

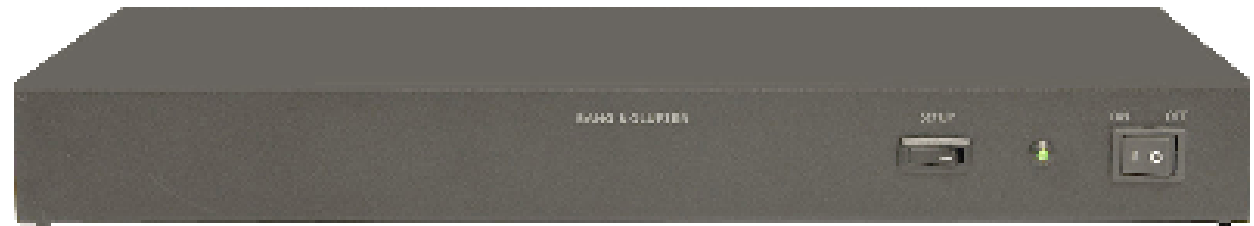
Master Link Gateway



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Master Link Gateway

- ML-Gateway is a control interface between the products in a Master Link system and a Home Automation System



- Control and operation possible in both directions
- Beo5 control and operation of the Home Automation System
 - ▶ Via the B&O products in the Master Link system
- Home Automation System control of B&O products in the Master Link system
 - ▶ Via a button on the Home Automation System

ML-Gateway - Features

- Operation of the B&O products in the Master Link system with Beo5



- Operation of the Home Automation System
 - ▶ Buttons on a panel



- Operation of the Home Automation System with Beo5
 - ▶ Via the Master Link system
 - ▶ From every zone in the house

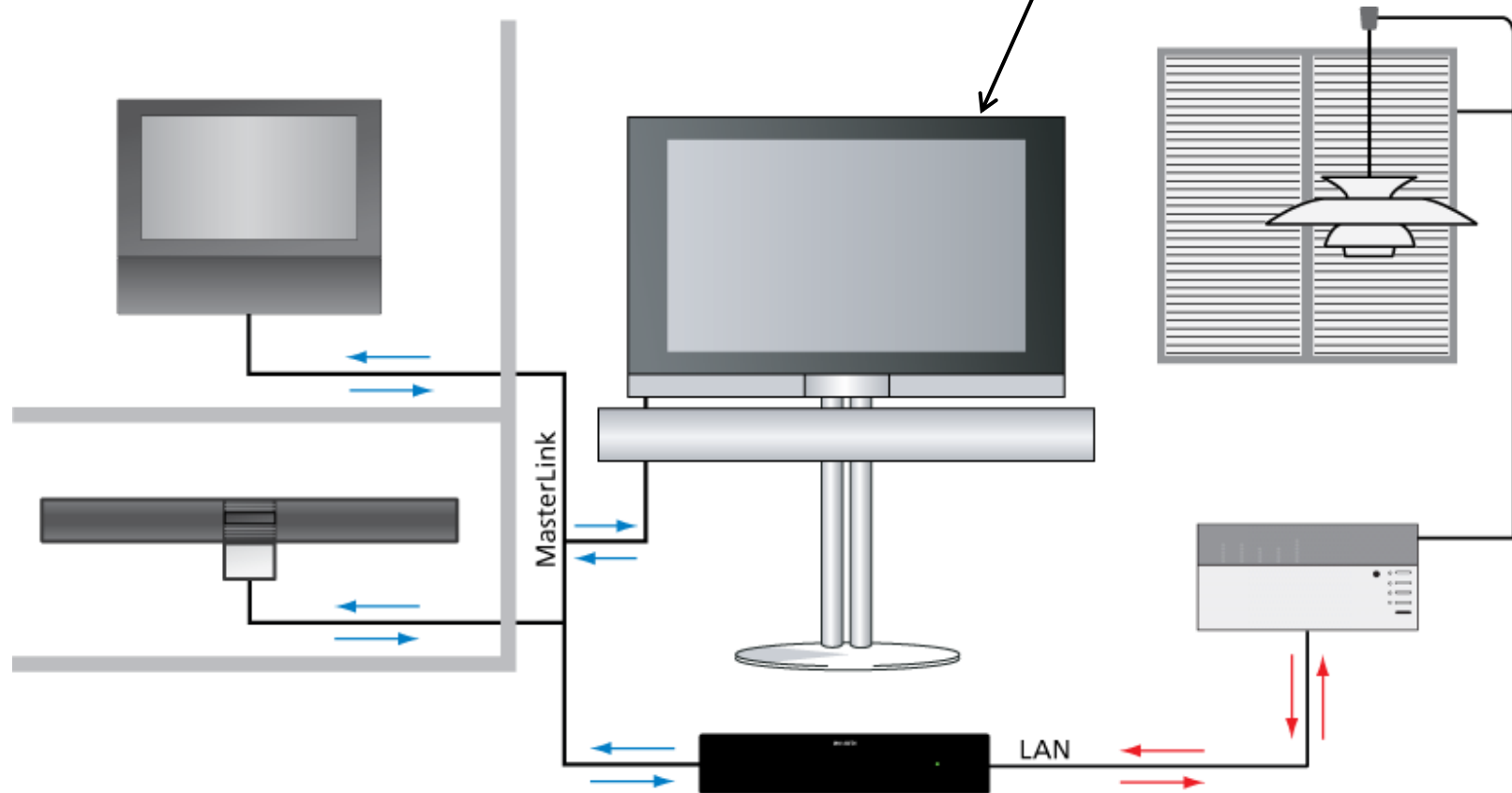
- Operation of the B&O products in the Master Link system via the Home Automation System
 - ▶ Via the Master Link system
 - ▶ Buttons on a panel

Basic functionality

- The Master Link Gateway is converting the commands
 - ▶ B&O commands into RS232 or Ethernet commands the Home Automation System
 - ▶ RS232 or Ethernet commands into B&O commands for the products in the Master Link system

Customer Service Menu

- MLGW Commands - enabled
- MLGW Status - enabled (Crestron only)



Basic functionality

- The control flow is based on macros by functionality
 - ▶ Events
 - ▶ Commands



- 2 x 65 commands per room
 - ▶ Local and global commands
- One to one or one to more command relations in both directions
- Master Link commands
 - ▶ Transmit IR simulated commands via the Master Link to a master
 - ▶ Receive IR simulated commands via the Master Link from a master - light and control commands
 - ▶ Receive status from the products on the Master Link

Technical specifications

- Mains voltage
 - ▶ 100 V~ - 230 V~
- Power consumption
 - ▶ 2.5 W
- Operating conditions
 - ▶ -10 to +50° C

Variants:

- Type no 1798
 - ▶ China
- Type no 1799
 - ▶ All markets

Connections:

- Mains socket
- Master Link
- RS232
 - ▶ D-SUB9 (male)
- Ethernet
 - ▶ RJ45 socket

MLGW compatible products

Product	SW	
BeoVision 7-32 MK I	≥ SW 7.91	HD-ready products only
BeoVision7-32 MK II	≥ SW 7.91	HD-ready products only
BeoVision 7-32 MK III	≥ SW 7.91	HD-ready products only
BeoVision 7-32 MK IV	≥ SW 7.91	HD-ready products only
BeoVision 7-40 MK I	≥ SW 7.91	HD-ready products only
BeoVision 7-40 MK II	≥ SW 7.91	HD-ready products only
BeoVision 7-40 MK III	≥ Build 433	μP-H8 SW ≥ 5.02
BeoVision 9-50 MK I	≥ Build 433	μP-H8 SW ≥ 5.02
BeoVision 9-50 MK II	≥ Build 433	μP-H8 SW ≥ 5.02
BeoVision 9-50 MK III	≥ Build 433	μP-H8 SW ≥ 5.02
BeoSystem 3	≥ Build 433	μP-H8 SW ≥ 5.02
BeoVision 8-26/32	≥ Build 132	
BeoVision 8-40	≥ Build 68	
BeoLink Active	≥ SW 1.6	
BeoLink Passive	≥ SW 1.6	
BeoLab 3500	≥ SW 3.30	
BeoSound 3200		Option 0 (via video master)
BeoSound 9000		Option 0 (via video master)
BeoSound 4		Option 0 (via video master)
BeoCenter 2		Option 0 (via video master)

Supported Home Automation Systems

Master Link Gateway supported Home Automation Systems:

- LK IHC, Schneider LexControl
- Lutron
 - ▶ Lutron HomeWorks Interactive
 - ▶ Lutron Graphic Eye
 - ▶ Lutron Graphic QS
 - ▶ Lutron Radio RA
- KNX
 - ▶ Busch-Jaeger and more than 120 other Home Automation Systems using the KNX standard
- Conson XP
- Crestron + others
- Clipsal (C-bus)

