

2017

**AMT
ELECTRONICS**

TEAM OF ENGINEERS

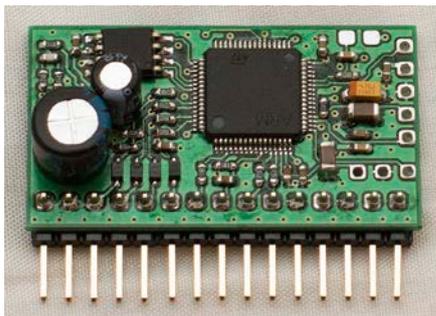
EVALUATION BOARD
AMT PANGAEA CP-16M-EB

USER'S MANUAL

2017 OMSK RUSSIA

AMT PANGAEA CP-16M MODULE

Our company has begun production of AMT Pangaea CP16M 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.



AMT Pangaea CP-16M module

To apply the module, the user must have some basic knowledge in the field of electronics and possess some computer literacy. For more detailed technical information on the module, read the description of AMT Pangaea CP-16M_ (ENG) RUS.pdf www.amtelectronics.com

AMT PANGAEA CP-16M-EB EVALUATION BOARD

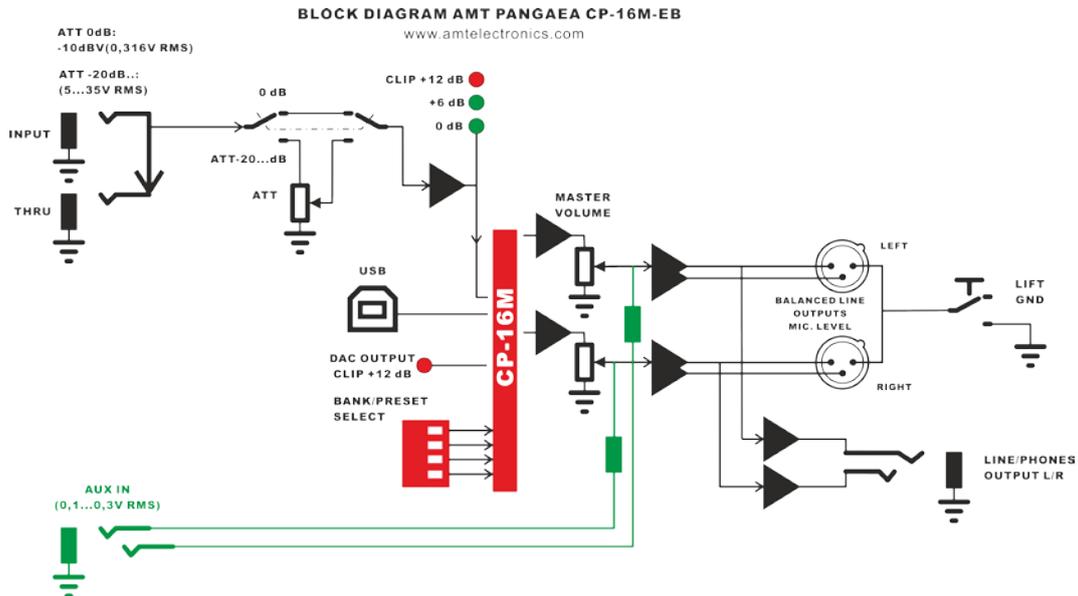
To make the process of getting to know easier and shorten the development time of the final product, AMT Electronics has developed a special AMT Pangaea CP-16M-EB Evaluation Board.



The view of the CP-16M-EB Evaluation Board (AMT Pangaea CP-16M module isn't installed).

The board has all the necessary interfaces for quickly starting the work with the module. The user can use some circuit designs of the evaluation board for the use in his final product. Many connectors of the evaluation board are duplicated by additional connecting contacts, which can be used by the developer to move the necessary connectors to the locations determined by the final design of the user's device. That is, in cases where the developer does not need to make many instances of the device and, when not constrained by the size of the final design, he can apply the ready AMT Pangaea CP-16M-EB board, possibly making some changes to the circuit.

BLOCK DIAGRAM AMT PANGAEA CP-16M-EB



The board is powered with an external power supply, voltage range 9...12VDC.

The signal applied to the CP-16M-EB input (INPUT connector) can be in one of two ranges of levels. They are selected by the position of the switch ATT:

ATT 0dB -10dBV (0,316 Vrms), the signal goes from the external preamp's output (effect pedals etc). The switch ATT at 0dB position..

ATT -20 dB signal is fed from the output of the power amplifier. The signal is regulated by a variable resistor ATT -20 dB....

