

Key Futures

- Independent selection of the display mode using the built-in button:

- Peak level
- TrueRMS level
- Peak-factor
- Dynamic with AGC

- Two hardware voltage modifications:

- StereoLM-PA-DBU** (dBU scale)
- StereoLM-PA-DBVU** (dBVU scale)

- Four hardware modifications for output power from 0.002 to 125 W (0 dB = 1 W):

- StereoLM-PA-R02** (dB scale, RL = 2 Ohms)
- StereoLM-PA-R04** (dB scale, RL = 4 Ohms)
- StereoLM-PA-R08** (dB scale, RL = 8 Ohms)
- StereoLM-PA-R16** (dB scale, RL = 2 Ohms)

- Input differential instrumental amplifiers provide the possibility of direct connection to signal sources both with a common point (AUX) and to high-voltage bridge output stages (Power Amp) without a common point

- The display range is from -27 to +21 dB

- Measuring the level of both positive half-waves of audio signals and negative ones, unlike 99% of similar budget indicators, which control only positive half-waves, cutting off and ignoring negative ones

- 23 points in each scale with optimally selected colors for the comfort visualization

- Wide supply voltage range from 5 to 15 V

- A marker (point) for fixing peak values with freeze and slow falling

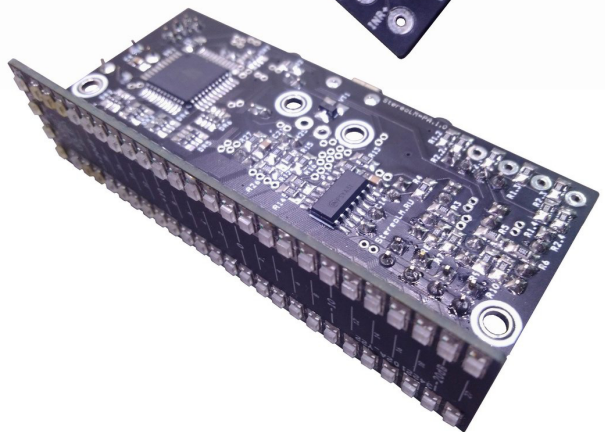
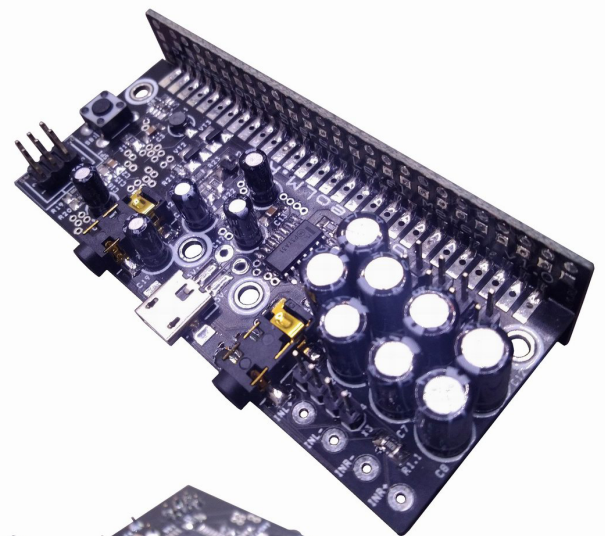
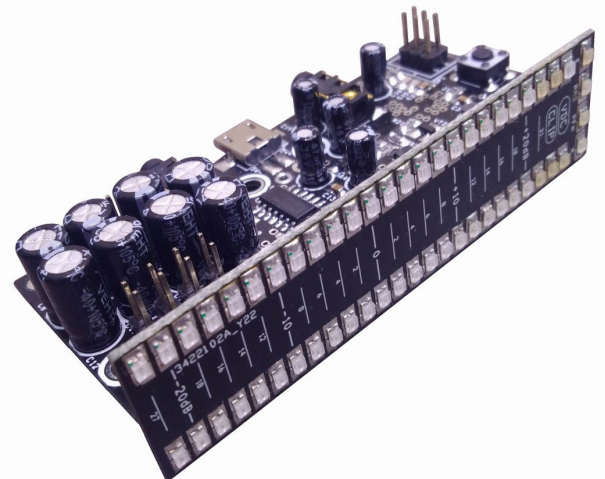
- Detection of the constant voltage and signal limitations in each channel

