directly by use of the UCPTsceneKeeperXXX[i][j] property.
2. For lighting scenes, the current values of the nviSCswitch[i] and nviSClux[i] input can be stored in the scene memory unit corresponding to the given scene number by a learn command (nviSCscene[i].function = SC_LEARN). A long pulse (e. g. initiated by hold of a make-contact element) usually causes this command.

Cross-fading

The UCPTsceneKeeperFadeTime[i] property determines the time between two consecutively transmitted dim commands and UCPTsceneKeeperDimStep[i] defines the step value for cross-fading between two scenes. The cross-fading function is only provided for dimming actuators.

8.7.2 fb_0Object (LonMark Object #0)

Network variable	Type	Dir	Description	Default value
nviRequest	SNVT_obj_request	IN		-
nvoStatus	SNVT_obj_status	OUT		-
nvoFileDirectory	SNVT_address	OUT		-

nviRequest – Object request

Type	SNVT_obj_request
Range	.object_id: <0.0; 65535.0> .object_request: RQ_NUL, RQ_NORMAL, RQ_DISABLED, RQ_UPDATE_STATUS, RQ_SELF_TEST, RQ_UPDATE_ALARM, RQ_REPORT_MASK, RQ_OVERRIDE, RQ_ENABLE, RQ_RMV_OVERRIDE, RQ_CLEAR_STATUS, RQ_CLEAR_ALARM, RQ_ALARM_NOTIFY_ENABLED, RQ_ALARM_NOTIFY_DISABLED, RQ_MANUAL_CTRL, RQ_REMOTE_CTRL, RQ_PROGRAM, RQ_CLEAR_RESET, RQ_RESET
Default	0 RQ_NORMAL [ID, request]
Description	Not supported

nvoStatus – Object status

Type	SNVT_obj_status
Range	.object_id: <0.0; 65535.0> .invalid_id: <0.0; 1.0> .invalid_request: <0.0; 1.0> .disabled: <0.0; 1.0> .out_of_limits: <0.0; 1.0> .open_circuit: <0.0; 1.0> .out_of_service: <0.0; 1.0> .mechanical_fault: <0.0; 1.0> .feedback_failure: <0.0; 1.0> .over_range: <0.0; 1.0> .under_range: <0.0; 1.0> .electrical_fault: <0.0; 1.0> .unable_to_measure: <0.0; 1.0> .comm_failure: <0.0; 1.0> .fail_self_test: <0.0; 1.0> .self_test_in_progress: <0.0; 1.0> .locked_out: <0.0; 1.0> .manual_control: <0.0; 1.0> .in_alarm: <0.0; 1.0> .in_override: <0.0; 1.0> .report_mask: <0.0; 1.0> .programming_mode: <0.0; 1.0> .programming_fail: <0.0; 1.0> .alarm_notify_disabled: <0.0; 1.0> .reset_complete: <0.0; 1.0> .reserved2: <0.0; 0.0>
Default	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 [ID, status flags]
Description	Not supported

nvoFileDirectory – Neuron address

Type	SNVT_address
Range	<16384.0; 64767.0>
Default	0 [16-bit address value]
Description	Not supported

8.7.3 SceneController (LonMark Object #3251)

Network variable	Type	Dir	Description	Default value
nviSCScene	SNVT_scene	IN	**Scene trigger input** This input triggers a scene (SC_RECALL) or loads the scene-preset memory with current values (SC_LEARN). Memory units for 20 scenes are provided. By SC_RECALL, the scene settings stored under the chosen .scene_number are recalled. The recall command can be delayed by the time defined in UCPTsceneKeeperDlyTime[i]. An SC_LEARN command stores the current values of nviSCswitch[i] and nviSClux[i] in the scene memory unit corresponding to the given .scene_number. Values nviSCswitch[i] and nviSClux[i] are stored only if they are bound. A scene number zero does not cause any control action (only needed for default before commissioning/at reset).	.function = SC_RECALL .scene_number = 0
nviSCSceneOffset	SNVT_scene	IN	Value within nviSCSceneOffset[i].scene_number will be added to nviSCScene[i].scene_number. nviSCSceneOffset[i].scene_number >= 20 leads to Scene 0.	.function = SC_RECALL .scene_number = 255
nviSCSwitch	SNVT_switch	IN	**Direct control input** Updates of this input are directly passed to the nvoSCswitch[i] output. This input overrides other inputs and ongoing fades/delays. Thus, scene settings can be modified e. g. manually.	.value = 0 .state = -1
nviSCSetting	SNVT_setting	IN	**Controller enabling/disabling input** Used to turn the controller on and off. A SET_ON command recalls the last scene. When the controller is turned off (SET_OFF), the scene stored in memory unit no. 20 is propagated without any configured delays.	.function = SET_ON .setting = 0 .rotation = 0
nviSCLux	SNVT_lux	IN	**Illumination level input** Input for an illumination value [lux], which is stored in the scene memory when nviSCscene[i] receives an SC_LEARN command and .nviSCscene[i] is bound.	0
nvoSCSceneFb	SNVT_scene	OUT	**Scene feedback output** Propagates the current state of the scene controller to the network.	.function = SC_RECALL .scene_number = 0
nvoSCSwitch	SNVT_switch	OUT	**Switch output** Provides the value of the UCPTsceneKeeperSwitch[i][j] scene memory for an actuator (e. g. a lamp actuator), whenever a scene change is initiated.	.value = 0 .state = -1
nvoSCSetting	SNVT_setting	OUT	Provides the value of the UCPTsceneKeeperSetting[i][j] scene memory for a controller (e. g. a sunblind controller). If sunblind are controlled, information about their position (.setting) and panel angle (.rotation) can be stored in the scene memory.	.function = SET_NUL .setting = 0 .rotation = 0
nvoSCLux	SNVT_lux	OUT	**Illumination level output** Propagates the illumination level of the UCPTsceneKeeperLux[i][j] scene memory.	0
nvoSCTemp	SNVT_temp_p	OUT	**Temperature output** Propagates the temperature value of the	327.67 °C (undefined)

Network variable	Type	Dir	Description	Default value
			UCPTsceneKeeperTemp[i][j] scene memory [°C].	
nvoSCOccupancy	SNVT_occupancy	OUT	**Occupancy state output** Propagates the occupancy state defined in the UCPTsceneKeeperOccupancy[i][j] scene memory.	OC_NUL

