



442

Owner's Manual



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Introduction

The Ampete Engineering 442 is the first of a new generation of switchers. Offering unparalleled amplifier, effects loop and speaker cabinet switching flexibility in a single rack space. The 442 features mono, dual mono, true stereo, supports wet/dry/wet operation, and WIFI connectivity, all monitored on a brand new integrated TFT Screen and controlled either natively or remotely. Whether you're a professional musician, amp collector, studio engineer, or just a tone enthusiast, the 442 delivers unparalleled performance in a safe, noise-free, reliable package perfect for your rig.

Routing concept

The 442 signal chain consists of two 2x2x1 switchers (2 amps, 2 FX loops, 1 cabinet).

If the stereo mode is active these two switchers operate completely independent from each other.

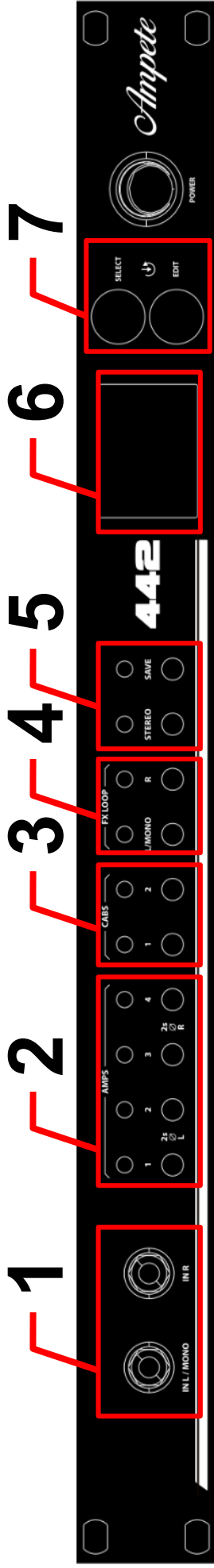
If the stereo mode is inactive the 442 works like a 4x4x2 switcher by interconnecting both switcher's FX loop bus and speaker bus.

The two switchers are marked with L and R in the display (see GUI), and we will refer to them as "left side" and "right side" in this manual.

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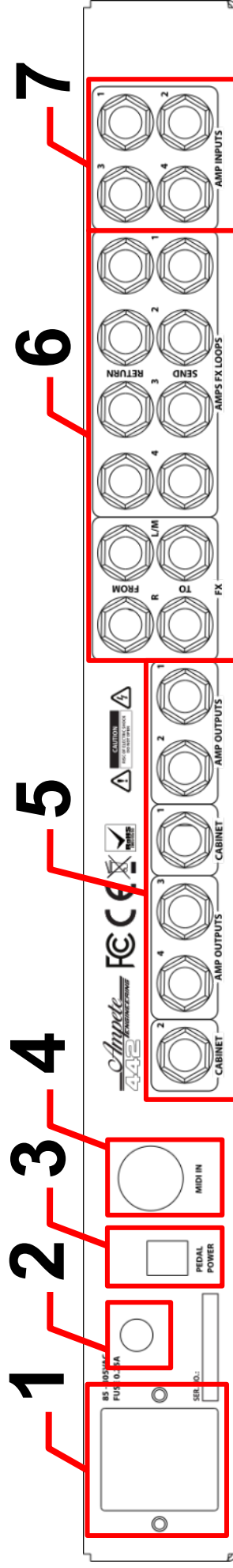
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Front Panel



1. Input Jacks: Connect your guitar here. Use the L/MONO jack in a mono setup. Use the R jack additionally in a stereo or dual mono setup. No matter if the STEREO mode is on or off, the signal from the L/MONO jack will always be routed to AMP1 and AMP2, and signal from the R jack will always be routed to AMP3 and AMP4. If R is not used, the signal from the L/MONO jack will be split to AMP3 and AMP4.
2. Amps section: Select one or multiple amps by pressing the corresponding buttons. LEDs show the current status. Long-press on AMP1 or AMP2 toggles the phase reverse for the left side, long-press on AMP3 or AMP4 toggles the phase reverse for the right side.
3. Cabinets section: Select one or both cabinets by pressing the corresponding buttons. LEDs show the current status.
4. FX Loops section: Set the FX loop status for both sides. LEDs show the current status.
5. STEREO: Toggle between stereo mode (LED on) and mono mode (LED off)
SAVE: The save LED is lit if a preset has unsaved changes. Press SAVE to update the preset to the current settings.
6. Display: see "GUI" for details
7. Encoder: Press and turn the encoders to navigate and edit the system menu (see "System Menu")

