

MIDI

MIDI stands for Musical Instrument Digital Interface. MIDI is used as a world-wide standard protocol that allows a communication between all kinds of digital devices. For example:

- a MIDI keyboard and a grandMA3 command wing.
- a MIDI pad controller and a grandMA3 console.
- a grandMA3 console and an audio mixing console.

An external MIDI device can be used as a wing extension for a an existing grandMA3 console or for controlling an external sound generator like a buzzer, for example.

To communicate between devices, MIDI messages are used. For example, when connecting a MIDI keyboard to a grandMA3 console, a numeric description about channel, note and velocity are sent to the connected console via a MIDI message.



Restriction:

MIDI does not transmit an audio signal.



Configure an External MIDI Device

It is possible to connect an external MIDI device to receive messages to certain grandMA3 products. Therefore, a standard MIDI cable can be used.

Requirements:

- 1x grandMA3 console or grandMA3 onPC station either with a command wing, a I/O node or a third-party USB device connected
- 1x MIDI capable device
- 1x standard MIDI cable
 - 1. Connect the MIDI cable to the MIDI data output connector (MIDI Out) from the external MIDI device to the MIDI data input connector (MIDI In) on the console. Make sure the external MIDI device is powered, too!
 - 2. Open Menu In & Out MIDI Remotes .
 - 3. To make the messages of the external MIDI device visible in grandMA3, enable Show MIDI Data in System Monitor .
 - 4. To allow MIDI inputs on a grandMA3 console from an external MIDI device, make sure to enable Enable Input .
 - 5. To see the incoming MIDI messages of the external MIDI device on the console, open the System Monitor window and press different hardkeys (for example the keys) on the external MIDI device. The MIDI messages are listed in the System Monitor as shown in the image below:

MA	System Monitor
RT RT RT RT RT RT RT RT RT RT RT	2m40./095 : OnMidiControlChange SendSessionSlot=31 Channel=2 Control=5 value=2 Oliset=0 2m48.8885 : OnMidiControlChange sendSessionSlot=31 Channel=2 control=5 value=7 offset=0 2m48.9885 : OnMidiControlChange sendSessionSlot=31 Channel=2 control=5 value=7 offset=0 2m49.0555 : OnMidiControlChange sendSessionSlot=31 Channel=2 control=5 value=8 offset=0 2m51.3225 : OnMidiControlChange sendSessionSlot=31 Channel=2 control=5 value=9 offset=0 2m51.4215 : OnMidiControlChange sendSessionSlot=31 channel=2 control=5 value=9 offset=0 2m51.4555 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=53 velo=35 offset=0 2m51.4555 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=22 offset=0 2m51.4885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=22 offset=0 2m51.48875 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=20 offset=0 2m51.48875 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=78 offset=0 2m51.9885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=78 offset=0 2m51.9885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=78 offset=0 2m51.9885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=78 offset=0 2m52.0228 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=78 offset=0 2m52.0285 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=78 offset=0 2m52.0885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=55 velo=8 offset=0 2m52.0885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=0 note=55 velo=0 offset=0 2m52.0885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=1 note=57 velo=78 offset=0 2m52.0885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=0 note=57 velo=0 offset=0 2m52.0885 : OnMidiNote sendSessionSlot=31 channel=2 pressed=0 note=57 velo=0 offset=0

After pressing several keys and turning knobs on the external MIDI device, the MIDI messages are shown in the System Monitor.

A MIDI message can contain several parameters:

- channel: Displays the external devices MIDI channel.
- pressed: Shows if a MIDI key is pressed (1) or released (0).
- note: Shows the MIDI note which is oblique to a key on the external MIDI device.
- velo: Shows the velocity which displays the intensity of a pressed key from 0 to 127.
- control: Shows the control change address and its absolute values (=value).
- offset: See <u>MIDI Remotes</u> topic.