Configuration Properties

Network variable	Type	Description	Default value
CP	UCPTsceneKeeperSwitch[20]	**Scene keeper switch** Provides direct access to the scene memory to configure SNVT_switch values for every scene. If the switch output shall not change when a new scene is recalled, this parameter has to be set at an HOLD value (.function = HOLD = 0), which is not propagated.	.value = 0 .function = -1
CP	UCPTsceneKeeperSetting[20]	**Scene keeper setting** Provides direct access to the scene memory to configure SNVT_setting values for every scene. If the setting output shall not change when a new scene is recalled, this parameter has to be set at an SET_NO_MESSAGE value (.function = SET_NO_MESSAGE), which is not propagated.	.function = SET_NUL .setting = 0 .rotation = 0
CP	UCPTsceneKeeperLux[20]	**Scene keeper lux** Provides direct access to the scene memory to configure illumination levels for every scene. If the illumination level output lux shall not change when a new scene is recalled, this parameter has to be set at an undefined value (0), which is not propagated.	0
CP	UCPTsceneKeeperTemp_p[20]	**Scene keeper temperature** Provides direct access to the scene memory to configure temperatures [°C] for every scene. If the temperature output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (327.67 °C), which is not propagated.	327.67 °C (undefined)
CP	UCPTsceneKeeperOccupancy[20]	**Scene keeper occupancy** Provides direct access to the scene memory to configure occupancy states for every scene. If the occupancy state output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (OC_NUL), which is not propagated.	OC_NUL
CP	UCPTsceneKeeperFadeTime[20]	**Time for fading scenes** If scene *i* is recalled, this time is used to reach requested value for this scene. Applied on nvoSCswitch[i]. Value should be larger than 500ms	0
CP	UCPTsceneKeeperDimStep[20]	**Scene keeper dim step** Sets the step value of nvoSCswitch[i].value for cross-fading.	3.5 %
CP	UCPTsceneKeeperDelayTime[20]	**Scene keeper delay** Defines the time between recall and performance of the corresponding scene. Only affects the nvoSCswitch[i] output.	0 (disabled)

nviSCscene[i] – Scene trigger input

Type:	SNVT_scene	
Valid Range:	.function:	SC_RECALL, SC_LEARN
	.scene_number:	1 .. 20
Default Value:	.function	= SC_RECALL
	.scene_number	= 0

Description: This input triggers a scene (SC_RECALL) or loads the scene-preset memory with current values (SC_LEARN). Memory units for 20 scenes are provided.
By SC_RECALL, the scene settings stored under the chosen `.scene_number` are recalled. The recall command can be delayed by the time defined in `UCPTsceneKeeperDlyTime[i]`.
An SC_LEARN command stores the current values of `nviSCswitch[i]` and `nviSClux[i]` in the scene memory unit corresponding to the given `.scene_number`.
A scene number zero does not cause any control action (only needed for default before commissioning/at reset).

nviSCswitch[i] – Direct control input

Type:	SNVT_switch	
Valid Range:	.value:	0 .. 100 %
	.state:	0, 1, -1
Default Value:	.value	= 0
	.state	= -1

Description: Updates of this input are directly passed to the `nvoSCswitch[i]` output. This input overrides other inputs and ongoing fades/delays. Thus, scene settings can be modified e. g. manually.

nviSCsetting[i] – Controller enabling/disabling input

Type:	SNVT_setting	
Valid Range:	.function:	SET_ON, SET_OFF
Default Value:	.function	= SET_ON
	.setting	= 0
	.rotation	= 0

Description: Used to turn the controller on and off. A SET_ON command recalls the last scene. When the controller is turned off (SET_OFF), the scene stored in memory unit no. 20 is propagated without any configured delays.

nviSClux[i] – Illumination level input

Type:	SNVT_lux
Valid Range:	0 .. 65,534 lux
Default Value:	0
Description:	Input for an illumination value [lux], which is stored in the scene memory when `nviSCscene[i]` receives an SC_LEARN command.

nviSCsceneOffset[i] – Scene offset input

Type:	SNVT_scene
Valid Range:	.function: SC_RECALL .scene_number: 1 .. 20
Default Value:	.function: SC_RECALL .scene_number = 255
Description:	The pending .scene_number value at this input is added to the .scene_number value at nviSCswitch. If the sum is an invalid value (sum > 20) the result will be 0.

nvoSCswitch[i] – Switch output

Type:	SNVT_switch
Valid Range:	.value: 0 .. 100 % .state: 0, 1, -1
Default Value:	.value = 0 .state = -1
Description:	Provides the value of the `UCPTsceneKeeperSwitch[i][j]` scene memory for an actuator (e. g. a lamp actuator), whenever a scene change is initiated.

nvoSCsceneFb[i] – Scene feedback output

Type:	SNVT_scene
Valid Range:	.function: SC_RECALL, SC_LEARN .scene_number: 1 .. 20
Default Value:	.function = SC_RECALL .scene_number = 0
Description:	Propagates the current state of the scene controller to the network.

nvoSCsetting[i] – Setting output

Type:	SNVT_setting	
Valid Range:	.function : .setting: .rotation : 	SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NUL 0 .. 100 % -359.98° .. +360.00°
Default Value:	.function .setting .rotation	= SET_NUL = 0 = 0
Description:	Provides the value of the `UCPTsceneKeeperSetting[i][j]` scene memory for a controller (e. g. a sunblind controller). If the blinds are controlled, information about their position (.setting) and panel angle (.rotation) can be stored in the scene memory.	

nvoSClux[i] – Illumination level output

Type:	SNVT_lux
Valid Range:	0 .. 65,534 lux
Default Value:	0
Description:	Propagates the illumination level of the `UCPTsceneKeeperLux[i][j]` scene memory.

nvoSCtemp[i] – Temperature output

Type:	SNVT_xxx (Default: SNVT_temp_p)
Valid Range:	-273.17 °C .. +327.66 °C
Default Value:	327.67 °C (undefined)
Description:	Propagates the temperature value of the `UCPTsceneKeeperTemp[i][j]` scene memory [°C].

nvoSCoccupancy[i] – Occupancy state output

Type:	SNVT_occupancy
Valid Range:	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default Value:	OC_NUL
Description:	Propagates the occupancy state defined in the `UCPTsceneKeeperOccupancy[i][j]` scene memory.

Configuration Properties

UCPTsceneKeeperSwitch[i][j] – Scene keeper switch

Type:	SNVT_switch
Valid Range:	.value: 0 .. 100 % .state: 0, 1, -1
Default Value:	.value = 0 .state = -1
Description:	Provides direct access to the scene memory to configure SNVT_switch values for every scene. If the switch output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (.state = -1), which is not propagated.