Home Automation Systems - Connection types

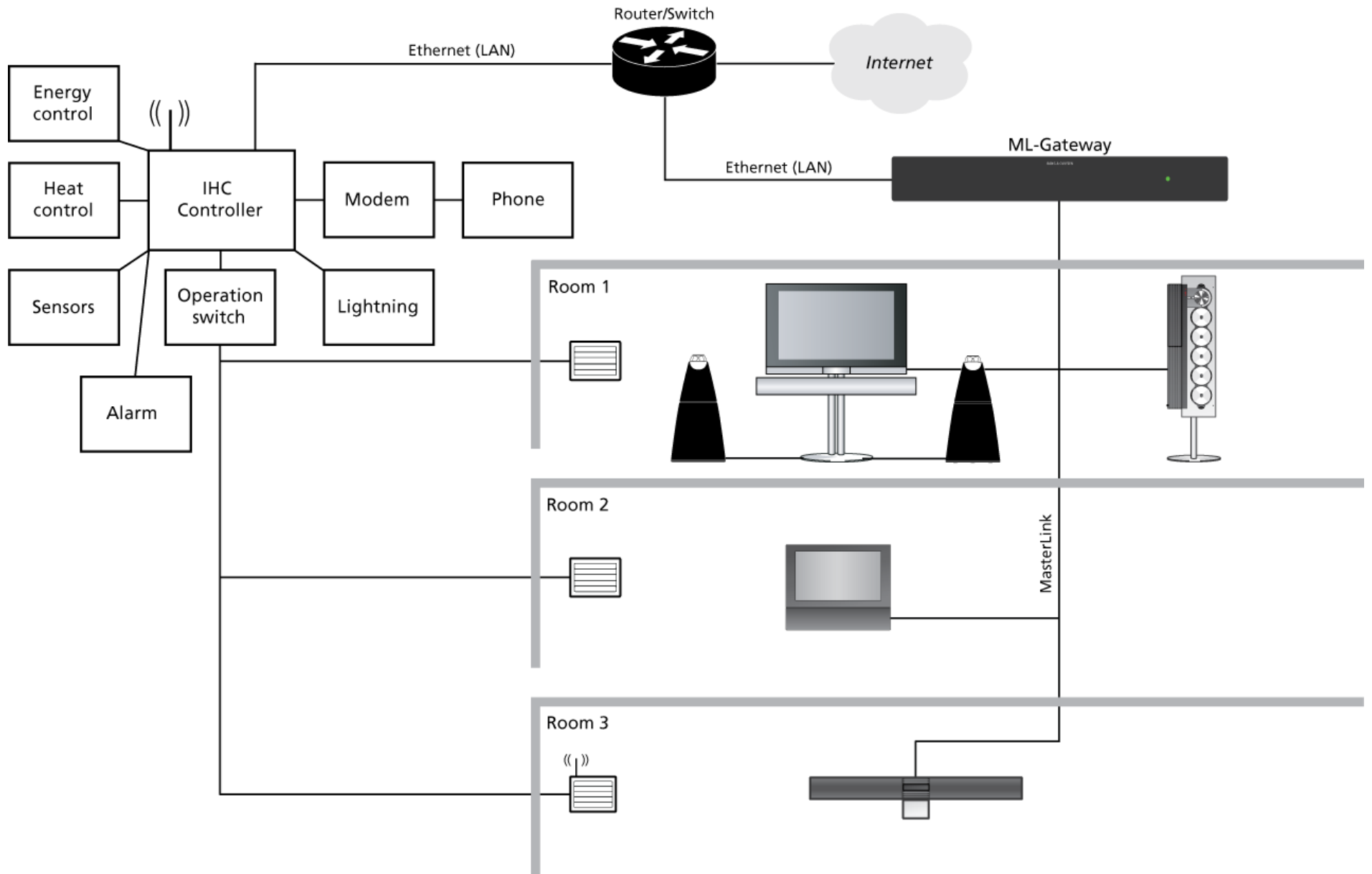
Ethernet connection (RJ45):

- LK IHC , Schneider LexControl
- Lutron Graphics Eye
- Lutron Graphics QS
- Lutron Radio RA
- Lutron Home Works Interactive
- KNXnet
- Crestron
- Clipsal

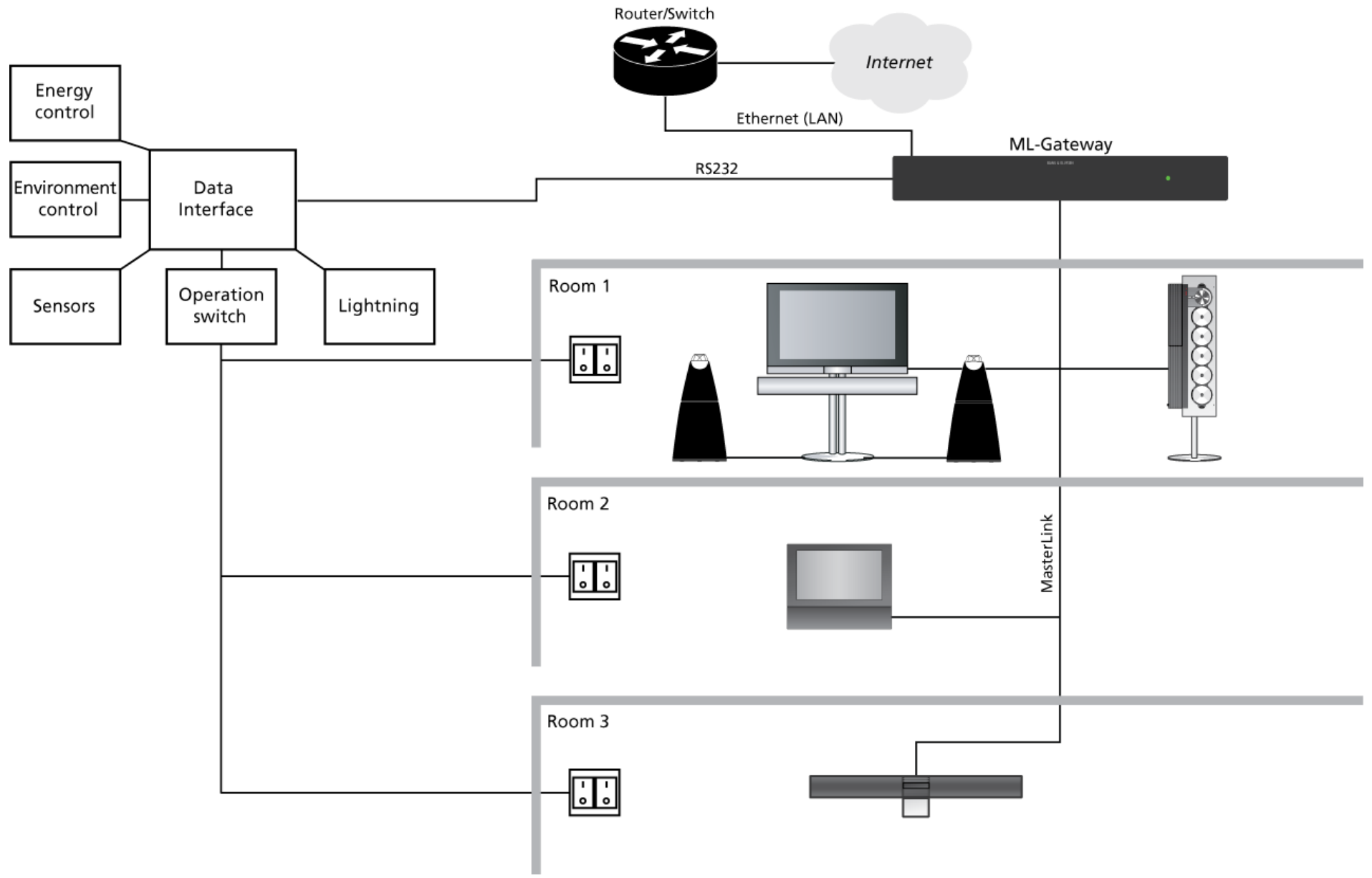
RS232 connection:

- Lutron Graphics Eye
- Lutron Graphics QS
- Lutron Radio RA
- Lutron Home Works Interactive
- KNX (FT 1.2)
- Conson Concept XP
 - ▶ RS485 → RS232 converter
- Crestron
- Clipsal