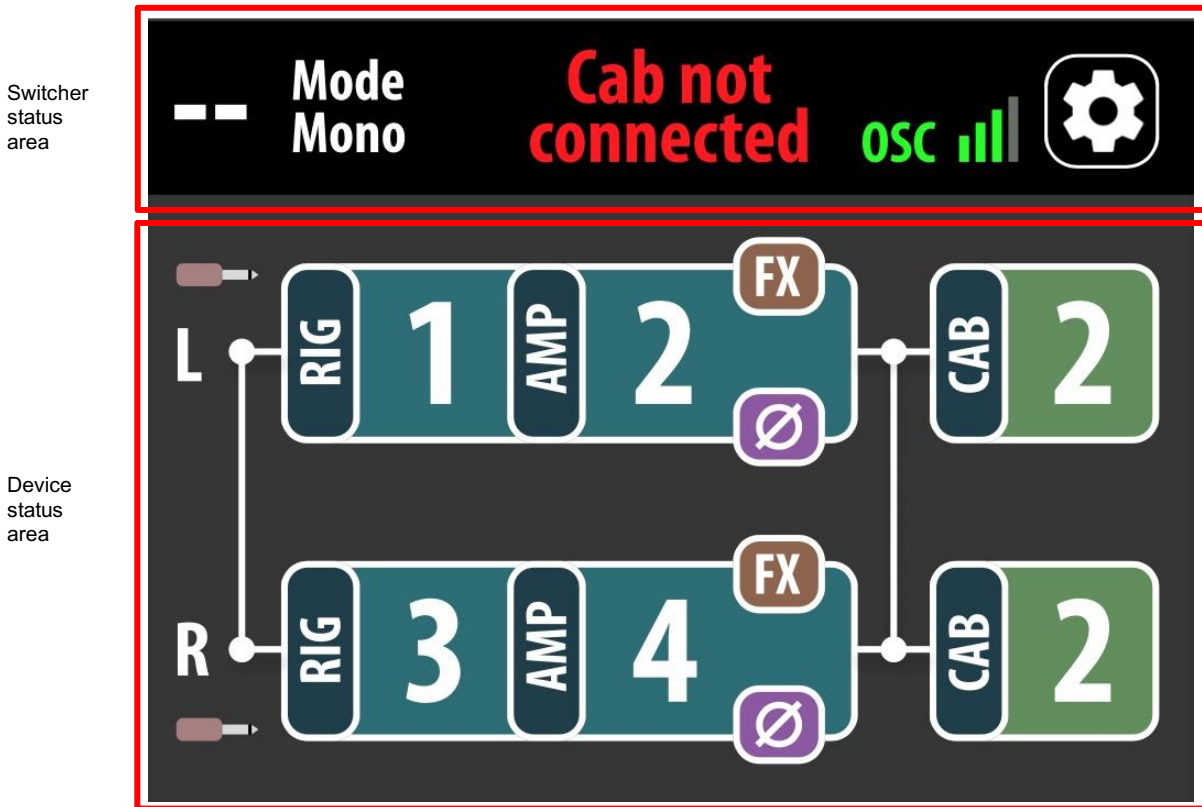
Rear Panel



1. AC inlet: connect the mains power cable here. The 442 can run on a wide input range from 85 to 305VAC for international use.
2. Wifi antenna connector. If you are using Wifi connectivity, connect the included wifi antenna here
3. Pedal Power: connect a DC power supply here to power your midi controller over the MIDI IN jack (3)
4. Midi In: connect a Midi controller here to control the 442 via Midi Program Change or Midi Control Change. See "Midi" for more details
5. Amp and Cabinet power amp connectors: connect the speaker outputs of your amplifiers to the AMP OUTPUTS 1-4.
Connect the inputs of your cabinets to CABINET 1-2.
6. FX Loops line level connectors: Connect the send and return jacks of your amplifiers to the corresponding AMPS FX LOOPS SEND / RETURN jacks. Make sure that the amplifier's FX loops are connected in the same order as the amplifier outputs.
Connect your effect pedal or rig to the FX TO/FROM jack. In a mono setup use the L/M jack first.
7. Amp Inputs: Connect these to your amplifier's guitar inputs. Make sure to connect the amps in the same order like used for the fx loops and amplifier outputs