The input level after the switch ATT is controlled by 3 LEDs (0dB, +6dB, +12dB Clip).

The LED 0dB corresponds to the nominal level.

The LED +12dB indicates the beginning of the clipping on the ADC input of the module.

The input signal applied to the module is subjected to digital processing in accordance with the selected BANK/PRESET. The BANK/PRESET numbers are selected via the DIP switches BANK/PRESET SELECT (4 banks with 4 presets each) in accordance with the table.

BANK/PRESET SELECT Table

	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
PS1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
PS2	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0
PS3	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
PS4	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0

A stereo signal from the DAC outputs through the amplifying circuits is fed to output connectors. Clipping of output signals of the DAC is indicated by LED "DAC OUTPUT CLIP".

The evaluation board has two XLR output connectors (right and left channels) with microphone output level signals. The circuitry of the board is protected from the possible presence of a phantom power supply of the microphone input. There is also an output TRS connector on which signals from the right and left channels are present. This connector can be used as a line stereo output or as an output to headphones. Levels on all output connectors are controlled simultaneously by one Master Volume potentiometer.

In addition to the main audio input (INPUT), there is an additional input (AUX) for connecting an external audio source (for example, an MP3 player).

TECHNICAL DATA AND DESCRIPTION OF SOME SCHEMATIC'S COMPONENTS OF AMT PANGAEA CP-16M-EB

Power supply Voltage - DC 9-12V

Evaluation board's current consumption (the module's installed) when powered from:

12VDC - 100 mA

9VDC - 120 mA

Input Audio connectors:

INPUT – Input audio signal connector. The source can be a preamp's output or a power amp's output.

Schematic reference designator: XS4

Type: TS Jack 6.3mm

Nominal input voltage (Attenuator 0dB): 0.316 Vrms (-10dBV)

Sine voltage of the ADC Full Scale (Attenuator 0dB): 1.26V (+2dBV)

Input voltage range (Attenuator -20...dB): 5...35 Vrms

Input impedance (Attenuator 0dB): 100kOhm

Input impedance (Attenuator -20...dB): 110kOhm

AUX IN – Additional audio input (MP3 player backing track, for example)

Schematic reference designator: XS4

Type: Jack 3.5mm

Input voltage: 0.1...0.3 Vrms

Input impedance: 2kOhm

Output Audio connectors:

THRU – connector for power amp's load (speaker or load box)

Schematic reference designator: XS5

Type: TS Jack 6.3mm

The output voltage is equal to the input voltage (INPUT XS4)

LEFT/RIGHT – Left and Right channels' balanced microphone level outputs.

They are intended to send signals to microphone inputs of a mixer, a sound card etc.

Schematic reference designator: XP1 (Left), XP2 (Right)

Type: XLR (M)

Output voltage: 0...200 mVrms

Output impedance: 300 Ohm

LINE/PHONES OUTPUT L/R – the output for headphones or a mixer line level input.

Schematic reference designator: XS6

Type: TRS Jack 6.3mm

Output voltage: 0...3 Vrms

Output impedance: 10 Ohm

Regulators:

MASTER VOLUME – output signals' volume control (connectors XP1, XP2, XS6)

Schematic reference designator: R20

ATT – input signal control when you use a power amp as a signal source (ATT -20dB)

Schematic reference designator: R17

Other connectors:

USB – a connector for a link to a computer

Schematic reference designator: XS7

9...12VDC – power supply connector:

Schematic reference designator: XS1

CP-16M – connector for the AMT Pangaea CP-16M

Schematic reference designator: XS9

Switches:

GND/LIFT – “Ground lifting” for use with the balanced outputs

Schematic reference designator: SB3

ATT – input attenuator's ON/OFF switch

Schematic reference designator: SB1

BANK/PRESET SELECT - CP-16M banks and presets switches

Schematic reference designator: XB2

Indicators:

INPUT IMPULSE METER – displays the input signal level

Schematic reference designator: HL1(+12dB Clip), HL2 (+6dB), HL3(0dB)

DAC Output Clip +12dB – displays CP-16M DAC clipping

Schematic reference designator: HL4

COMPUTER APPLICATION AMT PANGAEA CP

AMT electronics has developed a special computer Windows application AMT Pangaea CP. The application let you interactively control module's parameters, load IRs, copy presets, shape sound with EQ, filters etc.

The application has an intuitive graphical interface. More details of the application, you will be able to see by reading a user manual to it.

