



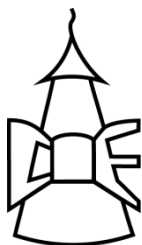
Custom Electronics Shack

Direct MC/MM RIAA Phono Preamplifier

CESP-0225

Zero Feedback





Custom Electronics Shack

www.cesamps.com

PHONO PREAMPLIFIER FOR MOVING COIL AND MOVING MAGNET CARTRIDGE WITH PASSIVE RIAA EQUALIZATION ZERO FEEDBACK

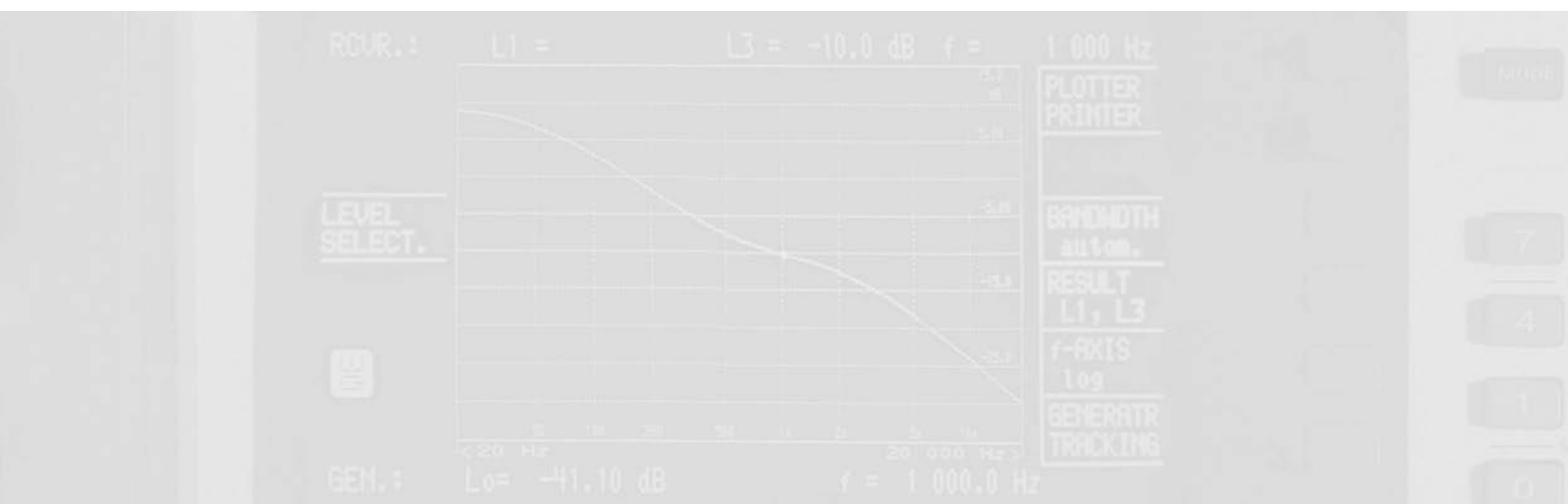
CESP-0225

Technical data:

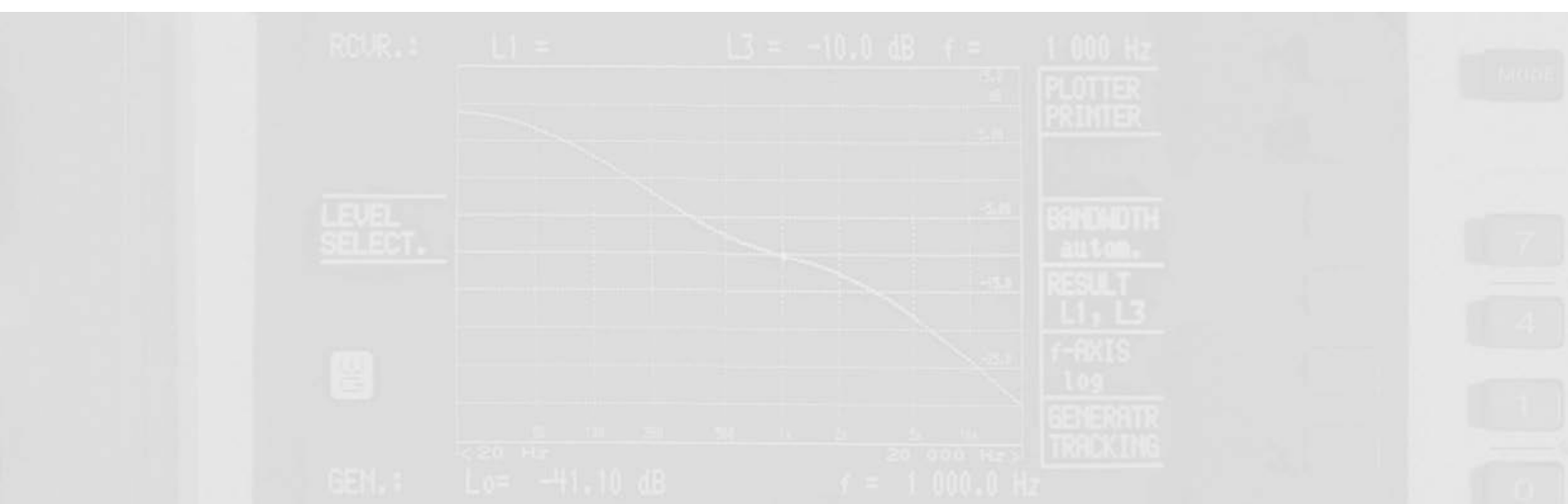
- Cartridge type: Moving Coil, Moving Magnet;
- Gain: 32dB(MM)/56dB(MC) @1kHz selectable;
- Distortion THD: 0.033%;
- Frequency response: +/-0.1dB of RIAA 20Hz-20kHz;
- Roll-off: Below 20Hz to suppress possible record rumble, without affecting the audio band;
- Polarity: Non-inverting;
- Input load resistance: selectable for Moving Coil, and separately selective for Moving Magnet;
For proper setting refer to table on the last page.
- Power supply: Low noise four stage high stability;
- Power input: 185V-250V acceptable, 220V-230V recommended.