Graphical User Interface (GUI)

Home Screen



Switcher status area

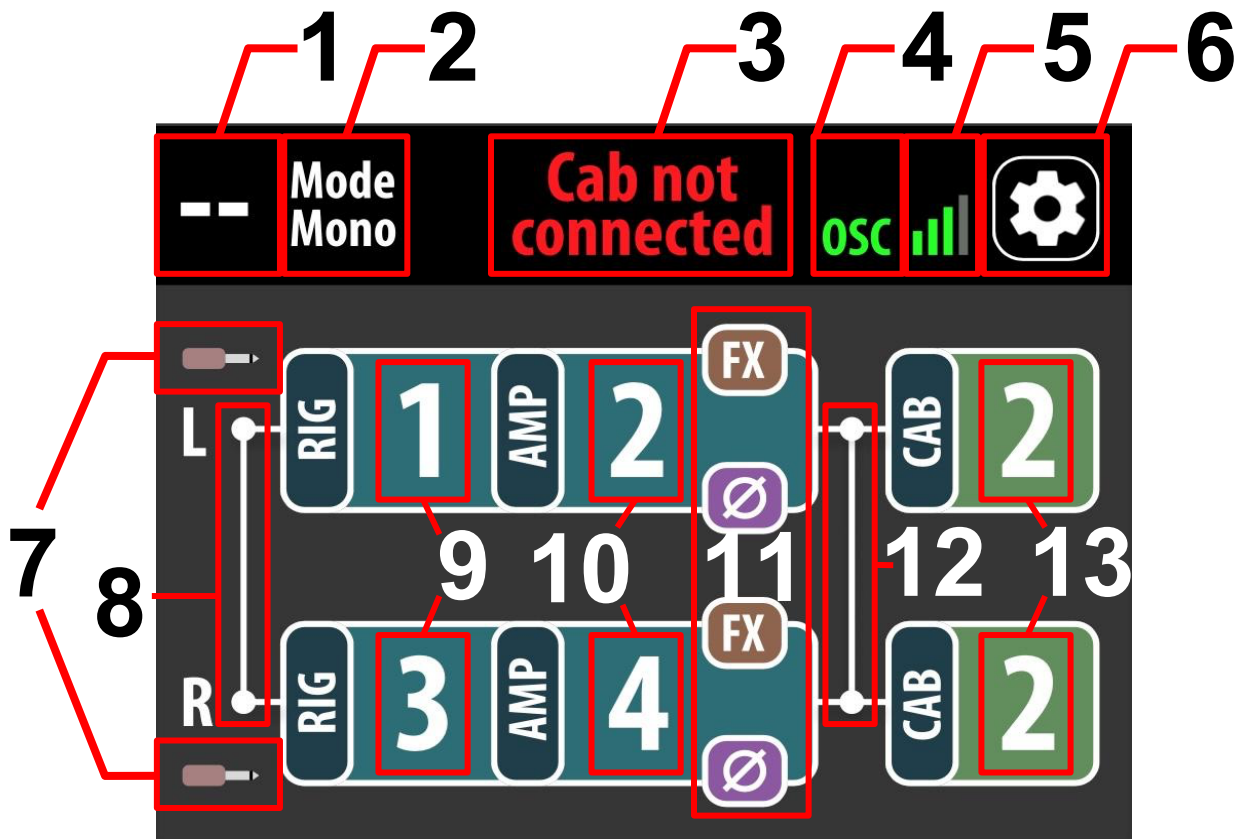
The upper part of the display shows information about the system status of the 442

Device status area

The main part of the screen shows information about the connection status of the devices. Devices are amplifiers, cabinets, effect pedals or effect rigs.

The device status area consists of a schematic representation of the analog path through the 442, starting from the input jacks on the left, followed by rigs, amplifiers and cabinets.

Independent of the operation mode, amplifiers 1 & 2 and cabinet 1 are always shown in the upper path, amplifiers 3 & 4 and cabinet 2 are always shown in the bottom path.