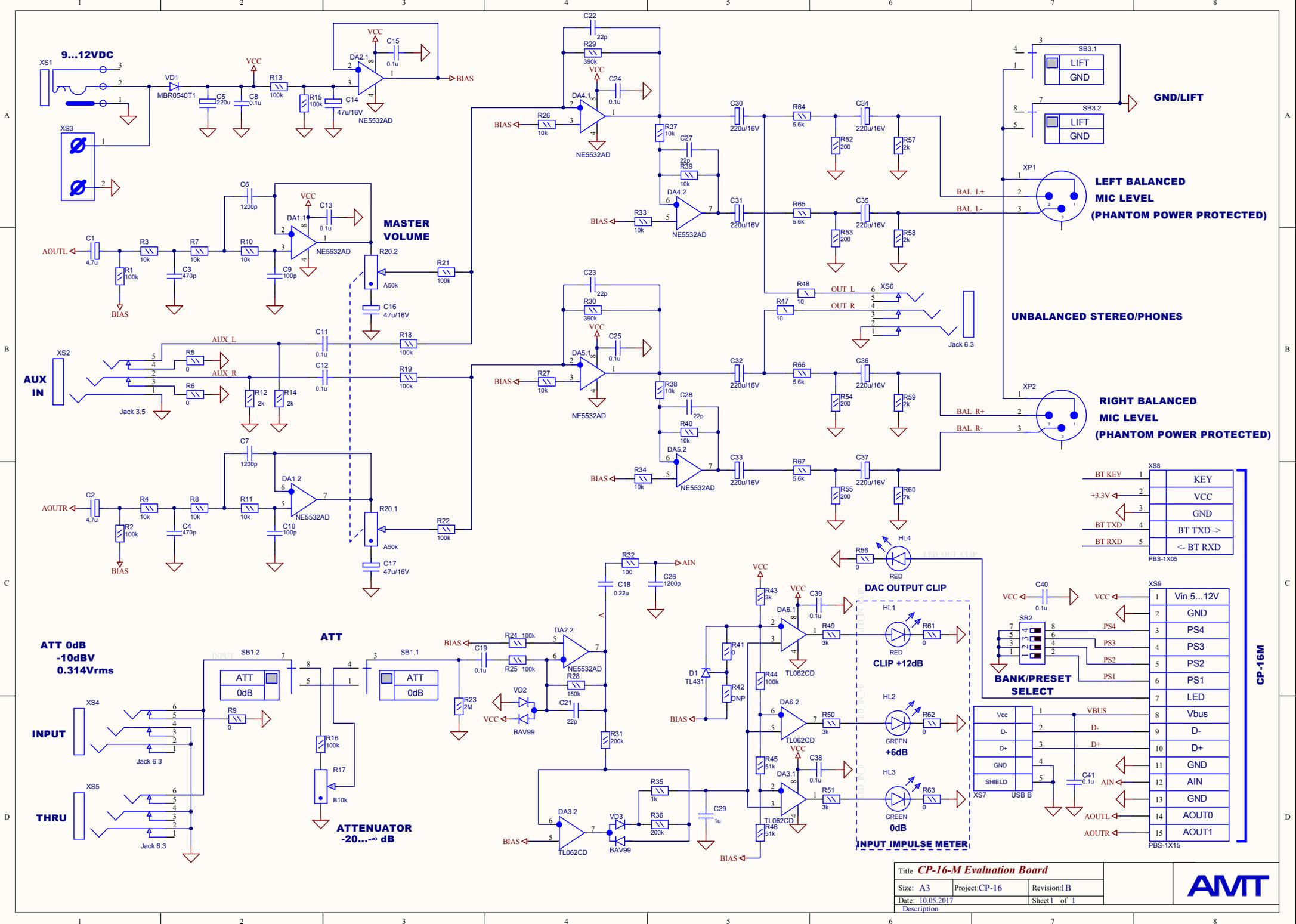
The module communicates with the application and with a computer in general, via USB interface.

