the t.mix

24.12

mixer

th•mann
MUSIC IS OUR PASSION

user manual

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20.02.2019, ID: 433544 (V2)

Table of contents

1 General information

This user manual contains important information on the safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device to another user, be sure that they also receive this manual.

Our products and user manuals are subject to a process of continuous development. We therefore reserve the right to make changes without notice. Please refer to the latest version of the user manual which is ready for download under *www.thomann.de*.

1.1 Further information

On our website (*www.thomann.de)* you will find lots of further information and details on the following points:

Download	This manual is also available as PDF file for you to download.
Keyword search	Use the search function in the electronic version to find the topics of interest for you quickly.
Online guides	Our online guides provide detailed information on technical basics and terms.
Personal consultation	For personal consultation please contact our technical hotline.
Service	If you have any problems with the device the customer service will gladly assist you.

1.2 Notational conventions

This manual uses the following notational conventions:

Letterings

The letterings for connectors and controls are marked by square brackets and italics.

Examples: *[VOLUME]* control, *[Mono]* button.

Displays

Texts and values displayed on the device are marked by quotation marks and italics.

Examples: *'24ch'*, *'OFF'*.

Instructions

The individual steps of an instruction are numbered consecutively. The result of a step is indented and highlighted by an arrow.

Example:

1. Switch on the device.
2. Press *[Auto]*.
   ⇨ Automatic operation is started.
3. Switch off the device.

1.3 Symbols and signal words

In this section you will find an overview of the meaning of symbols and signal words that are used in this manual.

Signal word	Meaning
DANGER!	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
NOTICE!	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.

Warning signs	Type of danger
	Warning – high-voltage.
	Warning – danger zone.

2 Safety instructions

Intended use

This device is intended to be used for amplification, mixing and playback of signals from musical instruments and microphones. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

Safety

DANGER!

Danger for children

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!

Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke!

Never let children unattended use electrical devices.

DANGER!

Electric shock caused by high voltages inside

Within the device there are areas where high voltages may be present. Never remove any covers.

There are no user-serviceable parts inside.

Do not use the device if covers, protectors or optical components are missing or damaged.

DANGER!

Electric shock caused by short-circuit

Always use proper ready-made insulated mains cabling (power cord) with a protective contact plug. Do not modify the mains cable or the plug. Failure to do so could result in electric shock/death or fire. If in doubt, seek advice from a registered electrician.

NOTICE!

Risk of fire

Do not block areas of ventilation. Do not install the device near any direct heat source. Keep the device away from naked flames.

NOTICE!

Operating conditions

This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.

Only operate the device within the ambient conditions specified in the chapter 'Technical specifications' of this user manual. Avoid heavy temperature fluctuations and do not switch the device on immediately after it was exposed to temperature fluctuations (for example after transport at low outside temperatures).

Dust and dirt inside can damage the unit. When operated in harmful ambient conditions (dust, smoke, nicotine, fog, etc.), the unit should be maintained by qualified service personnel at regular intervals to prevent overheating and other malfunction.

NOTICE!

Power supply

Before connecting the device, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly injure the user.

Unplug the device before electrical storms occur and when it is unused for long periods of time to reduce the risk of electric shock or fire.

NOTICE!

Possible damage due to installation of a wrong fuse

The use of different types of fuses can cause serious damage to the unit. Fire hazard!

Only fuses of the same type may be used.

3 Features

- Digital mixer
- 24 × microphone and line inputs with analogue gain, designed as both XLR and 1/4" phone jacks
- 2 built-in effects
- 8 × AUX outputs (XLR and 1/4" jack)
- 12 DCA groups that can control the volume of multiple channels with one fader without mixing the signals down to one signal.
- 1 headphones output (stereo, as 1/4" phone jack)
- Noise Gate
- Compressor
- 4-band parametric EQ per channel
- Real-Time-Analysis function (RTA) for spectral analysis of the signal in a channel
- Automix
- 13 × motorized fader (100 mm)
- 7" touch screen
- 24 Bit/48 kHz sampling rate
- iPad app for wireless remote control available (external router required)

4 Installation

NOTICE!

