Everything is just beginning…

2017

AMT Pangaea CP-16M

Russia

Omsk

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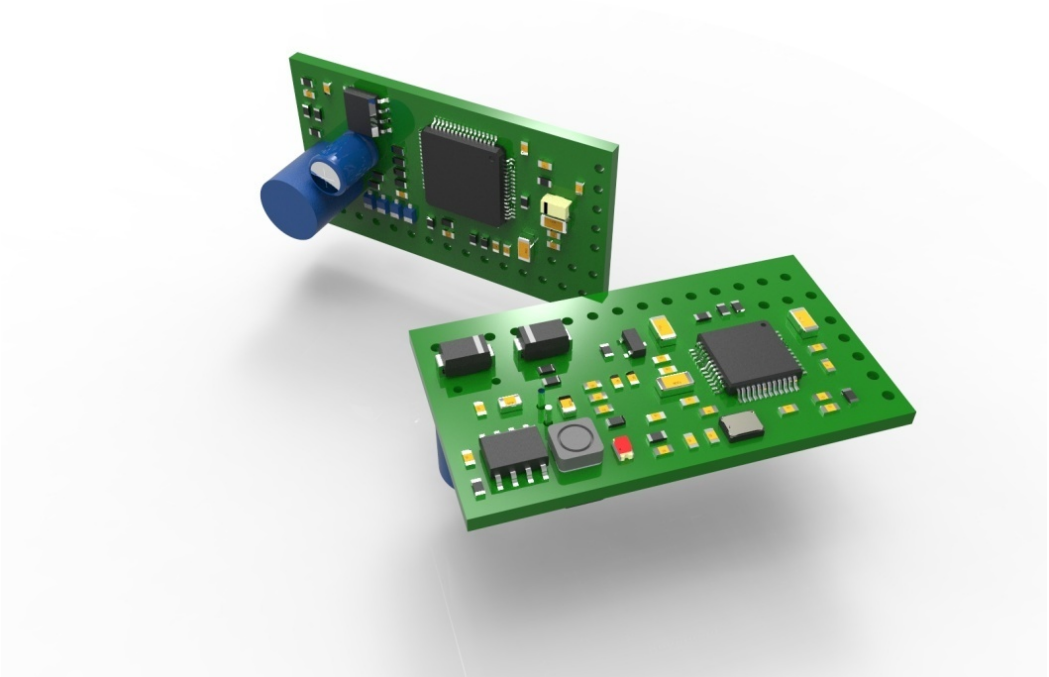
AMT Electronics presents a new product – the AMT Pangaea CP-16M module.

CP-16M - is a built-in digital audio processing module with preinstalled software.

AMT Pangaea CP-16 module is designed especially for those who create all sorts of guitar devices: power amplifiers, preamplifiers, guitar effects etc. The CP-16 module is so small that it can easily be integrated into any compact devices – such as “newfangled” mini effect pedals.



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:

1. Early Reflections (ROOM)
2. Parametric EQ – 5 bands parametric equalizer
3. LPF - Tunable low-pass filter
4. HPF – Tunable high-pass filter
5. Presence – the presence control boosts the upper mid-range frequencies
6. Volume – the common volume control

All these functions are configured and executed separately for each preset.

Parameters’ control and IRs loading are carried out via USB or Bluetooth interfaces (Bluetooth is not implemented in the current version).

The mounting place for a PLS-15 connector is provided for integration of the module into the user’s final design.

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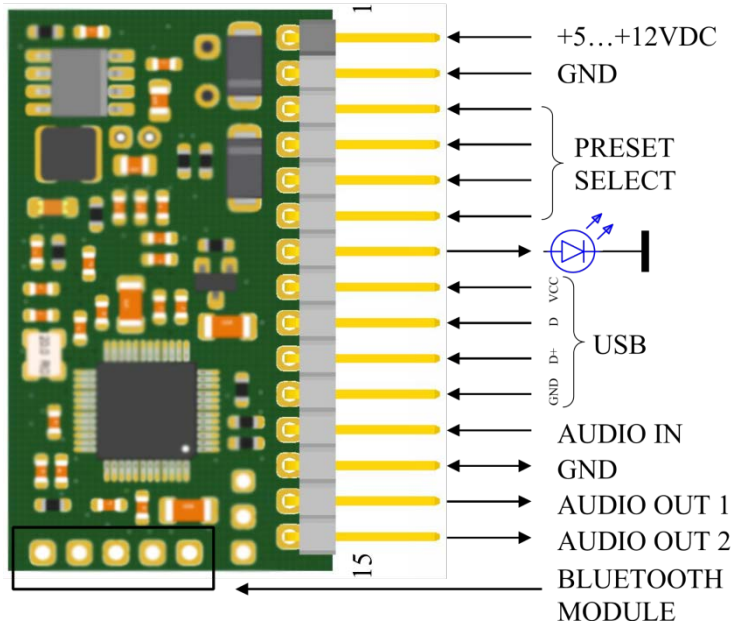
Connector's pins assignments:



1. Power +5…+12VDC
2. Common wire (GND)
3. Preset select PS4
4. Preset select PS3
5. Bank select PS2
6. Bank select PS1
7. Pin for connecting of an external LED's anode (no current-limiting resistor required). The LED indicates the clipping of the signal at the output of the DAC.
8. Vbus (USB)
9. D- (USB)
10. D+ (USB)
11. GND (USB)
12. ADC Input AIN
13. Common wire (GND)
14. DAC's Output (Left channel) AOUT0
15. DAC's Output (Right channel) AOUT1

The presets are selected by setting the binary code to the control inputs (PS1 ... PS4). The value of the logical zero must be not less than -0.3V and not more than + 0.3V. The input resistance of the control inputs (PS1 ... PS4) is 4.7 kΩ. An unconnected input is considered a logical one. The inputs are protected against positive voltage with diodes; therefore a voltage of +2.5 to +20 V can be applied to a control input as a logical one.

Bank/Preset Select Table

	PS1	*PS2*	*PS3*	*PS4*
Bank 0 Preset 0	*1*	*1*	*1*	*1*
Bank 0 Preset 1	*1*	*1*	*1*	*0*
Bank 0 Preset 2	*1*	*1*	*0*	*1*
Bank 0 Preset 3	*1*	*1*	*0*	*0*
Bank 1 Preset 0	*1*	*0*	*1*	*1*
Bank 1 Preset 1	*1*	*0*	*1*	*0*
Bank 1 Preset 2	*1*	*0*	*0*	*1*
Bank 1 Preset 3	*1*	*0*	*0*	*0*
Bank 2 Preset 0	*0*	*1*	*1*	*1*
Bank 2 Preset 1	*0*	*1*	*1*	*0*
Bank 2 Preset 2	*0*	*1*	*0*	*1*
Bank 2 Preset 3	*0*	*1*	*0*	*0*
Bank 2 Preset 0	*0*	*0*	*1*	*1*
Bank 2 Preset 1	*0*	*0*	*1*	*0*
Bank 2 Preset 2	*0*	*0*	*0*	*1*
Bank 2 Preset 3	*0*	*0*	*0*	*0*

Contacts 8 ... 11 are used to organize the USB interface. Using the USB interface, the module communicates with the computer. It is possible to work with the AMT Pangaea CP computer application that allows you to make the necessary settings of the module. Also, it is possible to replace the software version of the module.

AMT Pangaea CP-16M technical data :

ADC input has the next parameters:

1. Input impedance — 20 kOhm
2. DC Bias — +1,5 V
3. Full Scale sine wave input voltage — 2 V
4. Nominal sine wave input voltage (-12dB of Full Scale) — 0,5 V

DAC output has the next parameters:

1. *Minimal load impedance* — *5 kOhm*
2. *DC Bias* — *+1,5 V*
3. *Full Scale sine wave output voltage* — *0.9 V*

IR file's type: — *wav, Mono, 24-bits, 48kS/sec*

Latency: — *1.2msec*

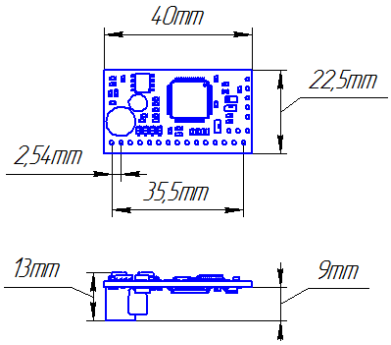
IR file truncation: — *984 Samples (20,5 mS)*

Russia Omsk April 2017

Power: 5VDC/135mA, 9VDC/80mA, 12VDC/65mA

*Dimensions: 40*22*13 (мм)*

Weight: 18г



Module's connection to a computer via USB.

If the USB port is connected to the module with the main power off, the computer's operating system defines the module as a USB drive. In this mode, you can update a software version or simply copy presets.

*Screen of **AMT Pangaea CP** computer application*

If the USB port is connected to the module when the main power is on, the operating system defines the module as a serial USB port (USB COM). In this mode, you can work with the "AMT Pangaea CP" computer application and manage (change, store) preset parameters. You can select different guitar cabinets' IRs and listen in real time the results of sound processing.

