Series 52

52/RX Mixing Console Installation Guide

Version: 1.1.0

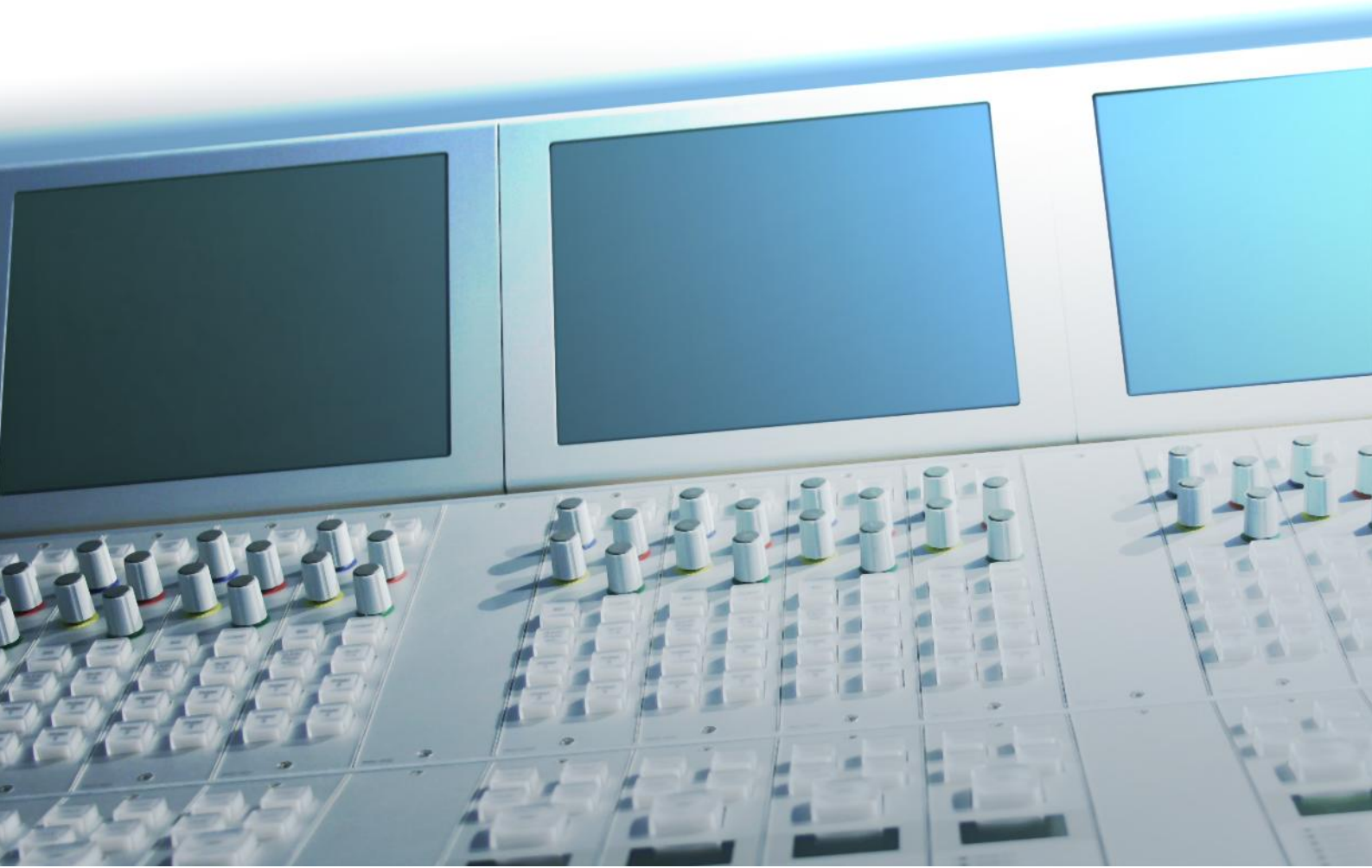


Table of Contents

1 Terms of Use - Legal Disclaimer

Series 52

52/RX Mixing Console Installation Guide

Version 1.1.0, 14.12.2009

2 About this Book

This installation guide will provide you a short introduction how to install an 52/RX Mixing Console.

The content of this manual is subject to change without notice. DHD recommends to visit the DHD website once in a while to check if there is a newer version of this document available.

