DHD

Digital Mixing and
Routing System

RM4200D

— Manual —

Part 7

External Modules Manual

Revision: September 26th, 2006

Contents

VII. External Modules Manual

About this Book

This book contains the manual for installation and configuration of external modules for the RM4200D Digital Mixing and Routing System.

Tip: This book *does not* contain the instructions for the configuration software `Toolbox4`. You find them in Part 3 of this manual, „Toolbox4 Configuration and Reference."

While permanently developing the RM4200D Digital Mixing and Routing System, DHD has published several modules, which need to be treated separately regarding their special functionality. All the modules described in this manual were developed to increase the range of features of the RM4200D. The modules are mostly stand-alone devices connected directly or networked to one or more RM4200D systems. To make their functionality available in an existing RM4200D installation, additional software applications are needed. This manual shows, how to install external modules and to configure them using corresponding applications.

The following modules are described in this book:

1. *The RM420-015 TFT Display*. This module can be used to enhance an RM4200D Mixing console. With its 8,4 inch colored touch screen display, it gives a direct feedback of the settings a mixing operator applies to a channel. Additionally, it comes with 5 stereo level indicators, which can be connected to any available internal audio signal of the connected RM4200D.

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1 RM420-015 TFT Display

1.1 Overview

The RM420-015 TFT Display is an extension module for the RM4200D Digital Mixing and Routing System.

It supports operators with a direct visual feedback of their changes on parameters - it shows filter curves as well settings of dynamics. Additionally, the panel comes with 5 stereo level indications to display arbitrary signals from a RM4200D. Finally, 4 indicator fields can be assigned with logic sources from a RM4200D to show for example „On Air" or „Redlight" states.

The Panel is touch sensitive and enables the operator to set parameters or to select, which parameters are displayed on the panel.

1.2 Installing the panel

The integration of an RM420-015 TFT Display into an existing RM4200D installation is not complicated. Both systems exchange data via TCP/IP, so both need to be connected to a ethernet switch (100MBit/s). A standard network cable (3m) is included.

The Display comes with an external power supply, which feeds the module with 48V DC.

Note: The RM420-015 TFT Display can *not* be powered with 24V from the RM4200D device. Please use the external power supply included in the shipment to power the module.

To mount the Panel savely on a table, the housing is supplemented with a massive metal stand. This stand needs to be fixed with adequate screws.

Caution: The RM420-015 TFT Display is an electronical device with no active cooling, for example by fan. Operation heat is lead away from the device by natural convection. Therefore the display **must not** be mounted into any kind

of housing or frame, which blocks the air grille on the backside and disallows cooling air to flow around the chassis.

1.3   Important information for operating the panel

Important Note: Only one RM420-015 TFT Display can be used together with one DSP Frame. Do not use more than one panels in combination with one DSP Frame. Use the Panel only in applications as described in this manual.

Data exchange between TFT Display and RM4200D is handled via a direct TCP/IP connection. While sharing level data of up to 5 stereo signals, a very high traffic is generated between both devices. As the bandwidth of the CAN bus is the bottleneck of the system's communication structure, the user has to take care to keep the total data traffic in an RM4200D within the limits.

These limits cannot be numeralized, because traffic on an RM4200D is related to different parameters , such like *type of commands*, *type of protocol*, *duration and amount of commands*, *buffer states* and so on.

The TFT display can be easily operated together with an RM4200D, even if this console is driven in a network, sharing a lot of networked logics (Global Logics, Global Resources, Global Potentiometer, ...) with other consoles. If traffic reaches or exceeds the internal bandwidth, the console may process delayed. If there are more commands than the system can handle at a time, these data is buffered.

Note: Processing buffered data may cause delays. This behaviour is uncritical, but could have an unsightly side effect: the levelmeters on the TFT screen may be displayed stagnant.

The slow down of the displayed levels is a temporary effect, as long as the exceeding of bandwidth is caused by traffic peaks. If an RM4200D is operated under contantly high traffic conditions, the unsightly effect of stagnant meters reduces the effectivity of the TFT display. That is the reason for the following specifications, when operating an RM4200D in combination with an RM420-015 TFT display:

* Make sure, that your DHD devices are operated in a physically separated network.
* Network devices have to be interconnected with 100MB/s switches, port speed „Auto Sense".
* Do *not* use the **RM420-553 Remote Control Software** in combination with an RM420-015 TFT display on the same console!
* Use the **RM420-551 DSP Control Software** only with reduced transfer rate when combining it with an RM420-015 TFT display on the same console! To start the software with a reduced transfer rate, create a shortcut to the „access4.exe" file, open the properties of this shortcut and enter „access4.exe - i 1000" into the target field.