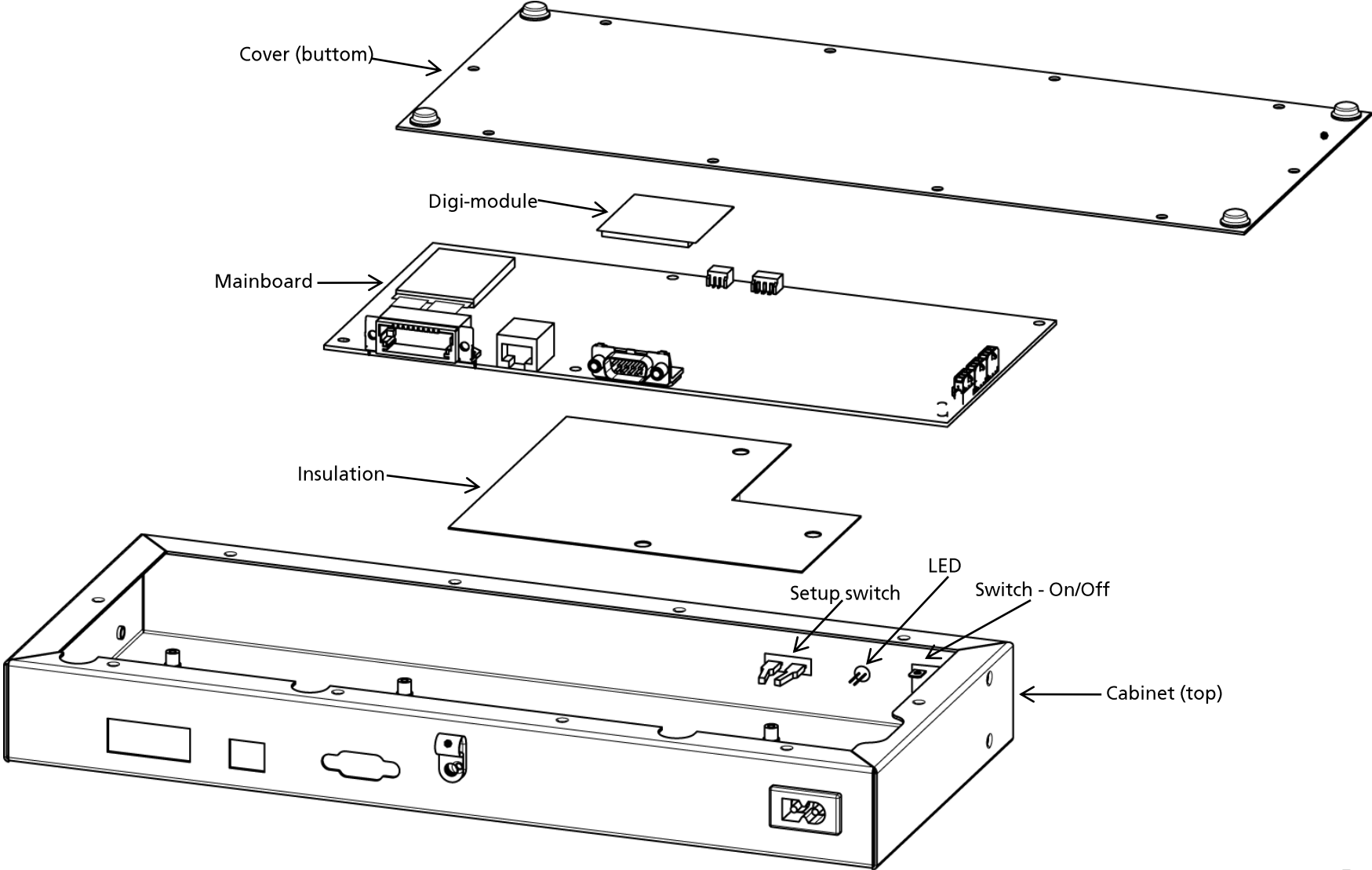
Ethernet connection - LK IHC



RS232 connection - KNX



The architecture



Front panel



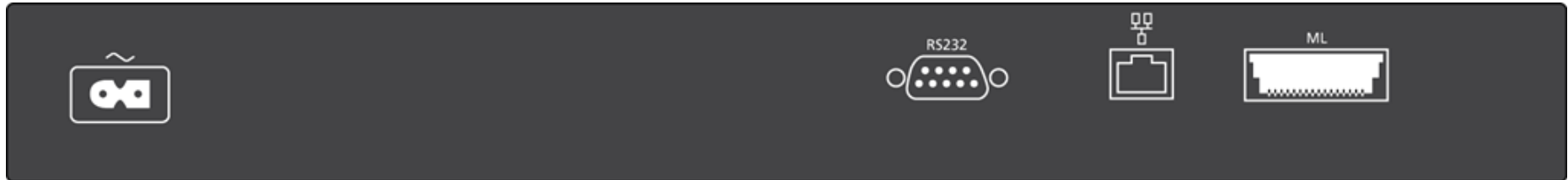
- On/off switch
- LED indicator
 - ▶ Green/Red
 - ▶ Start-up feedback
 - ▶ Error feedback
 - ▶ Software update feedback

- Setup switch and the LED
 - ▶ Supports several functions
 - ▶ The LED is the function indicator

Functions:

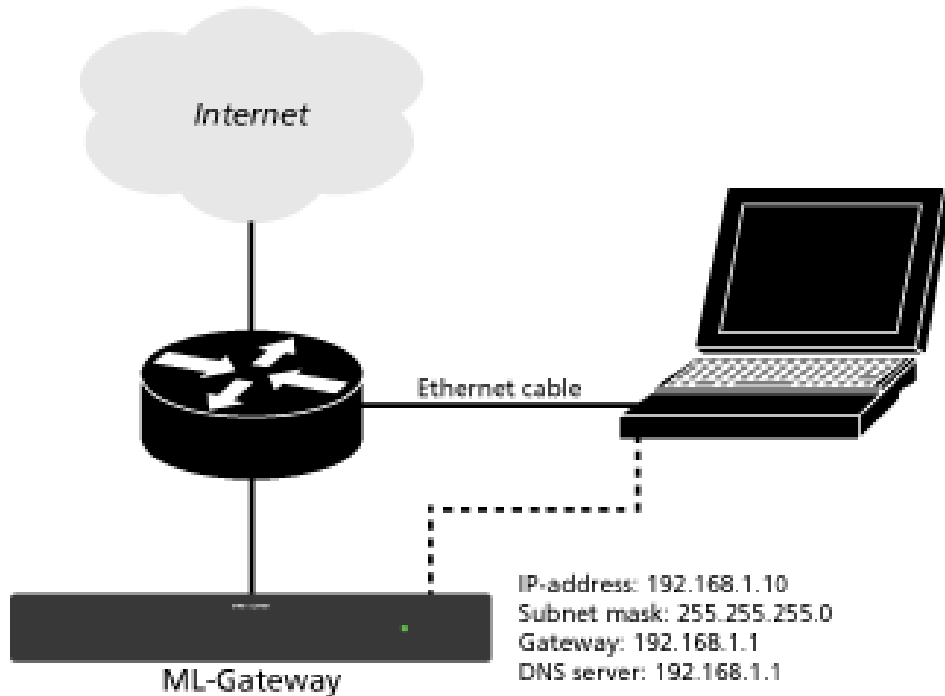
- ▶ Reset of password to factory settings
- ▶ Reset of network settings to factory settings
- ▶ Erasing of configuration. Reset of network settings and password to factory settings
- ▶ Master Link product assignment
- ▶ Recalling of original software
- ▶ Triggering of one macro

Rear panel



- Mains
- RS232
 - ▶ D-Sub9
- Ethernet
 - ▶ RJ 45 socket
 - ▶ 10/100 Mbit/s
- Master Link

Connecting a PC to Master Link Gateway



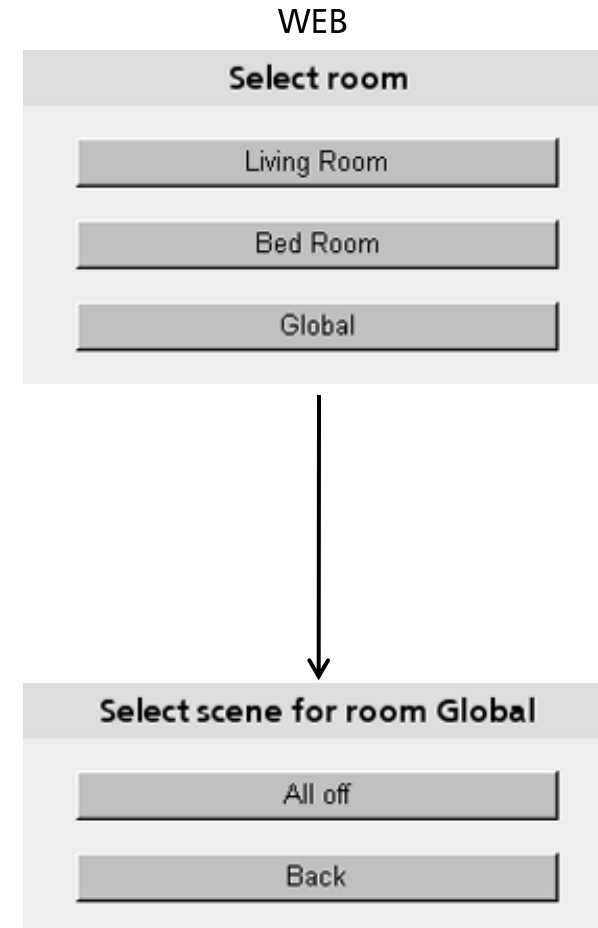
- Two ways to connect a PC to ML- Gateway
- ML-Gateway connected in a LAN
 - ▶ ML-Gateway, the PC and a Home Automation System connected at the same time
 - ▶ Recommended when a router/switch is available
- The PC directly to ML-Gateway
 - ▶ Ethernet cable from the network port on the PC to the Ethernet socket on the ML-Gateway
 - ▶ 'Cross-over' cable
 - ▶ Router / switch needed during the configuration
- Default IP-address
 - ▶ 192.168.1.10

Web-based User Interface

- Web-based User Interface
 - ▶ Access via the Internet browser on the PC
 - ▶ As to access a router
- Navigation
 - ▶ Menus can be selected in the navigation bar
 - ▶ Never use the back and forward buttons in the Internet browser
Information may be lost
- Save the settings before leaving a menu
 - ▶ Changing to another menu will not save the settings
- Help function
 - ▶ Can be accessed from a specific menu
 - ▶ Shows the relevant part for a specific menu

Start Menu

- Access to the Start Menu via the Internet browser on the PC / LapTop
 - ▶ Default IP-address in the address field
 - ▶ Default IP-address: 192.168.1.10
 - ▶ Can be changed
- Access
 - ▶ PC / LapTop - Internet, Lan & WLAN
 - ▶ Mobile phones - 3G & WiFi
- WEB panel
 - ▶ Access to the User Menus
- Setup
 - ▶ Access to the configuration and programming menus via a login box



Login to the configuration and programming menus

The login box:

- User Name
 - ▶ 'admin'
 - ▶ Cannot be changed

- Password
 - ▶ 'admin'
 - ▶ Can be changed

Enter Network Password

This secure Web Site (at 192.168.1.10) requires you to log on.