Note

This manual mainly refers to the physical installation of an 52/RX Mixing Console. Please find more information on this device in the 52/RX manual.

Please see the RM4200D manual to get more information on the RM4200D DSP Frame.

The configuration of the 52/RX Mixing Console and the RM4200D DSP Frame is described in the Toolbox5 configuration software manual.

How to Use this Book

The Navigation Tree

You can find the navigation tree on the left-hand-side of the PDF document. Via the entries of this tree you can directly reach the several chapters and sections of this document. Click onto the text or the  symbol of an entry to display its content.

If a chapter includes further sections, you will find a plus-symbol in front of the entry in the navigation tree. Either you can click onto this plus-sign or you double click the text or the symbol of the entry to make the sub-branches of the further sections visible.

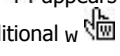
Search

You can find an alphabetical ordered list of keywords at the end of the document. Please see the page numbers in this index to find the respective keywords in the document.

Moreover, you can use the search function of your PDF reader to seek for any words.

Links

Links are underlined to separate them from the rest of the text. These links can be a connection to other chapters or sections in the same document or to an URL (internet address).

- Same document: The hand symbol  appears if you move the mouse over the link.
- URL: The hand symbol with an additional  appears if you move the mouse over the link.

Please notice, that you need an active internet connection to be able to execute a link to an URL.

The Meaning of Advices in the Text

Warning 	The demands and advices in this fields should be followed **unconditional**, because otherwise hardware and software products, data bases, as well as persons may suffer a loss.
Important 	The demands and advices in this fields should be followed, because these contents are necessary for the proper operation of the DHD systems.
Note 	Recommendations and further information are marked as notes. Sometimes you will also find off-topic content in this field, which is related to the actual topic.
Tip 	Tips are helpful advices, which should make work with DHD systems easier.
Weblink 	In this fields you can find links to websites, which include for example an other manual or the possibility to download a driver for the respective DHD system. Please notice, that you need an active internet connection to be able to execute a link to an URL.
Download 	You can directly open and download a file if the respective link is marked as download link (file link).

3 What is new in this version of the manual?

All sections that had been added, deleted or changed are listed below. Click on the entries to reach the respective sections directly.

Initial version (1.1.0):

Chapter / Section	State	Note
All sections.	added	Information added.

4 Environmental Specifications

In the following you can find some general advices concerning the environment of an 52/RX. If these values and standards are not adhered, DHD can not assure the proper functionality of the device.

Warning

Make sure the device has the operating temperature before switching it on. Also, the relative humidity must not be exceeded. Above all, **no humidity must condense on or in the device**!

operating temperature: +5 ... +35° Celsius

relative humidity: 20 ... 85%, non condensing

Note

Please note the environmental specifications of the RM4200D DSP Frame, which is connected to the 52/RX Mixing Console. Information on that can be found in the RM4200D system reference guide.

5 Assembling and Wiring the Hardware

In the following you can find information on the mechanical assembling and wiring of an 52/RX Mixing Console and how to integrate it into a mixing system.

Warning

Avoid damaging components by electrostatic discharge (ESD).

Before you touch or mount electronical components, make sure you do not carry any electrostatic charges. Earth yourself using a grounded metal object (heater, rack) to divert electrostatic charges immediately before you touch electronical components.

5.1 System Wiring

Note

You need an RM4200D DSP Frame with at least one RM420-852/853 Communication Controller to operate an 52/RX Mixing Console.