Danger of short circuit

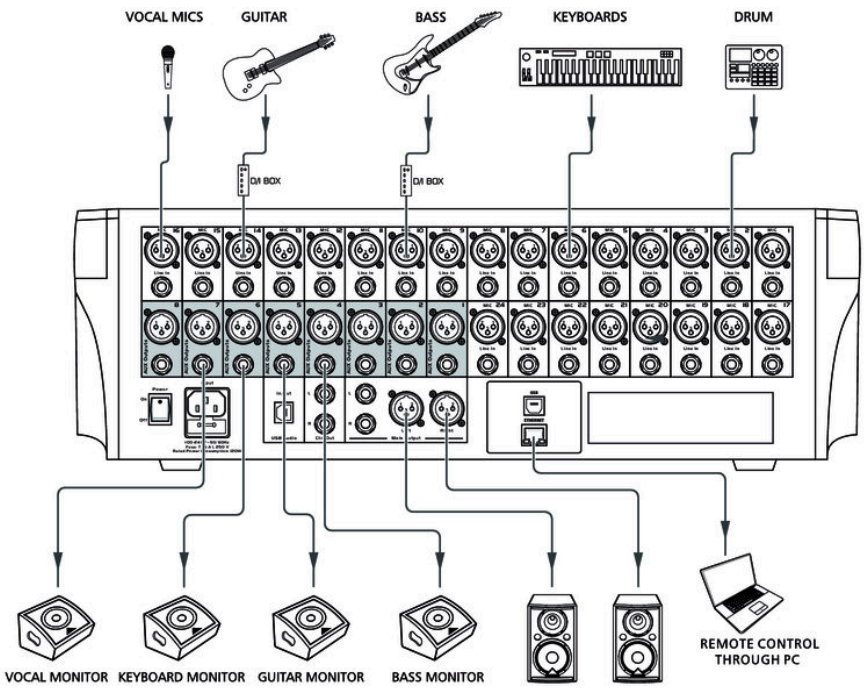
Switching on phantom power will damage the device if unbalanced XLR cables are connected.

Only turn on phantom power when exclusively balanced XLR cables are connected.

Unpack and check carefully there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the product against vibration, dust and moisture during transportation or storage use the original packaging or your own packaging material suitable for transport or storage, respectively.

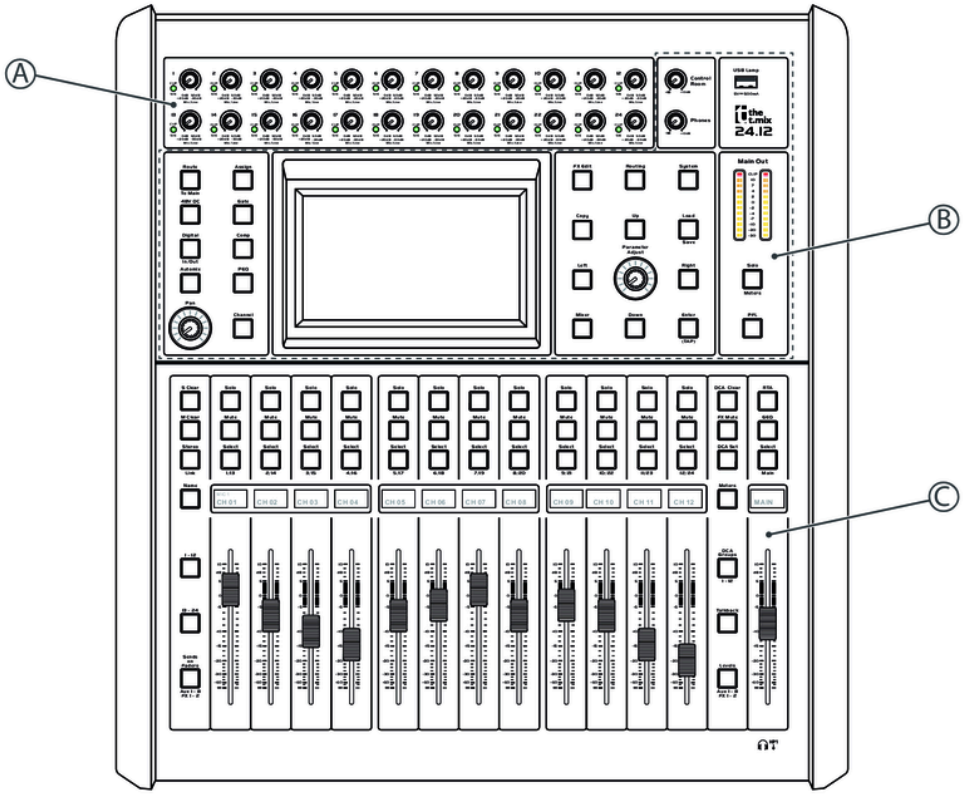
Create all connections while the device is off. Use the shortest possible high-quality cables for all connections. Take care when running the cables to prevent tripping hazards.