Important Note: The data stream of level information from an RM4200D is immediately stopped, whenever the connection between the TFT display and the RM4200D is interrupted. It reestablishes automatically, when both are connected again.

1.4 Preparing the RM4200D Mixing Console

The RM420-015 TFT Display is able to display up to 5 stereo level indicators. The signals which are indicated by the bargraphs need to be configured in the RM4200D device. Inside the RM4200D, an already known function is used to realise the indicator level information - the logic source **Level Detection**.

Important Note: The Firmware of the RM4200D must be upgraded to **5.05.09** or higher to enable the exchange of level data.
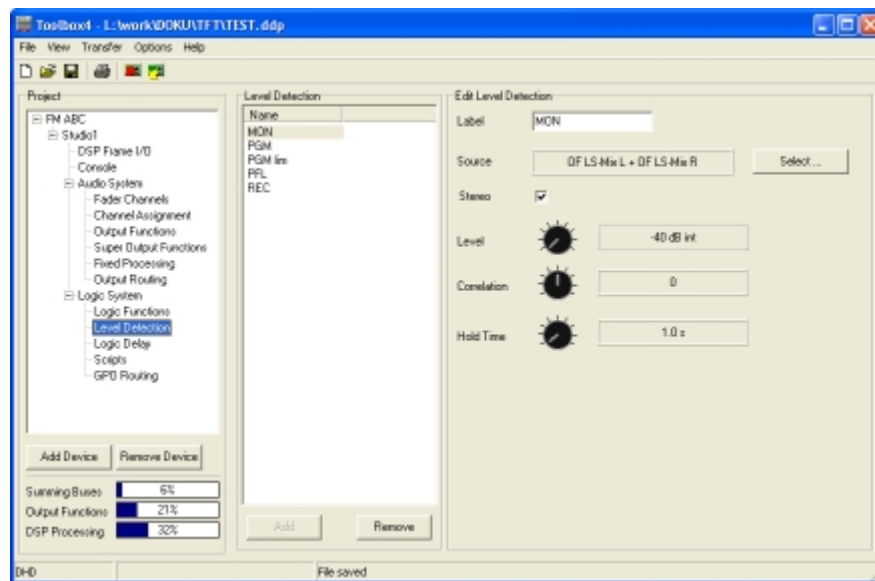

Figure 1–1: To enable the level indicator bargraphs, up to 5 Level Detections can be configured.

The logic source Level Detection is still available as a known RM4200D feature in the Toolbox4. By clicking the Select... button, the Audio Sources window opens. You can assign any of the available sources. Depending whether the selected source is stereo or mono, the dedicated checkbox Stereo needs to be checked or not. The potentiometer values Level, Correlation and Hold Time do not have any influence on the PPM bargraphs.

It makes sense to assign important internal signals as sources for the level detection (PGM out, PFL, Monitoring).

Important Note: Up to 5 Level Detections can be configured in one RM4200D device. If a level detection is still used for another internal functionality (i.e. „Silence detection"), you can parallely use the same Level Detection to feed a stereo indicator of the RM420-015, or you can configure the Touchscreen panel, not to use this Level Detection.

Each Level Detection is feeding *one* stereo indicator. The large bargraph on the left-hand side is connected to Level Detection 1. The following scheme is showing the relation between Level Detections and the indicators.

Figure 1–2:   **RM4200D Level Detections and RM420-015 level indicators have a fixed relation**.

Tip: If you would like to indicate the levels of more than 5 sources, choose an output function containing a rotary monitor selector as source for a `Level Detection`.

1.5 TFTConfig - Configuring the panel

Using the software

The software to configure the Panel is called `TFTConfig`. It is included within every shipment.

`TFTConfig` is a normal Windows program. It does not require any additional DLLs or other files. For installation, copy the program file on to the hard drive of your PC. To remove the program, just delete its program file. Start the software by opening the file `TFTConfig.exe`.

Important Note: The usage of the `TFTConfig` software is only specified for Windows XP and Windows2000 PC systems.

You can use the software without the RM420-015 hardware, e.g. to change or check configurations "offline". However, in most cases the configuration PC is connected to the Display.

Note: Using Ethernet to connect the `TFTConfig` software to the RM420-015 TFT Display requires the correct configuration of the IP addresses.