Please type the User Name and Password that you use for MLGW (use username 'admin').

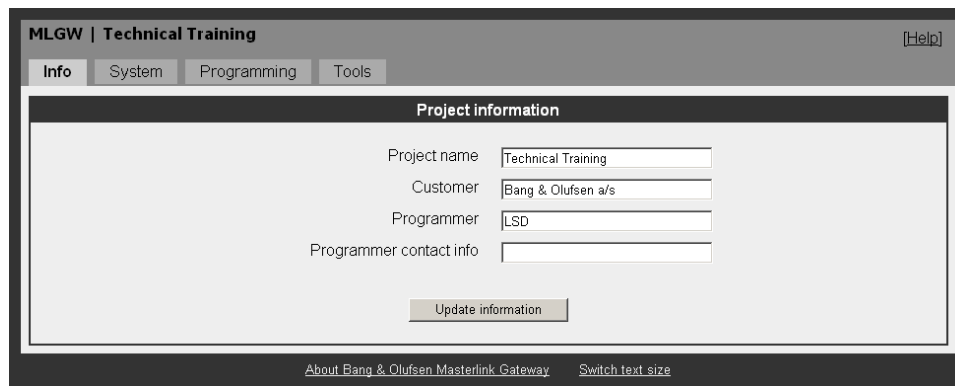
User Name: admin

Password: *****

Save this password in your password list

OK Cancel

Info Menu



The screenshot shows a web application window titled "MLGW | Technical Training" with a "[Help]" link in the top right corner. Below the title bar is a navigation menu with tabs for "Info", "System", "Programming", and "Tools". The "Info" tab is selected, displaying a "Project information" form. The form contains four input fields: "Project name" (filled with "Technical Training"), "Customer" (filled with "Bang & Olufsen a/s"), "Programmer" (filled with "LSD"), and "Programmer contact info" (empty). Below the fields is an "Update information" button. At the bottom of the window, there are two links: "About Bang & Olufsen Masterlink Gateway" and "Switch text size".

- Project name
 - ▶ Any name, number, etc.
- Customer
 - ▶ Name of the customer
- Programmer
 - ▶ Name of the technician or installer responsible for the programming
- Programmer contact info
 - ▶ Phone number of the programmer

System Menu - *Network*

The screenshot shows the 'Network Settings' configuration page in the MLGW Technical Training system. The page has a navigation bar with 'Info', 'System', 'Programming', and 'Tools'. Under 'System', there are sub-menus for 'Network', 'Date & Time', 'Text Size', 'Password', and 'MLGW Protocol'. The 'Network Settings' section is active, showing two radio button options: 'Connect using DHCP' (unselected) and 'Static connection with the settings below.' (selected). Below these are four input fields: 'IP address' (192.168.1.10), 'Subnet mask' (255.255.255.0), 'Gateway' (192.168.1.1), and 'DNS server' (192.168.1.1). An 'Apply settings' button is located below the fields. At the bottom, there is a warning: 'Changes will take place immediately. This may cause the configuration session to be terminated. In case of problems reconnecting to MLGW, network settings can be reset to factory default using the front panel button (see [help](#)).' The footer contains 'About Bang & Olufsen Masterlink Gateway' and 'Switch text size'.

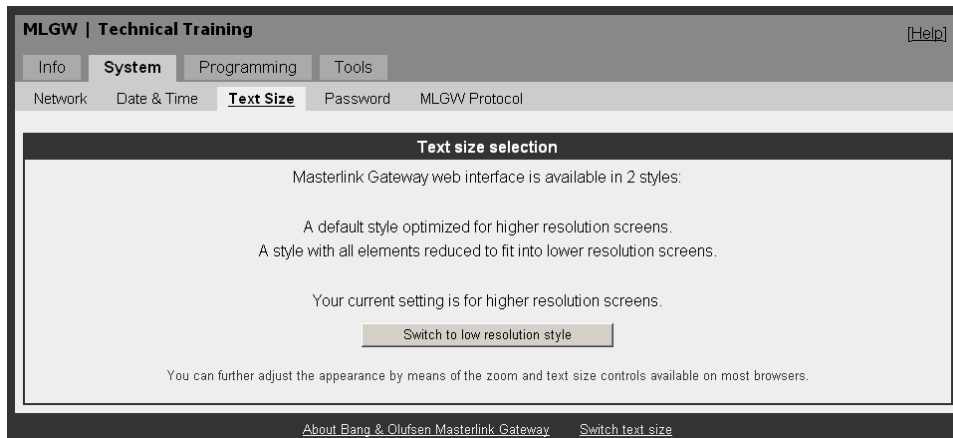
- Used to configure network settings
- Default settings
 - ▶ IP-address: 192.168.1.10
 - ▶ Subnet mask: 255.255.255.0
 - ▶ Gateway: 192.168.1.1
 - ▶ DNS server: 192.168.1.1
- Must be set to adapt to the router settings
- DHCP
 - ▶ Enable / Disable
- Recommended to use a static IP-address
 - ▶ First three octets must be set as in the router
- Subnet mask / Gateway / DNS server
 - ▶ Same settings as in the router

System Menu - *Date & Time*

The screenshot shows the 'Date and time settings' page in the MLGW Technical Training web interface. The page title is 'Date and time settings'. It displays the current system time as '1970-01-01 07:09:45'. There are two radio button options: 'Synchronize with BeoLink products' (which is selected) and 'Set the time manually to the values below:'. Under the manual settings, there are input fields for 'Date: [][][][] [YYYY MM DD]' and 'Time: [][][] [HH MM]'. A note below the time field states 'Time should be entered in 24h format'. An 'Apply date and time settings' button is located at the bottom of the form. At the very bottom of the page, there is a footer with the text 'About Bang & Olufsen Masterlink Gateway' and a link 'Switch text size'.

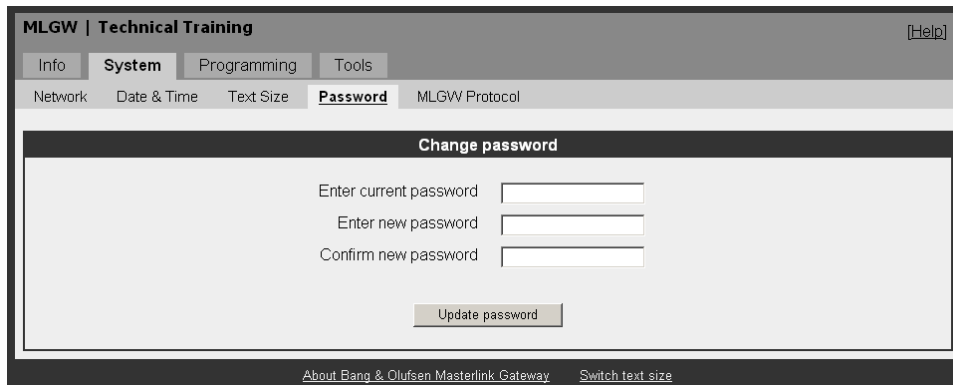
- System time synchronized with the B&O master via the Master Link
- Manual date and time settings
- A correct time setting is useful when checking the system log and the error log
 - ▶ Exact time when a fault has occurred
- Settings will be lost if the ML-Gateway has been switched off for several hours

System Menu - *Text Size*



- Adjustment of the user interface to fit the screen resolution of the connected PC / LapTop

System Menu - *Password*



The screenshot shows the MLGW Technical Training interface. At the top, there are tabs for 'Info', 'System', 'Programming', and 'Tools'. Below these are sub-tabs for 'Network', 'Date & Time', 'Text Size', 'Password', and 'MLGW Protocol'. The 'Password' sub-tab is selected. The main content area is titled 'Change password' and contains three input fields: 'Enter current password', 'Enter new password', and 'Confirm new password'. Below the fields is an 'Update password' button. At the bottom of the interface, there are links for 'About Bang & Olufsen Masterlink Gateway' and 'Switch text size'.

