

Series 52

52/XR MADI Router Quickguide Configuration

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Version: 1.6.0



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1 Terms of Use - Legal Disclaimer

Series 52

52/XR MADI Router Quickguide Configuration

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2 About this Book

This Quickguide refers to Toolbox5, Version 6.2.0.3

The following quickguide is a short introduction to start up a 52/XR router device with the Toolbox5 software. It should help you to configure the Router.

This manual does not contain any detailed information. For detailed information on special features, please refer to the 52/ XR MADI Router 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 \square 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 $\sqrt[n]{}$ appears if you move the mouse over the link.
- URL: The hand symbol with an additional $\sqrt{2}$ 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).

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3 Getting Started

The configuration software is represented by a file named Toolbox5.exe.

• Doubleclick the file Toolbox5.exe to start the application.

When starting the Toolbox5 for the first time, a second application is extracted, called DHD Communication Server (DHDCS.exe). This software is handling the complete communication between DHD Devices and DHD applications on a PC. To learn more about the DHD Communication Server, please refer to RM4200D manual, Part 6 "Application Software Manuals, Chapter 1 - The DHD Communication Server". The corresponding manual file is called "RM4200D_6_appsoftware_en.pdf".



The Toolbox5 software does not need any dynamic libraries or other additional files to run. Simply copy the file Toolbox5.exe to the desired directory and start it. To uninstall, delete the files Toolbox5.exe and DHDCS.exe.

After the software has started, it displays an empty project list and some basic project properties, which can be customized.

La DHD Toolbox 5 - Project1		
File View Transfer Options Help		
🗋 🚵 🖶 📚 💻 📰 🗊		
Project Global Control	Project "Project1" Project Options Device Links Global Logics Global Resources Project Identification Project Name: Project 1 Project ID: PDXG Information Last Editor: le Project Version: File Version: 6.2.0.3	
Add Remove DSP capacity 0%	File: Select Navigstor, Clipboard Destinations Sources Image: Clipboard image	

The Toolbox5 application window right after startup.

From here on, you have two ways to proceed:

- 1. You can create a new project to setup a routing device from the scratch.
- 2. You can load an existing project file (*.dp5) from your PC.
- In this quickguide example, an existing configuration file is used.



A project is representing a collection of DHD Series 52 Devices. Devices inside the same project are able to communicate with each other. This interoperability is comfortable to configure functions between several devices of one installation, e.g. talkback or on-air switching.



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3.1 Loading an existing project from your PC

Project configuration files are stored with dp5 suffix. In this example, a demo configuration "routerdemo.dp5" is used. You'll find this file on our download Website. Open this file by clicking menu File - Open Project... - Open to load it into Toolbox5.

🗼 DHD Toolbox 5 - Project1		
File View Transfer Options Help		
🗋 🚵 🖶 📚 🔳 🕎 🗊		
Image: Control Image: Control Image: Control Image: Co	S2/XR "Router_1" Options	
Add Remove	Navigator, Clipboard Sources Control Destinations Control (nothing selected) Project modified	

The device options tab after the inserting of a router device.

The project contains one device called "Demo Router". This device is the configured routing device. The device <code>options</code> tab shows, that the selected frame type is the 52-6063 with 3 height units. It is also possible to choose the 52-6066 for a 6 height units frame. The selected frame size influences the configurable I/O slots in the Toolbox5 device, but has no direct influence on the hardware functionality.

3.1.1 DSP Frame I/O Configuration

If you click on the + sign in front of the "Demo Router" device label, you reach 2 sub-branches, DSP Frame I/O and Audio.

In the DSP Frame I/O tab, the hardware layout of the routing device can be configured.