UCPTsceneKeeperSetting[i][j] – Scene keeper setting

Type:	UNVT_setting
Valid Range:	.function: SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE, SET_NO_MESSAGE, SET_NUL .setting: 0 .. 100 % .rotation: -359.98° .. +360.00°
Default Value:	.function = SET_NUL .setting = 0 .rotation = 0
Description:	Provides direct access to the scene memory to configure SNVT_setting values for every scene. If the setting output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (.function = SET_NUL), which is not propagated.

UCPTsceneKeeperLux[i][j] – Scene keeper lux

Type:	SNVT_lux
Valid Range:	0 .. 65,534 lux
Default Value:	0
Description:	Provides direct access to the scene memory to configure illumination levels for every scene. If the illumination level output lux shall not change when a new scene is recalled, this parameter has to be set at an undefined value (0), which is not propagated.

UCPTsceneKeeperTemp[i][j] – Scene keeper temperature

Type:	SNVT_temp_p
Valid Range:	-273.17 °C .. +327.66 °C
Default Value:	327.67 °C (undefined)
Description:	Provides direct access to the scene memory to configure temperatures [°C] for every scene. If the temperature output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (327.67 °C), which is not propagated. Attention: If the type of nvoSCtemp[i] has been changed, the type of this parameter has to be adjusted as well.

UCPTsceneKeeperOccupancy[i][j] – Scene keeper occupancy

Type:	SNVT_occupancy
Valid Range:	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default Value:	OC_NUL
Description:	Provides direct access to the scene memory to configure occupancy states for every scene. If the occupancy state output shall not change when a new scene is recalled, this parameter has to be set at an undefined value (OC_NUL), which is not propagated.

UCPTsceneKeeperFadeTime[i][j] – Scene keeper fade time for nviSCSwitch

Type:	UNVT_svea_time_msec
Valid Range:	100 .. 65,534 ms
Default Value:	0 (disabled)
Description:	Cross-fading time for the change from one scene to another at `nviSCSwitch[i]`.

UCPTsceneKeeperDimStep[i][j] – Scene keeper dim step

Type:	SNVT_lev_cont
Valid Range:	0 .. 100 %
Default Value:	3.5 %
Description:	Sets the step value of `nvoSCswitch[i]`.value for cross-fading.

UCPTsceneKeeperDelayTime[i][j] – Scene keeper delay

Type:	SNVT_time_sec
Valid Range:	0 .. 6,553.4 s
Default Value:	0 (disabled)
Description:	Defines the time between recall and performance of the corresponding scene. Only affects the `nvoSCswitch [i]` output.

8.8 LonMark®-object Switch#3200

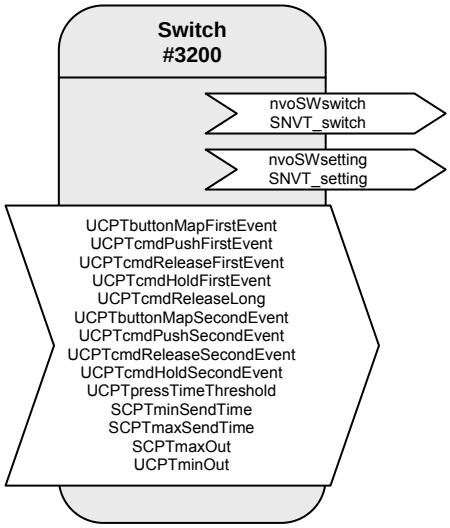


Table: Functions, parameters, and variables of the switch object

Function	Network variable	Type
Switch output	nvoSWswitch	SNVT_switch
Output setting	nvoSWsetting	SNVT_setting
Function	**Configuration parameters**	**Type**
Button assignment, first event	UCPTbuttonMapFirstEvent	SNVT_state
First button push	UCPTcmdPushFirstEvent	UNVT_setting
First release	UCPTcmdReleaseFirstEvent	UNVT_setting
First push and hold	UCPTcmdHoldFirstEvent	UNVT_setting
Release after holding	UCPTcmdReleaseLong	UNVT_setting
Button assignment, second event	UCPTbuttonMapSecondEvent	SNVT_state
Second button push	UCPTcmdPushSecondEvent	UNVT_setting
Second release	UCPTcmdReleaseSecondEvent	UNVT_setting
Second push and hold	UCPTcmdHoldSecondEvent	UNVT_setting
Time threshold for long button push	UCPTpressTimeThreshold	SNVT_time_sec
Minimum transmission interval	SCPTminSendTime	SNVT_time_sec
Maximum transmission pause	SCPTmaxSendTime	SNVT_time_sec
Maximum output value	SCPTmaxOut	SNVT_lev_cont
Minimum output value	UCPTminOut	SNVT_lev_cont

Network variables details:

nvoSWswitch - Switch output

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	.value = 0 .state = 0
Description	Network variable for controlling switching and dimmer actuators. The functionality is the result of the configuration of the parameters UCPTbuttonMapXXX and UCPTcmdXXX in the corresponding switch object.

nvoSWsetting - Output setting

Type	SNVT_setting
Value range	.function:SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE,SET_NUL .setting: 0 ... 100 % .rotation: -359.98° ... 360°
Default value	.function = SET_OFF .setting = 0 .rotation = 0
Description	Network variable for controlling controllers, blind and dimmer actuators. The functionality is the result of the configuration of the parameters UCPTbuttonMapXXX and UCPTcmdXXX in the corresponding switch object.

Configuration parameter details:

The assignment of the buttons (1 ... 4/8) to the objects or switching events is implemented using the parameters UCPTbuttonMapFirstEvent[i] and UCPTbuttonMapSecondEvent[i].
The first time a button is pressed (FirstEvent) usually refers to the switch-on command or a movement command
(for blind control). In TOGGLE mode, pressing a button (SecondEvent) usually triggers a switch-off command or a movement command in the opposite direction. In two-button operation however, the first switching event is linked to a certain button (the same telegram is always generated) and the second switching event is linked to another button. See below for a detailed description.

UCPTbuttonMapFirstEvent - Button assignment, first event

Type	SNVT_state
Value range	0 ... 1 boolean per Bit
Default value	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Description	Defines the button (hardware input) that triggers the first switching event, by setting the appropriate bit = 1. The bits are permanently assigned to the buttons.

UCPTcmdPushFirstEvent - First button push

Type	UNVT_setting
Value range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5 %]; .rotation: -359.98 ... 360.00 ° [0.02 °]
Default value	SET_ON 100.0 0.00
Description	Telegram sent on the first button push (rising edge) in the first switching event.