1. Preset: Shows the preset number that is currently active. Presets can be called via Midi or the System Menu, see "Midi" / "System Menu"
2. Mode: Shows the selected Mode (Mono / Stereo). See "Operation Modes"
3. Error Messages are shown in this area. The last error message is displayed until a new switching action is performed
4. OSC connected status: If the 442 has an active connection to TouchOSC, this icon will be displayed
5. Wifi strength: If the 442 has an active Wifi connection to an access point this icon shows the strength of the Wifi signal
6. System Menu: On the home screen the System Menu is always selected. Press the upper encoder to go to the System Menu
7. Shows up if a cable is plugged to the left or right input jack on the front panel
8. Connection status between the left and right input jack. If a cable is plugged into the left Input jack only, this line indicates the signal being routed also to the right input jack. If a cable is plugged into the right input jack, the line disappears to indicate a dual mono / stereo input topology. See "Operation Modes" for more information.
9. Shows the currently selected amplifiers which are set to Rig Mode. See "Rig Mode" for more details
10. Shows the currently selected amplifiers
11. Shows the status of the FX loop and phase reverse
12. The speaker bus connection indicates the Mono mode
13. Shows the currently selected cabinets

Operation Modes

The 442 has two different modes of operation: Mono Mode and Stereo Mode.

Mono Mode

In this mode the 442 is internally configured to work like a 4 amps, 4 fx loops, 2 cabinets switcher. Therefore one amplifier and up to two cabinets can be selected at the same time. Every amplifier can be routed to both of the cabinets. Use the left input jack and the left/mono fx loops connectors in this mode.

Note that in the GUI amplifiers 1 & 2 and cabinet 1 are always shown in the upper signal path of the device status area, while amplifiers 3 & 4 and cabinet 2 are always shown in the bottom path. To indicate the speaker bus connection between both paths the speaker bus connection line is shown in the GUI (see Graphical User Interface - 12).

Stereo Mode

In the stereo mode the 442 is internally configured to work like a dual 2 amps, 2 fx loops, 1 cabinet switcher. Therefore two amplifiers and two cabinets can be selected at the same time. Amplifier 1 and 2 can be routed to cabinet 1, while amplifier 3 and 4 can be routed to cabinet 2. Use the left input jack to split your guitar signal to two separate amplifier/cabinet combinations, or use the right input jack additionally for a dual mono or full stereo setup.

Rig Mode

If you want to integrate combo amplifiers or additional effect rigs into your setup, the 442 provides a special feature to simplify the process. Every amplifier slot on the 442 can be configured to what we call the Rig Mode. In this mode the 442 lets you select an amplifier slot without having a cabinet selected. Also there is no limitation on the amount of rig mode amplifiers selected at the same time. To configure your setup go to System > Rig Mode.

As this is a basic setting representing your actual setup, it is not supposed to be changed at runtime. Therefore the 442 will switch off all devices when this setting is changed.

Active amplifiers configured to Rig Mode are shown in the RIG section of the display (see GUI - 9). If both amplifiers from a stereo side are configured to rig mode, the AMP section in the GUI disappears.

Be aware that this setting deactivates a safety function to protect your amps from running without a load. Never activate the Rig Mode for an amplifier head (unless it is driving a speaker cabinet directly)!

Dual Cab Mode

Set this to ON if you want to be able to select two cabinets in parallel (only possible in Mono mode). If the Dual Cab mode is OFF, the 442 will automatically switch over to the other cabinet if it is selected.

System Menu

Press the SELECT encoder to enter the System Menu.

Inside the System Menu turn the SELECT encoder to choose a submenu, or close the System Menu with "X". Press the SELECT encoder to confirm your selection.

Inside the submenus use the EDIT encoder to select and edit a setting with turn and press.

For ON/OFF settings pressing EDIT will toggle the state.

For settings with a larger range of values, a horizontal slider is presented. Pressing EDIT will enter edit mode for the slider. An active edit mode is visualized by a different border color of the slider. Turning the EDIT encoder changes the value. Pressing EDIT again confirms the current setting and exits editing mode.

Submenu "System"

- Mains GND lift: activate this setting if you experience hum noise in your setup caused by ground loops
- Loops GND lift: activate this setting when struggling with pop or hum noise in conjunction with the FX loops
- LED Brightn.: controls the brightness of the front panel LEDs
- Firmware Update: If your 442 is connected to a Wifi network you can launch a firmware update by pressing the "Update" button. The 442 will check for updates, automatically download and install the update, and reboot when finished.
- Factory Reset: Press "Execute" to reset the 442 to the factory settings
 - delete Wifi SSID and password
 - delete all presets
 - configure all settings to the factory default

Submenu "Presets"

The Presets menu gives you an overview over all presets saved in the 442. You can recall a preset directly from here. It is arranged in 10 banks with 10 presets each.