Capacitors:

- WIMA on filter networks, AVX Tantalum on line decoupling, Fujicon electrolytics in power supply.



- Resistors: -High-quality metal film resistors 1% tolerance.
- Warning: -Power fuse 315mA Slow type;
-Fuse changes to its original value.
- Warranty: -Five years if device is used in normal working conditions.
- Topology: -Cascode amplifier stages single-ended class A design,
no overall feedback network;
-Paralleled multiple J-FET devices for lower noise figure,
lower distortion and high linearity;
-High-speed ultra-high linearity no TIM design;
-No crossover distortion and very low THD;
-Completely passive RIAA equalization network and low
frequency rumble filter;
-No step-up input transformers.
- Performance: -Transparent natural sound reproduction with precisely defined
sound stage, excellent stereo picture and lack of preamplifier
character, accurately equalized reproduction, absolute
immunity to microphonics and any system vibrations;
-No turn-on/turn-off transient clicks or any unpleasant noises.



Pictures

Front panel view



- 1 Power switch
- 2 Power indicator
- 3 Input selection switch
- 4 Input indicator

Rear panel view

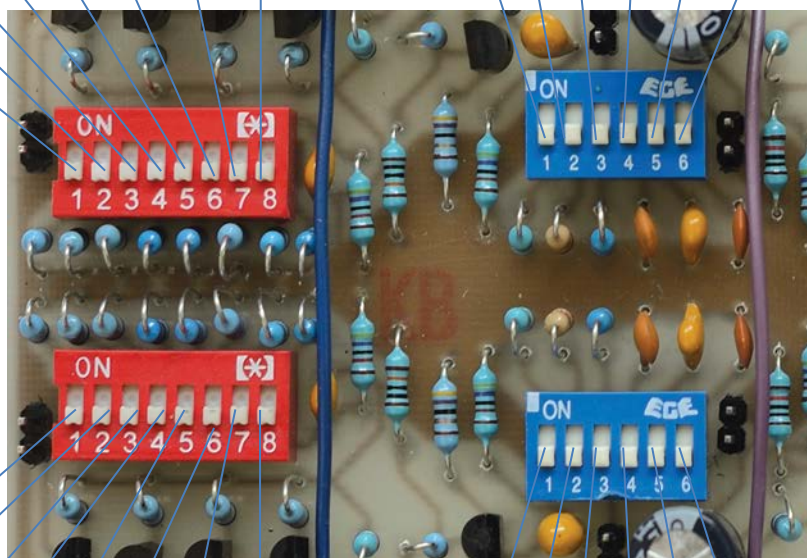


- 1 Mains power input
- 2 Fuse 315mA slow blow
- 3 RCA Line Output
- 4 XLR Balanced output
- 5 Phono ground
- 6 Moving Coil input
- 7 Moving Magnet input