Connection options



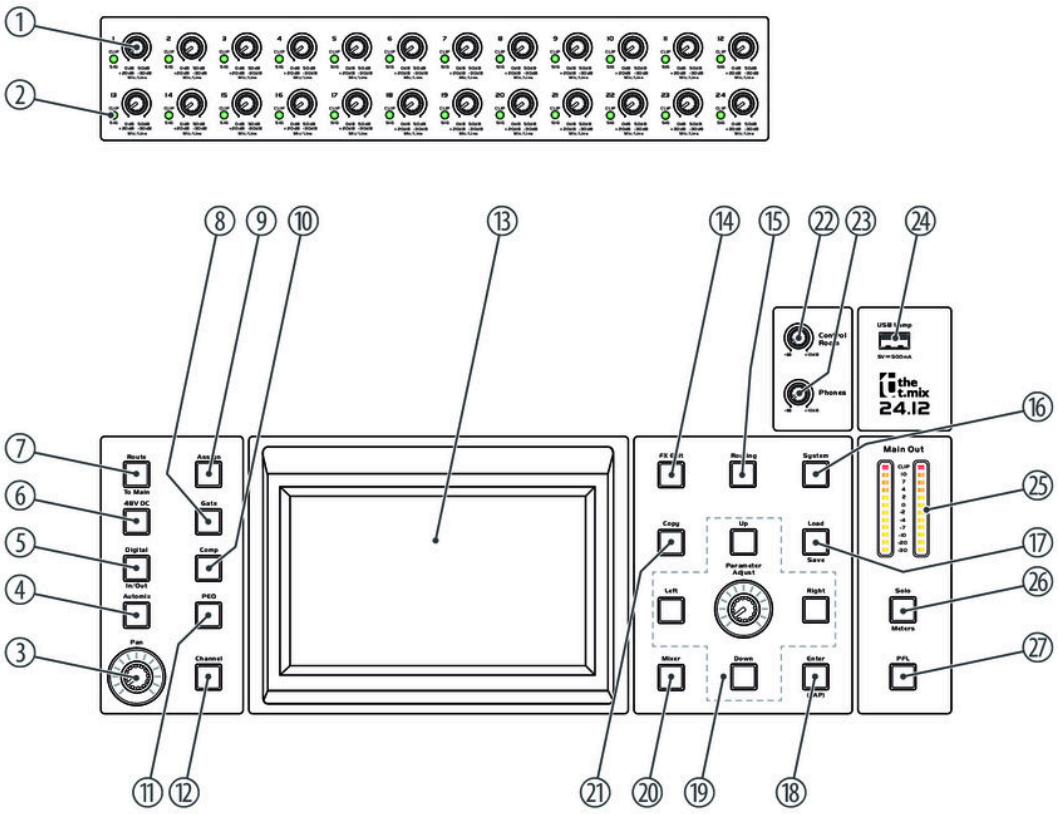
5 Connections and controls

Overview



A	Settings for the inputs
B	Settings for tone and signal processing
C	Settings for the outputs

Front panel A and B

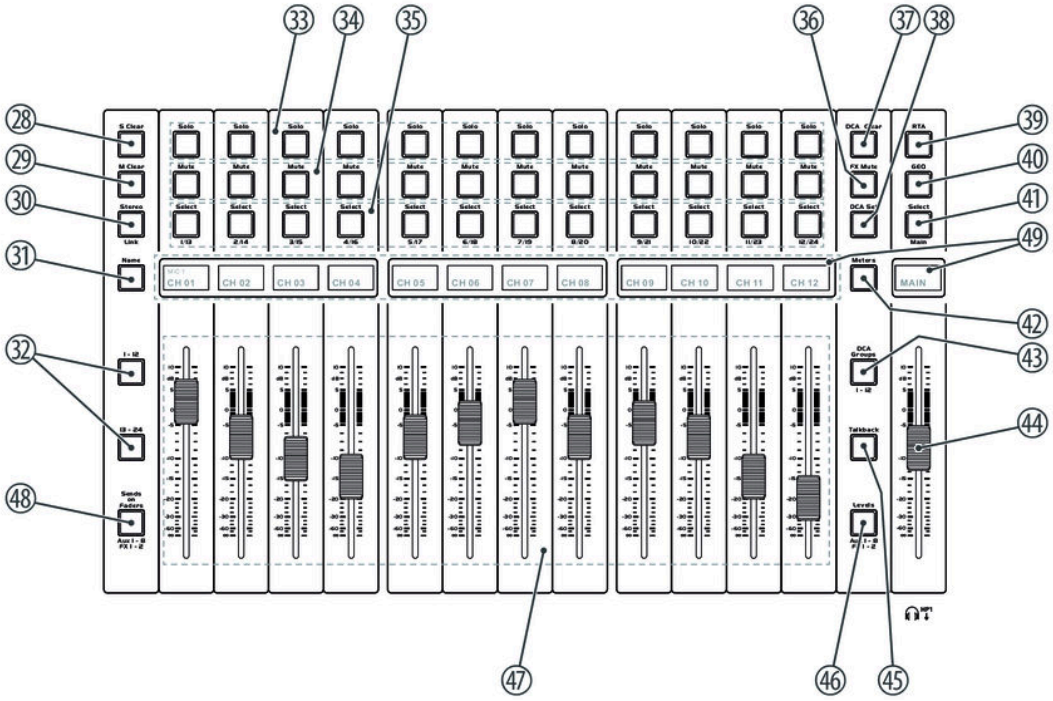


1	The controls *[1]*…*[24]* adjust the input signal to the working level of the unit.
2	*[Sig/Clip]* The LED lights up green when a signal is present at the respective input (level > -30 dB). The LED lights up red when the signal level is too high and distortion due to clipping occur (level > +20 dB). In this case, reduce the level with the [Mic/Line] control.
3	*[Pan]* Rotary control for adjusting the signal within the stereo panorama.
4	*[Automix]* Reduces the volume of the microphone when not in use.
5	*[Digital / In/Out]* Switches between digital input and output when the digital module is installed.
6	*[48V DC]* Enables the phantom power. The button lights up when the phantom power is turned on. The phantom power leads to damage to the device if unbalanced cables are connected. Only switch on phantom power while exclusively balanced cables are connected.