The File Menu

New

With this command you can generate a new, empty configuration file. Alternatively you can create a new file by hitting the following icon:

Open

Use this command to open an existing TFT configuration file. The dialogue for file selection is displayed; only RM420-015 configuration files are shown. The files bear the suffix

*.TFT .

Alternatively you can open the file dialogue by hitting the following icon:

Save (Ctrl+S)

With this command you can save the currently open TFT configuration. If you have started with a new file, you will be asked for a filename. A file dialogue opens in which you can enter name and location for the new file. If a file already exists, the existing file will be overwritten.

You can also call the command by hitting the following icon:

Save As...

With this command you can save the currently open TFT configuration as a file with another name. A file dialogue opens in which you can enter name and location for the new file. If a file with the same name already exists, you have to confirm the overwriting.

After saving, the script editor progresses in the new file.

Exit

This command closes the configuration software. If the current file contains still unsaved changes, an according dialogue will ask you to save them.

The View Menu

Test Colors

The function `Test colors` switches on a test mode for the logic indicators. With `Test Colors` activated, the software displays the configured colors for the logic indicators.

Figure 1–3:   **Test colors displayes the configured colors for the logic indicators**.

You can also call the command by hitting the following icon:

TFT Display setup...

`TFT Display setup...` opens a dialogue to specify the interconnection between the TFT display and an RM4200D. In the first text field (`TFT Display module name`), you can enter a name for the RM420-015 TFT Display. This name is basically used to simplify your work.

Hit the `Select...` button to choose an RM4200D configuration file (*.ddp) containing the device which should be connected to the TFT display. After selection, all devices configured in your *.ddp file are listed in the `TFT Display connects to device` menu. Choose the desired device from this list.

The interconnection of TFT display and RM4200D system is based on TCP/IP. Therefore, the display needs to know the current IP address of the RM4200D. Click the `Detect current` button to read the IP address of the desired device.

Finally, hit the `OK` button to confirm the settings, or press `Cancel` to discard them.
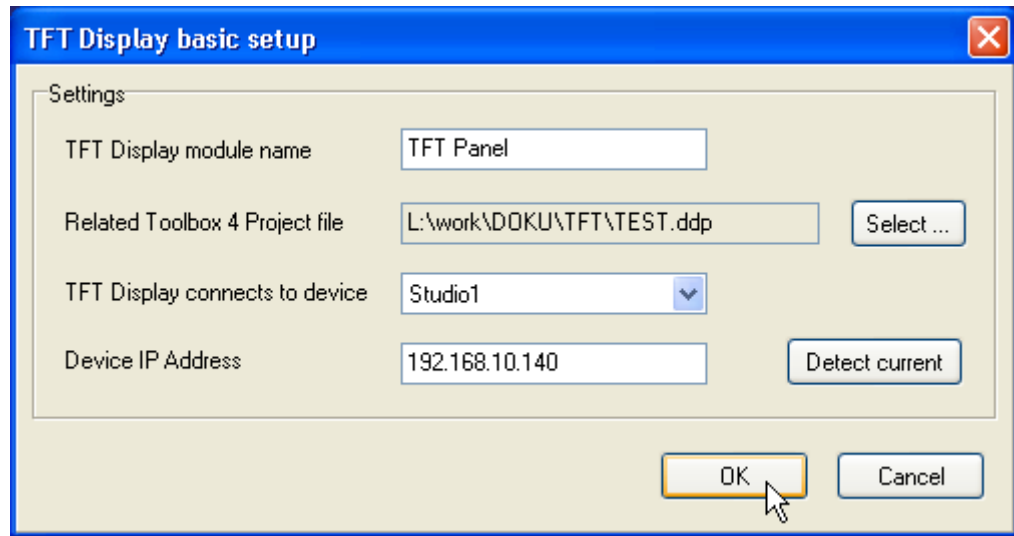
Figure 1–4:   **The TFT display setup window is used to set the interconnection between RM4200D and RM420-015 TFT Display.**

Note: To operate together, TFT display and RM4200D system need to be networked via ethernet. The devices have to be connected to the same subnet sharing one IP range. Please refer to Part 5 of this manual, Installation Guide, to learn more about networking RM4200D devices.

Maintenance Window

As already known from the `Toolbox4`, also the `TFTConfig` software comes with a maintenance application. It is called Maintenance Window, too, but provides several different options and features.

These changes were necessary because of the completely new hardware and software concept, the RM420-015 TFT Display is based on.

The maintenance window will be explained in a later abstract of this manual.