- Large input capacitance to expand the range of analyzed frequencies of signals in the woofer region

- Standard connectors for quick connection to external circuits, as well as contact pads with holes for connecting (soldering) your own wires

- Compact size and four mounting holes for easy integration into sound equipment

- The applied circuit solutions and techniques in the design of the PCB exclude the possibility of introducing distortions into the primary signal circuits, such as background noise due to the operation of the microprocessor, LED scales, etc., which are characteristic of indicators from other manufacturers



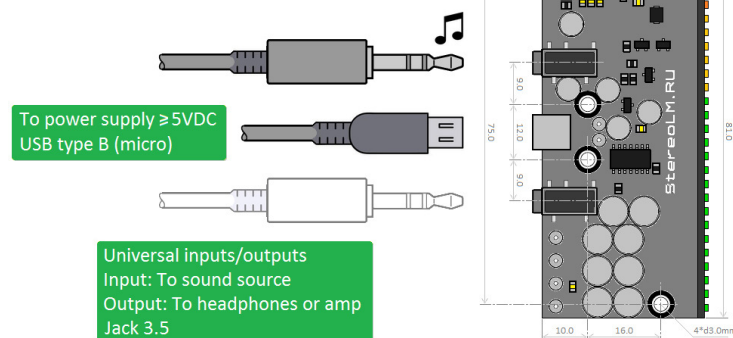
Characteristics

DC current supply voltage (min), V	4.8
DC current supply voltage (max), V	15.5
Incorrect power supply polarity protection	not provided
Current consumption without indication, mA (max)	40
Average current consumption during indication, mA	90
Peak current consumption during indication, mA (max)	160
Time to enter the operating mode after power supply, seconds (max)	15
Number of audio channels	2 (stereo)
Type of input of each channel	instrumental, differential, high-voltage
Direct connection to the Power Amp output/speaker	provided
Scale range	48 dB (-27...+21 dB)
Number of level indication points for each channel	23
The ability to change the colors of the display points	not provided
Detection of the constant voltage in the sound stage (VDC)	provided for each channel
Signal limitation detection (CLIP)	provided for each channel
Detection time (VDC, CLIP), ms, no more	60
Detectable duration of the presence of constant voltage (VDC), ms, not less	30
Detectable duration of the flat top of the cut-off pulse (CLIP), ms, not less	0.5
Delay between channels, ms (min)	15
Delay between channels, ms (max)	30
Integration time in Peak level and Peak-factor modes, ms	30
Integration time in TrueRMS level mode, ms	240
Integration time in Dinamic with AGC mode, ms	15
Sampling period in Peak level and Peak-factor modes, ms	60
Sampling period in TrueRMS level mode, ms	480
Sampling period in Dynamic with AGC mode, ms	30
Input separation capacitance (in each channel), uF, not less	200
Dimensions of the display area, mm	81x21
Overall dimensions LxWxH, mm	81x38x21
Weight of assembled module, grams (max)	25

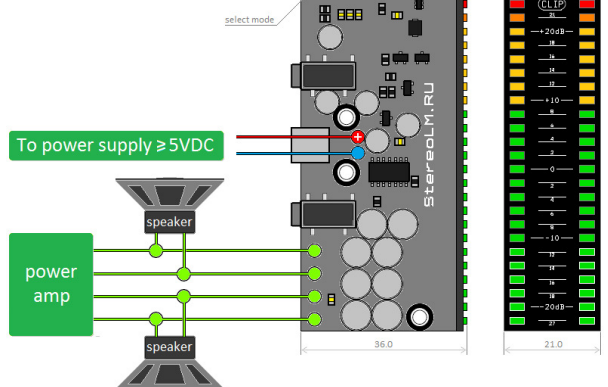
External Connections

To connect the power supply a standard USB-micro connector is provided, as well as two through contact pads for self-soldering wires. For power supply you can use an unstabilized DC source with voltage changes within the specified limits.

joint via connectors



junction by wires



To connect external audio signals two standard 3.5mm Jack connectors are provided (same pinout each), as well as through contact pads for self-soldering of wires, for example, when the indicator is directly connected to the outputs of the Power Amp, including bridge type (with outputs that do not have a common point). When the plug is connected to the 3.5mm Jack connectors, one of the differential input lines of the left channel is automatically connected to a similar differential input line of the right channel – this connection is electrically connected to the common signal source line inside the connector. The remaining differential input lines of both channels are connected to the signal lines of the left and right channels of the signal source. When removing the plug from the 3.5mm Jack connector the connection circuit of the two differential lines between the channels automatically opens again. Since the audio inputs are made according to the scheme of instrumental amplifiers it is not necessary to check the polarity between the signal source and the indicator inputs.