UCPTcmdReleaseFirstEvent - First release

Type	UNVT_setting
Value range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5 %]; .rotation: -359.98 ... 360.00 ° [0.02 °]
Default value	SET_NO_MESSAGE 0.0 0.00
Description	Telegram sent on releasing the button (falling edge) in the first switching event, when the button push time threshold has not yet been exceeded.

UCPTcmdHoldFirstEvent - First push and hold

Type	UNVT_setting
Value range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5 %]; .rotation: -359.98 ... 360.00 ° [0.02 °]
Default value	SET_NO_MESSAGE 0.0 0.00
Description	Telegram sent on holding the button (longer impulse) in the first switching event, when the button push time threshold has not yet been exceeded. If the minimum transmission interval > 0, then this telegram is cyclically sent.

UCPTcmdReleaseLong - Release after holding

Type	UNVT_setting
Value range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5 %]; .rotation: -359.98 ... 360.00 ° [0.02 °]
Default value	SET_NO_MESSAGE 0.0 0.00
Description	Telegram sent on releasing the button (falling edge) in both switching events, when the button push time threshold has not yet been exceeded.

UCPTbuttonMapSecondEvent - Button assignment, second event

Type	SNVT_state
Value range	.bit0: 0 ... 1 boolean
Default value	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Description	Defines the button (hardware input) that triggers the second switching event, by setting the appropriate bit = 1. The bits are permanently assigned to the buttons.

UCPTcmdPushSecondEvent - Second button push

Type	UNVT_setting
Value range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5 %]; .rotation: -359.98 ... 360.00 ° [0.02 °]
Default value	SET_OFF 0.0 0.00
Description	Telegram sent on a button push (rising edge) in the second switching event.

UCPTcmdReleaseSecondEvent - Second release

Type	UNVT_setting
Value range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5 %]; .rotation: -359.98 ... 360.00 ° [0.02 °]
Default value	SET_NO_MESSAGE 0.0 0.00
Description	Telegram sent on releasing the button (falling edge) in the second switching event, when the button push time threshold has not yet been exceeded.

UCPTcmdHoldSecondEvent - Second push and hold

Type	UNVT_setting
Value range	.function: SET_NO_MESSAGE, SET_NUL, SET_OFF, SET_ON, SET_DOWN, SET_UP, SET_STOP, SET_STATE; .setting: 0.0 ... 100.0 % [0.5 %]; .rotation: -359.98 ... 360.00 ° [0.02 °]
Default value	SET_NO_MESSAGE 0.0 0.00
Description	Telegram sent on holding the button (longer impulse) in the first switching event, when the button push time threshold has not yet been exceeded. If the minimum transmission interval > 0, then this telegram is cyclically sent.

UCPTpressTimeThreshold - Time threshold for a longer button push

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	1.0 s
Description	Time threshold for distinguishing between brief and longer button push.

SCPTminSendTime - Minimum transmission interval

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	0.2 s
Description	The minimum interval between two consecutive telegrams. Used to limit the bus loading, among other purposes.

SCPTmaxSendTime - Maximum transmission pause

Type	SNVT_time_sec
Value range	0.0 ... 6553.5 s [0.1 s]
Default value	0.0 s
Description	The maximum interval for continuous transmission of the current value.

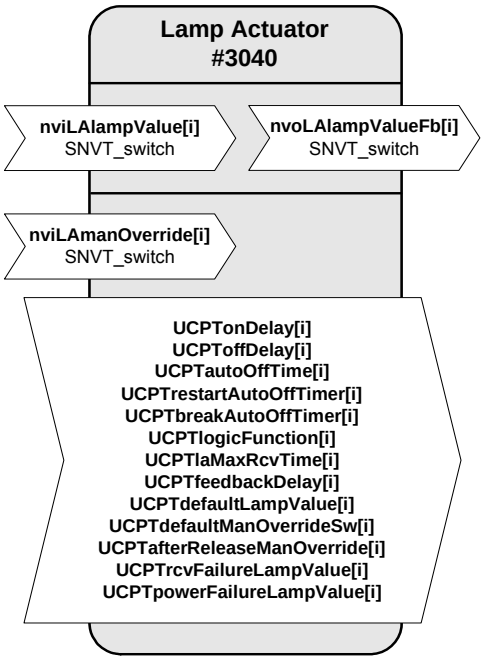
SCPTmaxOut - Maximum output value

Type	SNVT_lev_cont
Value range	0.0 ... 100.0 % [0.5 %]
Default value	100.0 %
Description	The maximum value for the associated output network variable.

UCPTminOut - Minimum output value

Type	SNVT_lev_cont
Value range	0.0 ... 100.0 % [0.5 %]
Default value	5.0 %
Description	The minimum value for the associated output network variable.

8.9 LonMark®-object Lamp Actuator #3040



Network variables details:

nviLAlampValue[i]

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	UCPTdefaultLampValue[i]
Description	Control input for switching the output channels

nviLAmanOverride[i]

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0 Deactivated: .state = -1
Default value	UCPTdefaultManOverrideSw[i]
Description	Control input with a higher priority than nviLAlampValue[i]. After deactivation (.state = -1, invalid value) the switching channel adopts a status depending on the setting in UCPTafterReleaseManOverride[i]. Alternatively, this input can be logically linked with nviLAlampValue[i]. The linking is selected using the parameter UCPTlogicFunction[i].

nvoLAlampValueFb[i]

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	UCPTdefaultLampValue[i]
Description	The current value/status of the switching channel is sent to the network here; either immediately upon being changed or after a delay defined in UCPTfeedbackDelay[i]. Switch-on and switch-off delays are regarded as being complete. This output can be cyclically sent over the period specified in SCPTmaxSendTime[i].

Configuration variables

UCPTonDelay[i] - Switch-on delay

Type	UNVT_time_sec
Value range	0 ... 65,534 s (increment: 1 s)
Default value	0 (deactivated)
Description	Switch-on delay of the output after arrival of an ON telegram at nviLAlampValue[i].

UCPToffDelay[i] - Switch-off delay

Type	UNVT_time_sec
Value range	0 ... 65,534 s (increment: 1 s)
Default value	0 (deactivated)
Description	Switch-off delay of the output after arrival of an OFF telegram at nviLAlampValue[i].

UCPTautoOffTime[i] - Automatic switch-off time

Type	UNVT_time_sec
Value range	0 ... 65,534 s (increment: 1 s)
Default value	0 (deactivated)
Description	The output is automatically switched off (without receiving an OFF telegram) after this time has expired. The time begins as soon as an ON telegram is received at nviLAlampValue[i].