Preamplifier configuration

MC Right Channel

Ω
10 25 47 100 250 470 820 1000



10 25 47 100 250 470 820 1000
 Ω

MM Right Channel

All Off – 47K
K Ω pF
24 10 1 47 100 220

24 10 1 47 100 220
K Ω pF
All Off – 47K

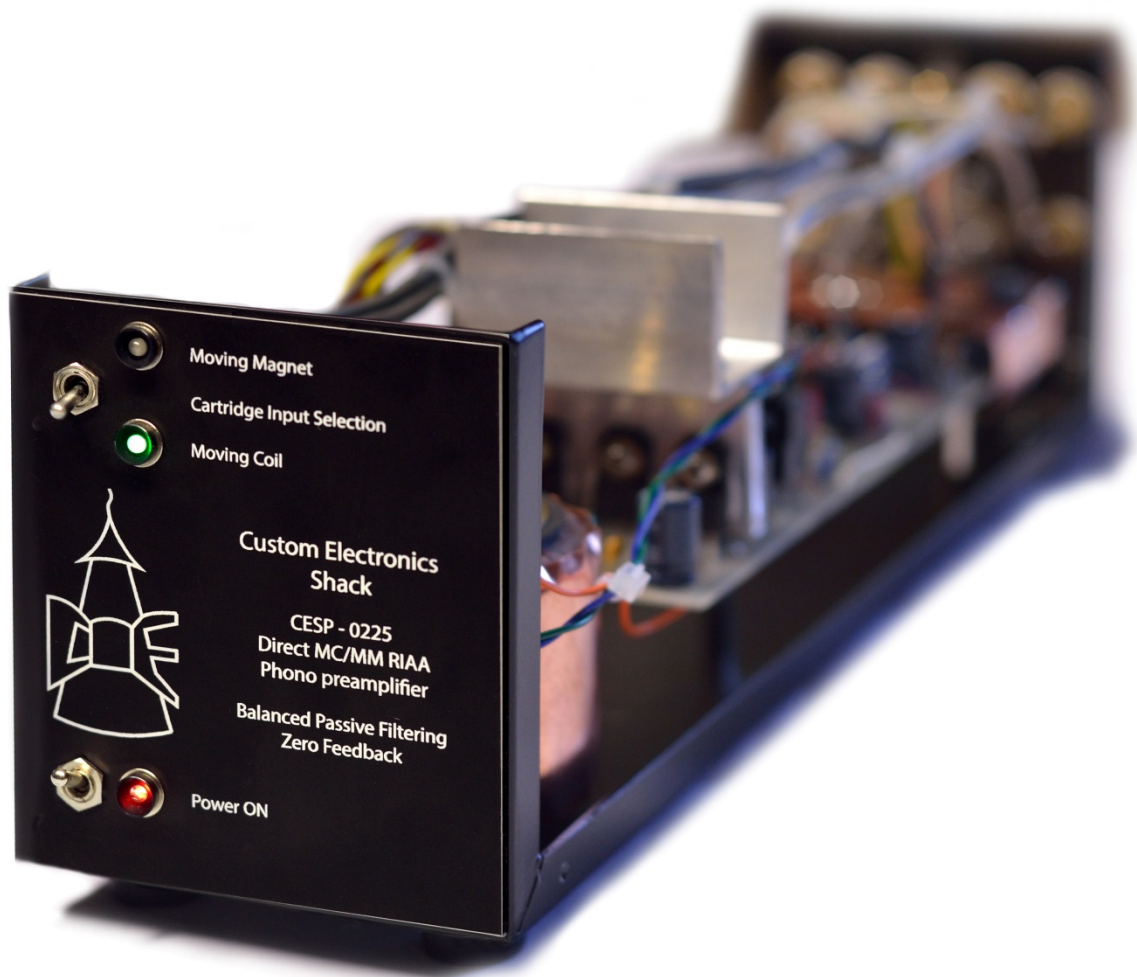
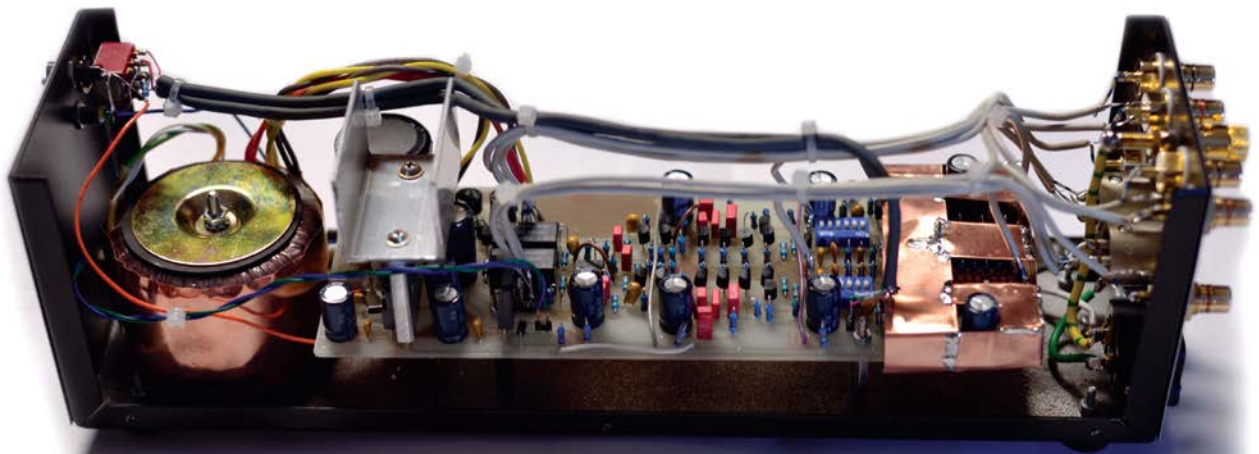
MC Left Channel

Input load resistance set switches
Switches for MC Input
For detailed configuration
see chart at the end of the manual.

MM Left Channel

Input load resistance and capacitance
Switches for MM Input
Default configuration
1/2/3: off for 47K Ω input
4: on 5/6: off for 47pF input.