- Possible to change password
- Default password
 - ▶ 'admin'
- Recommended to change the password if the ML-Gateway is connected in a LAN with access to the Internet
 - ▶ To prevent intruders to access the ML-Gateway
- Possible to make a reset to the default password
 - ▶ Setup switch on the front panel
 - ▶ Function 2

System Menu - *MLGW Protocol*



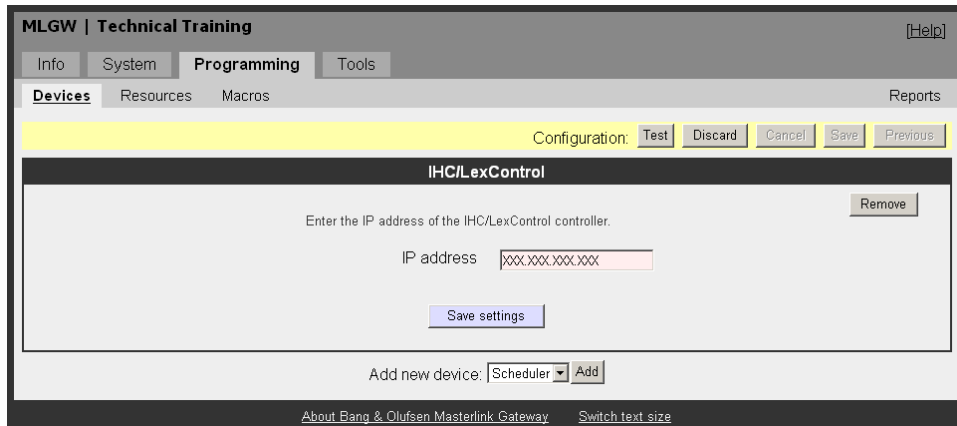
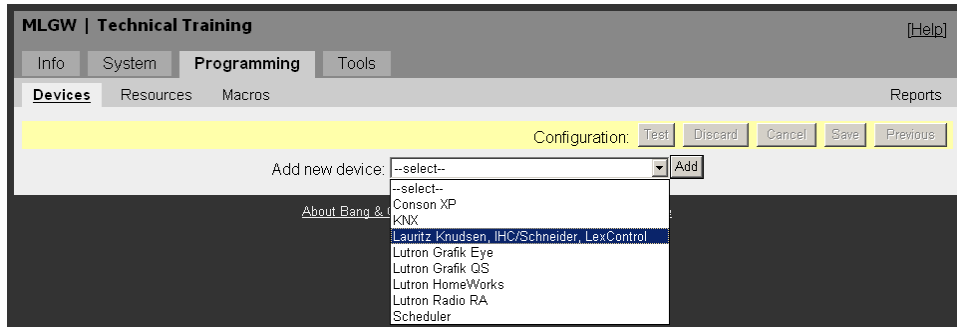
- Default settings
 - ▶ Enable MLGW protocol over IP
 - ▶ IP port: 9000
 - ▶ Enable MLGW over RS232
 - ▶ RS232 bit rate: 9600 bps

- Only used in connection with systems with fully programmable controllers
 - ▶ Crestron
 - ▶ AMX
- Possible to choose output port
 - ▶ RS232
 - ▶ TCP

Options:

- RS232 port
 - ▶ Enable / disable
 - ▶ Bit rates
 - ▶ 9600 bps
 - ▶ 19200 bps
 - ▶ 39400 bps
 - ▶ 57600 bps
- TCP port
 - ▶ Enable /disable
 - ▶ Port number

Programming - *Devices*



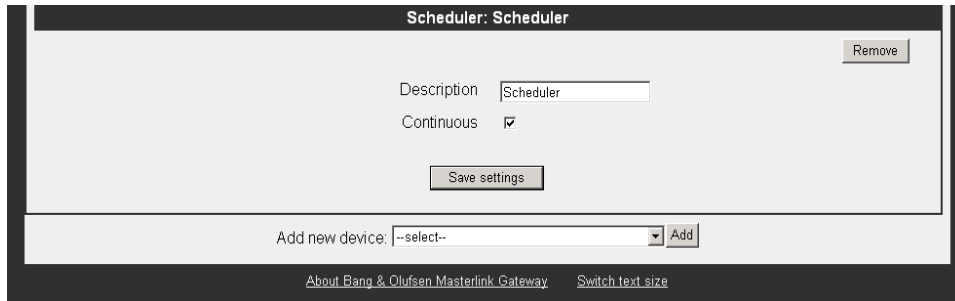
- Device = Home Automation System
 - ▶ Must be chosen in the drop-down box
- Two connection methods
 - ▶ Via the TCP port
 - ▶ Via the RS232 port
 - ▶ The output port depends on the Home Automation System
- IP-address of the Home Automation System

Programming - *Devices*

The screenshot shows the MLGW Technical Training interface. The main menu includes Info, System, Programming, and Tools. The Programming menu is active, and the Devices sub-menu is selected. The configuration page for a Lutron HWI device is displayed, featuring a 'Configuration:' bar with buttons for Test, Discard, Cancel, Save, and Previous. The device name 'Lutron HWI' is shown at the top of the configuration area, with a 'Remove' button. The configuration fields include: Connection method (Direct Ethernet connection), IP address (empty), IP port (23), login (empty), password (empty), RS232 bitrate (9600), and RS232 hardware flow control (checked). A 'Save settings' button is located at the bottom of the configuration area. Below the configuration area, there is an 'Add new device:' section with a 'Scheduler' dropdown and an 'Add' button. At the very bottom, there are links for 'About Bang & Olufsen Masterlink Gateway' and 'Switch text size'.

- Connection method
 - ▶ Ethernet connection
 - ▶ RS232
 - ▶ RS232 over IP
- IP-address
- IP-port
 - ▶ Only some Home Automation Systems
- Login
- Password
- RS232 bit rate
- RS232 hardware flow control
 - ▶ Only some Home Automation Systems

Programming - Devices - Scheduler



The screenshot shows a web interface for configuring a scheduler. The title bar reads "Scheduler: Scheduler". Inside the main area, there is a "Description" field containing the text "Scheduler", a "Continuous" checkbox which is checked, and a "Save settings" button. A "Remove" button is located in the top right corner. Below the main configuration area, there is a section for "Add new device" with a dropdown menu showing "--select--" and an "Add" button. At the bottom of the interface, there are two links: "About Bang & Olufsen Masterlink Gateway" and "Switch text size".

- Scheduler
 - ▶ Generates a time sequence of event
 - ▶ Understands 'START' and 'STOP' only
 - ▶ One or several schedulers are possible
- Must be defined
 - ▶ 'Resources Menu'
- Options
 - ▶ Continuously
 - ▶ One time only

Programming - Resources

MLGW | Technical Training [Help]

Info System **Programming** Tools

Devices **Resources** Macros Reports

Configuration: Test Discard Cancel Save Previous

BeoLink

Browse... Load resources from Beo5 project file...

Loading a Beo5 project file will automatically append rooms and products available from the file to the current list.

BeoLink rooms

Name	Room number	Delete
Main Room	1	<input type="checkbox"/>
Dining Room	2	<input type="checkbox"/>
Kitchen	3	<input type="checkbox"/>
Bedroom	4	<input type="checkbox"/>
		<input type="checkbox"/>

Define rooms from which you need to receive LIGHT and CONTROL events.

Apply changes

BeoLink products

Name	Room number	MLN	Delete
BeoVision 7-40 MKIII	1	1	<input type="checkbox"/>
BeoSound 9000	1	2	<input type="checkbox"/>
BeoLink Active	2	3	<input type="checkbox"/>
BeoLab 3500	3	4	<input type="checkbox"/>
BeoVision 6	4	5	<input type="checkbox"/>
			<input type="checkbox"/>

MLN should be a unique number between 1 and 16 for identifying each product.

Apply changes

Perform product assignment...

Instructions for product assignment will be shown before proceeding.

About Bang & Olufsen Masterlink Gateway Switch text size

- Resources = B&O products and rooms
- Products and rooms must be identified
 - ▶ Can be entered manually
 - ▶ Configuration file from Beo5 can be uploaded
- MLN
 - ▶ Master Link Node
 - ▶ Address of the products in the Master Link system

Programming - Resources - *Product Assignment*

BeoLink Product Assignment

After pressing the **Start** button below, you should wait approximately 5 minutes for MLGW to be ready for products assignment.
The front panel indicator should flash red rapidly when ready for assigning products.

Activate the products in the order given below, remembering that **Main products** must be activated selecting any source and **Link products** must be activated only selecting a source **from the main room** (don't use a local source)

Allow at least 20 seconds and no more than 5 minutes between products.
Products marked for skipping **have to be activated** in order to get to the correct MLN values assigned.

To terminate product assignment, briefly press the setup button on the front panel, or wait for 5 minutes timeout.
To abort, press the setup button for 3 seconds.

Ordered list of products to assign

MLN	Product	Room
1	BeoVision 7-40 MKIII	Main Room
2	BeoSound 9000	Main Room
3	BeoLink Active	Dining Room
4	BeoLab 3500	Kitchen
5	BeoVision 6	Bedroom

Extra products beyond this list can be activated and will be automatically appended to the list of products.