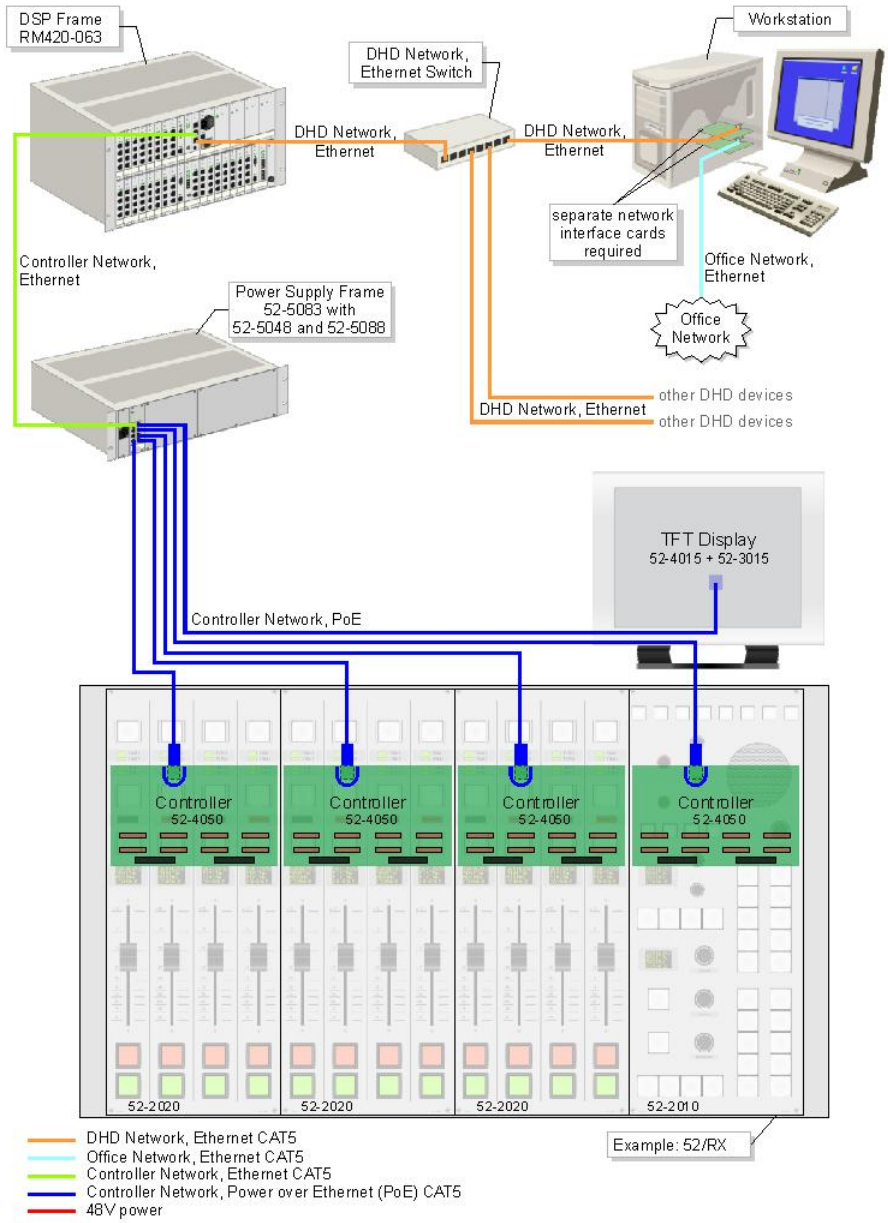
The mixing system consists of two main parts, which are coupled via an industry standard ethernet connection. These parts are:

- **The DSP Frame.** This unit includes all input and output modules, the DSP Audio Engine and the Control Engine.
- **The Mixing Console.** This is the user interface of the mixer with all faders, control knobs, push buttons, displays and TFT screens.

The following example picture should explain the basic structure how to wire a 52/XR mixing system. You have to keep in mind that it is possible to arrange 52/RX Mixing Consoles with different numbers of fader and control modules and TFT displays. Because of this and several powering options, it is not possible to mention every wiring possibility in the following, but the basic structure is always quite the same.

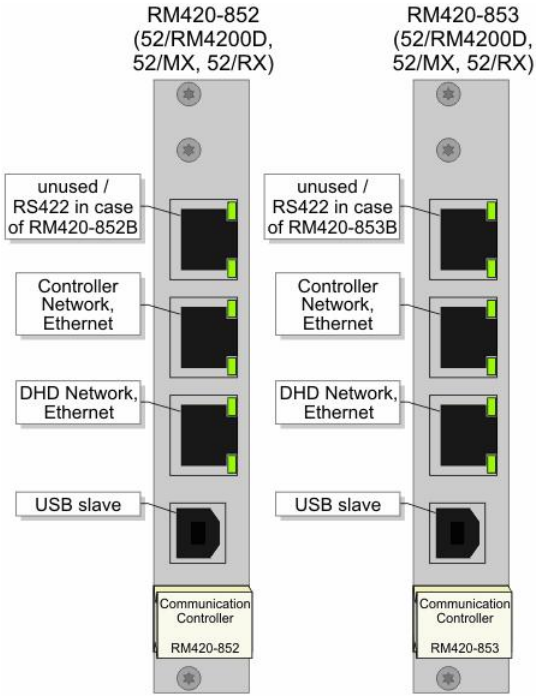
Note

To power the modules of the mixing console, you need at least one PoE switch (Power over Ethernet) and a power supply.