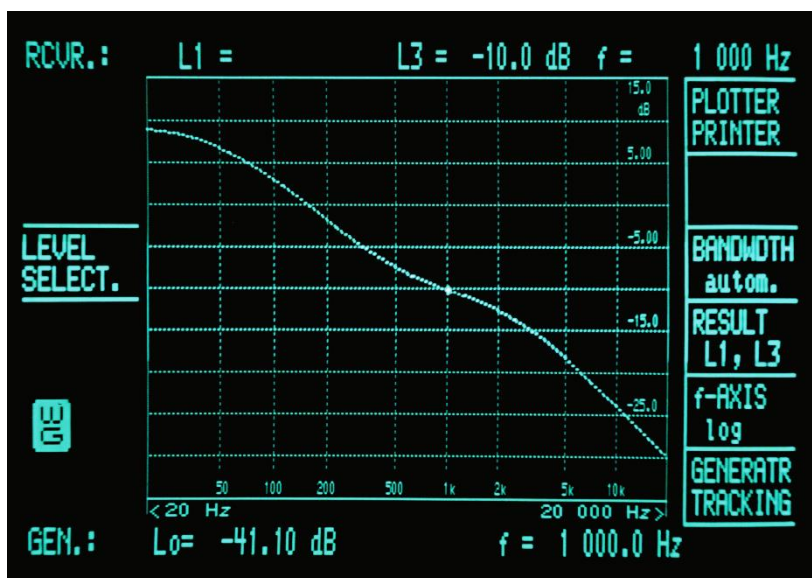
Inside Look



Complete system

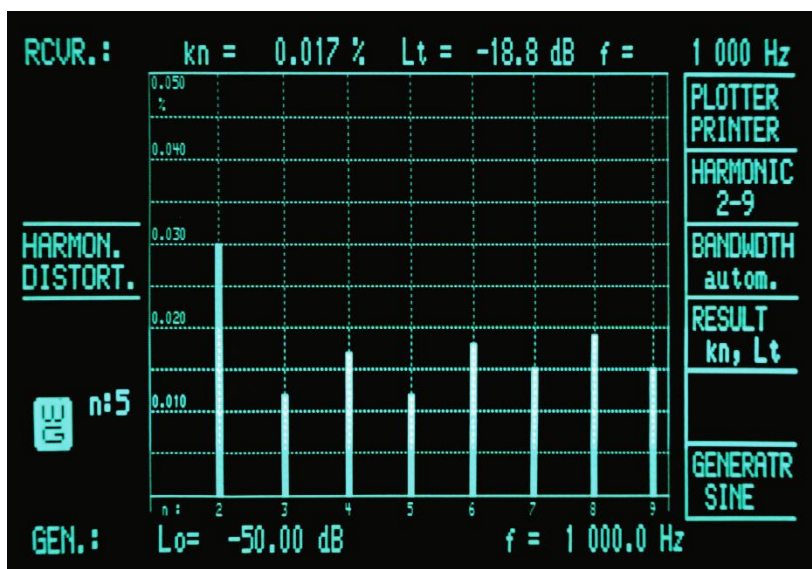


Measurements



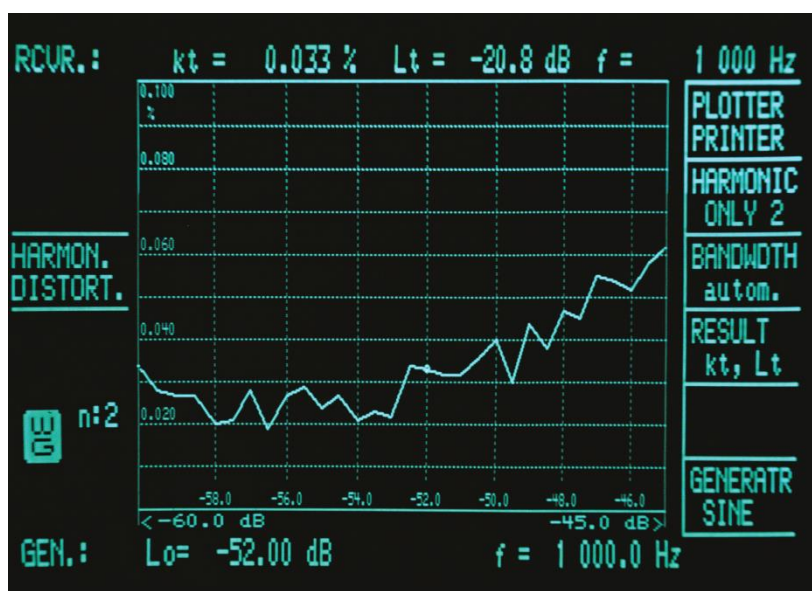
Graph 1 –
RIAA Frequency Response

Three passive filters make up the RIAA reproduction curve. The time constants are: 75us, 318us, and 3180us. Passive components of filter networks are measured and hand-picked to achieve high accuracy of RIAA filter within +/-0.25dB.