Start product assignment

Abort product assignment

- All products must be activated in the correct order of the MLN
 - ▶ On-screen instructions
- The assignment procedure must be repeated if products are added or replaced
 - ▶ The ML-Gateway must be able to identify the new products

Programming - Resources - Scheduler

Scheduler: Scheduler

Event	Wait time	Delete
Good Morning	15	<input type="checkbox"/>
Coffee	90	<input type="checkbox"/>
		<input type="checkbox"/>

Apply Changes

- Event
 - ▶ Name
 - ▶ Can be used several times
- Wait time
 - ▶ Seconds since the scheduler started

Programming - Resources - *Virtual buttons*

- Virtual buttons are used for WEB access
 - ▶ Laptop - Internet and WLAN
 - ▶ Mobile phone - 3G and Wi-Fi

Virtual buttons

Labels for special rooms

Global scenes:

Nearby scenes:

Away scenes:

Virtual buttons

Name	Id	Room	Presentation hints	Delete
<input type="text" value="Global"/>	<input type="text" value="0"/>	<input type="text" value="Main Room"/>	<input type="checkbox"/> Always visible <input type="checkbox"/> Require confirmation <input type="checkbox"/> Compact	<input type="checkbox"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="Hidden"/>	<input type="checkbox"/> Always visible <input type="checkbox"/> Require confirmation <input type="checkbox"/> Compact	<input type="checkbox"/>

Buttons on the Web Panel will be ordered by ID. Lower ID values will appear first.

[About Bang & Olufsen Masterlink Gateway](#) [Switch text size](#)

- Name
 - ▶ Name of the virtual button
- ID
 - ▶ Identifier for the virtual button
- Room
 - ▶ Association of a room with a button
- Presentation Hints
 - ▶ Always Visible
 - ▶ Button is always visible on the mobile device
 - ▶ Require Information
 - ▶ To avoid to call a function by a mistake
 - ▶ Compact
 - ▶ Smaller display area on the display of the mobile device

Programming - Resources - *Home Automation System*

Lutron Grafik Eye: Grafik

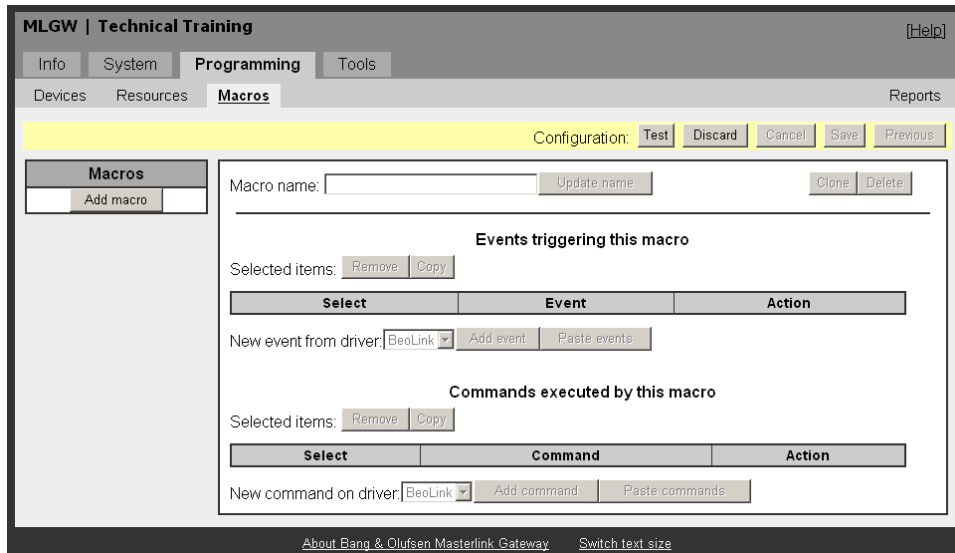
Name	Type	Address	Delete
Main Control	Control unit	0	<input type="checkbox"/>

Sort by: Name

Resources can be detected during TEST. Press TEST, activate resources, then press CANCEL. **Show detected** will display a list of resources activated during testing ([help](#)).

- Name
- Type
- Address
- Sort by
 - ▶ Name
 - ▶ Address

Programming - *Macros*



- The interaction between the different devices connected to ML-Gateway is defined by means of macros
 - ▶ A macro consists of a set of events and a list of commands
- An event - input from a Beo5 - defined in a macro will execute all commands contained in the macro
- Event and commands can be copied from one macro to another
- If the address to a resource has been changed events and commands becomes orphan
 - ▶ The background changes to another colour

Programming - Macros - *BeoLink Commands*

The screenshot shows a window titled "BeoLink command for macro: Macro 000". At the top, there is a dropdown menu labeled "Beo4 Command" and a "Change command" button. Below this, the window is titled "Beo4 Command" and contains several configuration fields:

- Product: BeoVision 7-40 MkIII
- Command: TV
- Destination: Video source
- Secondary source: DEFAULT
- Link: Remote source (main room)

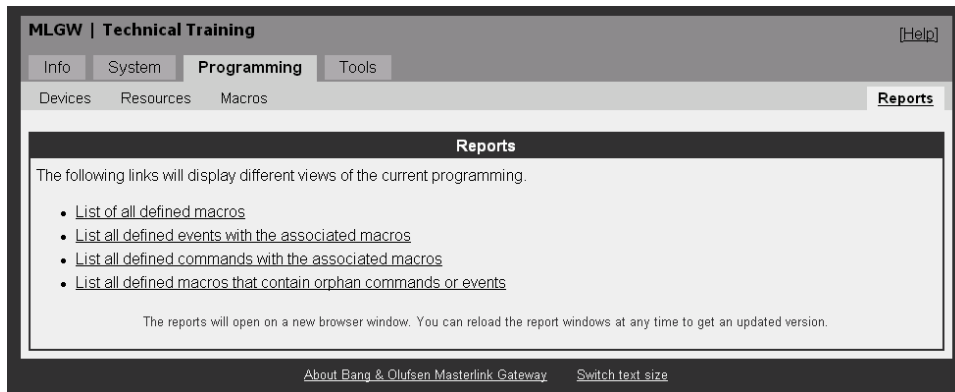
At the bottom of the window, there are two buttons: "Finish" and "Cancel".

- Product
- Command
 - ▶ TV
- Destination
 - ▶ Video source
 - ▶ Audio source
 - ▶ V.TAPE, V.MEM
 - ▶ All products (All standby)
- Secondary sources
 - ▶ Default.
 - ▶ V.TAPE, DVD2, V.MEM 2
- Link
 - ▶ Local / Default source
 - ▶ Remote source

Programming - Configuration Toolbar

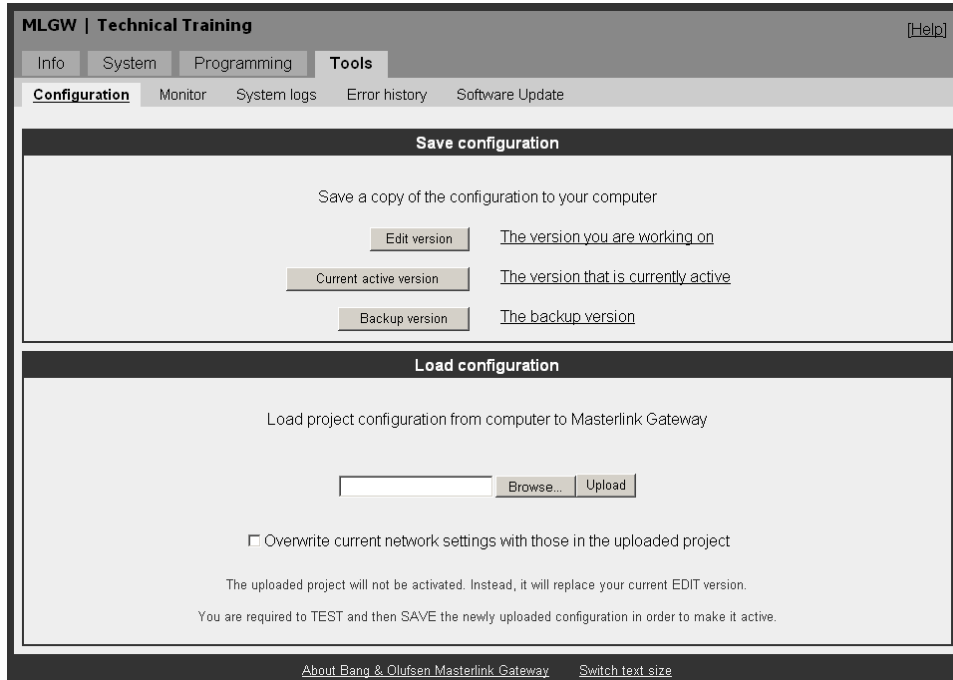
- Three configuration versions
 - ▶ The *'Active Configuration'* (Is always running)
 - ▶ The *'Edit Configuration'*
 - ▶ The *'Previous Configuration'*
- Modifications can be made in the *'Edit Configuration'*
 - ▶ Settings, resources and macros are not active
- Test of modifications
 - ▶ 'Test' button on the toolbar
 - ▶ The *'Active Configuration'* stops temporarily
 - ▶ The *'Edit Configuration'* is running
 - ▶ System and menus logs can be used to check the modifications
- The *'Edit Configuration'* to become the *'Active Configuration'*
 - ▶ By using the 'Save' button
 - ▶ The 'Cancel' button restarts the original *'Active Configuration'*
- Discard
 - ▶ The 'Discard' button reverts changes to the *'Edit Configuration'* and makes it equal to the *'Active Configuration'*
- The previous *'Active Configuration'* is changed to *'Previous Configuration'* when a configuration has been accepted
- The configurations version can be downloaded as backup and uploaded to another ML-Gateway

