

AMT PANGAEA CP16A-6F22.



Fig. 1

AMT Pangaea CP16A-6F22 (hereinafter CP16A-6F22) is a plug-in module made in the form factor of the 6F22 battery. The module has in its composition serially produced by our company digital audio signal processing module AMT Pangaea CP-16M and new development - mini board of input/output analog interfaces **Fig.1**

Due to its small size and functional completeness, the CP16A-6F22 module can be easily integrated both into newly developed guitar devices (power amplifiers, pre-amplifiers, guitar effects, load boxes, etc.) and into any already operated similar devices. For example, the module can be easily installed in the battery compartment of pre-amplifiers and drive pedals produced by AMT Electronics or other manufacturers.

Module's pre-installed software allows you to emulate the sound of any guitar cabinet by loading the appropriate guitar cabinets' impulse responses (IRs), which can easily be found on our site and on the Internet (both paid and free). The user's interface of the module is structured as 4 banks of 4 presets (16 presets in total). A separate impulse response of a guitar cabinet can be loaded into each preset. The module's software allows you to implement effects and functions:

- ER Early Reflections (ROOM)
- EQ Parametric EQ -5 bands parametric equalizer
- LP Tunable low-pass filter
- LP Tunable high-pass filter
- PS Presence – the presence control boosts the upper mid-range frequencies
- VL Volume – the common volume control
- IR Impulse Response of a guitar cabinet
- PA Power amps' models
- PR Preamp's module
- CM Compressor
- GT Noise Gate

All these functions are configured and executed separately for each preset. Parameters' control and IRs loading are carried out via USB with the Pangaea CP Application.

The AMT Pangaea CP-16M is a heart of the CP-16A-6F22 module <https://amtelectronics.com/new/amt-pangaea-cp-16-module/>

AMT PANGAEA CP16A-6F22 CONNECTOR'S PINS ASSIGNMENTS:



Fig. 2 CONNECTOR'S PINS ASSIGNMENTS

1-2	Power +9... +12VDC (Maximum +18VDC)
3-4	Common power wire (1*)
5-6	Control inputs P3, P4 Bank Select PS2 PS1 (2*)
7-8	Control inputs P1, P2 Preset Select PS4 PS3 (2*)
9-10	CLIP LED contacts for an external LED (9 anode/10 cathode) (3*)
11	Common wire (GND)
12	Input of an audio signal
13-14	Common wire (GND)
15-16	AUX R/L - Inputs of an auxiliary signal source (for example WAV, MP3 player)
17-18	Common wire (GND)
19-20	OUT R/L - R/L audio output (*4)

BANK/PRESET CONTROL



Fig. 3

Presets are organized by groups of 4 banks (Bank_0...Bank_3), 4 presets (Preset_0...Preset_3) in each Bank. The choice of Bank/preset is made by applying a binary code to the control inputs (P1...P4) from the quad switch of the module **Fig.3**.

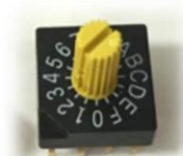


Fig. 4

For external Bank/preset selection you can use (e.g.) 16 position encoder, see **Fig.4** In this case, all four keys of the module switch must be set to OFF.

In addition to simple switches such as "dry contact", electronic circuits can also be used to apply a code to the inputs (P1...P4). The value of logic level "0" must be at least -0.3V and no more than +0.3V. The Input impedance of the control inputs (P1...P4) is 4.7 kOhm. A non-connected input is considered a logic level "1". The inputs are protected from positive voltage by diodes, so the voltage from +2.5 to +20V can be supplied as a logic level "1".