L DHD Toolbox 5 - C:\Dokument	e ur	nd Einstellungen\le\	Desktop\	52XR-Doku\De	emo_Router.dp5			
File View Transfer Options Help								
🗋 🚵 🖶 📚 🎫 🕎 🗊 👘								
Project								
- Project1	1	52/XR "Demo R	louter'	, DSP Fra	me input/output			
- Global Control	-							
- Demo Router								
DSP Frame I/O	#	Туре	Link	Label	Number of Channels	Redundancy	Digital Format	HeadRoom
Audio	1	52-6710 Sync.						
	2	52-6850 Controller						
	3	52-6120 Dual MADI	*	Port 3.1	64 Channels 🛛 🛡	-	AES10 MADI	➡ -9 dBFS = 0 dBint
				Port 3.2	64 Channels 🛛 🔻	-	AES10 MADI	➡-9 dBFS = 0 dBint
	4	52-6120 Dual MADI		Port 4.1	64 Channels 🛛 🛡	-	AES10 MADI	➡-9 dBFS = 0 dBint
				Port 4.2	64 Channels	-	AES10 MADI	➡ -9 dBFS = 0 dBint
	5	52-6120 Dual MADI	-	Port 5.1	64 Channels 🛛 🛡		AES10 MADI	➡ -9 dBFS = 0 dBint
				Port 5.2	64 Channels 🛛 🔻		AES10 MADI	➡ -9 dBFS = 0 dBint
	6	52-6120 Dual MADI	-	Port 6.1	64 Channels 🛛 🛡	-	AES10 MADI	➡ -9 dBFS = 0 dBint
				Port 6.2	64 Channels 🛛 🛡		AES10 MADI	➡ -9 dBFS = 0 dBint
	7	None	*					
	8	None	+					
	9	52-6440 Router 4096	*					
	10	None	+					
	11	None	*					
	12	None						
	13	52-6120 Dual MADI	*			Enabled	5	
						Enabled	F.	
	14	52-6120 Dual MADI	-			Enabled 1	4	
						Enabled	F	
	15	None	+					
	16	None	+					
	Navi	igator, Clipboard						
1	So	urces			Destinations			
Add Remove			GO					
DSP capacity			🧊 IN 14.2	2.03 - 04				
				Project modified				



Slot 3 to 8 and 13 to 18 contain the MADI modules. Slot 13-18 can be operated in a normal or a redundant mode. If switched to redundant, a MADI port duplicates the signals of the corresponding port on the left side of the router backplane.



Currently, only a single type of module can be configured on Slots 3 - 8 and 13 - 18. To make the configuration process easier, the labels of each MADI port can be customized.

Additionally, you can set the Number of Channels for each MADI port. You can select between 64 or 56 channels or if a Stagebox device is linked to a MADI port.

In the next column you choose, whether the digital format should be AES10 MADI or 32bit float.

Headroom allows to adjust a corresponding level, which should refer to the internal reference level of 0 dBint.

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3.1.2 Labelling and configuring single I/Os

Click onto the + sign in front of the DSP Frame I/O branch and select an existing port to reach the channel configuration.

If the Number of Channels is set to 64 or 56, you can switch channels to mono or stereo and set a label for each single input and output here. Additionally, you can set a local level adjustment for single inputs and outputs, which differs from the global settings.



The Toolbox5 shows the inputs and outputs of a chosen MADI Port.

If Number of Channels was linked to a Stagebox, you are able to define the layout of the connected Stagebox device here. Basically, this part of the configuration is to make the whole configuration process easier. 52/MB hardware must not be configured.

3.1.3 Configuring Audio

3.1.3.1 Setting the synchronisation

Selecting the Audio branch displays the synchronisation window. Here you can do refinements on the current device synchronisation.

It is possible, to configure two independent synchronisation sources. Sync Source 1 is the always meant to be the master sync source and is used by the system as long as it is available. If it fails and a secondary sync source is configured and available, the system automatically switches over to Sync Source 2. If this source is not available, too, or not configured, the system switches to Internal Synchronisation.

Currently, the Toolbox5 supports synchronisation frequencies of 48 kHz and 44.1 kHz. In a future version, also 96 kHz and 88.2 kHz will be supported. The hardware is still able to handle both higher frequencies.

Switch on the $v_{ariSpeed}$ option, if you want to synchronise the router to an external synchronisation frequency with a larger jitter. This option activates a VariPLL, which could handle such sources.