Enter the Presets menu via the EDIT encoder to scroll and select the desired bank. Scroll over the bank selection to select the desired preset with pressing EDIT. A red square will indicate a selected preset.

Scroll to the end of the presets list to execute the "Call" command by pressing EDIT again.

See "Presets" for more information.

Submenu "Rig Mode"

See "Rig Mode" for details

Presets

The 442 has a non-volatile memory to store up to 99 presets. Coming from the factory all presets are empty. Selecting an empty preset will not change the current status of the 442.

You can see the status of each preset in the Presets Menu.

Presets can be recalled in three different ways:

- from the Presets Menu
- with an OSC command over a Wifi connection
- with a Midi Program Change message sent by a Midi controller connected to the Midi Input of the 442

A preset stores the following settings:

- Amplifiers
- Rigs
- Cabinets
- FX Loops
- Phase
- Stereo Mode

Note that the Rig Mode configuration is not saved in each preset, and therefore must match the configuration the preset was designed for. Selecting a Rig mode amplifier from a preset when it is not set to Rig mode gives the error message "Not in Rig Mode", and leaves the affected amplifier inactive.

Midi

Midi Channel: set the 442 Midi channel in the System Menu. 0=OMNI, 1-16 = Midi Channel 1-16

Midi Program Change: sending a Midi Program Change message to the 442 activates the corresponding preset.

Midi Control Change messages

Midi control change messages give the possibility to switch single devices without creating a preset first.

Device	CC Number	Value
Amplifier 1	0	127 = ON, <127 = OFF
Amplifier 2	1	127 = ON, <127 = OFF
Amplifier 3	2	127 = ON, <127 = OFF
Amplifier 4	3	127 = ON, <127 = OFF
Cabinet 1	40	127 = ON, <127 = OFF
Cabinet 2	41	127 = ON, <127 = OFF
FX Loop L	80	127 = ON, <127 = OFF
FX Loop R	81	127 = ON, <127 = OFF
Phase L	82	127 = ON, <127 = OFF
Phase R	83	127 = ON, <127 = OFF
Stereo	88	127 = ON, <127 = OFF
Save	90	127 = ON, <127 = OFF

Connecting to a Wifi network

For connecting the 442 to a Wifi for the first time you need the following

- Wifi router with DHCP server, configured Wifi and the Wifi password
 - Android or Apple smartphone connected to the desired Wifi access point
 - Smartphone App "EspTouch" by Espressif from App Store or Google Play
1. Make sure Wifi Enable is set to "ON" in the 442 System menu.
 2. Open the EspTouch app on your smart phone and select EspTouch. A page will open which shows the SSID of the Wifi your smartphone is connected to, and an input field for the Wifi password.
 3. Enter the Wifi password and press Confirm at the bottom of the page.

After some seconds you will see a success notification, and the display of the 442 will show a Wifi symbol in the upper right corner.

Entering the 442's System menu, scrolling down to the Wifi section you can see the Wifi SSID and IP address. You are now ready to control your 442 via OSC, or execute firmware updates.

If you have previously configured a Wifi which is currently not available, the 442 will make several attempts to connect. After the last failed attempt you can connect to a new wifi with the EspTouch App as described above.

The different states of the Wifi connection are shown in the System Menu:

- Connecting... : 442 is trying to connect to the last used access point
- Disconnected: the Wifi connection has been los
- Waiting for Provisioning... : the 442 was not able to connect to a Wifi and is now waiting to be provisioned with Wifi credentials from the EspTouch App
- Connected successfully: Wifi SSID and IP address are shown

Re-Provisioning


If you want to change to a different Wifi access point even though the 442 is currently connected to another, press "Start" in the Re-Provisioning section. The active access point is deleted from the 442's memory, and you can newly connect to a different access point via the EspTouch App. Of course you have to make sure your mobile phone is connected to the new access point before that.