DSP Frame and Control Desk coupled via ethernet.

The Communication Controller RM420-852/853 in the DSP frame is the communication interface between the DSP frame and the connected modules on one side and the ethernet network for configuration and controlling on the other side. You can find three RJ45 connectors and one USB interface on this module.



Controller modules for the 52/RX.

Since the revision RM420-852B/853B, the upper RJ45 connector provides an RS422 interface (not useable as RS232). On previous modules this port has no function.

The middle connector of the three jacks is the interface to the controller network. Connect your console(s) to this RJ45 jack. Therefore, connect this port to a PoE switch, as well as all the fader and control modules and TFT displays. All modules of this network own an unique IP address, which should not be changed. In the system drawing above the required PoE switch is installed in a power frame. It is also possible to mount the PoE switch next to the console and to use a separate power supply.

For configuration and controlling processes, as well as communication with other DHD Systems, the device can be connected to a PC or a local network via the lower RJ45 connector. The DHD system can get any IP address in this network.

Use the USB port of the communication controller module if you want to connect directly to the device for maintenance.

General Information

Please use CAT5 cables continuous for wiring. But DHD recommends to use CAT6 cables for longer distances. The maximum length of the Ethernet cable between two modules of the Controller network is **100 meters** (for instance between the Communication Controller of the DSP frame and a PoE switch or between a PoE switch and 52-4050 Controllers - that are included in the 52/XR fader and control modules. Use only switches in the DHD network and the controller network, which are shipped and/or recommended by DHD for the usage in these networks. Especially the switches must be **Unmanaged Switches** working with a speed of **100 Mbit/s**.

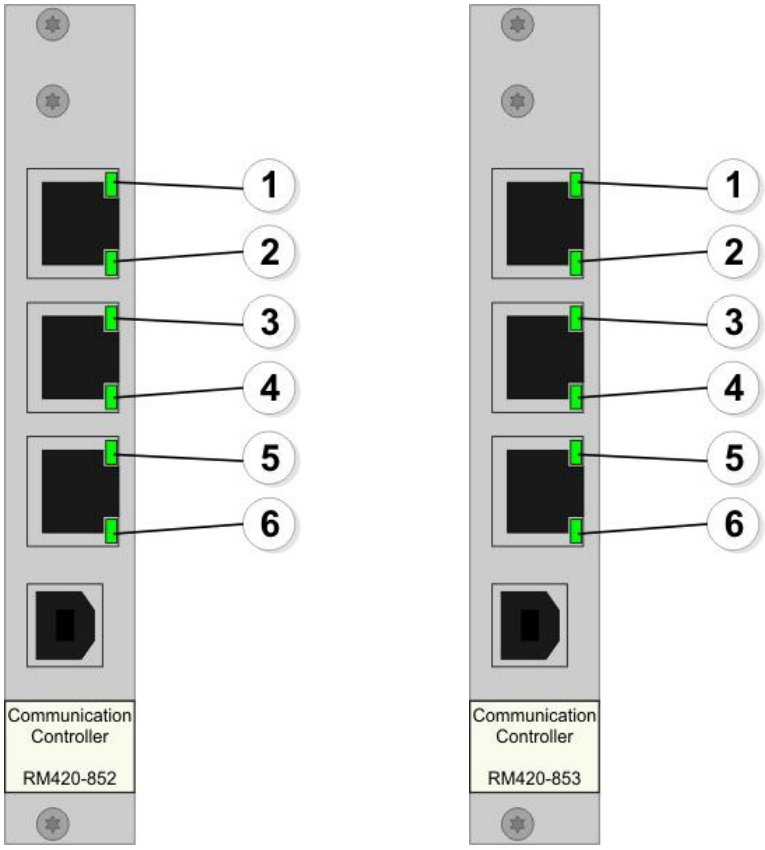
The following switches are tested by DHD and are recommended for the usage in DHD Ethernet networks:

Manufacturer	**Type**
3com	Superstack 3, Baseline Switch 16 Port 10/100 Ref. 3C16470
3com	Superstack 3, Baseline Switch 24 Port 10/100 Ref. 3C16471

Manufacturer	Type
Allied Telesyn	AT-FS713FC/SC 12x RJ45 1x SC http://www.alliedtelesyn.de
Allied Telesyn	AT-FS708 8x RJ45 http://www.alliedtelesyn.de

5.1.1 Meaning of the Controller Module LEDs

The meaning of the LEDs are identical for the RM420-852 and the RM420-853 Communication Controller modules.