You can choose the synchronisation source out of a list of 9 possible sources:

- Internal
- BNC 1 Word Clock
- BNC 2 Word Clock
- MADI 3.1
- MADI 13.1
- RJ45 AES3/EBU

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- BNC 1 AES3/EBU
- BNC 2 AES3/EBU
- BNC 1 Video

L DHD Toolbox 5 - C:\Dokument	te und Einstellungen\le\Desktop\52XR-Doku\Example.dp5	
File View Transfer Options Help		
🗋 👌 🔒 😓 🔳 🕎 🗊		
Project Global Control Global Control DSP Frame I/O Studio 2 Studio 2 Studio 3 - Prod 1 Prod 2 S2/MB 1 S2/MB 2 Audio Output Routing	Synchronisation Synchronisation • 48 kHz Sync Source 1: BNC 1 Word Clock Sync Source 2: BNC 2 Word Clock MADI 13.1 MADI 13.1 BNC Options BNC 2 AES3/BDU BNC 2 AES3/BU BNC 2 AES3/BU BNC 2 AES3/BU BNC 2 AES3/BU BNC 1 Video Wordclock1 Phase Image dge Image for failing edge Image for failing edge	
	Navigator, Clipboard	
Add Remove	Sources Destinations	

The synchronisation tab can be seen by selecting the Audio branch.

DHD

3.1.3.2 Setting the output routing

In the output routing menu, you have access to the signal routing of the device.

L DHD Toolbox 5 - C:\Dokument	te und Einstellungen\le\Desktop\	52XR-Doku\Exa	mple.dp5		
File View Transfer Options Help					
🗋 🚵 🖶 📚 🎫 🕎 🗊 👘					
Project	and the second		12222		
Example	52/XR "Demo Router	", Output R	outing		
- Global Control					
Demo Router	Available Ports	Output Routing			
	Deet	Output Name	Output Address	Fourse	Muka Laging
Studio 1	Studio 1	Studio 21	3 1 01 - 02 I	IN 4.1.01 - 02 P+ PCM out	Mate Logics
- Studio 2	Studio 1	Studio 2 P	3 1 01 - 02 0	IN 3.2.01 - 02 P; PGM out	
- Studio 3	Studio 2	Studio 31	3 1 03 - 04 1	IN 4 1 01 - 021 : PGM out	
	-	Studio 3 R	3 1 03 - 04 R	IN 4.1.01 - 02 B: BGM out	=
Prod 1	Prod 1	Prod 1 I	3 1 05 - 06 1	IN 5 1 01 - 021 PGM out	
Prod 2	Prod 2	Prod 1 B	3.1.05 - 06 B	IN 5.1.01 - 02 B: PGM out	_
- 52/MB 1	52/MB 1	Prod 2 L	3.1.07 - 08 L	IN 5.2.01 - 02 L: PGM out	
52/MB 2	52/MB 2	Prod 2 R	3.1.07 - 08 R	IN 5.2.01 - 02 R: PGM out	
🖻 Audio	10000000	DAW 1 L	3.1.09 - 10 L	IN 6.1.05 - 06 L: Protools 1	
Output Routing		DAW 1 R	3.1.09 - 10 R	IN 6.1.05 - 06 R: Protools 1	
		DAW 2 L	3.1.11 - 12 L	IN 6.1.07 - 08 L: Protools 2	
		DAW 2 R	3.1.11 - 12 R	IN 6.1.07 - 08 R: Protools 2	
		DAW 3L	3.1.13 - 14 L	(not assigned)	
		DAW 3 R	3.1.13 - 14 R	(not assigned)	
		DAW 4 L	3.1.15 - 16 L	(not assigned)	
		DAW 4 R	3.1.15 - 16 R	(not assigned)	
		CODEC 11	3 1 17 - 181	(not assigned)	
		Source:	(not assigned)	Select Source	Clear All
	Naviester, Cipheard	1			
	Navigator, Cipboard				
1 1	Sources		estinations		
Add Remove	GO				
DSR capacity	(nothi	na selected)			
U%					
L					
					11.

At the subbranch Output Routing you are able to connect the configured inputs directly to the available outputs.

The Available Ports list shows all configured MADI ports. Select a port to have access to its outputs. Outputs will be shown in the Output Routing list. Here, the outputs are shown with their label and their physical address. Additionally, the assigned sources are displayed.

You can define an assignment by clicking the <code>Select Source...</code> button.