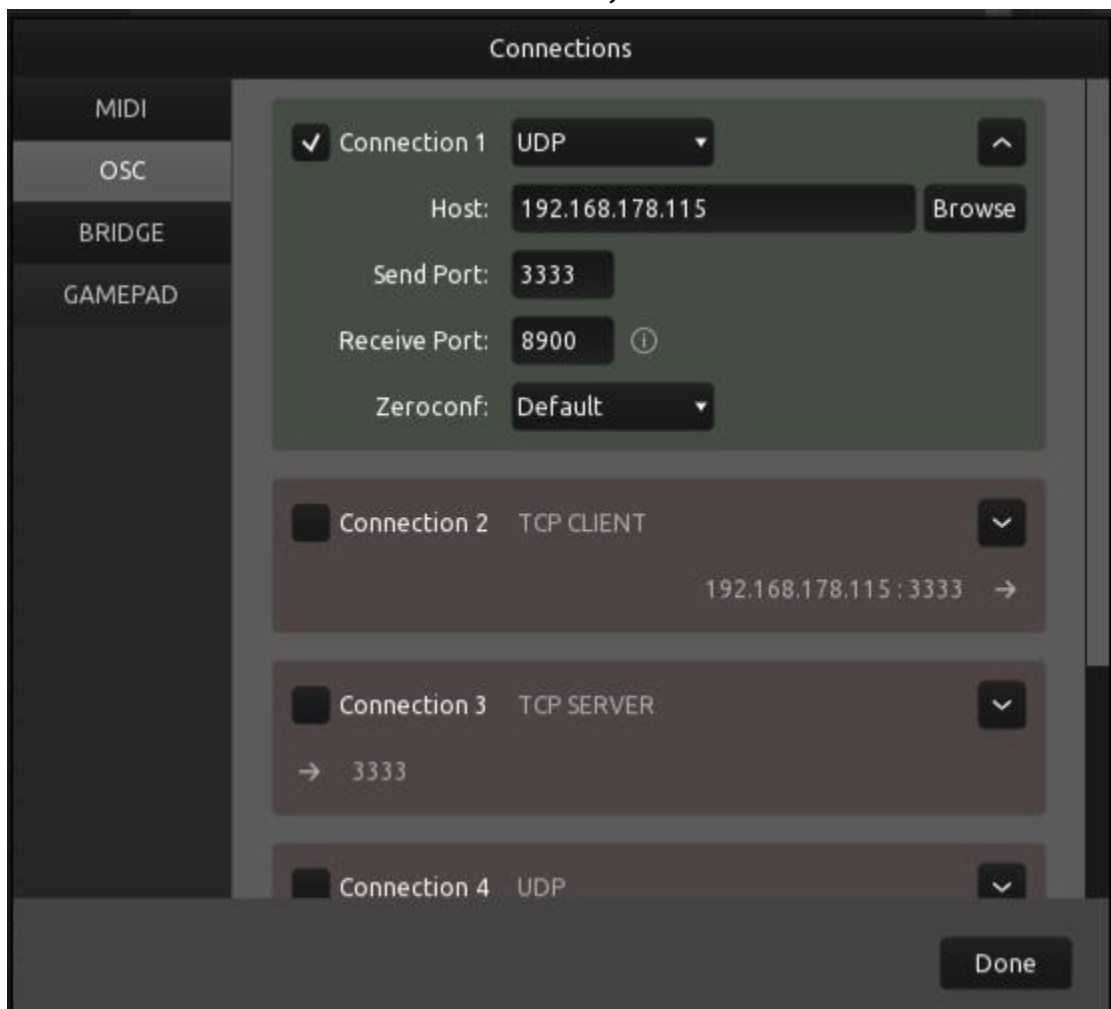
OSC with TouchOSC


The 442 is designed to be controlled via OSC (Open Sound Control). OSC is an open source protocol for digitally controlling all kinds of music equipment like DAWs, Digital Mixers, Midi Devices and much more. There are several programs and apps you can use for OSC. We have chosen "TouchOSC" as an example.