Bank/Preset Select Table (switch is ON = 0, switch is OFF = 1)

Module's contacts	BANK 0				BANK 1				BANK 2				BANK 3			
	PRESET				PRESET				PRESET				PRESET			
	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
P4	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
P3	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0
P2	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
P1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0

TECHNICAL DATA:

1. INPUT - Audio input (cont.12) *5

• input impedance	100kOhm
• ADC full scale voltage	1,26V (+2dBV)
• nominal level of the audio signal	0.316Vrms (-10dBV)

2. OUT R/L - R/L audio output (cont. 19,20)

• Maximum sine wave voltage (Line mode)	1.2V
• Maximum sine wave differential voltage (BAL mode)	4.6V
• Maximum sine wave voltage (PH mode)	2.3V
• Minimum head phones impedance	32 Ohm

3. AUX R/L - R/L input of the auxiliary audio signal

• Input impedance	10 kOhm
• Maximum sine wave voltage	1V

4. Dimensions

26mm*16mm*48mm

5. Weight

16 g

6. Power supply voltage

9...18V DC (18VDC Maximum)

7. Current consumption (without signals and load)

12V/95mA , 9V/110mA

USB INTERFACE

The module communicates with the computer via USB interface in one of two modes determined by the power-on sequence of the AMT Pangeae CP16A-6F22 module

1 - Mode: the system identifies the module as a USB drive. In this mode you can work with files and update the firmware version.

To enter mode 1:

a) Connect the USB connector of the CP16A-6F22 module with a USB cable to the corresponding computer connector.

2 - Mode: the system identifies the module as a USB serial port (USB COM). In this mode, you communicate with the CP16A-6F22 module with the AMT Pangea CP computer application.

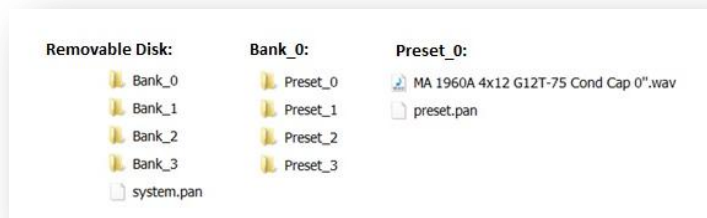
To enter Mode 2:

a) supply power to CP16A-6F22.

b) Connect the USB connector of the CP16A-6F22 module with a USB cable to the corresponding computer connector.

Fig. 5 shows the organization of the folders and the contents of the CP16A-6F22 module connected as a USB drive (mode 1).

Fig. 5



Bank_0 ... Bank_3 folders contain Preset_0 ... Preset3 folders. Each Preset folder contains preset.pan system files. After deleting the contents or formatting the disk, the files and folders listed above will be automatically re-created by the system. In addition to the above files, you can store other information on the disk — for example, the AMT Pangea CP16A-6F22 manual file, text files of preset comments, etc. Internal flash memory Capacity is 3.96 MB

The **system.pan** file contains the system settings of the module (the number of the current preset and the type of audio output).

The **preset.pan** file contains system preset settings.

* **.wav** files located in preset folders (preset) are cabinets' impulse response files.

COMPUTER APPLICATION AMT PANGAEA CP

For interactive control, loading impulse responses (IRs) and changing the parameters of the AMT Pangea CP16A-6F22 module, we developed the AMT Pangea CP computer application. The application has an intuitive graphical interface. **Fig. 6** shows the application window.

There are versions of the application for Windows and for MAC OS. You can download (for free) AMT PANGAEA CP applications and the latest firmware version of the CP-16M module (the CP-16M is a part of the CP16A-6F22 module) by visiting the MEDIA CENTER section of our company's official website <https://amtelectronics.com/new/>

Fig. 6



EXAMPLES OF THE CP16A-6F22 MODULE'S APPLICATION.

Example 1. Cabinet simulator as a standalone device

Fig. 7 shows a schematics of a simple Cabinet simulator created on the basis of the module CP16A-6F22. You can use this Cabinet simulator, together with your floor preamps or drive pedals by placing the CP16A-6F22 module and several connectors in some metal case. When you use your drive pedals with a Cabinet simulator on the basis of the module, select the PR function (preamp) in the used preset of the CP16A-6F22 module.