Meaning of the LEDs of the RM420-852 and the RM420-853 Communication Controller modules.

1. Reserved for future functions.

2. RM420-852/853: Reserved for future functions. | RM420-852B/853B: Booting process successful ("Done"), must always turn on several seconds after switching on or resetting the module. During operation, the LED is then permanently illuminated. On the RM420-852/853 the corresponding LED is located behind the front panel above the USB connector and is only visible through the little gap.

3. This LED is permanently on if a connection is established to the controller network.

4. The LED flashes during data is received from the controller network.

5. This LED is permanently on if a connection is established to the DHD network.

6. The LED flashes during data is received from the DHD network.

5.2 Calculating the Power Consumption

The following facts are important for the choice of power supply units for 52/RX Mixing Consoles.

- Use two 52-5048 power supply units for **larger mixers** with redundancy option inside the 52-5081 or 52-5083 power supply frames. The maximum power consumption in total is 200W.
- Use two 52-5048 power supply units for **several smaller mixers** with redundancy option inside the 52-5081 or 52-5083 power supply frames. The maximum power consumption in total is 200W.
- You may also use two 52-5047 power supply units for **smaller mixers** with redundancy option inside the 52-5081 or 52-5083 power supply frames. The maximum power consumption in total is 100W.
- Use the 52-4048 desktop power supply for **smaller mixers** in **non redundant** installations. The maximum power consumption in total is 100W.
- PoE switches are not included in all 52/RX fader and control modules or table installation frames.
- Use 52-4080 PoE switches mounted close to the console or 52-5088 PoE switches inside the 52-5083 power supply frames.