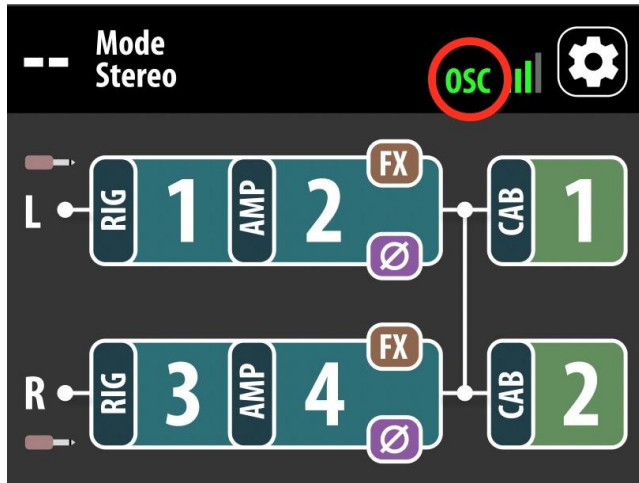
TouchOSC has a desktop software, as well as a smartphone app available, which makes it easy to connect to the device, and control it with dedicated buttons, faders, and rotary encoders, or show status messages on displays. You can even design your own overlay to better fit your workflow. We have developed an overlay especially for the 442. You can download it on our website at www.ampete-engineering.com/downloads

Getting started with the TouchOSC desktop software

1. Download and install the TouchOSC desktop app from <https://hexler.net/touchosc#get>
2. Open the app and click on  in the upper part of the main window
3. In the pop-up dialog configure the OSC connection like shown below. The Host IP address must be set to the 442's IP address shown in the system menu



4. Open the 442 overlay file you have downloaded from our website via File > Open...
5. Click on 
6. Make sure the 442 is switched on and the Wifi is configured like explained in "Connecting to a Wifi"
7. Press "CONNECT" in the TouchOSC overlay
8. In the 442 display the OSC icon will appear, showing the active connection status to TouchOSC








9. You can now control the 442 via the TouchOSC app


Controlling the 442 with the TouchOSC mobile app

Download the TouchOSC app from the App store or Google Play

To transfer the 442 overlay to your mobile phone do the following (has to be done only once):

1. In the TouchOSC desktop app click on 
2. Click on "Server" and check the Enabled field to enable the desktop app acting as an Editor Network Server
3. In the TouchOSC mobile app click on  (note: you have to scroll the upper bar to the left to see the icon)
4. In the Editor Network page click on "Client"
5. You should see your computer in the list of available servers, click on connect
6. You will now see the same overlay on you mobile app that is opened in the desktop app
7. Click on the dot on the upper right side of the window, and confirm to disconnect from the editor network
8. Click on  to open the menu
9. Click on  to save the overlay on your mobile phone

Configure the OSC connection with  like shown for the desktop app and use the overlay to

control the 442 by clicking on 

Note that the 442 can only send responses like button states and error messages to one single host device. While you can control the 442 from two or more different devices, you will only receive responses from the device that first connected via the CONNECT button in TouchOSC.

OSC Protocol

Device	OSC command	Value send	Value receive	Type
Amplifier 1	/device/amp/1	none (toggle)	0=OFF, 1=ON	INT
Amplifier 2	/device/amp/2	none (toggle)	0=OFF, 1=ON	INT
Amplifier 3	/device/amp/3	none (toggle)	0=OFF, 1=ON	INT
Amplifier 4	/device/amp/4	none (toggle)	0=OFF, 1=ON	INT
Cabinet 1	/device/cab/1	none (toggle)	0=OFF, 1=ON	INT
Cabinet 2	/device/cab/1	none (toggle)	0=OFF, 1=ON	INT
FX Loop L	/device/fxloop/1	none (toggle)	0=OFF, 1=ON	INT
FX Loop R	/device/fxloop/2	none (toggle)	0=OFF, 1=ON	INT
Phase L	/device/phase/1	none (toggle)	0=OFF, 1=ON	INT
Phase R	/device/phase/2	none (toggle)	0=OFF, 1=ON	INT
Preset Call	/preset/call	1 - 99	none	INT
Preset Save	/preset/save	none (toggle)	0=OFF, 1=ON	INT
Stereo	/stereo	none (toggle)	0=OFF, 1=ON	INT
Connect	/connect	none (toggle)	0=OFF, 1=ON	INT
Error Messages	/display/error	none	Text	String



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Technical Specifications

Dimensions:

Width: 438mm
Height: 44mm
Depth: 143mm
Front Panel width: 482mm (19")

Weight: 2,3kg (5 lbs)
Power consumption: 5W max
Mains: 85 - 305VAC