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Audio - Demo Router	×
(not assigned)	^
🗄 Inputs	
🛨 - Studio 1	
🛨 Studio 2	
🖨 - Studio 3	
IN 4.1.01 - 02 L: PGM out	
IN 4.1.01 - 02 R: PGM out	
IN 4.1.03 - 04 L: REC out	
- IN 4.1.03 - 04 R: REC out	
— IN 4.1.05 - 06 L: AUX 1 return	
 IN 4.1.05 - 06 R: AUX 1 return 	
— IN 4.1.07 - 08 L: AUX 2 return	
— IN 4.1.07 - 08 R: AUX 2 return	
— IN 4.1.09 - 10 L: AUX 3 return	
— IN 4.1.09 - 10 R: AUX 3 return	
— IN 4.1.11 - 12 L: AUX 4 return	
— IN 4.1.11 - 12 R: AUX 4 return	
TN 4 1 12 14 DI CODEC 1 KOLIW	_
Filter:	X
Assign Close	

The Audio Sources window.

The Audio Sources window opens, containing all available sources which can be assigned to physical outputs.

4 Transferring a configuration to a device

If you want to transfer a configuration to a device, please follow these steps:

- Select the desired device from the projects device tree.
- Click Load to Device in Transfer menu. The DHD Connection Dialog opens.
- Select the desired hardware from the ${\tt select}$ list and press ${\tt ok}$.

The transfer process starts and the configuration is copied to the chosen hardware.

DHD

)evice Selectio		5				
Select:	Project ID	Device ID	Hardware Name	Device Name	IP Addr	Serial No
	StaB	1	01-20-14		10.1.32.20	012014
	Mon	1	Ho2		192.168.10.92	020000
	LCDs	64	Deg1	DEG1	192.168.10.124	020003
	WSAE	64	IB5200	Router_1	192.168.10.29	020009
	SWEW	64	Marco	Device_1	192.168.10.168	020017
	NOP4	65	LS	LS	192.168.10.167	020039
	NOP4	72	P4518	518	192.168.10.130	02003A
	NOP4	70	P4S15	S15	192.168.10.151	02003C
	NOP4	71	P4516	516	192.168.10.134	02003E
	NOP4	69	P4514	514	192.168.10.157	020046
	NOP4	68	P4S13	513	192.168.10.169	020047
	NOP4	66	P4511	511	192.168.10.110	020048
Fixed IP:						
					ОК	Cancel

The Connection Dialog of the Toolbox5.

If a 52/XR MADI Router is available but unreachable via network, you probably need to refine the network settings. Please refer to the following abstract to learn more about the network configuration of a 52/XR MADI Router.

5 Configuring the Ethernet Interface

Every 52/XR MADI Router is equipped with an ethernet interface (with two ethernet interfaces in case of controller redundancy). The interface - an RJ45 female connector - is located on the communication controllers. It is a standard twisted pair interface with a data transfer rate of 100Mbit/s. The interface complies with the 100Base-TX, IEEE 802.3u standard.

The ethernet connection of the 52/XR MADI Router allows communication with DHD application software, as well as with conventional applications like Telnet and web browsers on one or more PCs.



5.1 IP Basic Settings

Before delivery, each 52/XR MADI Router is configured with an IP basic setting. This setting accords to a certain pattern, unless the customer indicates different requirements in his order.

Each controller with an integrated ethernet interface has a dedicated network address, the so-called MAC address (MAC - Media Access Control). This address is always unambiguous and unique. DHD owns the MAC address range 00:0A:63:00:00:00 to 00:0A:63:FF:FF:FF, therefore this address is also referred as serial number of a DHD device.

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A network-compatible controller module is always identified in a network by its MAC address. As the first 3 Bytes of all DHD MAC addresses always are identical, only the last 3 Bytes are indicated in DHD software applications.

i	Note
	If you find the term "MAC address" in the context of a DHD system, it always refers to the last three Bytes of the actual address, although this is, strictly speaking, incorrect.

These last 3 Bytes of the MAC address are used for composing the IP address for the basic setting. Please find below an example for the MAC address 10:00:02:

- Every single Byte is translated into the decimal format: 10h = 16, 00h = 0, 02h = 2
- Afterwards the decimal numbers are strung together; 10 is prepended, and all numbers are separated by periods: 10.16.0.2

The subnet mask is automatically set to 255.0.0, o, according to the classification of this IP range.