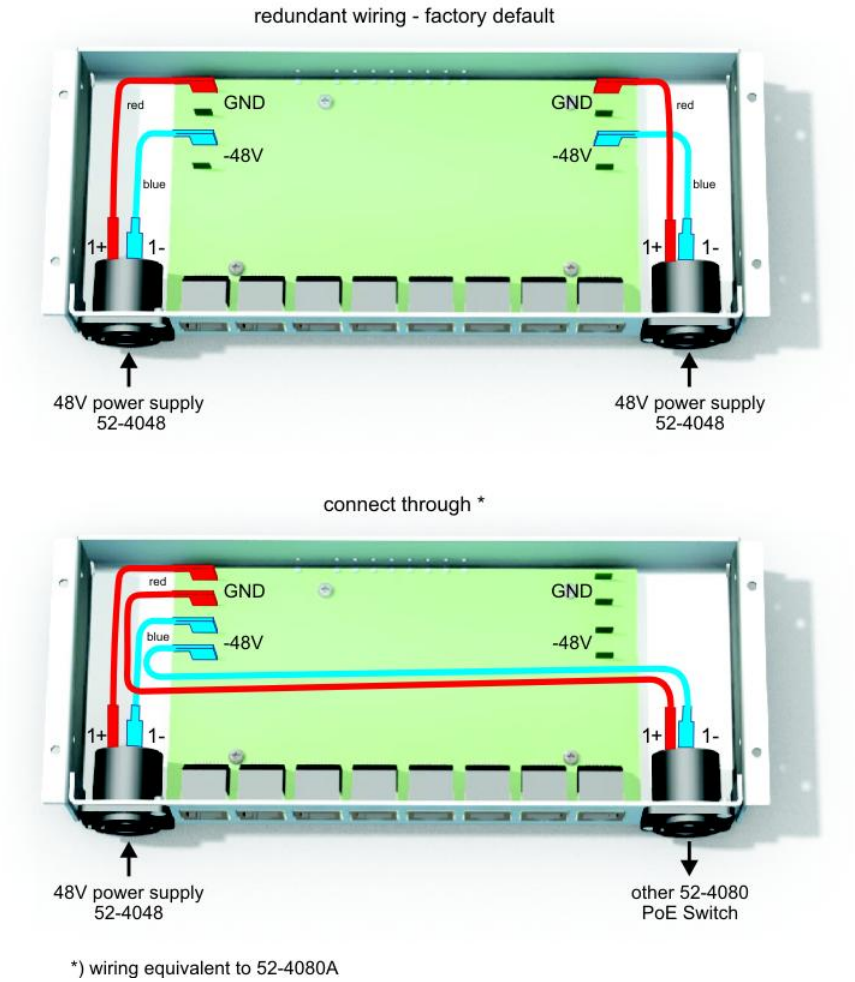
Important

There are two 48V connectors on each 52-4080 PoE switch. At revision A of the PoE switch (52-4080A), the second speakon connector can be used to chain to another 52-4080. Do not connect two power supplies to a 52-4080A to achieve redundant power supply! There is no diode included in the 52-4080A!

Revision B of the PoE switch (52-4080B) provides the option to connect a redundant power supply to the module. Nevertheless, in revision B it is still possible to connect through the PoE switch to another PoE switch. Please take care about the internal wiring!

52-4080B PoE Switch, power wiring

Important:
If a 52-4080B PoE switch is operated in redundancy mode, audible noise can arise due to the connected 52-4048 Desktop Power Supplies, since no load share is effected by these power supplies.
Load share is effected in the Power Supply Frames 52-5081 and 52-5083 in combination with the Power Supply modules 52-5047 or 52-5048. Moreover, apart from using 52-4080B PoE switches, it is possible to install 52-5088 PoE switches in the Power Supply Frames 52-5081 and 52-5083.



Power wiring possibilities of the 52-4080 PoE switch.

Please use the following information to calculate the power consumption of your 52/RX Mixing Console.

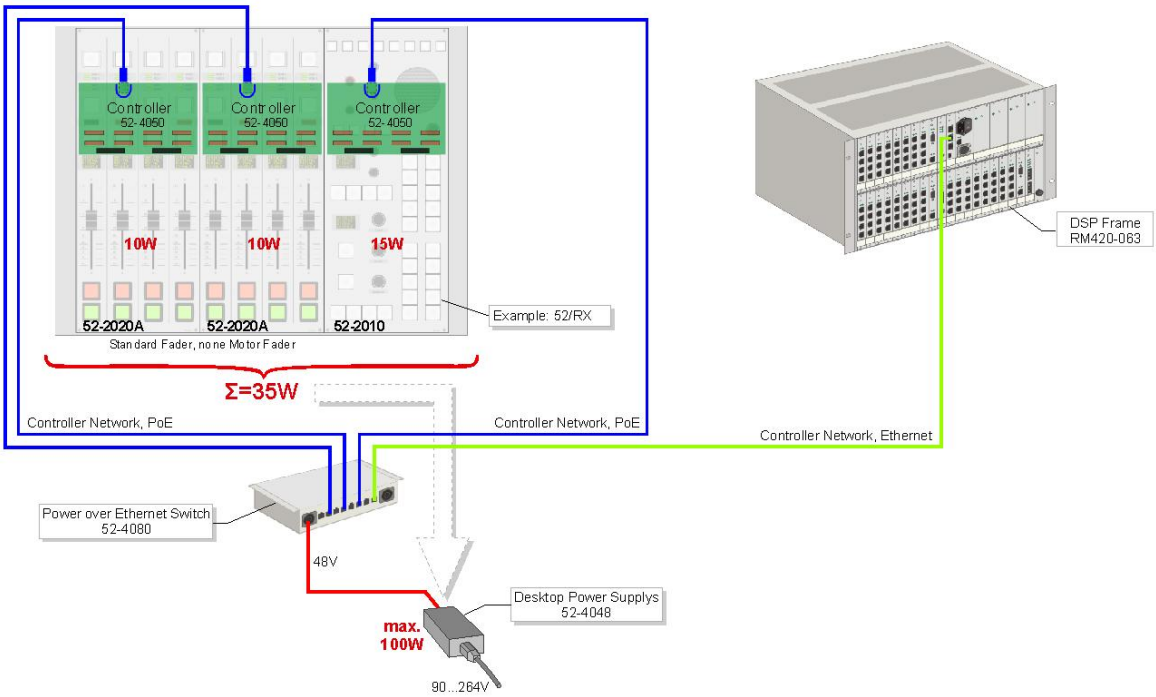
- Calculate with 10W for each TFT display 52-4015A or 52-4017A.
- Calculate with 10W for each non-motorized fader module 52-2020A, 52-2020B and 52-2029A.
- Calculate with 15W for each motorized fader module 52-2020M and 52-2029M.
- Calculate with 15W for each central module 52-2010.