UCPTrestartAutoOffTimer[i] - Automatic switch-off time extendable

Type	UNVT_boolean
Value range	TRUE, FALSE
Default value	TRUE
Description	Defines whether the automatic switch-off time (UCPTautoOffTime[i]) is restarted on receipt of every ON telegram (TRUE) or not reset (FALSE).

UCPTbreakAutoOffTimer[i] - Automatic switch-off interruptible

Type	UNVT_boolean
Value range	TRUE, FALSE
Default value	FALSE
Description	Defines whether the automatic switch-off time (UCPTautoOffTime[i]) is interrupted on receipt of an OFF telegram (TRUE) or not (FALSE).

UCPTlogicFunction[i] - Logic function

Type	UNVT_logic_fnc
Value range	LF_OVERRIDE, LF_AND, LF_OR, LF_XOR, LF_NAND, LF_NOR, LF_NXOR
Default value	LF_OVERRIDE
Description	This parameter can be used to define a logical linking of the inputs nviLAlampValue[i] and nviLAmanOverride[i] according to the truth table below. The following assignments apply:

1 = On (.state = 1 and .value > 0)
0 = Off (.state = 0 or .state = 1 and .value = 0)
-1 = invalid (.state = -1)
DLV = Value defined in the UCPT**d**efault**L**amp**V**alue[i].
!DLV = UCPT**d**efault**L**amp**V**alue[i] inverted
DMO = Value defined in UCPTdefaultManOverrideSw[i].
!DMO = UCPT**d**efault**M**an**O**verrideSw[i] inverted

nviLAlampValue[i]	nviLAmanOverride[i]	AND	OR	XOR	NAND	NOR	NXOR
0	0	0	0	0	1	1	1
0	1	0	1	1	1	0	0
1	0	0	1	1	1	0	0
1	1	1	1	0	0	0	1
0	-1	0	DMO	1	1	!DMO	0
1	-1	DMO	1	1	!DMO	0	0
-1	0	0	DLV	1	1	!DLV	0
-1	1	DLV	1	1	!DLV	0	0
-1	-1	0	DLV	0	1	!DLV	1

The temporal behaviour of the outputs is not affected by the logical linking, but is parameterised according to the result of the linking.
Under standard parameterisation LF_OVERRIDE nviLAmanOverride[i] is prioritised with regard to nviLAlampValue[i].

SCPTlaMaxRcvTime[i] - Maximum reception pause

Type	SNVT_time_sec
Value range	0 ... 6,553.4 s (increment: 0.1 s)
Default value	0 (deactivated)
Description	An update to nviLAlampValue[i] must be received within the time period defined here, otherwise the output is set to the value defined in UCPTrcvFailureLampValue[i].

UCPTfeedbackDelay[i] - Feedback delay

Type	UNVT_time_msec
Value range	0 ... 65,534 ms (increment: 1 ms)
Default value	0 (deactivated)
Description	The transmission of the feedback value via nvoLAlampValueFb[i] is delayed by the value specified here. The time is restarted on every value/status change.

UCPTdefaultLampValue[i] - Default lamp value

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	.value = 0 .state = 0
Description	The value adopted by nviLAlampValue[i] after the power supply is restored or after a restart. This normally reflects the output value.

UCPTdefaultManOverrideSw[i] - Default override control

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0 Deactivated: .state = -1
Default value	.value = 0 .state = -1
Description	The value automatically adopted by the input after the bus voltage is restored or after a reset.

UCPTafterReleaseManOverride[i] - Default manual override release

Type	UNVT_switch_cfg
Value range	.function: SW_NUL, SW_HOLD, SW_VALUE .value: 0 ... 100 %
Default value	.function = SW_NUL .value = 0
Description	The value adopted by the output after nviLAmanOverride[i] is released.

SW_NUL: Current value of the nviLAlampValue[i] input is adopted.
SW_HOLD: Current value of the actuator channel is retained.
SW_VALUE: The actuator channel adopts the value parameterised in .value.

UCPTrcvFailureLampValue[i] - Lamp value in case of reception failure

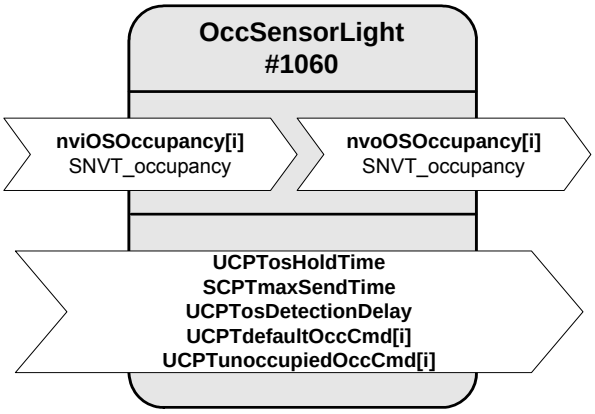
Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0 Deactivated: .state = -1
Default value	.value = 0 .state = -1
Description	The value adopted by the output after the time specified in SCPTlaMaxRcvTime[i] has expired. If .state = -1 the output is not changed.

UCPTpowerFailureLampValue[i] - Lamp value in case of power failure

Type	SNVT_switch
Value range	.value: 0 ... 100 % .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0 Deactivated: .state = -1
Default value	.value = 0 .state = -1
Description	Value adopted by the output when the power fails. If .state = -1 the output is not changed.

The following objects “OccSensorLight, OccSensorHvac, LightSensor and ClosedLoopSensor” are concerned to a DALI multi-sensor. They are implemented into the project by choosing a multi-sensor object in the “Device Selector”.

8.10 OccSensorLight (#1060)



Output variables

nvoOSOccupancy[i]

Type	SNVT_occupancy
Value range	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	OC_UNOCCUPIED
Description	Output of the sensor value. If a movement is detected, OC_OCCUPIED is output here. The output value for the "NOT OCCUPIED" state can be defined via the parameter UCPTunoccupiedOccCmd[i].

nviOSOccupancy[i]

Type	SNVT_occupancy
Value range	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	OC_NUL
Description	Input for an additional sensor. The internal and the external state of presence take effect in the same way (no priority).

Configuration parameters

UCPTosHoldTime

Type	SNVT_time_sec
Value range	0 ... 6,553 s
Default value	40 s
Description	After detection of motion the state OCCUPIED is kept for this period.