The complete set includes:

1. *AMT Pangaea CP-16M module* *1pc.*
2. *User's manual* *1pc.*
3. *Packaging* *1pc.*
4. *Warranty card* *1pc.*

Schematic diagram of possible analog circuits for the AMT Pangaea CP-16M (See page 6)

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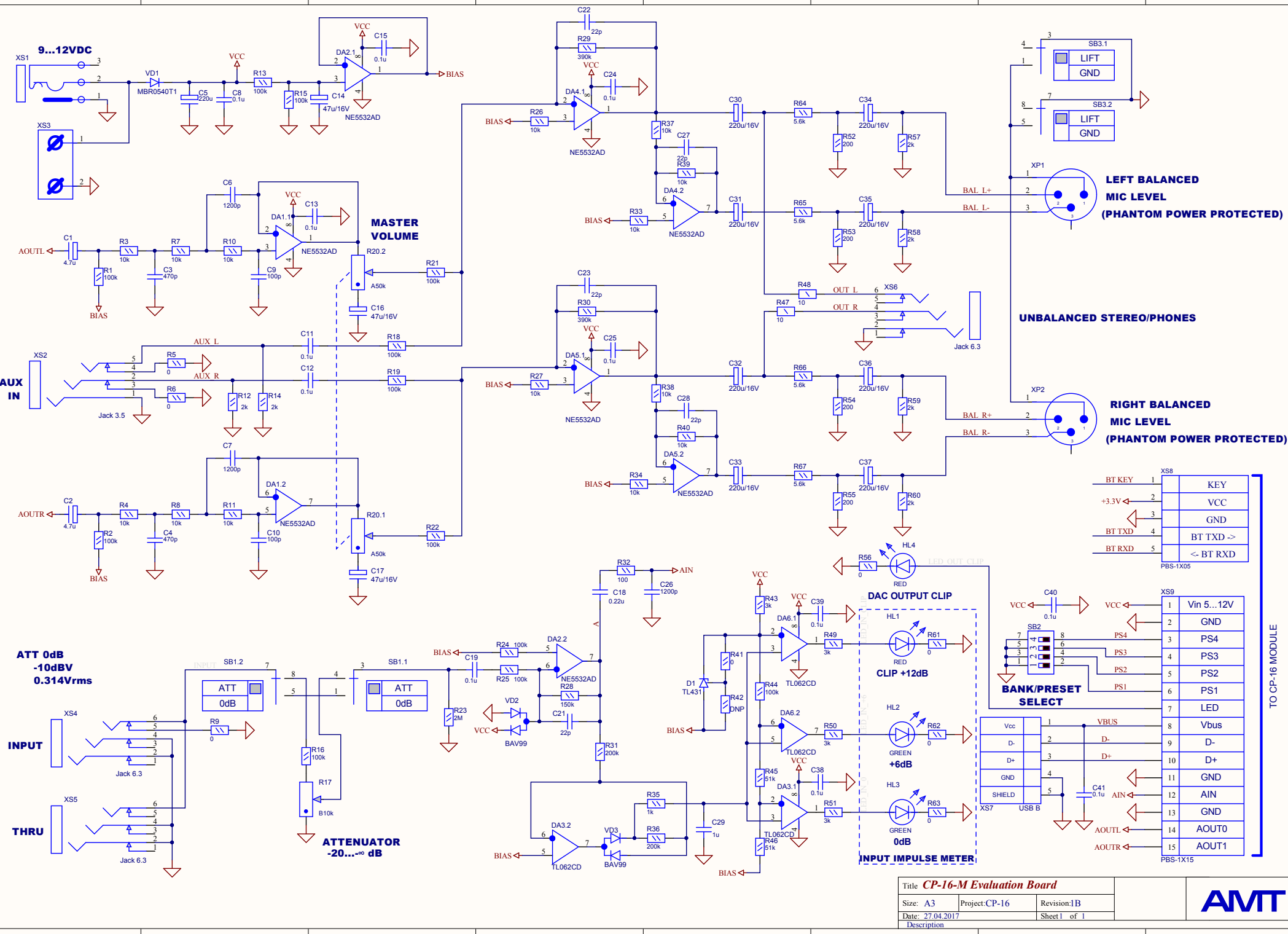
9...12VDC
XS1
VD1
MBR0540T1
C5 220u
C8 0.1u
R13 100k
R15 100k
C14 47u/16V
C15 0.1u
DA2.1
NE5532AD
VCC
BIAS
XS3
MASTER VOLUME
DA1.1
DA1.2
R20.1
R20.2
A50k
C16 47u/16V
C17 47u/16V
R21 100k
R22 100k
AUX IN
XS2
Jack 3.5
AUX L
AUX R
AOUTL
AOUTR
C1 4.7u
C2 4.7u
C6 1200p
C7 1200p
C9 100p
C10 100p
R1 100k
R2 100k
R3 10k
R4 10k
R7 10k
R8 10k
R10 10k
R11 10k
C3 470p
C4 470p
R5 0
R6 0
R12 2k
R14 2k
C11 0.1u
C12 0.1u
R18 100k
R19 100k
DA4.1
DA4.2
DA5.1
DA5.2
C22 22p
C23 22p
C24 0.1u
C25 0.1u
R29 390k
R30 390k
R26 10k
R27 10k
R33 10k
R34 10k
R37 10k
R38 10k
C27 22p
C28 22p
R39 10k
R40 10k
C30 220u/16V
C31 220u/16V
C32 220u/16V
C33 220u/16V
R64 5.6k
R65 5.6k
R66 5.6k
R67 5.6k
R52 200
R53 200
R54 200
R55 200
R57 2k
R58 2k
R59 2k
R60 2k
C34 220u/16V
C35 220u/16V
C36 220u/16V
C37 220u/16V
BAL L+
BAL L-
BAL R+
BAL R-
XP1
XP2
LEFT BALANCED
MIC LEVEL
(PHANTOM POWER PROTECTED)
RIGHT BALANCED
MIC LEVEL
(PHANTOM POWER PROTECTED)
SB3.1
SB3.2
LIFT
GND
UNBALANCED STEREO/PHONES
OUT L
OUT R
XS6
R47 10
R48 10
Jack 6.3
HL4
R56 0
RED
LED_OUT_CLIP
DAC OUTPUT CLIP
XS8
BT KEY
+3.3V
BT TXD
BT RXD
KEY
VCC
GND
BT TXD ->
<- BT RXD
PBS-1X05
XS9
Vin 5...12V
GND
PS4
PS3
PS2
PS1
LED
Vbus
D-
D+
GND
AIN
GND
AOUT0
AOUT1
PBS-1X15
TO CP-16 MODULE
C40 0.1u
SB2
BANK/PRESET SELECT
XS7
USB B
Vcc
D-
D+
GND
SHIELD
VBUS
C41 0.1u
ATT 0dB
-10dBV
0.314Vrms
INPUT
THRU
XS4
XS5
Jack 6.3
SB1.1
SB1.2
ATT
0dB
R9 0
R16 100k
R17
B10k
ATTENUATOR
-20...-∞ dB
R32 100
C18 0.22u
C26 1200p
AIN
DA2.2
DA3.1
DA3.2
DA6.1
DA6.2
TL062CD
NE5532AD
