



A4

Product Presentation

24 April 2013

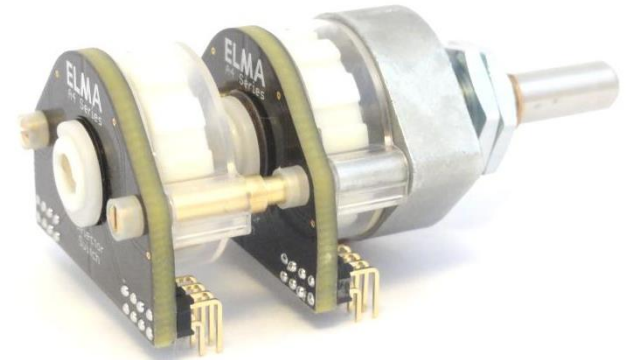
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A4 in Brief

The A4 audio switch series offers a comprehensive range of selector switches, as well as series and ladder type attenuators.

These high performance audio switches incorporate a PCB based switch contact system that is specifically designed to meet audiophile requirements for superb sonic performance.

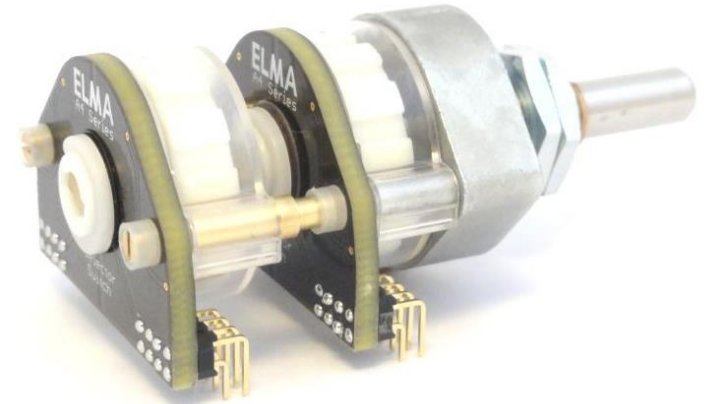
All switches feature Elma's hallmark indexing feel for superior tactile feedback.



Selector Switches

The selector switches are available in horizontal or vertical orientation, and feature switch torques from 1.5 to 15 Ncm and are available in up to 8 wafer versions.

The switch functionalities range from 1 pole x 24 positions to 4 x 6 per wafer at 15 degrees indexing with shorting contacts, or from 1 x 12 to 4 x 3 per wafer at 30 degree indexing with shorting or non-shorting contacts. All switches feature selectable end-stops.



Series and Ladder Type Attenuators

The series and ladder type attenuators feature switch torques from 1.5 to 15 Ncm and are available either populated with low-noise, high precision SMT resistors (standard input impedances are 10k, 25k, 50k or 100k), or non-populated THT versions which can be populated by the customer.

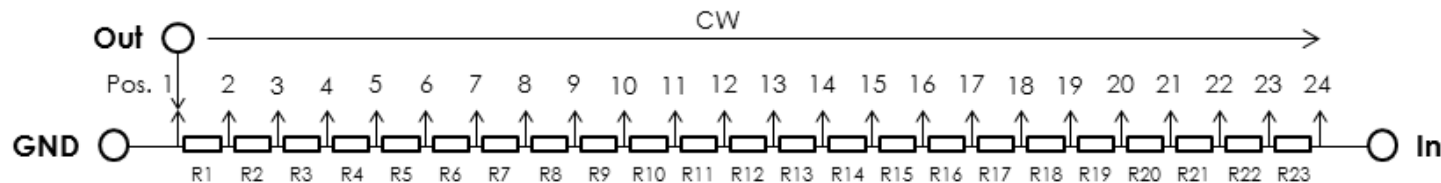
The series type attenuators are available from 1 to 8 channels and the ladder types are available up to 4 channels.