Thus the following IP basic setting results for the example device:

```
• IP address: 10.16.0.2
```

• Subnet mask: 255.0.0.0

Please learn in the following chapter how to change these settings and adjust them to your IT environment.

5.2 IP Configuration

The IP settings of a 52/XR MADI Router are no longer defined in the configuration file, but directly in the systems communication controller. To set IP parameters, please use the Maintenance Window, an application, which is implemented in Toolbox5. You can open the Maintenance Window by clicking the according command in the view menu or by pressing F7 on your keyboard. The application opens in a window with three sections:



View of the Maintenance window after opening.

In the left upper part of the window, beneath the menu bar, you can see a list of the Series 52 systems accessible in the network. On the right side next to it, in the largest part of the window, you can see system information of the device which is selected in the left-handed list. Above the status bar in the lower part of the window, current messages are displayed, sent by DHD systems in the reachable network.

You have two options to adjust the IP settings of a Series 52 system, depending on the following conditions:

- a. You can see the respective device in the list in the left part of the maintenance window.
- b. You **cannot** see the respective device in the list in the left part of the maintenance window.

If you can see the device in the list (a)

- 1. Right-click on the displayed device name.
- 2. A context menu appears. Select the Network Config... command from this menu.
- 3. A window opens, displaying the current IP configuration of the device.

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Network Config		
Device		
Serial No:	020024	Retrieve Current
Hardware Name:	LSXR	
Network IP Address		
 Automatically via 	DHCP	
C Fixed		
IP Address:	10.2.0.36	Subnet Mask: 255.0.0.0
Gateway:	10.0.0.1	Broadcast: 255.255.255.255
Time		
Time Server:	192.168.10.5	Setup time zone and DST
Mail		
Mail Server:	0.0.0.0	
		Send Close

The Network Config window shows the current IP configuration of the device with the serial number which is entered in the Serial No text field.

Serial No - The Serial Number

The device of which you can see the network settings, is always represented by its serial number ($_{Serial NO}$). This serial number is unambiguous and is only valid for one single controller. You can use the field to read out settings of devices that are located in a different network segment. Read more about this in section "If you do not see the device in the list (b)".

Hardware Name - The Device Name

You can provide every Series 52 system with a device name (Hardware Name) which will specify the device. This name will help you to identify the device in the network. You can choose any name up to 20 characters; however, no space characters are allowed. Not allowed special characters are rejected on entering.

Automatically via DHCP - Automatic IP Assignment by a DHCP Server

If there is a DHCP server on the network, which is also supposed to carry out the IP configuration of the 52/XR MADI Router, please just select the Automatically via DHCP radio button.

Fixed - Fixed IP Setting

If you cannot access a DHCP server or you want manually carry out the IP configuration, please first select <code>Fixed</code> and then fill in the according values (IP Adress, Subnet Mask, Gateway, Broadcast) into the activated text fields.



Mail Server

This text field has no function yet and does not need to be filled in.

Time Server

Series 52 systems run with an internal system time which can be synchronised to a time server (NTP - Network Time Protocol). For this, please enter the IP address of your time server in the text field <code>Time Server</code>.

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If you cannot see the device in the list (b)

- 1. Click on the ${\tt Device}$ command in the menu.
- 2. Select the Network Config... command from this menu.
- 3. The Network Config window will open; all its text fields are empty.

Network Config			×
Device Serial No:	020024	Retrieve Current	
Hardware Name:			
Network IP Address			
Automatically via	a DHCP		
C Fixed			
IP Address:		Subnet Mask:	
Gateway:		Broadcast:	
Time			
Time Server:		Setup time zone and DST	
Mail			
Mail Server:			
		Send Close	

Enter the serial number of the device, for which you want to change the IP configuration, in the "Network Config" window.

4. Enter the serial number of the device into the Serial No text field. Hit the Retrieve Current button afterwards.

This will send a query into the network, searching for network devices outside of the subnet. If the 52/XR MADI Router should be located outside of the subnet of the PC, it will answer anyway and transmit its current IP settings. The settings are then displayed in the Network Config window, where you can change them.

You can change the data according to the principle described in the section "If you can see the device in the list (a)". The process is completed when you send the changed data to the device by hitting the send button.

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