Example A: 8 fader modules 52-2029A + 1 control module 52-2010 + 1 TFT display 52-4015 = 8 x 10W + 1 x 15W + 1 x 10W = 105W.

Example B: 3 fader modules 52-2020M with motorized faders + 1 control module 52-2010 = 3 x 15W + 1 x 15W = 60W.

5.2.1 Power Consumption Example 1

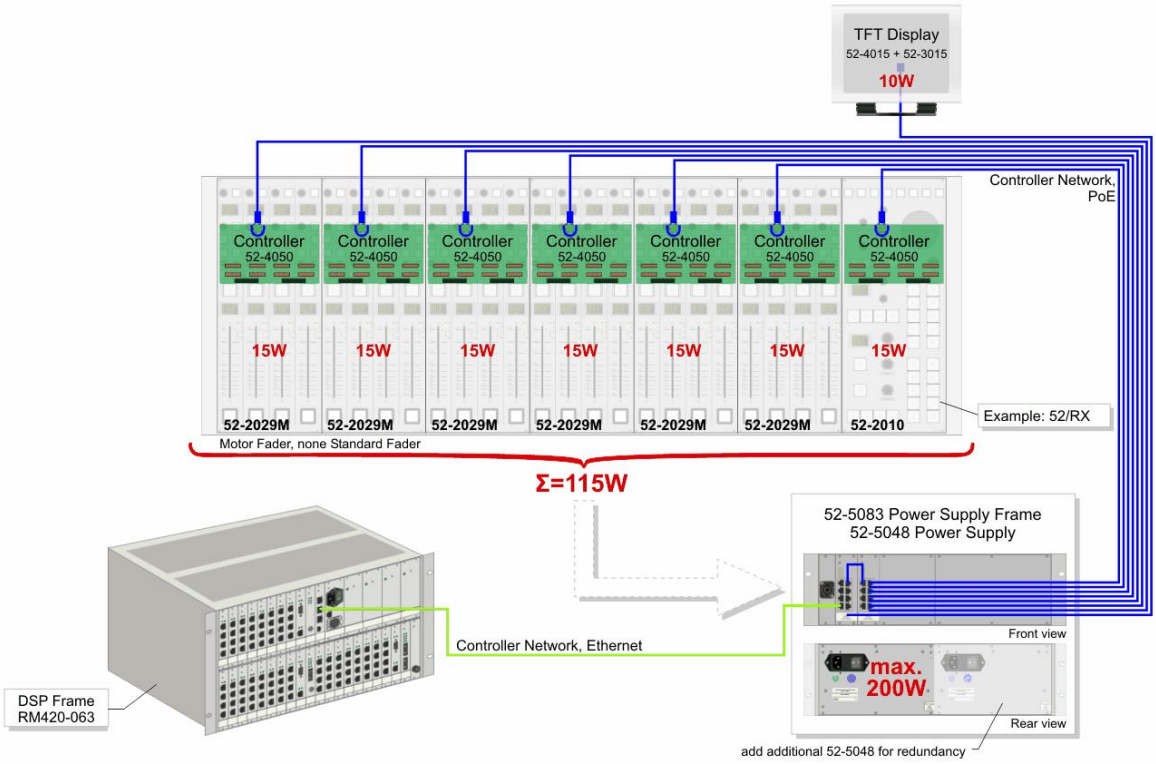
In this example a 52/RX console with two fader modules and one central module is used. Calculate 10W for each non-motorized fader module 52-2020A and 15W for the central module 52-2010. Consequently, the power consumption of this 52/RX console is about 35W. In this case a 52-4048 desktop power supply (that provides up to 100W) powers the console via a 52-4080 PoE switch.



Power consumption example 1.

5.2.2 Power Consumption Example 2

An example of a larger console with motorized faders and a central TFT display can be found in the following. This console includes six motorized fader modules 52-2029M and for each of these modules you need to calculate with 15W. Moreover the central control module 52-2010 has a power consumption of up to 15W and the TFT display 52-4015A has a power input of 10W. In total a power supply is need that provides 115W or more. In this case a 52-5083 power supply frame is used, equipped with 200W 52-5048 power supplies and 52-5088 PoE switches.



Power consumption example 2.

Index