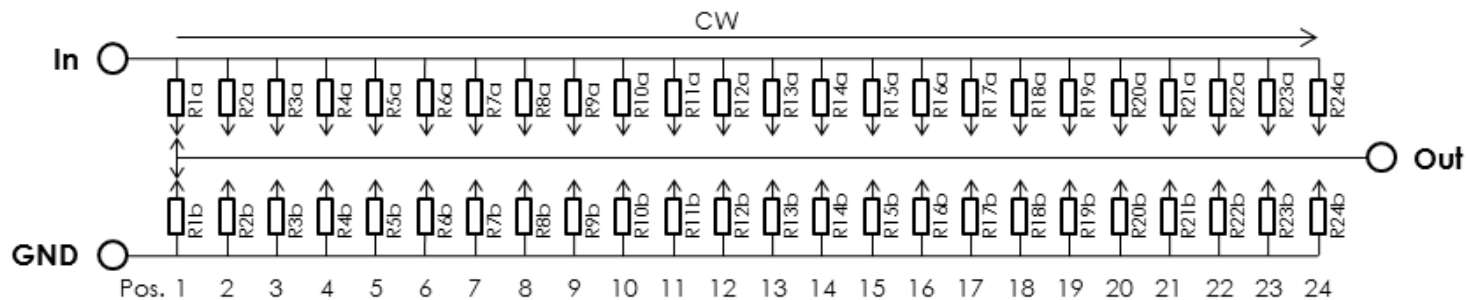
Attenuators; dB Levels and Circuitries

Switch Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Attenuation [dB]	Off	-62	-53	-46	-41	-37	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0
Step size [dB]		9	7	5	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Series Type Circuitry:



Ladder Type Circuitry:



Attenuators; Excel Resistor Calculator

dB Calculator for A4 Series Attenuators

Input values

Output values

How to Use this Calculator

This calculator is made for calculating the resistor values for the A4 series type attenuators according to the desired dB attenuation values.

Below diagram represents the circuitry and shows the input and GND connector as well as the 23 resistors of the series type attenuator.

In order to determine the resistor values following input values are required;

#1 - Input impedance [Ohms]

#2 - Attenuation starting value (at switch pos. 2)

#3 - Step values (attenuation values will be resulting). Make sure the attenuation value of position 24 becomes 0 dB.

The target resistor values and E96 coices are calculated and the corresponding attenuation and step values based on E96 are re-calculated.