Receive MIDI

Requirement:

- 1x grandMA3 demo show file
- To send MIDI messages, make sure the MIDI Mode is set to In in the Output Configuration menu:

*	Cutput Configuration														Session All	Col C	umns ondensed	×	
Lock	No		Name	Туре	IP	Port A	Port B	Port C	Port D	Port E	Port F	Port G	Port H	SMPTE Mode	SMPTE TC	MIDI Mode	MIDI TC	MIDI Offset	s
	1		Console																
	1(1)		KevinR-PC	Wing-onPC	172.16.250.46	1	2	3							Slot 1	In	Slot 1		
			New onPC																
	3		PU																
	4		NetworkNode																
					408														
					Pa	iste		Oops		Ad Pres	id ient								
			Co	ру	Im	port		Export		Rem	ove ent				Save Device Confi	guration	Device	Load Configurati	on
MZ		Adm	in[Fixture]>																

MIDI Mode is set to In in the Output Configuration menu.



After connecting an external MIDI device to the grandMA3 console, it is time to insert and customize a MIDI remote.

In this example, the sequence on an executor is controlled by pressing a key on a external MIDI keyboard:

1. To insert a new MIDI remote, tap Insert new MIDIRemote . The row MIDIRemote 1 is added automatically as shown below:

In & Out	8 Out																	
DC Remotes								Show MID	i Data in Sys	item Monitor	.	Enable Input						
MIDI Remotes	Lock	No	Name	Enabled	MIDI Channel	MIDI Index	MIDI Type	Target	t	Fader	Key	Trigger On	Trigger Off	In From	In To	Out From	Out To	
DMX	1	1	MIDIRemote 1	Yes	1	0	NoteAttack					95	31	0	127	0.0	100.0	
Remotes			New MIDIRemote															
OSC																		
—																		
PSN																		
Insert nev	MIDIR	lemote	Cut		Paste			Dops										
Delete			Сору		Import			xport										

A new MIDIRemote is set in the MIDI Remotes-tab.

- 2. To rename, tap MIDIRemote 1 in the Name column. Start to type "Key 1", tap Enter on the virtual keyboard, or press Please .
- 3. To allocate a specific hardkey on the MIDI keyboard, press a key on the keyboard and use the information **channel** and **note** from the System Monitor window to edit the MIDI Channel and MIDI Index columns. For this example MIDI Channel is set to 2 and MIDI Index is set to 48.
- 4. Set the MIDI Type to NoteAttack , to implement velocity.
- 5. To open the Assignment Editor, tap and edit the empty cell in the Target column. Tap the Sequence -tab and select Look as shown in the image:



М	M A Assignment Editor												
	Empty	Sequence	View	iew Macro		erPlugin	Group		World	Mas	ter		
Filter:											Clear		
Lock	No Name		Scribble	Appearance	Auto Start	Auto Stop	Auto Fix	Auto Stomp	Release First Cue	Soft LTP	Comma Enable		
	1 (3)	Look			Yes	Yes	No	No	Yes	Yes	Yes		
	2 (3)	Sequence 2			Yes	Yes	No	No	Yes	Yes	Yes		
		New Sequence											

Choose a target in the Assignment Editor

6. To open the Select Fader pop-up, edit the empty Fader column. Set the Fader to Master as shown in the image below:

Select Fader 💥
Empty
Master
x
ХА
хв
Temp
Rate
Speed
Time

Select Fader pop-up.

7. The new MIDI remote is set and the MIDI Remotes window should look like this:



In & Out																	×	
DC Remotes								Show MIDI	Data in Syst	tem Monitor		Enable Input						
MIDI Remotes	Lock	No	Name	Enabled	MIDI Channel	MIDI Index	MIDI Type	Target		Fader	Key	Trigger On	Trigger Off	In From	ln To	Out From	Out To	
DMX Remotes	_	1	Key 1 New MIDIRemote	Yes		48	NoteAttack	Sequence	1 'Look'	Master		95	31		127	0.0	100.0	
_																		
PSN																		
Insert ne	w MIDIF	Remote	Cut				00	ps										
					Import		Exp	ort										
MA	🖴 Adr	min(Fixtu	re]>														■ ►	

A new MIDI remote is set.





Hint:

To reproduce this example using syntax, see **<u>Remote</u>** keyword.