SCPTmaxSendTime

Type	SNVT_time_sec
Value range	10 ... 6,553 s
Default value	120 s
Description	The output variables are transmitted cyclically within this interval. The function is deactivated for 0.

UCPTosDetectionDelay

Type	SNVT_time_sec
Value range	10 ... 6,553 s
Default value	0 s
Description	Delay between the detection of motion and the setting of the output to OCCUPIED. The timer starts from the beginning when the hold time ahs expired without the detection of motion.

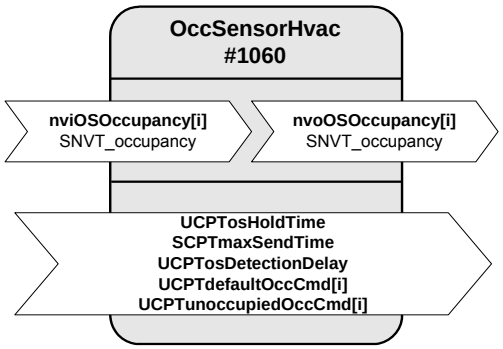
UCPTdefaultOccCmd

Type	SNVT_occupancy
Value range	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	OC_NUL
Description	The value configured here is issued during the initialisation phase of the sensor head (approx. 2 s).

UCPTunoccupiedOccCmd[i]

Type	SNVT_occupancy
Value range	OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	OC_UNOCCUPIED
Description	The value set here is transmitted on switching to the "NOT OCCUPIED" status. That means that the presence detector can be adapted to different application cases.

8.11 OccSensorHvac (#1060)



Output variables

nvoOSOccupancy

Type	SNVT_occupancy
Value range	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	see UCPTdefaultOccCmd[i]
Description	Output of the sensor value. If a movement is detected, OC_OCCUPIED is output here. The output value for the "NOT OCCUPIED" state can be defined via the parameter UCPTunoccupiedOccCmd[i].

nviOSOccupancy

Type	SNVT_occupancy
Value range	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	OC_NUL
Description	Input for an additional sensor. The internal and the external state of presence take effect in the same way (no priority).

Configuration parameters

UCPTosHoldTime

Type	SNVT_time_sec
Value range	0 ... 6,553 s
Default value	40 s
Description	After detection of motion the state OCCUPIED is kept for this period.

SCPTmaxSendTime

Type	SNVT_time_sec
Value range	10 ... 6,553 s
Default value	120 s
Description	The output variables are transmitted cyclically within this interval. The function is deactivated for 0.

UCPTosDetectionDelay

Type	SNVT_time_sec
Value range	10 ... 6,553 s
Default value	0 s
Description	Delay between the detection of motion and the setting of the output to OCCUPIED. The timer starts from the beginning when the hold time ahs expired without the detection of motion.

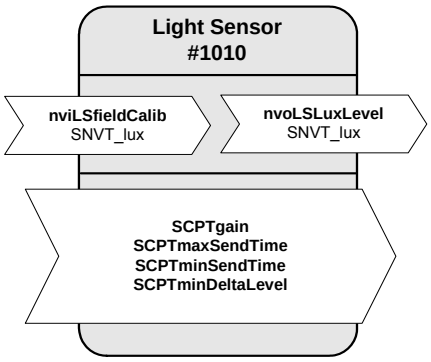
UCPTdefaultOccCmd

Type	SNVT_occupancy
Value range	OC_OCCUPIED, OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	OC_NUL
Description	The value configured here is issued during the initialisation phase of the sensor head (approx. 2 s).

UCPTunoccupiedOccCmd[i]

Type	SNVT_occupancy
Value range	OC_UNOCCUPIED, OC_BYPASS, OC_STANDBY, OC_NUL
Default value	OC_STANDBY
Description	The value set here is transmitted on switching to the "NOT OCCUPIED" status. That means that the presence detector can be adapted to different application cases, e.g. lighting control or heating control. Normally: lighting control = OC_UNOCCUPIED, heating = OC_STANDBY

8.12 Light Sensor (#1010)



Input variables

nviLSfieldCalib

Type	SNVT_lux
Value range	0 ... 65,535 lux
Default value	0
Description	Execution of a calibration: 1) Bring the brightness in the room to the operating point 2) Measure the current brightness value on the reference and enter this value into nviLSfieldCalib 3) Upload the device configuration into the database

Output variables

nvoLSLuxLevel

Type	SNVT_lux
Value range	0 ... 65,535 lux
Default value	1016
Description	Outputs the measured brightness in the form of a lux value.

Configuration variables

SCPTgain

Type	SNVT_muldiv
Value range	.multiplier: 0 ... 65,535 .divisor: 0 ... 6.5535
Default value	.multiplier = 1 .divisor =1
Description	Memory of the conversion factor of the calibration. A known conversion factor can be entered manually.

SCPTmaxSendTime

Type	SNVT_time_sec
Value range	0 ... 6,553.5 s
Default value	120 s
Description	The current lux value is transmitted regularly within this interval.

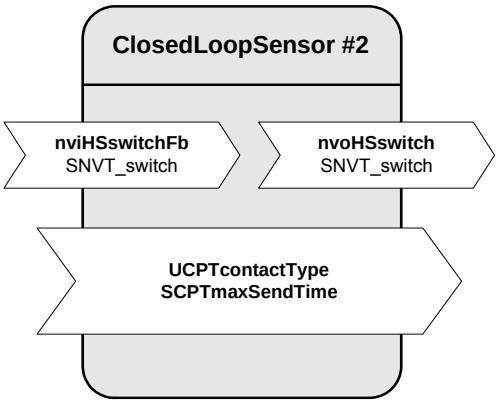
SCPTminSendTime

Type	SNVT_time_sec
Value range	0 ... 6,553 s
Default value	2 s
Description	Minimum interval between two telegrams.

SCPTminDeltaLevel

Type	SNVT_lev_cont
Value range	0 ... 100%
Default value	2.5%
Description	The minimum change required for an update of the output variables.

8.13 ClosedLoopSensor



Input variables

nviHSswitchFb

Type	SNVT_switch
Value range	.value: 0 ... 100% .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	.value = 0 .state = -1
Description	Input value for an additional sensor.

Output variables

nvoHSswitch

Type	SNVT_switch
Value range	.value: 0 ... 100% .state: 0, 1, -1 ON: .state = 1 and .value > 0 OFF: .state = 0 or .state = 1 and .value = 0
Default value	.value = 0 .state = 0
Description	Logical OR between the hardware contact of the DALI multi-sensor and the nviHSswitchFb.