Input impedance [Ohms]				50'000				
	Res [Ohms]	E96 [Ohms]	Res#	Pos.	dB values [dB]		E96 Re-calc	
					Attn.	Step	Attn. [dB]	Step [dB]
Input					24	0.00	0.00	Output
Most right (cw)	10'283.59	10'200.00	R23	24	0.00	2.00	0.00	2.01
			R22	23	-2.00	2.00	-2.01	2.00
	8'168.54	8'060.00	R21	22	-4.00	2.00	-4.01	1.98
	6'488.51	6'340.00	R20	21	-6.00	2.00	-5.99	2.00
	5'145.00	5'140.00	R19	20	-8.00	2.00	-7.99	2.00
	4'095.00	4'090.00	R18	19	-10.00	2.00	-9.99	2.00
	3'280.00	3'280.00	R17	18	-12.00	2.00	-11.99	2.00
	2'645.00	2'645.00	R16	17	-14.00	2.00	-13.99	2.00
	2'145.00	2'145.00	R15	16	-16.00	2.00	-15.99	2.00
	1'745.00	1'745.00	R14	15	-18.00	2.00	-17.99	2.00
	1'415.00	1'415.00	R13	14	-20.00	2.00	-19.99	2.00
	1'145.00	1'145.00	R12	13	-22.00	2.00	-21.99	2.00
	915.00	915.00	R11	12	-24.00	2.00	-23.99	2.00
	715.00	715.00	R10	11	-26.00	2.00	-25.99	2.00
	545.00	545.00	R9	10	-28.00	2.00	-27.99	2.00
	415.00	415.00	R8	9	-30.00	2.00	-29.99	2.00
	315.00	315.00	R7	8	-32.00	2.00	-31.99	2.00
	245.00	245.00	R6	7	-34.00	2.00	-33.99	2.00
	195.00	195.00	R5	6	-36.00	2.00	-35.99	2.00
	155.00	155.00	R4	5	-38.00	2.00	-37.99	2.00
	125.00	125.00	R3	4	-40.00	2.00	-39.99	2.00
	100.00	100.00	R2	3	-42.00	2.00	-41.99	2.00
	80.00	80.00	R1	2	-44.00	2.00	-43.99	2.00
	63.00	63.00	R0	1	-46.00	2.00	-45.99	2.00
	50.00	50.00	R-1	0	-48.00	2.00	-47.99	2.00
	40.00	40.00	R-2	-1	-50.00	2.00	-49.99	2.00
	32.00	32.00	R-3	-2	-52.00	2.00	-51.99	2.00
	25.00	25.00	R-4	-3	-54.00	2.00	-53.99	2.00
	20.00	20.00	R-5	-4	-56.00	2.00	-55.99	2.00
	16.00	16.00	R-6	-5	-58.00	2.00	-57.99	2.00
	13.00	13.00	R-7	-6	-60.00	2.00	-59.99	2.00
	10.00	10.00	R-8	-7	-62.00	2.00	-61.99	2.00
	8.00	8.00	R-9	-8	-64.00	2.00	-63.99	2.00
	6.30	6.30	R-10	-9	-66.00	2.00	-65.99	2.00
	5.00	5.00	R-11	-10	-68.00	2.00	-67.99	2.00
	4.00	4.00	R-12	-11	-70.00	2.00	-69.99	2.00
	3.20	3.20	R-13	-12	-72.00	2.00	-71.99	2.00
	2.50	2.50	R-14	-13	-74.00	2.00	-73.99	2.00
	2.00	2.00	R-15	-14	-76.00	2.00	-75.99	2.00
	1.60	1.60	R-16	-15	-78.00	2.00	-77.99	2.00
	1.30	1.30	R-17	-16	-80.00	2.00	-79.99	2.00
	1.00	1.00	R-18	-17	-82.00	2.00	-81.99	2.00
	0.80	0.80	R-19	-18	-84.00	2.00	-83.99	2.00
	0.63	0.63	R-20	-19	-86.00	2.00	-85.99	2.00
	0.50	0.50	R-21	-20	-88.00	2.00	-87.99	2.00
	0.40	0.40	R-22	-21	-90.00	2.00	-89.99	2.00
	0.32	0.32	R-23	-22	-92.00	2.00	-91.99	2.00
	0.25	0.25	R-24	-23	-94.00	2.00	-93.99	2.00
	0.20	0.20	R-25	-24	-96.00	2.00	-95.99	2.00
	0.16	0.16	R-26	-25	-98.00	2.00	-97.99	2.00
	0.13	0.13	R-27	-26	-100.00	2.00	-99.99	2.00
	0.10	0.10	R-28	-27	-102.00	2.00	-101.99	2.00
	0.08	0.08	R-29	-28	-104.00	2.00	-103.99	2.00
	0.063	0.063	R-30	-29	-106.00	2.00	-105.99	2.00
	0.050	0.050	R-31	-30	-108.00	2.00	-107.99	2.00
	0.040	0.040	R-32	-31	-110.00	2.00	-109.99	2.00
	0.032	0.032	R-33	-32	-112.00	2.00	-111.99	2.00
	0.025	0.025	R-34	-33	-114.00	2.00	-113.99	2.00
	0.020	0.020	R-35	-34	-116.00	2.00	-115.99	2.00
	0.016	0.016	R-36	-35	-118.00	2.00	-117.99	2.00
	0.013	0.013	R-37	-36	-120.00	2.00	-119.99	2.00
	0.010	0.010	R-38	-37	-122.00	2.00	-121.99	2.00
	0.008	0.008	R-39	-38	-124.00	2.00	-123.99	2.00
	0.0063	0.0063	R-40	-39	-126.00	2.00	-125.99	2.00
	0.0050	0.0050	R-41	-40	-128.00	2.00	-127.99	2.00
	0.0040	0.0040	R-42	-41	-130.00	2.00	-129.99	2.00
	0.0032	0.0032	R-43	-42	-132.00	2.00	-131.99	2.00
	0.0025	0.0025	R-44	-43	-134.00	2.00	-133.99	2.00
	0.0020	0.0020	R-45	-44	-136.00	2.00	-135.99	2.00
	0.0016	0.0016	R-46	-45	-138.00	2.00	-137.99	2.00
	0.0013	0.0013	R-47	-46	-140.00	2.00	-139.99	2.00
	0.0010	0.0010	R-48	-47	-142.00	2.00	-141.99	2.00
	0.0008	0.0008	R-49	-48	-144.00	2.00	-143.99	2.00