7	*[Route / To Main]* Allows you to assign an input channel to the main channel.
8	*[Gate]* Opens the *'Gate'* page for Noise Gate settings.
9	*[Assign]* Opens the *'Assign'* page for the assignments of input channels to buses.
10	*[Comp]* Opens the *'Comp'* page for Compressor settings.
11	*[PEQ]* Opens the *'PEQ'* page for parametric EQ settings.
12	*[Channel]* Opens the *'Channel'* page for a summary of the settings of the currently selected channel, bus, or DCA group.
13	7" touch screen
14	*[FX Exit]* Selects the effects bus FX 1 or FX2 to perform tone control and assignment to outputs.
15	*[Routing]* Allows the assignment to outputs for the respective bus.
16	*[System]* Opens the system menu for editing presets.
17	*[Load / Save]* Opens the menus for loading or saving presets.
18	*[Enter / (TAP)]* Confirms settings in the menu. On pages *'FX1'* and *'FX2'* you can use this button to enter the setting for the delay function in time with the music.
19	*[Parameter Adjust]* Control to set the main parameter of the currently selected effect. Pressing *[Up]*, *[Down]*, *[Left]* and *[Right]* lets you navigate on the display pages.
20	*[Mixer]* Opens the *'Mixer'* page for channel settings.
21	*[Copy]* Copies the channel settings for another channel.
22	*[Control Room]* Volume control for the control room output
23	*[Phones]* Volume control for headphone output

24	*[USB Lamp]* USB port for supplying power to accessories, such as a gooseneck lamp
25	*[Main Out]* Level meter of main channel or solo channel. By default, the level of the main channel is displayed when the *[Solo / Meters]* button is not pressed.
26	*[Solo / Meters]* Toggles the level meter *[Main Out]* between Main and Solo.
27	*[PFL]* Switches the Control Room output between the modes Pre Fader Listen (PFL) and After Fader Listen (AFL). This can be used to monitor a signal either as it is present at the input or as it sounds affected by the tone and volume controls.

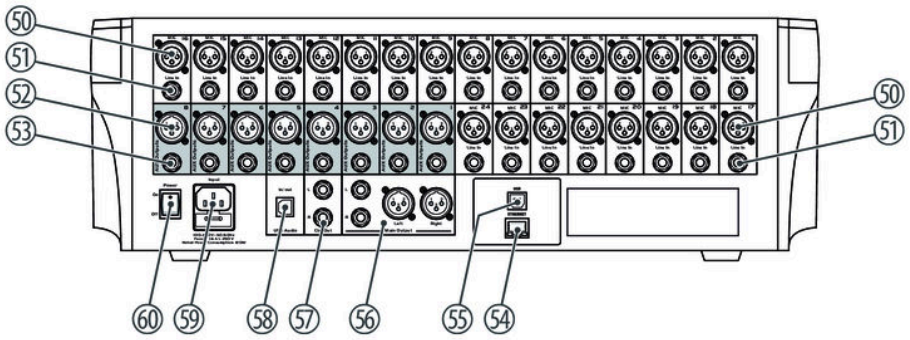
Front panel C



28	*[S Clear]* Cancels the solo mode for all input channels and buses. The button lights orange when at least one channel or bus is operating in Solo mode.
29	*[M Clear]* Unmutes all input channels and buses.
30	*[Stereo / Link]* Input channels 1…24 and buses AUX 1…AUX 8 can each be paired as stereo channels. When pairing is on, the button lights up blue.
31	*[Name]* Allows the renaming of a channel.
32	*[1 – 12]*, *[13 – 24]* Selection buttons for channels
33	*[Solo]* Assigns the currently selected input channel to the solo bus. The button lights up when the input channel has been assigned.
34	*[Mute]* Mutes or unmutes the respective channel.
35	*[Select]* Selects the respective channel to perform tone control and assignment to outputs.

36	*[FX Mute]* Mutes or unmutes effects bus FX1 or FX2.
37	*[DCA Clear]* Cancels the selection of DCA groups.
38	*[DCA Set]* Confirmation button for setting up DCA groups that can control the volume of multiple channels with one fader without mixing the signals down to one signal.
39	*[RTA]* Opens the *'RTA'* page (Real-time analysis), presents a spectral analysis of the signal in the selected channel.
40	*[GEQ]* Opens the *'GEQ'* page for graphic EQ settings.
41	*[Select / Main]* Assigns the currently selected input channel to the output bus Main.
42	*[Meters]* Opens the *'Meters'* page which shows the levels of all input and output channels at a glance.
43	*[DCA groups / 1 – 12]* Selection buttons for DCA groups
44	Motor fader for adjusting the the main output volume
45	*[Talkback]* Opens the *'Talk Back'* page where settings for the device's Talkback feature can be made. This feature is often used to make announcements from the console operator to the musicians on stage. To this, connect a microphone to input 24. Channel 24 can be assigned to the output channel Main or to one of the channels AUX1…AUX8. In *'PTT'* mode, you have to keep the *[Talkback]* button pressed during the announcement. In *'ON/OFF'* mode, you have to press *[Talkback]* before and after the announcement.
46	*[Levels / Aux 1 – 8/FX 1– 2]* Selection button for the AUX and FX buses.
47	Motor fader to adjust the volume of the currently selected channel, bus or DCA group.
48	*[Sends on Faders/ Aux 1 – 8/FX 1– 2]* Allows the assignment to outputs for the respective bus.
49	Digital channel label