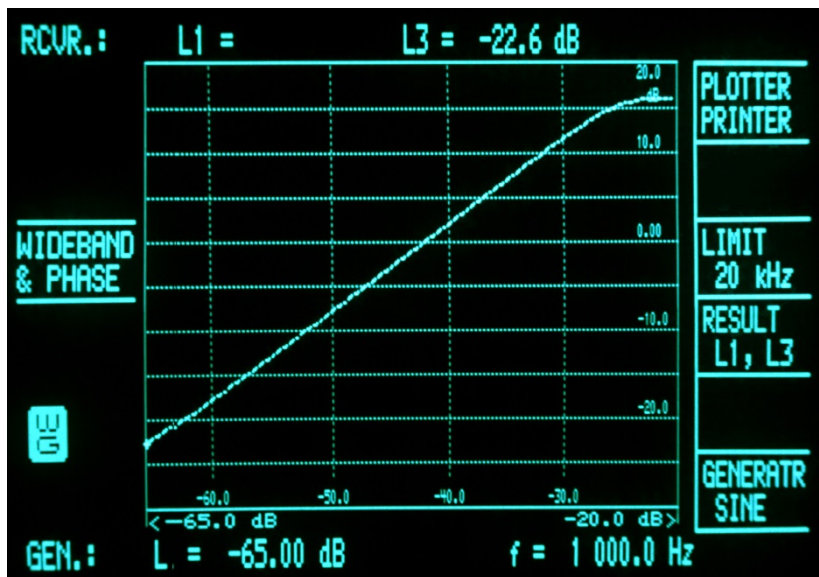
Graph 2 –
Harmonic Distortion Graph

This graph shows percentage of separate harmonics distortion from second to ninth with highest value on second harmonic of 0.030%.



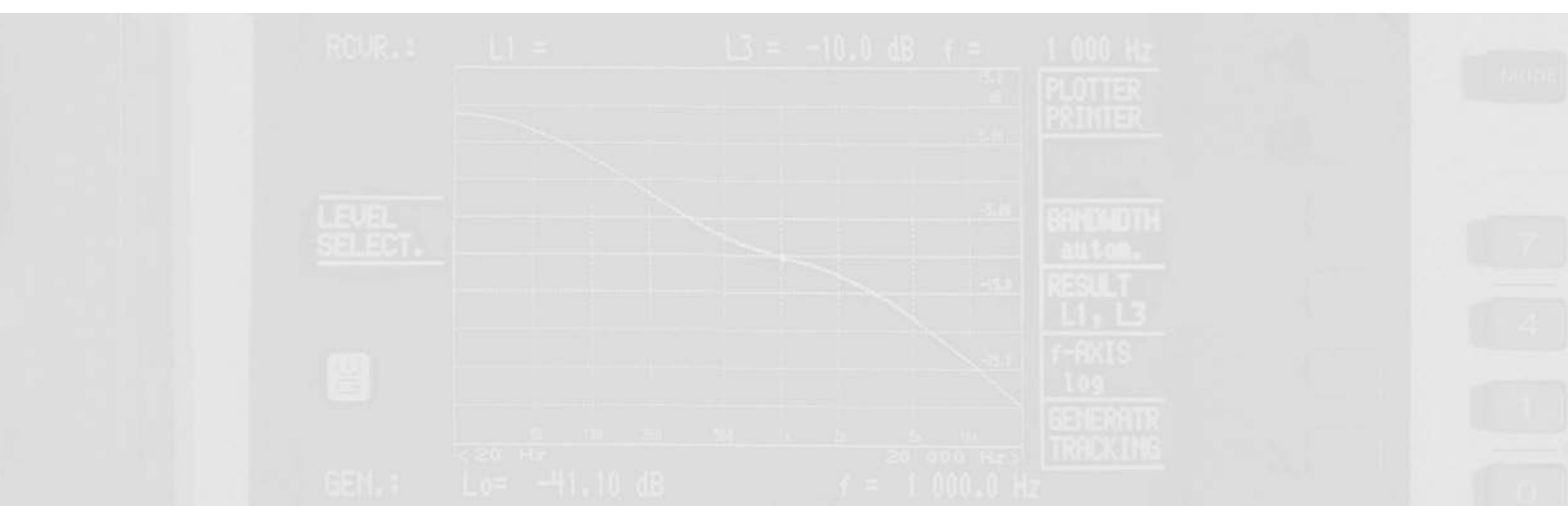
Graph 3 -
Total Harmonic Distortion vs
Input MC Level

At nominal MC input level total harmonic distortion or THD achieves level of 0.033% which is exceptional for Class-A Single-ended no overall feedback Passive RIAA preamplifier.



Graph 4 –
Dynamic Headroom

Nominal MC input level is -64dB. Because of the high dynamic range of amplifier circuits MC input can withstand 40dB more than its nominal value. Entering the clipping point at -24dB. Graph represents linear voltage gain from nominal input level to clipping point level.