The Transfer Menu

Load to TFT display...

This command copies the current configuration from the `TFTConfig` software into the selected RM420-015 TFT Display. First choose the command `Load to TFT display`. In the DHD connection dialog you can select the desired Device. After confirming the selection, the new configuration is transferred. Due to the small amount of data, the transfering process is quite fast. No process bar will be shown during upload.

Caution: Loading a new configuration irrecoverably overwrites the older configuration available in the TFT display. Therefore, if in doubt, save the current configuration to file before modifying it using the command Load from TFT display.

You can also execute the function `Load to TFT display...` by clicking on the icon

in the toolbar.

Load from TFT display...

This command loads the configuration from a RM420-015 TFT Display into the `TFTConfig` software. In the DHD connection dialog, you have to select the corresponding panel, too.

Caution: Please remember that the modification caused by the download can not be undone as soon as the project file is saved. Thus, you should always work with copies of the original configuration files.

You can also execute the function `Load from TFT display...` by clicking on the icon

in the toolbar.

The Help Menu

About...

Here, the creation date of the software and version of the `TFTConfig` software is displayed, e.g. "Version 1.0.2 Build 0". For service enquiries please always quote this version description completely.

The main window

In the main window of the `TFTConfig` software, you can adjust the settings for the level and logic indicators. If you move the mouse cursor over the display layout, all configurable fields will be highlighted.

If you click a highlighted level indicator field, you can configure its label and check, whether it should be enabled or not.

Figure 1–5: Click a selected level indicator field to enter a label for it. Confirm the changes with OK to assign the label.

There is no possibility to define an assignment of RM4200D Level Detection signals to the level indicators. This assignment is automatically done. (See "Figure 1–2: RM4200D Level Detections and RM420-015 level indicators have a fixed relation." on page 5.)

If one of the highlighted logic indicators is clicked, a setup window is opened to define settings. You can set a label for the indicator and assign a color for it. The assignable colors will be shown later, when the Test colors mode is activated.
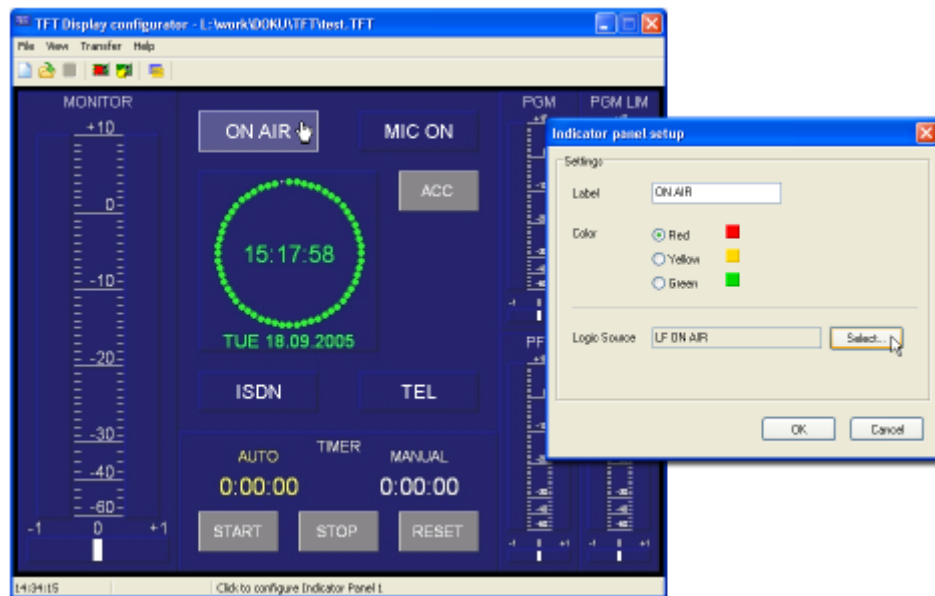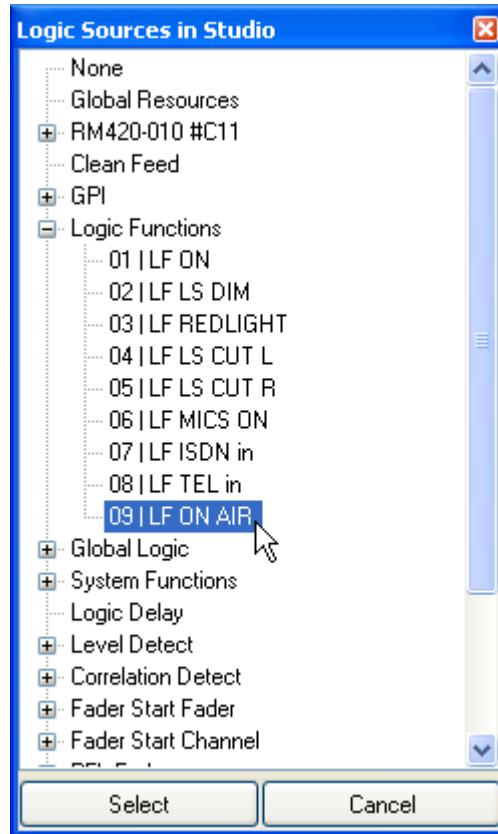