R24 100k
R25 100k
R28 150k
C19 0.1u
C21 22p
R23 2M
VD2
BAV99
R31 200k
R35 1k
R36 200k
VD3
C29 1u
D1
TL431
R41 0
R42 DNP
R43 3k
R44 100k
R45 51k
R46 51k
R49 3k
R50 3k
R51 3k
C39 0.1u
C38 0.1u
HL1
HL2
HL3
RED
GREEN
CLIP +12dB
+6dB
0dB
INPUT IMPULSE METER
R61 0
R62 0
R63 0
Title CP-16-M Evaluation Board
Size: A3
Project:CP-16
Revision:1B
Date: 27.04.2017
Sheet 1 of 1
Description
AMT

Some advices about USB connection

AMT CP-16M module uses the USB interface for connecting to a computer. The USB connector is not installed on the module, as it is understood that the user is free to install it in the desired location of the final design.

When installing the connector, you must use, in addition to the 4 contacts of USB interface (VCC, D-, D +, GND), also the contacts of the connector's housing (shield).

The matter is that when the USB cable of the device is being “hot” connected to a computer, we often connect devices which have different potentials, since the devices may be non-grounded.

Often the designs of the devices do not imply the possibility of grounding, for example - an impulse network adapter.

Therefore, when hot-connecting two devices with a USB cable, the one important condition must be fulfilled – the “grounds” of the devices ought to be connected first in time.

USB connectors’ designs are made so that their housings (shields) would be connected first.

The use of special USB protective components is recommended.

In addition, you need to be careful when using USB splitters. Some cheap USB splitters do not have a connection between the input and output connectors' housings.

Also, you must be sure that your USB cable is in a fully working state - in addition to the four USB wires, the shielding conductor, connecting the housings of the cable's connectors, should not be broken.