	switch pos 1	switch pos 2	switch pos 3	switch pos 4	switch pos 5	switch pos 6	switch pos 7	switch pos 8	
	10 ohm	22 ohm	47 ohm	100 ohm	249 ohm	475 ohm	825 ohm	1K ohm	
Cartridge									Cartridge
Loading									Loading
Ohm's									Ohm's
5.4	ON	ON	ON	ON	ON	ON	ON	ON	5.4
5.43	ON	ON	ON	ON	ON	ON	ON	OFF	5.43
5.44	ON	ON	ON	ON	ON	ON	OFF	ON	5.44
5.47	ON	ON	ON	ON	ON	OFF	ON	ON	5.47
5.47	ON	ON	ON	ON	ON	ON	OFF	OFF	5.47
5.5	ON	ON	ON	ON	ON	OFF	ON	OFF	5.5
5.5	ON	ON	ON	ON	ON	OFF	OFF	ON	5.5
5.52	ON	ON	ON	ON	OFF	ON	ON	ON	5.52
5.53	ON	ON	ON	ON	ON	OFF	OFF	OFF	5.53
5.55	ON	ON	ON	ON	OFF	ON	ON	OFF	5.55
5.56	ON	ON	ON	ON	OFF	ON	OFF	ON	5.56
5.59	ON	ON	ON	ON	OFF	OFF	ON	ON	5.59
5.59	ON	ON	ON	ON	OFF	ON	OFF	OFF	5.59
5.62	ON	ON	ON	ON	OFF	OFF	ON	OFF	5.62
5.63	ON	ON	ON	ON	OFF	OFF	OFF	ON	5.63
5.66	ON	ON	ON	ON	OFF	OFF	OFF	OFF	5.66
5.71	ON	ON	ON	ON	OFF	ON	ON	ON	5.71
5.74	ON	ON	ON	OFF	ON	ON	ON	OFF	5.74
5.75	ON	ON	ON	OFF	ON	ON	OFF	ON	5.75
5.78	ON	ON	ON	OFF	ON	OFF	ON	ON	5.78
5.79	ON	ON	ON	OFF	ON	ON	OFF	OFF	5.79
5.82	ON	ON	ON	OFF	ON	OFF	ON	OFF	5.82
5.82	ON	ON	ON	OFF	ON	OFF	OFF	ON	5.82
5.85	ON	ON	ON	OFF	OFF	ON	ON	ON	5.85
5.86	ON	ON	ON	OFF	ON	OFF	OFF	OFF	5.86
5.88	ON	ON	ON	OFF	OFF	ON	ON	OFF	5.88
5.89	ON	ON	ON	OFF	OFF	ON	OFF	ON	5.89
5.92	ON	ON	ON	OFF	OFF	OFF	ON	ON	5.92
5.92	ON	ON	ON	OFF	OFF	ON	OFF	OFF	5.92
5.95	ON	ON	ON	OFF	OFF	OFF	ON	OFF	5.95
5.96	ON	ON	ON	OFF	OFF	OFF	OFF	ON	5.96
6	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	6
6.11	ON	ON	OFF	ON	ON	ON	ON	ON	6.11
6.14	ON	ON	OFF	ON	ON	ON	ON	OFF	6.14
6.15	ON	ON	OFF	ON	ON	ON	OFF	ON	6.15
6.18	ON	ON	OFF	ON	ON	OFF	ON	ON	6.18
6.19	ON	ON	OFF	ON	ON	ON	OFF	OFF	6.19
6.22	ON	ON	OFF	ON	ON	OFF	ON	OFF	6.22
6.34	ON	ON	OFF	ON	ON	OFF	ON	ON	6.34
6.35	ON	ON	OFF	ON	OFF	ON	OFF	OFF	6.35
6.38	ON	ON	OFF	ON	OFF	OFF	ON	OFF	6.38
6.39	ON	ON	OFF	ON	OFF	OFF	OFF	ON	6.39
6.43	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	6.43
6.5	ON	ON	OFF	OFF	ON	ON	ON	ON	6.5
6.55	ON	ON	OFF	OFF	ON	ON	ON	OFF	6.55
6.55	ON	ON	OFF	OFF	ON	ON	OFF	ON	6.55
6.59	ON	ON	OFF	OFF	ON	OFF	ON	ON	6.59
6.6	ON	ON	OFF	OFF	ON	ON	OFF	OFF	6.6
6.64	ON	ON	OFF	OFF	ON	OFF	ON	OFF	6.64
6.65	ON	ON	OFF	OFF	ON	OFF	OFF	ON	6.65
6.68	ON	ON	OFF	OFF	OFF	ON	ON	ON	6.68
6.69	ON	ON	OFF	OFF	ON	OFF	OFF	OFF	6.69
6.72	ON	ON	OFF	OFF	OFF	ON	ON	OFF	6.72
6.73	ON	ON	OFF	OFF	OFF	ON	OFF	ON	6.73
6.77	ON	ON	OFF	OFF	OFF	OFF	ON	ON	6.77
6.78	ON	ON	OFF	OFF	OFF	ON	OFF	OFF	6.78
6.82	ON	ON	OFF	OFF	OFF	OFF	ON	OFF	6.82
6.83	ON	ON	OFF	OFF	OFF	OFF	OFF	ON	6.83
6.88	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	6.88
7.16	ON	OFF	ON	ON	ON	ON	ON	ON	7.16
7.21	ON	OFF	ON	ON	ON	ON	ON	OFF	7.21
7.23	ON	OFF	ON	ON	ON	ON	OFF	ON	7.23
7.27	ON	OFF	ON	ON	ON	OFF	ON	ON	7.27
7.28	ON	OFF	ON	ON	ON	ON	OFF	OFF	7.28
7.33	ON	OFF	ON	ON	ON	OFF	ON	OFF	7.33
7.34	ON	OFF	ON	ON	ON	OFF	OFF	ON	7.34
7.37	ON	OFF	ON	ON	OFF	ON	ON	ON	7.37
7.39	ON	OFF	ON	ON	ON	OFF	OFF	OFF	7.39
7.43	ON	OFF	ON	ON	OFF	ON	ON	OFF	7.43
7.44	ON	OFF	ON	ON	OFF	ON	OFF	ON	7.44
7.49	ON	OFF	ON	ON	OFF	OFF	ON	ON	7.49
7.5	ON	OFF	ON	ON	OFF	ON	OFF	OFF	7.5
7.55	ON	OFF	ON	ON	OFF	OFF	ON	OFF	7.55
7.56	ON	OFF	ON	ON	OFF	OFF	OFF	ON	7.56
7.62	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	7.62
7.92	ON	OFF	ON	OFF	ON	OFF	OFF	ON	7.92
7.96	ON	OFF	ON	OFF	OFF	ON	ON	ON	7.96
7.98	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	7.98
8.03	ON	OFF	ON	OFF	OFF	ON	ON	OFF	8.03
8.04	ON	OFF	ON	OFF	OFF	ON	OFF	ON	8.04
8.1	ON	OFF	ON	OFF	OFF	OFF	ON	ON	8.1
8.1	ON	OFF	ON	OFF	OFF	ON	OFF	OFF	8.1
8.16	ON	OFF	ON	OFF	OFF	OFF	ON	OFF	8.16
8.18	ON	OFF	ON	OFF	OFF	OFF	OFF	ON	8.18
8.25	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	8.25
8.45	ON	OFF	OFF	ON	ON	ON	ON	ON	8.45
8.52	ON	OFF	OFF	ON	ON	ON	ON	OFF	8.52
8.54	ON	OFF	OFF	ON	ON	ON	OFF	ON	8.54