Figure 1–6: Click a selected logic indicator field to enter a label for it. After setting the color and assigning the related logic source, confirm your settings with OK.

Clicking the `Select...` button besides the `Logic Source` field opens the `Logic Sources` window as known from the `Toolbox4`.

This window shows all available logic sources of the connected RM4200D, which can be assigned to the logic indicators. Select the source you would like to indicate and press `Select`. The source will be listed in the `Logic Source` text field. Whenever this logic source is activated during operation, the indicator will be lit in the configured color.

By clicking the clock symbol a window opens, which enables the user to configure own shortcut labels for the displayed days in the date line beneath the clock. If nothing is changed here, the default values are the english days in 3-digit code (MON, TUE, WED,...).

The Status bar

The status bar below the main window displays the current PC time (hh:mm:ss). It also indicates, if the loaded `TFTConfig` file has been changed („Modified") and shows context information about the highlighted area in the main window.
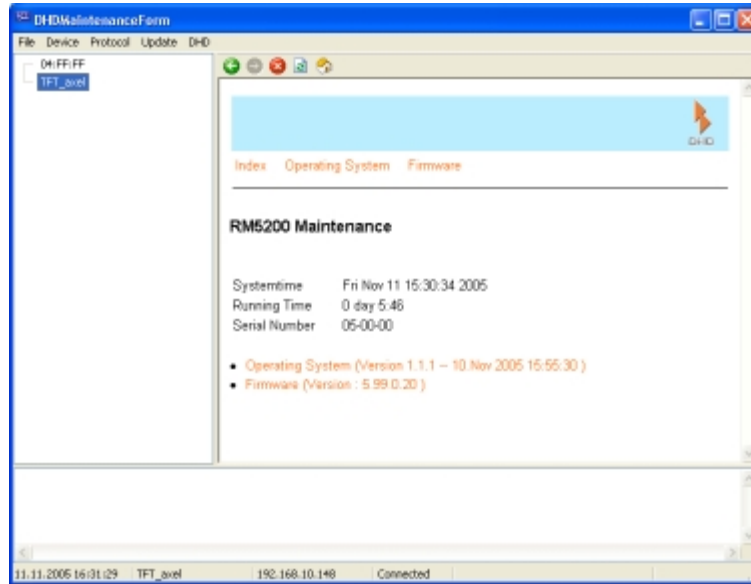
1.6   The Maintenance Window - F7

The Maintenance Window of the `TFTConfig` software has been renewed completely and is only basically comparable to the known Maintenance Window of the `Toolbox4`. This changes became necessary because of a new hardware and software concept, which is introduced with the TFT display.

The display is driven by a microcontroller, which runs an operating system *separated* from the systems firmware. While communication from or to the display is handled

by the operating system, the firmware manages any handling of audio or logic commands.

This separation i.e. allows to do firmware upgrades or resets without influencing the operating system.