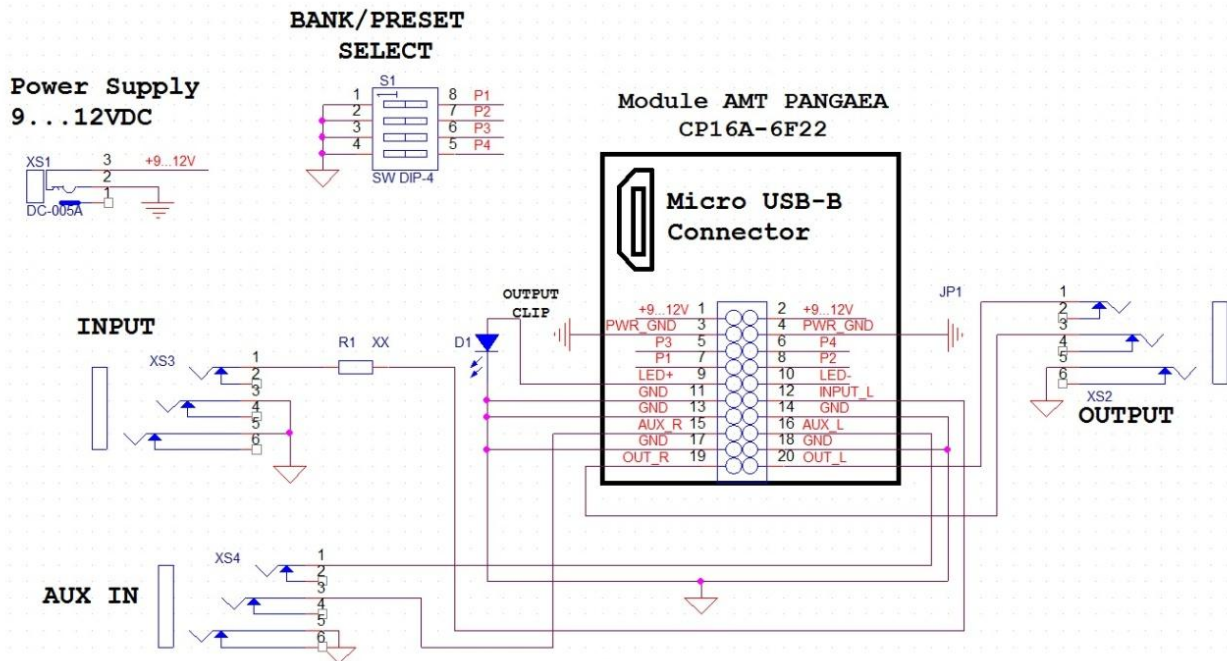


Fig. 7

The use of the AMT Pangaea CP16A-6F22 module is not limited to the options we offer, you can develop your own control scheme with wide functionality (indication, MIDI, footswitches, etc.)

To implement a more functional device based on the CP16A-6F22 module, we recommend that you familiarize yourself with the Evaluation Board (AMT PANGAEA CP-16M-EB) for the CP-16M module. You can find a description of the Evaluation Board in the MEDIA section of our official website <https://amtelectronics.com/new/>

Example 2. Embedding the module in the battery compartment of the AMT LA2 series preamp (R2)



Fig. 8



Fig. 9

1. Remove the battery connection terminal by removing the wires from the preamp board (unsolder).
2. Cut the conductor on the PCB at the OUT Cab.Sim connector see **Fig. 8**
3. Solder to the contacts module CP16A-6F22 five wires supplied, observing the colors **Fig. 9**
 - red to the contact 1 (power)
 - black to the contact 3 (power common wire)
 - white to the contact 12 (Input)
 - green to the contact 19 (OUT R)
 - grey to the contact 20 (OUT L)
4. Insert the module into the battery compartment, solder the wires to the appropriate contacts on the preamp PCB.
5. Solder a 330 kOhm resistor

6. Connect the preamp output to the input of the CP16A-6F22 module. (white wire)
7. Connect the output of the module to the preamp OUT CABSIM connector - gray L, green R.
8. Connect the black and red wires of the module to the power connector of the preamp. (red + (positive) power, black common wire)