	switch pos 1	switch pos 2	switch pos 3	switch pos 4	switch pos 5	switch pos 6	switch pos 7	switch pos 8	
	10 ohm	22 ohm	47 ohm	100 ohm	249 ohm	475 ohm	825 ohm	1K ohm	
Cartridge									Cartridge
Loading									Loading
Ohm's									Ohm's
8.6	ON	OFF	OFF	ON	ON	OFF	ON	ON	8.6
8.61	ON	OFF	OFF	ON	ON	ON	OFF	OFF	8.61
8.68	ON	OFF	OFF	ON	ON	OFF	ON	OFF	8.68
8.69	ON	OFF	OFF	ON	ON	OFF	OFF	ON	8.69
8.75	ON	OFF	OFF	ON	OFF	ON	ON	ON	8.75
8.77	ON	OFF	OFF	ON	ON	OFF	OFF	OFF	8.77
8.82	ON	OFF	OFF	ON	OFF	ON	ON	OFF	8.82
8.84	ON	OFF	OFF	ON	OFF	ON	OFF	ON	8.84
8.91	ON	OFF	OFF	ON	OFF	OFF	ON	ON	8.91
8.92	ON	OFF	OFF	ON	OFF	ON	OFF	OFF	8.92
8.99	ON	OFF	OFF	ON	OFF	OFF	ON	OFF	8.99
9.01	ON	OFF	OFF	ON	OFF	OFF	OFF	ON	9.01
9.09	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	9.09
9.23	ON	OFF	OFF	OFF	ON	ON	ON	ON	9.23
9.32	ON	OFF	OFF	OFF	ON	ON	ON	OFF	9.32
9.34	ON	OFF	OFF	OFF	ON	ON	OFF	ON	9.34
9.41	ON	OFF	OFF	OFF	ON	OFF	ON	ON	9.41
9.42	ON	OFF	OFF	OFF	ON	ON	OFF	OFF	9.42
9.5	ON	OFF	OFF	OFF	ON	OFF	ON	OFF	9.5
9.52	ON	OFF	OFF	OFF	ON	OFF	OFF	ON	9.52
9.59	ON	OFF	OFF	OFF	OFF	ON	ON	ON	9.59
9.61	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	9.61
9.68	ON	OFF	OFF	OFF	OFF	ON	ON	OFF	9.68
9.7	ON	OFF	OFF	OFF	OFF	ON	OFF	ON	9.7
11.76	OFF	ON	ON	ON	ON	ON	ON	ON	11.76
11.9	OFF	ON	ON	ON	ON	ON	ON	OFF	11.9
11.93	OFF	ON	ON	ON	ON	ON	OFF	ON	11.93
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12.68	OFF	ON	ON	ON	OFF	ON	OFF	OFF	12.68
12.83	OFF	ON	ON	ON	OFF	OFF	ON	OFF	12.83
12.86	OFF	ON	ON	ON	OFF	OFF	OFF	ON	12.86
13.03	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	13.03
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13.71	OFF	ON	ON	OFF	ON	OFF	ON	ON	13.71
13.73	OFF	ON	ON	OFF	ON	ON	OFF	OFF	13.73
13.9	OFF	ON	ON	OFF	ON	OFF	ON	OFF	13.9
13.94	OFF	ON	ON	OFF	ON	OFF	OFF	ON	13.94
14.07	OFF	ON	ON	OFF	OFF	ON	ON	ON	14.07
14.13	OFF	ON	ON	OFF	ON	OFF	OFF	OFF	14.13
14.28	OFF	ON	ON	OFF	OFF	ON	ON	OFF	14.28
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14.5	OFF	ON	ON	OFF	OFF	OFF	ON	ON	14.5
14.53	OFF	ON	ON	OFF	OFF	ON	OFF	OFF	14.53
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14.76	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	14.76
14.99	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	14.99
15.68	OFF	ON	OFF	ON	ON	ON	ON	ON	15.68
15.93	OFF	ON	OFF	ON	ON	ON	ON	OFF	15.93
15.98	OFF	ON	OFF	ON	ON	ON	OFF	ON	15.98
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17.37	OFF	ON	OFF	ON	OFF	ON	ON	OFF	17.37
17.65	OFF	ON	OFF	ON	OFF	OFF	ON	OFF	17.65
17.71	OFF	ON	OFF	ON	OFF	OFF	OFF	ON	17.71
18.03	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	18.03
18.59	OFF	ON	OFF	OFF	ON	ON	ON	ON	18.59
18.94	OFF	ON	OFF	OFF	ON	ON	ON	OFF	18.94
19.02	OFF	ON	OFF	OFF	ON	ON	OFF	ON	19.02
19.35	OFF	ON	OFF	OFF	ON	OFF	ON	ON	19.35
19.39	OFF	ON	OFF	OFF	ON	ON	OFF	OFF	19.39
19.73	OFF	ON	OFF	OFF	ON	OFF	ON	OFF	19.73
19.81	OFF	ON	OFF	OFF	ON	OFF	OFF	ON	19.81
20.09	OFF	ON	OFF	OFF	ON	ON	ON	ON	20.09
20.21	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	20.21
20.5	OFF	ON	OFF	OFF	OFF	ON	ON	OFF	20.5
20.59	OFF	ON	OFF	OFF	OFF	ON	OFF	ON	20.59
20.98	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	20.98
21.03	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF	21.03
21.43	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF	21.43
21.53	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	21.53
22	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	22
25.25	OFF	OFF	ON	ON	ON	ON	ON	ON	25.25
25.9	OFF	OFF	ON	ON	ON	ON	ON	OFF	25.9
26.04	OFF	OFF	ON	ON	ON	ON	OFF	ON	26.04
26.66	OFF	OFF	ON	ON	ON	OFF	ON	ON	26.66
26.74	OFF	OFF	ON	ON	ON	ON	OFF	OFF	26.74