The USB interface can operate in one of two modes:

- 1 - If you connect USB cable to the Evaluation board when the main power is OFF, the CP16M will be defined by a computer as a USB external drive. In this mode, you can update the module's software or simply copy banks / presets.
- 2 - If you connect USB cable to the Evaluation board when the main power is ON, the CP16M will be defined by a computer as a serial USB (USB COM) port. In this mode, you can work with the AMT Pangaea CP computer application. (www.amtelectronics.com)



A screen shot of the AMT Pangaea CP computer application



BT KEY	1	XS8	KEY
+3.3V	2		VCC
	3		GND
BT TXD	4		BT TXD >
BT RXD	5		< BT RXD

PBS-1X05

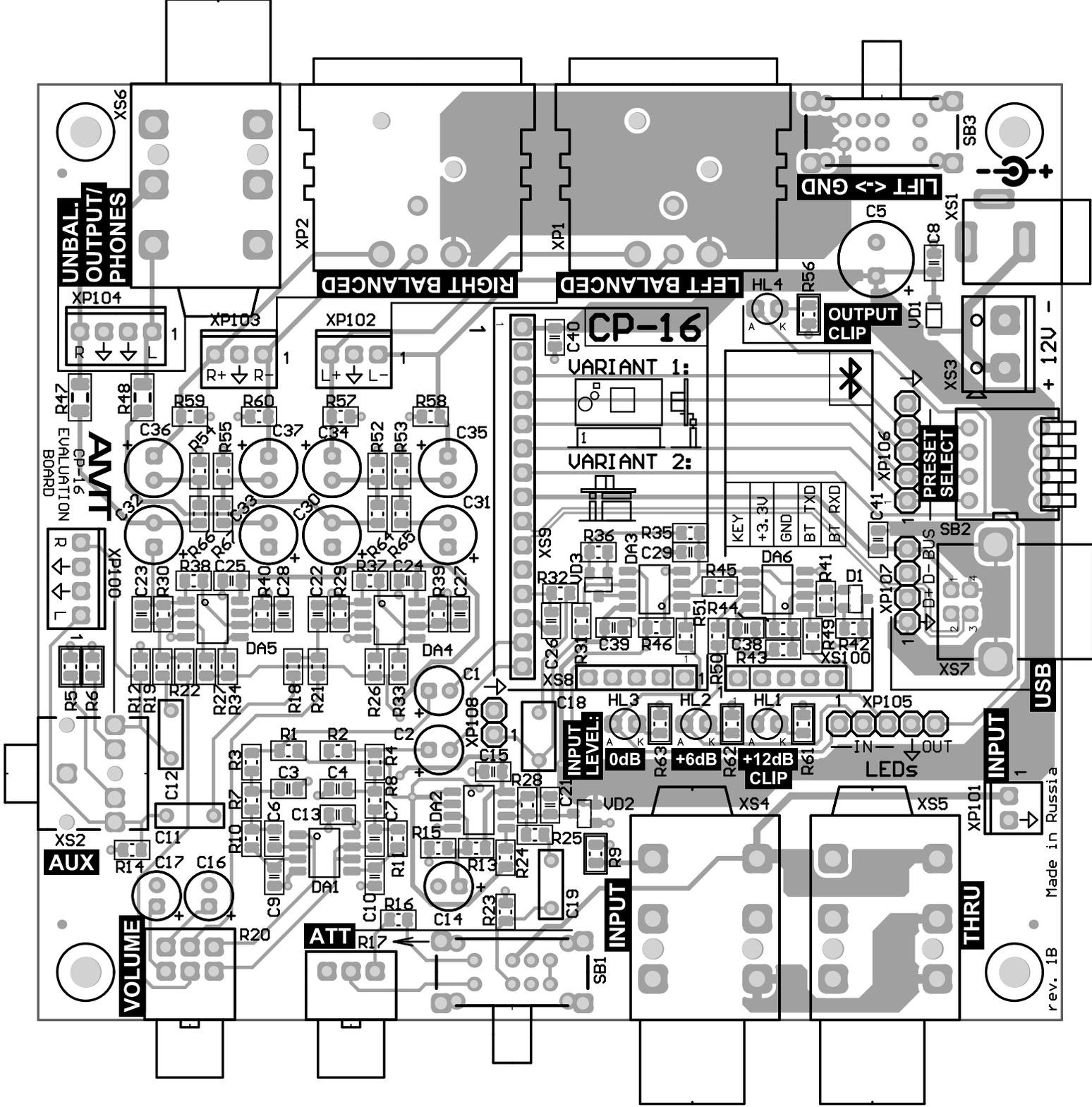
1	Vin 5...12V
2	GND
3	PS4
4	PS3
5	PS2
6	PS1
7	LED
8	Vbus
9	D-
10	D+
11	GND
12	AIN
13	GND
14	AOUTL
15	AOUTR

PBS-1X15

Title CP-16-M Evaluation Board		
Size: A3	Project: CP-16	Revision: 1B
Date: 10.05.2017	Sheet 1 of 1	
Description		



CP-16M



rev. 1B Made in Russia