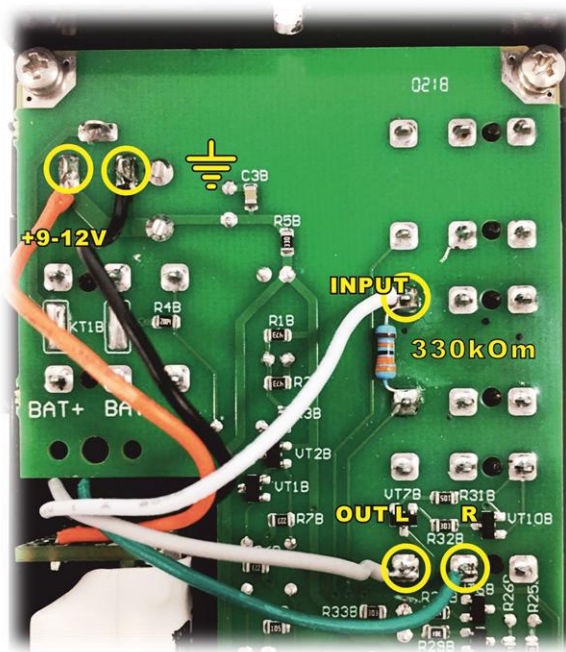


Fig. 10 additionally explains the operations performed

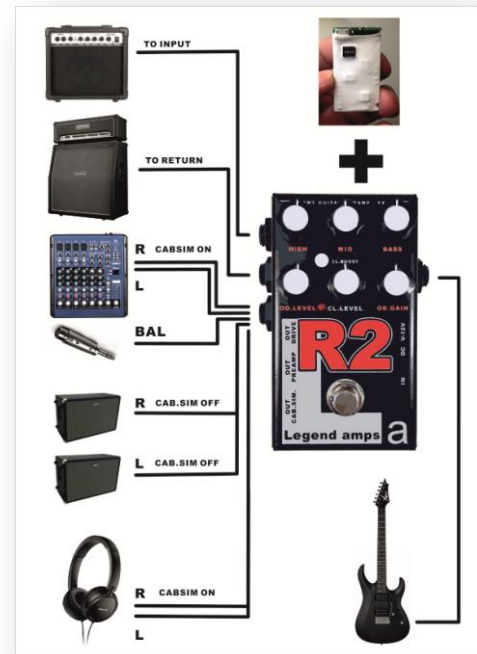


Fig. 11 Options for connecting the upgraded preamp

NOTES *

- 1* Contact is connected to "common wire"
 - 2* Contacts P1 ... P4 of the CP16A-6F22 module are internally connected to the contacts of the CP-16M (the CM-16M is a part of the CP16A-6F22 module) in accordance with P1-PS4, P2-PS3, P3-PS2, P4-PS1.
 - 3* The LED indicates the DAC clipping (no current limiting resistor needed)
 - 4* Contacts OUT R / L, depending on the set mode, can be: stereo headphone output (headphones), stereo line level output or balanced output
 - 5* When the module is embedded in the preamp, in some cases it is necessary to use the cabsim output simultaneously with the preamp output, the nominal level of the preamp output signal may exceed -10 dBV. In this case, you can lower the sensitivity of the AMT Pangaea CP16A-6F22 module by sending a signal to the module input via a 330 kOhm resistor, in this case the sensitivity will drop by 12dB.
- For attenuation:

-8dB	150kohm resistor is needed
-6dB	100kohm resistor is needed
-3dB	39 kOhm resistor is needed

THE COMPLETE SET INCLUDES:

1. Module CP16A-6F22	1pc
2. Resistors (39k, 100k, 150k, 330k)	4pcs
3. Wires (five colors)	5pcs
5. Packaging	1pc

Appendix

Schematics of the CP-16A module (which is a part of the AMT Pangaea CP16A-6F22)