	switch pos 1	switch pos 2	switch pos 3	switch pos 4	switch pos 5	switch pos 6	switch pos 7	switch pos 8	
	10 ohm	22 ohm	47 ohm	100 ohm	249 ohm	475 ohm	825 ohm	1K ohm	
Cartridge									Cartridge
Loading									Loading
Ohm's									Ohm's
27.39	OFF	OFF	ON	ON	ON	OFF	ON	OFF	27.39
27.55	OFF	OFF	ON	ON	ON	OFF	OFF	ON	27.55
28.09	OFF	OFF	ON	ON	OFF	ON	ON	ON	28.09
28.33	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	28.33
28.91	OFF	OFF	ON	ON	OFF	ON	ON	OFF	28.91
29.09	OFF	OFF	ON	ON	OFF	ON	OFF	ON	29.09
29.86	OFF	OFF	ON	ON	OFF	OFF	ON	ON	29.86
29.96	OFF	OFF	ON	ON	OFF	ON	OFF	OFF	29.96
30.78	OFF	OFF	ON	ON	OFF	OFF	ON	OFF	30.78
30.98	OFF	OFF	ON	ON	OFF	OFF	OFF	ON	30.98
36.5	OFF	OFF	ON	OFF	ON	ON	OFF	OFF	36.5
37.73	OFF	OFF	ON	OFF	ON	OFF	ON	OFF	37.73
38.03	OFF	OFF	ON	OFF	ON	OFF	OFF	ON	38.03
39.07	OFF	OFF	ON	OFF	OFF	ON	ON	ON	39.07
39.54	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	39.54
40.66	OFF	OFF	ON	OFF	OFF	ON	ON	OFF	40.66
41.01	OFF	OFF	ON	OFF	OFF	ON	OFF	ON	41.01
42.57	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	42.57
42.77	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF	42.77
44.47	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF	44.47
44.89	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON	44.89
47	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	47
54.55	OFF	OFF	OFF	ON	ON	ON	ON	ON	54.55
57.69	OFF	OFF	OFF	ON	ON	ON	ON	OFF	57.69
58.41	OFF	OFF	OFF	ON	ON	ON	OFF	ON	58.41
61.62	OFF	OFF	OFF	ON	ON	OFF	ON	ON	61.62
62.03	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	62.03
65.67	OFF	OFF	OFF	ON	ON	OFF	ON	OFF	65.67
66.6	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	66.6
69.85	OFF	OFF	OFF	ON	OFF	ON	ON	ON	69.85
71.35	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	71.35
75.09	OFF	OFF	OFF	ON	OFF	ON	ON	OFF	75.09
76.31	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	76.31
81.89	OFF	OFF	OFF	ON	OFF	OFF	ON	ON	81.89
82.61	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	82.61
89.19	OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	89.19
90.91	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	90.91
100	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	100
120	OFF	OFF	OFF	OFF	ON	ON	ON	ON	120
136.36	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	136.36
140.42	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	140.42
160.56	OFF	OFF	OFF	OFF	ON	OFF	ON	ON	160.56
163.36	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	163.36
191.27	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	191.27
199.36	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON	199.36
231.62	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	231.62
249	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	249
301.44	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	301.44
322.03	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	322.03
452.06	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	452.06
475	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	475
825	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	825
1000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	1000
47000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	47000

contact: <http://cesamps.com/contact>

August 18th 2014.