Programming - Reports



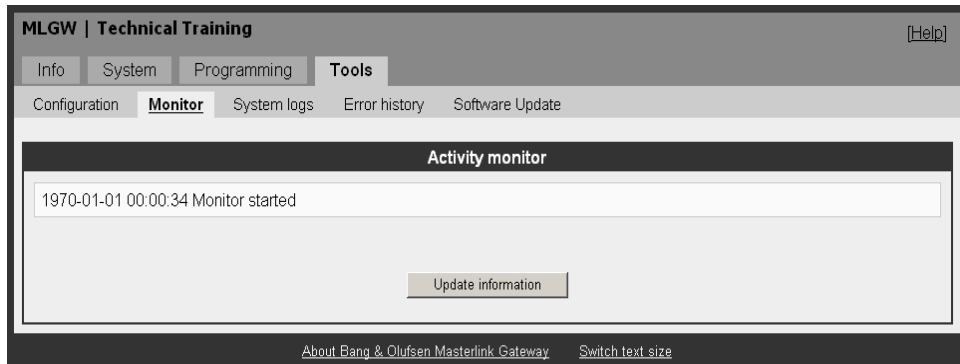
- List of all defined macros
- List of all defined events with the associated macros
- List of all defined commands with the associated macros
- List of all defined macros containing orphan commands or events

Tools - Configuration



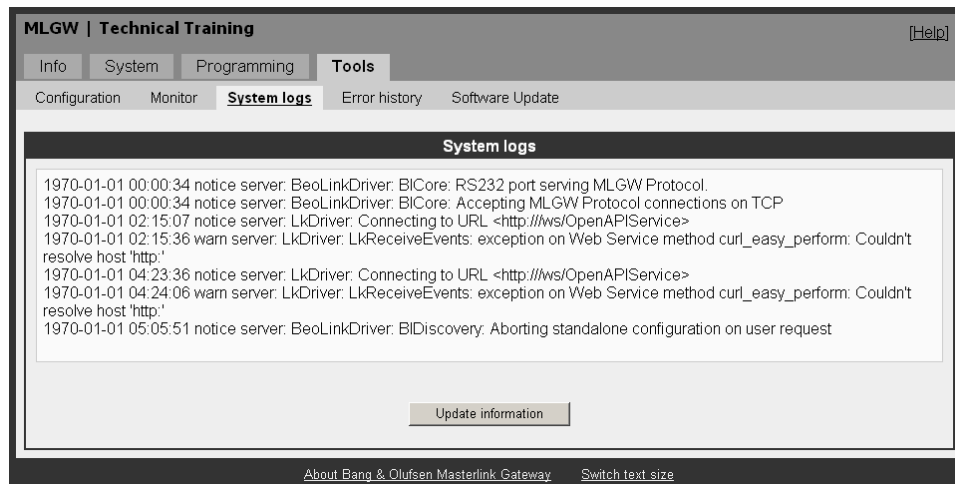
- Save Configuration
 - ▶ 'Edit version'
 - ▶ The version being working on
 - ▶ 'Current active version'
 - ▶ The running version
 - ▶ 'Backup version'
 - ▶ Previous version
- Load Configuration
 - ▶ 'Browse'
 - ▶ Browsing the PC's hard disk for the wanted configuration version
 - ▶ 'Upload'
 - ▶ Uploading the configuration
 - ▶ 'Test' + 'Save' to changes it to the 'Current active version'
- Network settings
 - ▶ Default not overwritten

Tools - Monitor



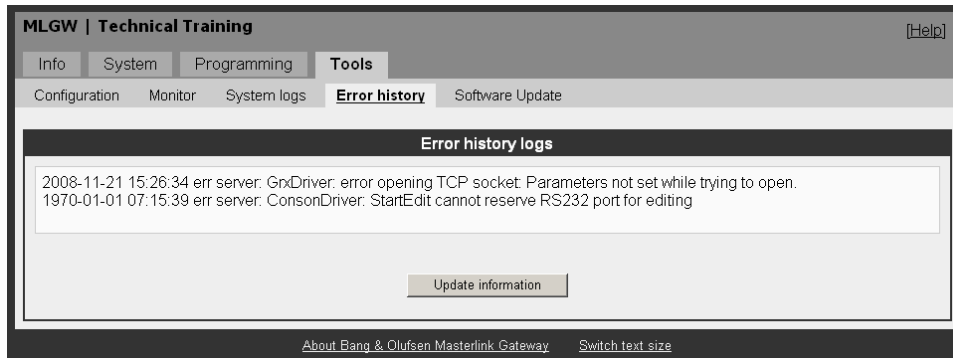
- Shows the latest 100 actions
 - ▶ Events, macros, commands
- Finds the precise addressing of components
 - ▶ Shows the event if a keypad is activated
 - ▶ Check of macros and their commands
- Command Line Interface (CLI)
 - ▶ If a more precise monitoring is needed
 - ▶ In real time

Tools - System Logs



- System messages
 - ▶ The interaction between MLGW and external devices
 - ▶ Application errors and system errors
- Can be used to verify the connection to external devices and to check incoming ML-Gateway protocol connections
- Old messages are deleted when new messages appear, due to the size of the log

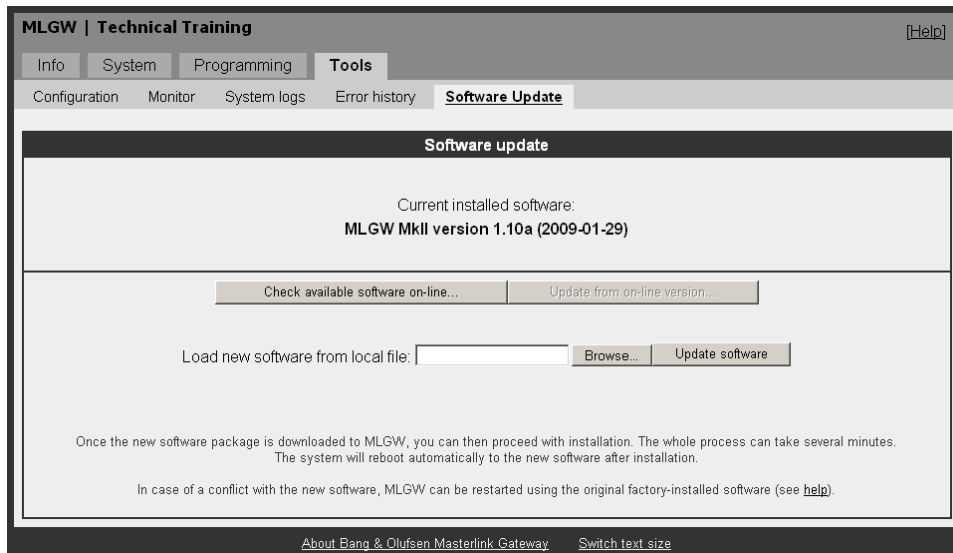
Tools - *Error History*



- Service Counters
 - ▶ Available via the Command Line Interface
 - ▶ Useful for determining error conditions
 - ▶ The time when an error occurred

- Shows errors concerning the application and operating system
- Error information are stored in an EEPROM
 - ▶ Are not lost after re-booting the ML-Gateway
- Can be used for diagnosing faults

Tools - Software Update



- Two methods for updating software
- On-line updating
 - ▶ When ML-Gateway is connected in LAN with Internet access
 - ▶ Current and new software versions are visible
- Off-line updating
 - ▶ No Internet access
 - ▶ Upload of software from a PC / Laptop

Command Line Interface

```
Telnet 192.168.1.10
login:
Logged in
MLGW > _

Telnet 192.168.1.10
login:
Logged in
MLGW > info
-----
Bang & Olufsen Masterlink Gateway MkII
-----
SN                21185935
                   4888-4888

Telnet 192.168.1.10
login:
Logged in
MLGW > counters
-----
SERVICE COUNTERS
-----
Running time      250 hours
System restarted  54 times
Power failures    50 times
Macros executed   26
App CPU flash updates 3
H8 CPU flash updates 4
-----

MLGW > netconfig
Static IP settings:
-----
IP address        192.168.1.10
Subnet mask       255.255.255.0
Gateway          192.168.1.1
DNS server        192.168.1.1
MLGW > _
```