Rear panel



50	*[Mic 1]…[Mic 24]* Mic level inputs, designed as XLR sockets.
51	*[Line In 1]…[Line In 24]* Line level inputs, designed as 1/4" phone jacks.
52	*[AUX Outputs 1]…[AUX Outputs 8]* AUX outputs 1…8, designed as XLR sockets.
53	*[AUX Outputs 1]…[AUX Outputs 8]* AUX outputs 1…8, designed as 1/4" phone jack (mono, balanced)
54	*[Ethernet]* RJ45 socket for the integration of the device into a local area network (LAN) or for firmware updates
55	*[USB]* The USB port is used to exchange data with a connected PC, for example to transfer individual settings from and to the computer.
56	*[Main Output]* Master output for connecting an amplifier or active speaker, designed as XLR sockets and 1/4" jacks (balanced) for left and right channels.
57	*[Ctrl Out L], [Ctrl Out R]* Control room output, designed with separate 1/4" jacks (balanced) for left and right channels.
58	*[USB Audio]* USB port for feeding in digital audio signals or for digital output of the sum signal, unaffected by the master fader.
59	*[Input]* IEC chassis plug for operating voltage supply with fuse holder
60	*[Power]* Main switch. Turns the device on and off.

6 Operating

6.1 Main menu

In the main menu, important settings are directly accessible.

1. Press *[System]*.
   ⇨ The main menu appears on the display.
2. Use the display to select, set values, and navigate the menu.

The table below shows on overview of the available menus.

Menu item	Meaning
'Assign / C Strip'	Tapping the *'Assign / C Strip'* button switches between *'Assign'* and *'C Strip'* function.
'Assign'	Assigning the currently selected input channel and FX to the possible buses.
'Main'	Assigning the channel to the Main bus. When assigned, the button lights blue.
'AUX1-4'	Displays the status of the respective channels *'AUX1'*, *'AUX2'*, *'AUX3'*, *'AUX4'*.
'AUX5-8'	Displays the status of the respective channels *'AUX5'*, *'AUX6'*, *'AUX7'*, *'AUX8'*.
'Sends'	Sends the selected channel on *'AUX1'*…*'AUX4'* or *'AUX5'*…*'AUX8'*. Allows pre / post switching of *'AUX1'*…*'AUX4'* or *'AUX5'*…*'AUX8'*.
'Phase / INV'	Phase inversion of the selected channel.
	'INV': the phase is inverted.
	'PHASE': the phase is not inverted.
'Select Channel'	Selection of all available channels for editing
'Load'	Loads a configuration.
'Copy'	Copies a configuration.
'Save'	Saves a configuration.
'Link'	Links the selected channel to the adjacent channel. On this, you can only link the odd-numbered channels to the even-numbered channels, not vice versa.
'C Strip'	Opens the settings for the input channels and for the output channels.
'Gate / Comp'	Tapping the *'Gate / Comp'* button switches between *'Gate'* and *'Comp'* function.
'Gate'	Opens the settings for the channel-wise switchable noise gate.
'Comp'	Opens the settings for the channel-wise switchable compressor.
'PEQ / GEQ'	Tapping the *'PEQ / GEQ'* button switches between *'PEQ'* and *'GEQ'* function.
'PEQ'	Opens the settings for the parametric equalizer.
'GEQ'	Opens the settings for the graphic equalizer.
'FX 1 / FX 2'	Tapping the *'FX 1 / FX 2'* button switches between *'FX 1'* and *'FX 2'* function.

Menu item	Meaning
'FX 1'	Selecting and setting the effect type for the first effects unit
'FX 2'	Selecting and setting the effect type for the second effects unit.
'System / Routing'	Tapping the *'System / Routing'* button switches between *'System'* and *'Routing'* function.
'System'	Displays information about the hardware and software revision status and allows the device to be reset to the factory defaults.
'Routing'	Assigning the individual input channels to the currently selected bus.
'DCA / Full Mix'	Tapping the *'DCA / Full Mix'* button switches between *'DCA'* and *'Full Mix'* function.
'DCA'	Assigning channels to DCAs (Digitally Controlled Amplifier) to collectively change the level of assigned channels.
'Full Mix'	Displays all available channels for a complete overview of the entire mixer.
'Meters / Mixer'	Tapping the *'Meters / Mixer'* button switches between *'Meters'* and *'Mixer'* function.
'Meters'	Overview of the level of all available channels
'Mixer'	The *'Mixer'* windows displays 8 channels at the same time. Tapping the *'Bank Left'* or *'Bank Right'* buttons calls up the previous or next 8 channels.

6.2 Parametric Equalizer

For each input channel and each output channel, a parametric equalizer with four frequency bands plus high-pass and low-pass filters can be switched on.