Operating Modes

The operating modes are selected cyclically one by one with each short pressing of the built-in button on the PCB. The selected mode is stored in the non-volatile memory of the device and is restored at the next supply voltage.

<i>Mode</i>	<i>RMS LED</i>	<i>PFA LED</i>	<i>Notes</i>
Peak level			
TrueRMS level	+		The RMS level is determined by averaging a large number of signal measurements during integration (True RMS). The peak fixation point is disabled in this mode.
Peak-factor		+	The final displayed value of the peak factor is calculated using the formula $20 \lg(\text{Peak}/\text{TrueRMS})$
Dynamic with AGC	+	+	An inertial automatic gain control (AGC) system is active - while listening to the composition, the signal gain is adapted in such a way as to achieve maximum dynamism of displaying levels in both channels. This mode is not suitable for measuring absolute values of the signal level.

Hardware Modifications

StereoLM-PA-DBU

Maximum common-mode input voltage without damaging the device, V – **20.7**

#	Level, dBu	RMS level, Volts	Peak level, Volts
23	+21	8,696	12,298
22	+20	7,750	10,960
21	+18	6,156	8,706
20	+16	4,890	6,916
19	+14	3,884	5,493
18	+12	3,085	4,363
17	+10	2,451	3,466
16	+8	1,947	2,753
15	+6	1,546	2,187
14	+4	1,228	1,737
13	+2	0,976	1,380
12	0	0,775	1,096
11	-2	0,616	0,871
10	-4	0,489	0,692
9	-6	0,388	0,549
8	-8	0,309	0,436
7	-10	0,245	0,347
6	-12	0,195	0,275
5	-14	0,155	0,219
4	-16	0,123	0,174
3	-18	0,098	0,138
2	-20	0,078	0,110
1	-27	0,035	0,049

StereoLM-PA-DBVU

Maximum common-mode input voltage without damaging the device, V – **26.7**

#	Level, dBVU	RMS level, Volts	Peak level, Volts
23	+21	11,220	15,868
22	+20	10,000	14,142
21	+18	7,943	11,234
20	+16	6,310	8,923
19	+14	5,012	7,088

18	+12	3,981	5,630
17	+10	3,162	4,472
16	+8	2,512	3,552
15	+6	1,995	2,822
14	+4	1,585	2,241
13	+2	1,259	1,780
12	0	1,000	1,414
11	-2	0,794	1,123
10	-4	0,631	0,892
9	-6	0,501	0,709
8	-8	0,398	0,563
7	-10	0,316	0,447
6	-12	0,251	0,355
5	-14	0,200	0,282
4	-16	0,159	0,224
3	-18	0,126	0,178
2	-20	0,100	0,141
1	-27	0,045	0,063

StereoLM-PA-R...

Maximum common-mode input voltage without damaging the device, V:

StereoLM-PA-R02 ($R_{LOAD} = 2$ Ohms)	35,5
StereoLM-PA-R04 ($R_{LOAD} = 4$ Ohms)	44,8
StereoLM-PA-R08 ($R_{LOAD} = 8$ Ohms)	54,1
StereoLM-PA-R16 ($R_{LOAD} = 16$ Ohms)	63,4

#	Level, dB	Power in load, Watts
23	+21	125,9
22	+20	100,0
21	+18	63,1
20	+16	39,8
19	+14	25,1
18	+12	15,9
17	+10	10,0
16	+8	6,310
15	+6	3,981
14	+4	2,512
13	+2	1,585
12	0	1,000
11	-2	0,631
10	-4	0,398
9	-6	0,251
8	-8	0,159
7	-10	0,100
6	-12	0,063
5	-14	0,040
4	-16	0,025
3	-18	0,016
2	-20	0,010
1	-27	0,002