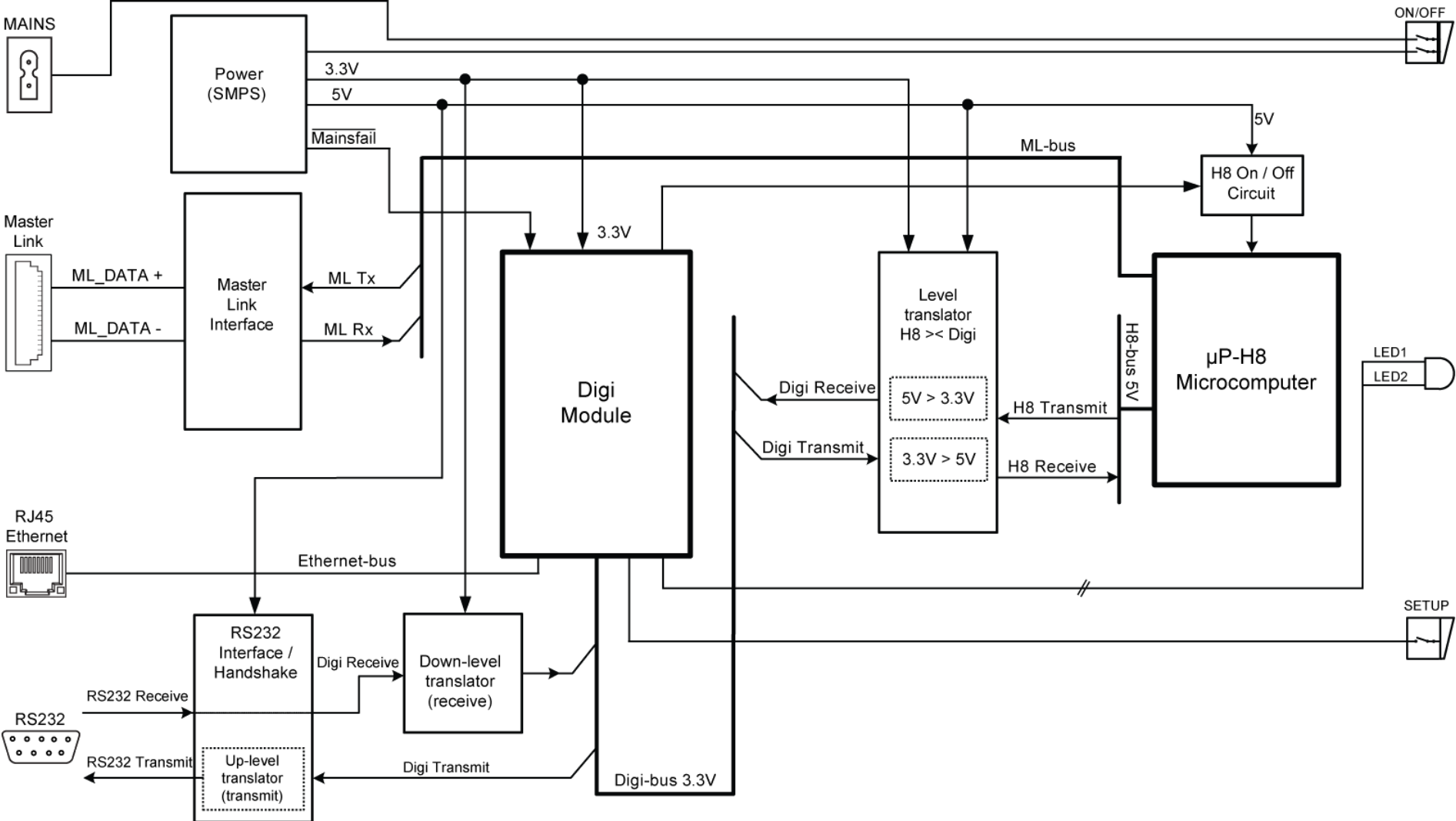
CLI Commands

- HELP
- LOGOUT
- INFO
- DATE
- DATE BEOLINK
- NetCONFIG
- NetCONFIG DHCP
- PASSWORD
- MAC
- MLGWPROTO
- MONITOR
- ALLSTANDBY
- COUNTERS

- Serial number programming
 - ▶ _SETSN xxxxxxxx

- Ship mode
 - ▶ _shipmode

Block diagram



Servicing

- On-site service
 - ▶ Static -protective Field Service Kit
- Back-up suitcase available
 - ▶ Contains a Service Manual
- Servicing in a Service Center
 - ▶ Only in a **ESD Protected Area**
- Service Manual
 - ▶ Can be downloaded from BeoWise
 - ▶ English version available as booklet
 - ▶ Part no: 3538097
- Help Guide
 - ▶ Can be downloaded from BeoWise
- Software updates
 - ▶ Can be downloaded from BeoWise
- PC / LapTop
 - ▶ For updating and configuration after a repair
- Voltmeter
- PC oscilloscope / voltmeter
 - ▶ Not a demand, but recommended

Fault finding

- Analyse the fault type
 - ▶ Software related
 - ▶ Hardware related

Software related

- Symptom
 - ▶ ML-Gateway does not work after a software update
- Use the LED and the Setup switch
 - ▶ The LED does not change from RED to GREEN after a minute
 - ▶ No visible feedback from the LED when pressing the Setup switch briefly
 - ▶ The ML-Gateway reboots automatically every minute
- Solution
 - ▶ Restart the ML-Gateway using the original installed software
 - ▶ Delete the configuration
 - ▶ Use an earlier software version
 - ▶ If the fault is inherent to the latest software

- Symptom
 - ▶ No access to ML-Gateway
- Solution
 - ▶ Check the LAN
 - ▶ Reset the network settings in the ML-Gateway (Function 3)
 - ▶ Enter network settings

- Symptom
 - ▶ "Not enough space transferring file" error
 - ▶ Temporary data takes up space in the RAM
- Solution
 - ▶ Restart the ML-Gateway in order to clear the RAM
 - ▶ During software update
 - ▶ Perform a 'Factory Reset' (function 4)

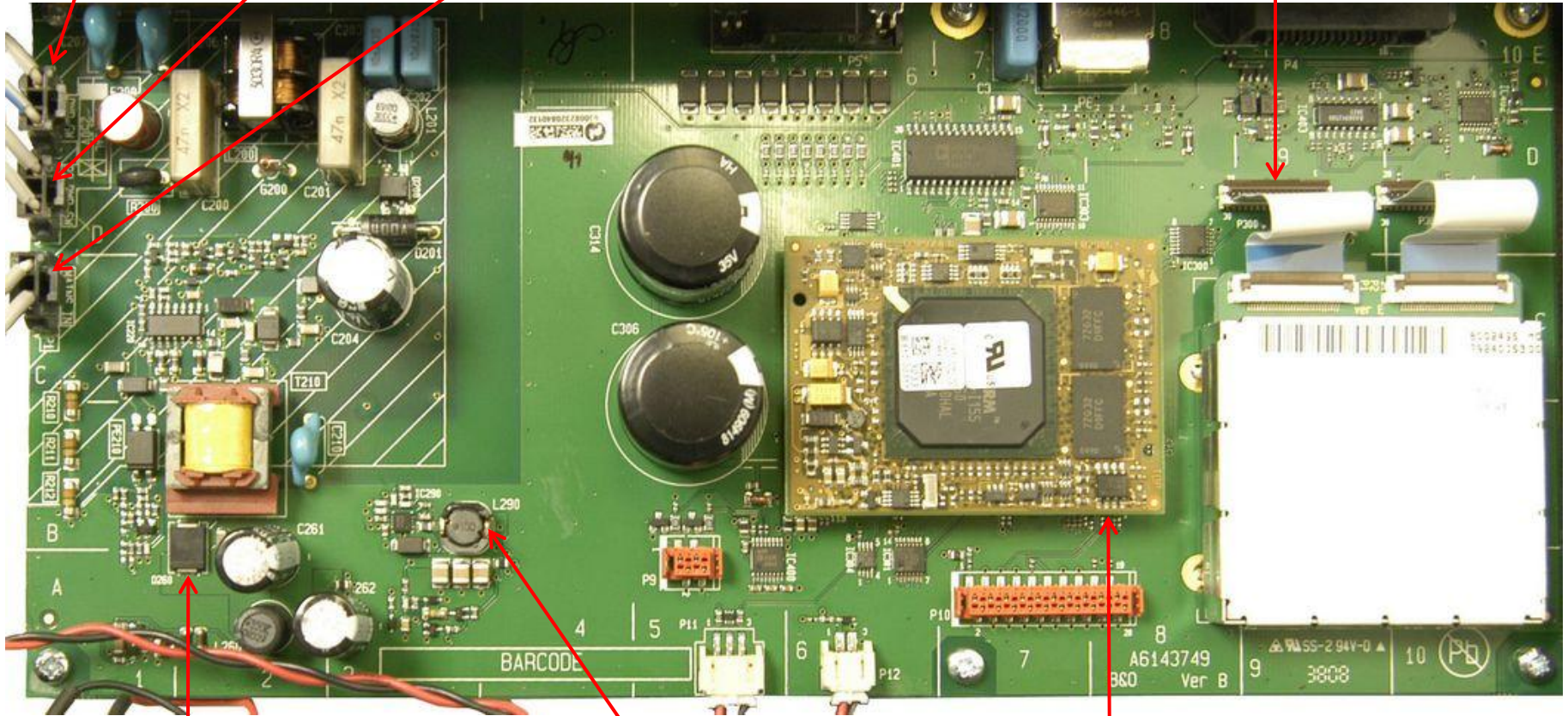
Fault finding - Measuring points

Mains voltage
- P1

Mains voltage
to switch - P2

Mains voltage
from switch - P3

5 V - P300
Pin 3



5 V
(D260)

3.3 V
(L290)

3.3 V - P302
Pin 2, 15, 16, 17