1. Tap the *'PEQ / GEQ'* button to change to the *'PEQ'* function.
2. For presetting, press the selection buttons *[1-12]* or *[13-24]* for the channels or the selection button *[AUX 1-8 FX 1-2]* for the AUX and FX buses. Then use *[1/13] …[12/24]* to select the desired input channel, output channel or FX bus.

   Alternatively: Tap on the *'Select Channel'* button and select the desired input channel or output channel on the display surface. Confirm the selection with *'Enter'*.

   ⇨ The button for the selected input channel or output channel lights up blue. The desired input channel or output channel is shown in the display.
3. Tap on *'EQ1'*, *'EQ2'*, *'EQ3'*, *'EQ4'* to select the frequency band.

   ⇨ The selected frequency band lights up.
4. Tap *'Type'* to select the type of filter.
5. Tap *'Frequency HPF'* or *'Frequency LPF'* to fine-tune the high-pass or low-pass filter.
6. Adjust the desired values by moving the slider on the display.

   Alternatively: Use the rotary control *[Parameter Adjust]* to set the desired values.
7. Save the settings with *'Save'*.

   You can save up to 48 individual settings.

The *'Flat EQ'* button can be used to cancel the settings made. The frequency response is then back in the initial state.

The *'ON/OFF'* can be used to turn the EQ on of off. By default, the EQ is turned on.

Option	Selection range	Meaning
'Frequency HPF'	20.6 Hz – 20.0 kHz	High-pass filter frequency
'Type'	Bypass, BW6, BS6, BW12, BS12, LR12, BW18, BS18, BW24, BS24, LR24, BW30, BS30, BW36, BS36, LR36, BW42, BS42, BW48, BS48, LR48	Type and slope rate of the filter
'Low-pass filter frequency'	20.0 kHz – 20.6 Hz	Low-pass filter frequency
'Type'	Bypass, BW6, BS6, BW12, BS12, LR12, BW18, BS18, BW24, BS24, LR24, BW30, BS30, BW36, BS36, LR36, BW42, BS42, BW48, BS48, LR48	Type and slope rate of the filter
'Frequency EQ 1–4'	20.6 Hz – 20.0 kHz	Frequency of EQ bands 1–4.

Option	Selection range	Meaning
'Type'	Hi-Shelf, Lo-Shelf	Filter type
'Q'	0.4 – 24	Q shape of EQ band
'Gain'	–24 dB – +24 dB	Boost / cut

6.3 Graphic Equalizer

For the outputs MAIN and AUX, a 31-band equalizer can be switched on.

1. Tap the *'PEQ / GEQ'* button to change to the *'GEQ'* function.
2. For presetting, press the selection button *[AUX 1-8 FX 1-2]* for the AUX and FX buses. Then use *[1/13]* …*[8/20]* to select the desired output channel.

   Alternatively: Tap on the *'Select Channel'* button and select the desired output channel on the display surface. Confirm the selection with *'Enter'*.

   ⇨ The button for the selected output channel lights up blue. The desired output channel is shown in the display.
3. Use the arrow buttons *'Left'* and *'Right'* to select the band for which you want to adjust the graphic EQ.

   ⇨ A purple bar indicates the selected band.
4. Move the purple bar by tapping on it with your finger or using the arrow buttons *'Up'* and *'Down'* to make the desired setting.

   Alternatively: Use the rotary control *[Parameter Adjust]* to set the desired values.
5. Save the settings with *'Save'*.

   You can save up to 48 individual settings.

The *'Flat EQ'* button can be used to cancel the settings made. The frequency response is then back in the initial state (flat).

The *'ON/OFF'* button can be used to turn the EQ on or off. By default, the EQ is turned on.

6.4 Compressor

For each input channel and each output channel, a compressor can be switched on.

1. Tap the *'Comp / Gate'* button to change to the *'Comp'* function.
2. For presetting, press the selection buttons *[1-12]* or *[13-24]* for the channels or the selection button *[AUX 1-8 FX 1-2]* for the AUX and FX buses. Then use *[1/13] …[12/24]* to select the desired input channel, output channel or FX bus.

   Alternatively: Tap on the *'Select Channel'* button and select the desired input channel or output channel on the display surface. Confirm the selection with *'Enter'*.

   ⇨ The button for the selected input channel or output channel lights up blue. The desired input channel or output channel is shown in the display.
3. Tap on *'ON'* to activate the setting options.
4. Tap the buttons to select the options *'Threshold'*, *'Attack'*, *'Release'*, *'Comp Ratio'*, *'Comp Gain'*.
5. Adjust the desired values by moving the slider on the display.

   Alternatively: Use the rotary control *[Parameter Adjust]* to set the desired values.
6. Save the settings with *'Save'*.

   You can save up to 48 individual settings.

Option	Selection range	Meaning
'Threshold'	–30 – +20 dB	Threshold
'Attack'	10 ms – 150 ms	Slew rate
'Release'	10 ms – 1 s	Decay time
'Comp Ratio'	1:1 – LIMIT	Ratio
'Comp Gain'	0 dB – 24 dB	Gain

6.5 Noise Gate

For each input channel a noise gate can be switched on.