UCPTcontactType

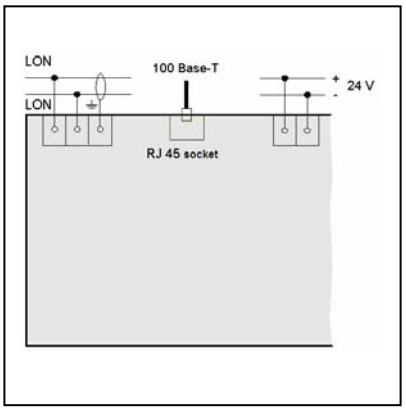
Type	UCPT_contact_type.h
Value range	CT_NORMALLY_OPEN; CT_NORMALLY_CLOSED
Default value	CT_NORMALLY_OPEN
Description	Setting of the contact type.

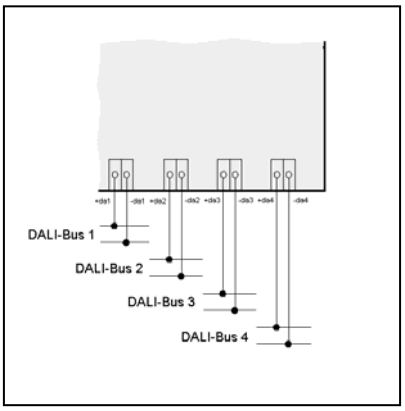
SCPTmaxSendTime

Type	SNVT_time_sec
Value range	0 ... 6.553 s
Default value	0 (deactivated)
Description	Maximum time between two transmission cycles. If the time is > 0, the current output value nvoHSswitch is transmitted in cycles.

9 Appendix B: Technical Data

LON DALI Gateway REG 4x16 DIM

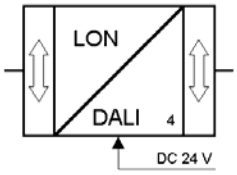




FTT 24V

- four DALI outputs to control up to 64 DALI devices for each output, divided into 16 groups
- EIA-232 interface for device configuration
- TP/FT-10 transceiver and Ethernet socket
- addressing of the DALI devices with configuration tool
- status monitoring off all connected DALI devices
- monitoring of all lamps (if DALI compatible)
- status LEDs for diagnostics and status indication
- manual operation for direct control of DALI devices
- pluggable screw-type terminals
- supply voltage: DC 24 V
- DIN rail mounting according to EN 50 022
- width of the device: approx. 157 mm (9 pitch)
- software application for control of the DALI devices, including timers, prioritised control and configurable reaction to power-down/power-up/bus reset. Furthermore, the application provides constant light and scene control according to LonMark profile „Lamp Actuator (3040)“, „Constant Light Controller (3050)“ and scene control in the DALI devices.

Function



The LON DALI-Gateway REG 4x16 DIM provides four DALI outputs for the control of up to 256 DALI devices divided into 64 groups. At each output 64 DALI devices divided into 16 groups can be connected.

The device needs a supply voltage of DC 24 V. The supply voltage fort he DALI devices (16 V DC) is not supplied by this device. To supply the DALI Gateway and the DALI devices the DALI Power Supply REG-N 140 (art.-no.: 11837-467) has to be used. This device provides the supply voltage for the DALI Gateway and the DALI bus power for the four DALI outputs.

The current state of the LON DALI-Gateway is indicated via status LEDs. The device provides buttons on the front of the housing for manual operation of the connected DALI devices.

The common device state is indicated by the service and RUN LED.

The application software complies with the LonMark guidelines.

Mounting

The LON DALI-Gateway REG 4x16 DIM is for mounting on DIN rails according to EN 50 022.

The wires for the network connection, the power supply and the DALI outputs are conected via pluggable screw-type terminals. The plug terminals can be screwed onto the cables before installation of the device and then plugged in later.

All devices mounted next to the DALI-Gateway must be equipped with a basic insulation at a minimum.

The green RUN LED does not illuminate until the application program has been correctly loaded into the device.

By pushing the service pin, the LON DALI Gateway is initiated to send its Neuron ID. The service LED indicates the programming state.

Remarks

Installation and mounting of electrical devices may only be done by a skilled electrician. When planning and installing electrical equipment, the applicable norms, guidelines, rules and regulations for the respective country are to be followed. Beyond this, the device specifications are also to be followed. Detailed specialised knowledge of LON technology is a prerequisite for project work, installation, and commissioning.
The functioning of the device is software dependent. Only software applications approved for this device by SVEA-BCS may be loaded.
The plant installer has the responsibility of ensuring that the loaded application programs, and the parameters defined within this, agree with the external connections of the device. This applies especially to situations where several application programs for different applications are available for the device.