Send MIDI

It is also possible to send MIDI messages from a grandMA3 console to an external MIDI device.

To send MIDI messages from a grandMA3 console:

- Connect the MIDI cable to the MIDI data input connector (MIDI In) from the external MIDI device to the MIDI data output connector (MIDI Out) on the console.
- MIDI messages can be sent using the **<u>SendMIDI</u>** keyword.
- To send MIDI messages, make sure the MIDI Mode is set to Out in the Output Configuration menu:

*	🗱 Output Configuration													Session All	CoA	mns Indensed	×			
Lock	No		Name	Туре	IP		Port A	Port B	Port C	Port D	Port E	Port F	Port G	Port H	SMPTE Mode	SMPTE TC	MIDI Mode	MIDI TC	MIDI Offset	L SI
	1		Console																	
	2(1)		onPC -PC	Wing-onPC	172.16.250.4	16	1	2	3							Slot 1	Out	Slot 1		
			New onPC																	
	3		PU																	
	4		NetworkNode																	
						Past	e		Oops		Adi Presi	d ent		RDM						
			Co	ру		mpo	rt		Export		Remo	ove int				Save Device Confi	guration	Device	Load Configuratio	on
M/		Adm	n(Fixture)>														ሐ	680	🕕 🚍	۲

MIDI Mode is set to Out in the Output Configuration menu.

The given MIDI channel (1 to 16) in the command line will be used to send out a MIDI message. For the example below, MIDI channel 10, Index (note) 46 and velocity 99/0 is used:



For the example, MIDI channel 10 is used.



The MIDISend command applies the following rules:

- If a MIDI channel is entered in the command, the entered MIDI channel will be used. If no MIDI channel is entered, MIDI channel 1 will be used.
- If a velocity is entered in the command, the entered velocity will be used. If no velocity is entered, a velocity full (127) will be used.
- If no status (On or Off) is entered in the command, On will be used.

Depending on the external MIDI device, it is necessary to send a MIDI message to the external MIDI device that mimics the release of a hardkey, by sending an **Note Off** (Value 0) message. This is shown in the image below:

	ean M	tero 99												Settings	Ģ	×
Name	Ма	cro 99	Scribble		Appearance	Lock	-	Î	CLI							
Lock	No	Nam	e		Command	wa	ait En	nabled	AddToCmdl	Execute						
	1	MacroLine 1		SendMIDI "Note" 10	0/46 99	Fol										
	2	MacroLine 2		SendMIDI "Note" 10	0/46 0	0.0)5									
				New MacroLine												
Ins	ertnew	MacroLine		Cut		Oops										
	De	lete		Сору	Import	Export					Test Macro Line	Test Macro		Lis Refere	t nces	
MA	Admin@ShowData/DataPools/Default/Macros/Macro 99>												å		91041	►

A button is assigned to a send a MIDI message with velocity on and off.



MIDI Connection via USB

A external device can also be connected to the grandMA3 onPC Software using a third-party USB MIDI device.

Restriction:

Connecting an external MIDI device via USB is only possible using the grandMA3 onPC Software.

Requirements:

- 1x grandMA3 onPC Software
- 1x MIDI capable device
- 1x USB cable

To connect an external MIDI device via USB:

- 1. Connect both, the external MIDI device and computer, using an USB cable.
- 2. Press Menu , tap Settings and then tap onPC Settings . The onPC Settings window opens.
- 3. Make sure the MIDI via onPC command wing button is disabled.
- 4. To select the external MIDI device, tap MIDI In Device . The Select MIDI In device pop-up opens:
- 5. Select the external MIDI device. In the example it is MPK225 as shown in the image below:

Select MIDI In device	×
None	
MPK225	
MIDIIN2 (MPK225)	
MIDIIN3 (MPK225)	
MIDIIN4 (MPK225)	

The Select MIDI IN device pop-up shows the connected keyboard.

5. The external MIDI device is connected to the grandMA3 onPC Software. To set up a MIDI remote, go back to **Receive MIDI**.

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Hint: For more information about the grandMA3 onPC settings, see <u>onPC settings</u>.