	0.00063	0.00063	R-50	-49	-146.00	2.00	-145.99	2.00
	0.00050	0.00050	R-51	-50	-148.00	2.00	-147.99	2.00
	0.00040	0.00040	R-52	-51	-150.00	2.00	-149.99	2.00
	0.00032	0.00032	R-53	-52	-152.00	2.00	-151.99	2.00
	0.00025	0.00025	R-54	-53	-154.00	2.00	-153.99	2.00
	0.00020	0.00020	R-55	-54	-156.00	2.00	-155.99	2.00
	0.00016	0.00016	R-56	-55	-158.00	2.00	-157.99	2.00
	0.00013	0.00013	R-57	-56	-160.00	2.00	-159.99	2.00
	0.00010	0.00010	R-58	-57	-162.00	2.00	-161.99	2.00
	0.00008	0.00008	R-59	-58	-164.00	2.00	-163.99	2.00
	0.000063	0.000063	R-60	-59	-166.00	2.00	-165.99	2.00
	0.000050	0.000050	R-61	-60	-168.00	2.00	-167.99	2.00
	0.000040	0.000040	R-62	-61	-170.00	2.00	-169.99	2.00
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	0.000016	0.000016	R-66	-65	-178.00	2.00	-177.99	2.00
	0.000013	0.000013	R-67	-66	-180.00	2.00	-179.99	2.00
	0.000010	0.000010	R-68	-67	-182.00	2.00	-181.99	2.00
	0.000008	0.000008	R-69	-68	-184.00	2.00	-183.99	2.00
	0.0000063	0.0000063	R-70	-69	-186.00	2.00	-185.99	2.00
	0.0000050	0.0000050	R-71	-70	-188.00	2.00	-187.99	2.00
	0.0000040	0.0000040	R-72	-71	-190.00	2.00	-189.99	2.00
	0.0000032	0.0000032	R-73	-72	-192.00	2.00	-191.99	2.00
	0.0000025	0.0000025	R-74	-73	-194.00	2.00	-193.99	2.00
	0.0000020	0.0000020	R-75	-74	-196.00	2.00	-195.99	2.00
	0.0000016	0.0000016	R-76	-75	-198.00	2.00	-197.99	2.00
	0.0000013	0.0000013	R-77	-76	-200.00	2.00	-199.99	2.00
	0.0000010	0.0000010	R-78	-77	-202.00	2.00	-201.99	2.00
	0.0000008	0.0000008	R-79	-78	-204.00	2.00	-203.99	2.00
	0.00000063	0.00000063	R-80	-79	-206.00	2.00	-205.99	2.00
	0.00000050	0.00000050	R-81	-80	-208.00	2.00	-207.99	2.00
	0.00000040	0.00000040	R-82	-81	-210.00	2.00	-209.99	2.00
	0.00000032	0.00000032	R-83	-82	-212.00	2.00	-211.99	2.00
	0.00000025	0.00000025	R-84	-83	-214.00	2.00	-213.99	2.00
	0.00000020	0.00000020	R-85	-84	-216.00	2.00	-215.99	2.00
	0.00000016	0.00000016	R-86	-85	-218.00	2.00	-217.99	2.00
	0.00000013	0.00000013	R-87	-86	-220.00	2.00	-219.99	2.00
	0.00000010	0.00000010	R-88	-87	-222.00	2.00	-221.99	2.00
	0.00000008	0.00000008	R-89	-88	-224.00	2.00	-223.99	2.00
	0.000000063	0.000000063	R-90	-89	-226.00	2.00	-225.99	2.00
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	0.000000040	0.000000040	R-92	-91	-230.00	2.00	-229.99	2.00
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	0.000000016	0.000000016	R-96	-95	-238.00	2.00	-237.99	2.00
	0.000000013	0.000000013	R-97	-96	-240.00	2.00	-239.99	2.00
	0.000000010	0.000000010	R-98	-97	-242.00	2.00	-241.99	2.00
	0.000000008	0.000000008	R-99	-98	-244.00	2.00	-243.99	2.00
	0.0000000063	0.0000000063	R-100	-99	-246.00	2.00	-245.99	2.00
	0.0000000050	0.0000000050	R-101	-100	-248.00	2.00	-247.99	2.00
	0.0000000040	0.0000000040	R-102	-101	-250.00	2.00	-249.99	2.00
	0.0000000032	0.0000000032	R-103	-102	-252.00	2.00	-251.99	2.00
	0.0000000025	0.0000000025	R-104	-103	-254.00	2.00	-253.99	2.00
	0.0000000020	0.0000000020	R-105	-104	-256.00	2.00	-255.99	2.00
	0.0000000016	0.0000000016	R-106	-105	-258.00	2.00	-257.99	2.00
	0.0000000013	0.0000000013	R-107	-106	-260.00	2.00	-259.99	2.00
	0.0000000010	0.0000000010	R-108	-107	-262.00	2.00	-261.99	2.00
	0.0000000008	0.0000000008	R-109	-108	-264.00	2.00	-263.99	2.00
	0.00000000063	0.00000000063	R-110	-109	-266.00	2.00	-265.99	2.00
	0.00000000050	0.00000000050	R-111	-110	-268.00	2.00	-267.99	2.00
	0.00000000040	0.00000000040	R-112	-111	-270.00	2.00	-269.99	2.00
	0.00000000032	0.00000000032	R-113	-112	-272.00	2.00	-271.99	2.00
	0.00000000025	0.00000000025	R-114	-113	-274.00	2.00	-273.99	2.00
	0.00000000020	0.00000000020	R-115					