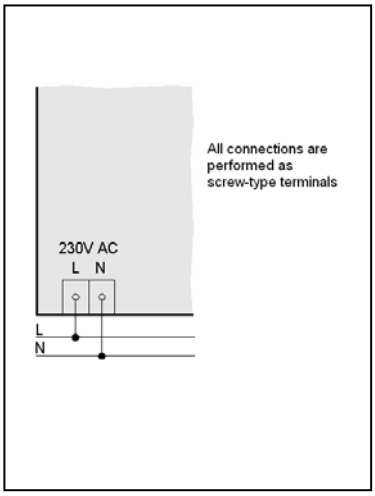
Technical Data

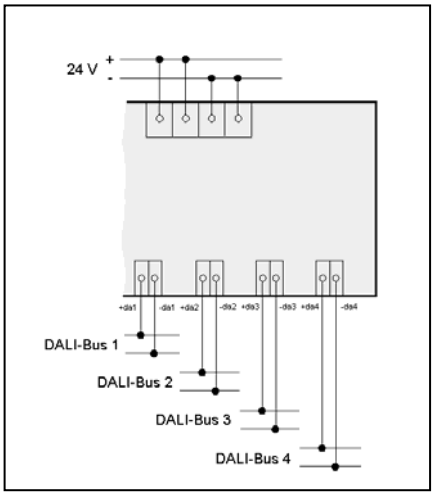
LON DALI Gateway REG 4x16 DIM

Power supply	
supply voltage:	24 V DC (9... 35 V)
current consumption:	max. 170 mA
Bus connection	
transceiver type:	1) LON-Free-Topology-Transceiver (TP/FT-10)
	2) Lon-Over-IP (IP-852)
Outputs	
Number:	4
type:	DALI interface
number of DALI devices:	max. 64 per output
Controls	
Service:	sends the Neuron ID; pressing the service button during a hardware reset places the device in the unconfigured state
ON OFF BUS:	ON: switch on all connected DALI devices of the selected output
	OFF: switch off all connected DALI devices of the selected output
	A long push (> 3s) is necessary in order to switch to channel selection mode.
Channel:	A long push (> 3s) starts manual operation A further short button push allows the respective DALI channel to be selected (cycle: channel 1- channel 2- channel 3- channel 4- all channels)
	A further long push (> 3s) stops manual operation
Progr:	programming button pressed for 3s: manual replace of **one** DALI device Besides the device to be replaced only one further device is allowed to be in the state of lamp failure.
Indicators	
RUN-LED:	ON: device is working normally; OFF: no supply voltage
Service LED:	OFF: device is working normally
	FLASHES: boot up process
	RED: application is downloaded
DALI x:	GREEN: all DALI devices of the output were switched on locally (ALL ON)
	GREEN flashing: data transmission on the output and all devices OK
	RED: Error on the DALI bus (lamp failure, broken wire, no DALI device connected
	RED flashing: data transmission on the output and error on the DALI bus
	YELLOW: ready for the manual replace of one ballast
	YELLOW flashing: selection manual operation active
	OFF: all DALI devices of the output were switched off locally (ALL OFF)

Lon-Over-IP:	GREEN: IP-Port is configured and current
	GREEN or YELLOW flashing: data transmission
	YELLOW: IP-Port is configured but not current
	RED: IP-Port has a failure
	RED flashing: IP-Port is not configured
	OFF: IP-Port is not active
TP/FT-10:	GREEN: configured and current
	GRÉEN flashing: data transmission on the LON bus
	RED: error in network access
	RED flashing: device error of at least one device
	YELLOW flashing: not configured
	OFF: no or invalid data transmission
IRC:	GREEN: configured and current
	GREEN flashing: data transmission OK
	RED: Port is not in use or defective
	RED flashing: ping error
	OFF: no communication
	YELLOW flashing: port is not configured
Cfg:	IP-channel configured
Msg:	data transmission on the IP-channel
Link:	Connected to Ethernet
Connections	
Supply, DALI output, Bus:	Pluggable screw-type terminals for cross-sections of 0.5 .. 2.5 mm² (solid)
Ethernet (100 Base-T)	jack RJ 45
Housing	
Dimensions:	86 x 157 x 58 mm (H x W x D)
	9 pitch according to DIN 43 880
Protection class:	IP20 (EN 60 529/IEC 144)
Site conditions	
Operating temperature:	+5 °C .. +50 °C
Storage temperature:	-10 °C... +85 °C
relative humidity:	10 .. 90 % without moisture condensation
EMC specification	
Noise immunity:	according to EN 50 090-2-2

DALI Power Supply REG-N 140 (11837-467)

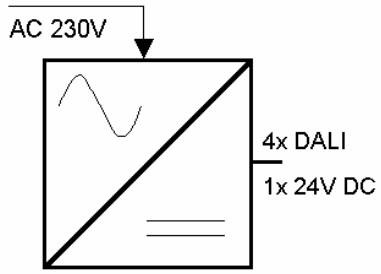




230V

- power supply fort he LON DALI-Gateway REG 4x16 DIM
- one output DC 24 V (max. 7 W)
- outputs fort he supply of four DALI lines (DC 16 V, 116 mA per output)
- LED per output for status and failure indication
- supply voltage: AC 230 V
- pluggable screw-type terminals
- DIN rail mounting according to EN 50 022
- width of the device: approx. 72 mm (4 pitch)

Function



The DALI Power Supply provides the supply voltage for the LON DALI-Gateway (art.-no.: 36236-332) and the DALI bus power of the four DALI outputs of the Gateway. For operation, the device needs a supply voltage of AC 230V.

The current state of the outputs is indicated via status LEDs.

Mounting

The DALI-Power Supply is for mounting on DIN rails according to EN 50 022.

The wires for the power supply, the DALI outputs and the 24 V output are conected via pluggable screw-type terminals. The plug terminals can be screwed onto the cables before installation of the device and then plugged in later.

All devices mounted next to the DALI-Power Supply must be equipped with a basic insulation at a minimum.

Remarks

Installation and mounting of electrical devices may only be done by a skilled electrician.
When planning and installing electrical equipment, the applicable norms, guidelines, rules and regulations for the respective country are to be followed. Beyond this, the device specifications are also to be followed. Detailed specialised knowledge of LON technology is a prerequisite for project work, installation, and commissioning.

The function of the device is especially adopted to the needs of the DALI-Gateway. Only devices may be connected that are approved by SVEA-BCS or confirm the DALI normative (IEC 60929).

The plant installer has the responsibility of ensuring that all connected devices fit to the specifications of the DALI Power Supply.

Technical data

DALI Power Supply REG-N 140

Power supply	
Supply voltage:	AC 230 V (+/- 10%) 50 Hz
Start-up behaviour:	current limiting
Output 24 V	
Output voltage:	DC 24 V (+/- 10%)
Nominal voltage:	170 mA
Short-circuit detection:	Switch off after 100ms
Max. short-circuit current:	approx.. 4.5 A
Cyclical re-start:	every 1.6 s (+/- 20%) after switch off due to short-circuit
	DALI outputs do not work during a short-circuit
Overload behaviour:	The output current of the 24 V output is limited electronically
Current limitation:	230 mA at min. temperature
	190 mA at max. temperature
Reaction time:	150-500 ms (dependent on the level of overload)
max. wire length:	1m
DALI outputs	
Number:	4
DALI bus voltage:	DC 16 V (11 V .. 20.5 V) (basic insulation, not SELV)
DALI output current:	116 mA per DALI line/output
	2x 332 mA at a parallel connection of two outputs
	1x 664 mA at a parallel connection of four outputs
Protective circuit:	Short-circuit proof, basic insulation to 230 V, protective insulation to 24 V output

10 Appendix C: List of supported extension-modules

TP/FT-10:

LON I/O-Modul REG-N 8S 10A (32237-344)
LON I/O-Modul REG-N MSE4 230V (32237-346)
LON I/O-Modul REG-N 4S 16A (32237-342)
LON I/O-Modul REG-N 8DI 8DO AC (35237-348)
LON I/O-Modul REG-N 8AO (34237-352)
LON I/O-Modul REG-N 8AI (33237-350)

LON Room Control Unit RCU-61 (14311-237) incl. application 311SW xx
LON Room Control Unit RCU-101 (14311-237)

LON Bus Coupling Unit UP (14311-237)