1. Tap the *'Comp / Gate'* button to change to the *'Gate'* function.
2. For presetting, press the selection buttons *[1-12]* or *[13-24]* for the channels or the selection button *[AUX 1-8 FX 1-2]* for the AUX and FX buses. Then use *[1/13] …[12/24]* to select the desired input channel, output channel or FX bus.

   Alternatively: Tap on the *'Select Channel'* button and select the desired input channel or output channel on the display surface. Confirm the selection with *'Enter'*.

   ⇨ The button for the selected input, output, or FX channel lights up blue. The desired input, output, or FX channel is shown in the display.
3. Tap on *'ON'* to activate the setting options.
4. Tap the buttons to select the options *'Threshold'*, *'Attack'*, *'Release'*.
5. Adjust the desired values by moving the slider on the display.

   Alternatively: Use the rotary control *[Parameter Adjust]* to set the desired values.
6. Save the settings with *'Save'*.

   You can save up to 48 individual settings.

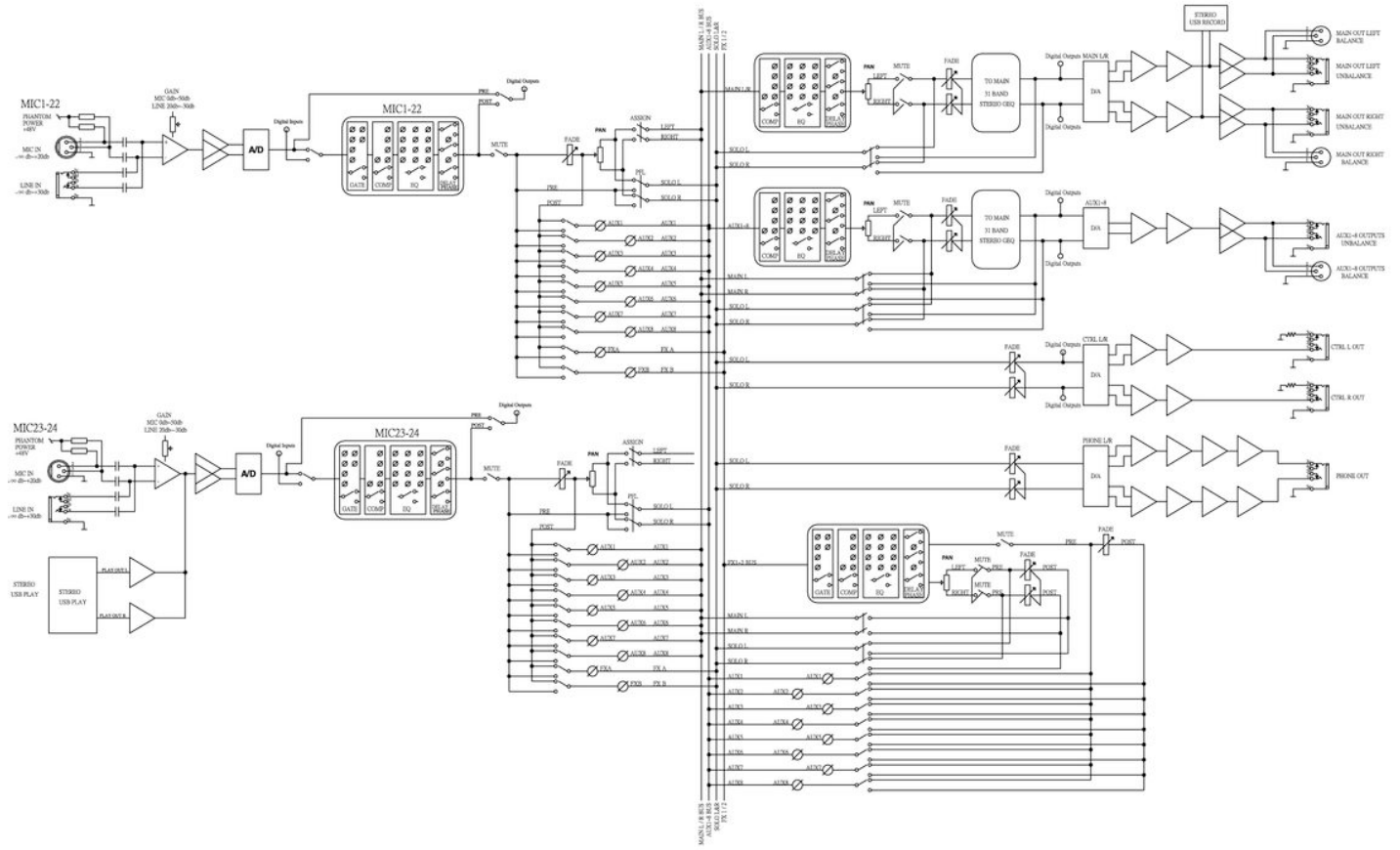
Option	Selection range	Meaning
'Threshold'	–84 dB – +20 dB	Threshold
'Attack'	0.5 ms – 200 ms	Slew rate
'Release'	10 ms – 1 s	Decay time