The Maintenance Window is devided into three parts.
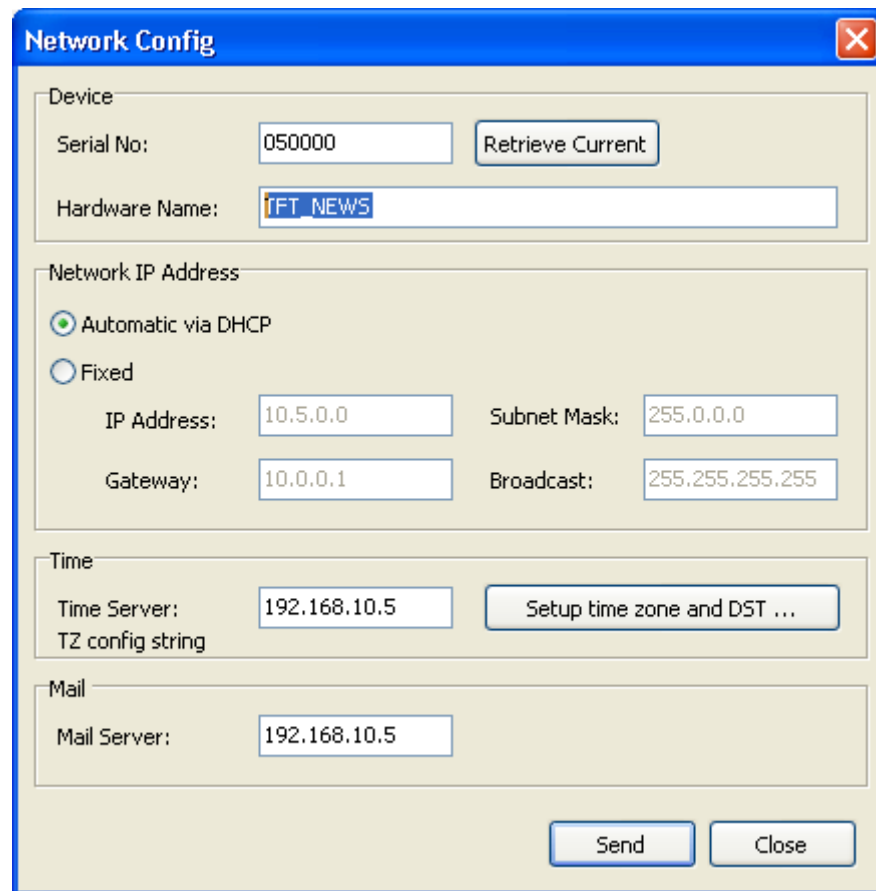
Device list

The column on the left-hand side shows all available TFT Displays and RM5200D devices inside the network, your PC is connected to. The value listed here is called **Hardware Name**. Each device has a fixed Hardware Name, which can be manually assigned. This name has to be unique. If no name is entered, a device is listed with its MAC address. This MAC address is already known from the RM4200D systems.

Network Config

If you right-click a device in the device list, a context menu is shown.

Important Note: Make sure that you enter IP addresses in the correct format (xxx.xxx.xxx.xxx).

Device

The `Serial No` represents the last 3 bytes of the MAC address of a device. If a device is still running in your network, but is not reachable due a different IP configuration, you can enter its MAC address (printed on its back) in the `Serial No` field and press the `Retrieve Current` button. The IP configuration is downloaded and can be changed.

Enter a `Hardware Name` in the corresponding field to be able to identify your hardware later.

Network IP Address

Enter the network settings for your device here. If the device is configured automatically `via DHCP`, all other fields are deactivated.

Select `Fixed` to manually insert your settings. If in doubt about what to enter here, please contact your network administration for the correct values.

Time

In order to synchronize the clock shown on the display, the device needs to listen to a `Time Server` in your network. A Time Server is represented by an application running on a networked PC. If you do not already have a Time Server installed, you can find several software solutions in the internet.

Note: If no Time Server is available in your network, the clock is not shown in the TFT display.

Hit the `Setup time zone and DST...` button to specify your time zone settings.

Mail Server

In case of a support request, you are directly able to send system information to DHDs' support via the maintenance window. Therefore, a Mail Server IP address needs must be configured.

If you have finished your settings, hit the `Send` button to transfer the settings to the dedicated device (identified by the Serial Number)

Click the `Close` button to close the window.

Firmware Reset

This command forces a reset of the devices' firmware. During a reset, the device will not disappear from the device list. The display will not be switched off. Instead, all indicators freeze for a while and the display refreshes completely after a couple of seconds.

Important Note: If you have changed the time zone configuration, you need to restart the firmware.

System Reboot

With this command, you can reboot the complete system, including its operating system. The system reboot is a deeper engagement into the systems operation state. The display will be switched off while the operating system reboots. After about 20 seconds, the device should be back running.

Note: A reboot of the system is only necessary, if the module obviously behaves strange.

System information

If you select one of the listed devices by clicking on its name, the main display right besides the device list shows some basic details about the selected device. The most important information for service enquiries is listed here:

- `Operating System (Version 1.1.1 -- date)`: This is an information about the version of the operation system.
- `Firmware (Version : 5.99.0.20 )`: This line indicates, which firmware version is used on the device.

Please have this information present for service requests.

Protocol window

In the lower part of the Maintenance Window, protocol messages sent by the connected devices are shown.

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