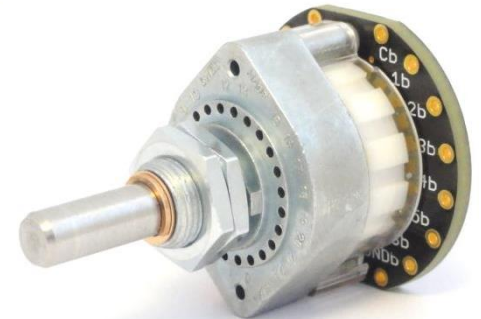
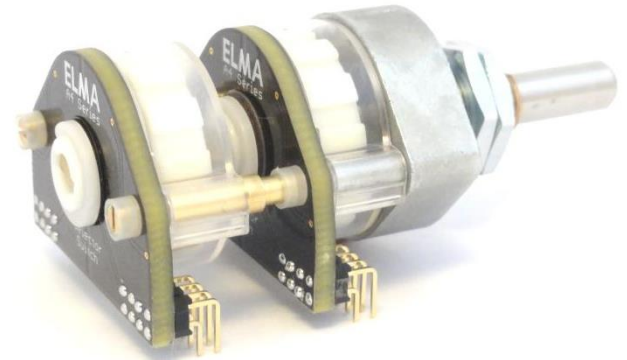
Markets & Applications



High-End Audio



Pro Audio



Availability

Samples

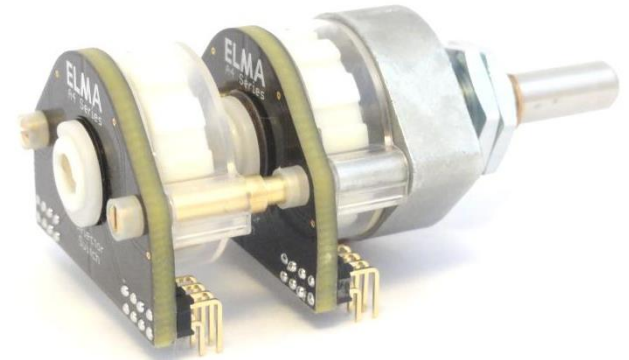
Some types are available within 1 week.

Budgetary Pricing

Please contact your local sales representative

Lead times

Stock to approximately 4 weeks.



Thank You