7 Technical specifications

Input connections	Voltage supply		IEC chassis plug C14
	Signal input Line	Type	24 × 1/4" phone socket, balanced
		Level	+22 dBu
		Impedance	75 kΩ
	Signal input Mic	Type	24 × XLR chassis socket, 3-pin
		Level	+22 dBu
		Impedance	6.8 kΩ
	Ethernet		1 × RJ45 socket
	USB		1 × USB port
	USB Audio		1 × USB port
Output connections	AUX	Type	8 × 1/4" phone socket, mono, balanced
		Level	max. +20 dBu
		Impedance	240 Ω
	AUX	Type	8 × XLR chassis socket, 3-pin
		Level	max. +20 dBu
		Impedance	240 Ω
	Master	Type	2 × XLR chassis socket, 3-pin
	Master	Type	2 × 1/4" phone socket, balanced
	Control Room	Type	2 × 1/4" phone socket, balanced
Gain			–20 dBu… +30 dBu
Frequency range			22 Hz…22 kHz, 0 dBu ±1.5 dB
Signal-to-noise ratio			111 dB
Total harmonic distortion (THD)			< 0.01 % 1 kHz
Noise Gate		Threshold	–84 dBu…+20 dBu
		Slew rate (attack)	0.5 ms…200 ms
		Decay time (release)	10 ms…1 s
Compressor		Threshold	–30 dBu…+20 dBu
		Slew rate (attack)	10 ms…150 ms
		Decay time (release)	10 ms…1 s
		Compression	1:1…Limit
		Gain	0 dBu…+24 dB

Equalizer	Lows (low pass or low shelf)	21 Hz…19.2 kHz, ±24 dB
	Low mids	21 Hz…19.2 kHz, ±24 dB
	High mids	21 Hz…19.2 kHz, ±24 dB
	Treble (high pass or high shelf)	21 Hz…19.2 kHz, ±24 dB
Digital signal processing	Internal processor	32 bit, floating point
	A/D-D/A converter	114 dB, resolution: 24 bit
Phantom power		48 V ±3 V
Power consumption		W
Supply voltage		100 – 240 V ~ 50/60 Hz
Fuse		5 mm × 20 mm, 1,6 A, 250 V, slow-blow
Dimensions (W × H × D)		527.5 mm × 532.3 mm × 200.8 mm
Weight		15.4 kg
Ambient conditions	Temperature range	0 °C…40 °C
	Relative humidity	50 %, non-condensing

Block diagram



Further information

Busses	8
Physical inputs	24
Max. number of channels	24
DCA	Yes
External card slot	No
Touch Screen	Yes
Offline Editing	No
Removable stage box	No
External power supply	No
Backup power supply	No
19" rack format	No
Built-in audio player	No

8 Plug and connection assignment

Introduction

This chapter will help you select the right cables and plugs to connect your valuable equipment in such a way that a perfect sound experience is ensured.

Please note these advices, because especially in 'Sound & Light' caution is indicated: Even if a plug fits into the socket, an incorrect connection may result in a destroyed power amp, a short circuit or 'just' in poor transmission quality!

Balanced and unbalanced transmission

Unbalanced transmission is mainly used in semi-professional environment and in hifi use. Instrument cables with two conductors (one core plus shielding) are typical representatives of the unbalanced transmission. One conductor is ground and shielding while the signal is transmitted through the core.

Unbalanced transmission is susceptible to electromagnetic interference, especially at low levels, such as microphone signals and when using long cables.

In a professional environment, therefore, the balanced transmission is preferred, because this enables an undisturbed transmission of signals over long distances. In addition to the conductors 'Ground' and 'Signal', in a balanced transmission a second core is added. This also transfers the signal, but phase-shifted by 180°.

Since the interference affects both cores equally, by subtracting the phase-shifted signals, the interfering signal is completely neutralized. The result is a pure signal without any noise interference.

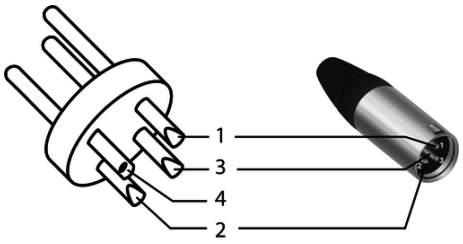
1/4" TS phone plug (mono, unbalanced)

1	Signal
2	Ground, shielding

1/4" TRS phone plug (mono, balanced)

1	Signal (in phase, +)
2	Signal (out of phase, –)
3	Ground

XLR plug (balanced)



1	Ground, shielding
2	Signal (in phase, +)
3	Signal (out of phase, –)
4	Shielding on plug housing (option)

9 Cleaning

Fan grids

The fan grids of the device must be cleaned of any contamination, such as dust, etc. on a regular basis. Before cleaning, switch off the device and disconnect mains-operated devices from the mains. Only use pH-neutral, solvent-free and non-abrasive cleaning agents. Clean the unit with a slightly damp lint-free cloth.

10 Protecting the environment

Disposal of the packaging material

For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

Disposal of your old device

This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE) in its currently valid version. Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.

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