

Manual Variable Attenuators

Rotary

Pushbutton

Toggle switch



Manual Variable Attenuators

Model Number Index

Please add connector type to the end of part number to complete model number ie; 50R-273 SMA.

Rotary

	Frequency Range	Attenuation Range	Page
<u>50 Ohm</u>			
50R-019	DC-2200 MHz	0-10 dB x 1	4-5
50R-028	DC-1000 MHz	0-1 dB x 0.1	4-5
50R-029	DC-2200 MHz	0-70 dB x 10	4-4
50R-043	DC-1000 MHz	0-100 dB x 10	4-4
50R-083	DC-2000 MHz	0-10 dB x 1	4-6
50R-084	DC-2200 MHz	0-60 dB x 10	4-6
50R-096	DC-1200 MHz	0-100 dB x 10	4-8
50R-124	DC-2500 MHz	0-70 dB x 10	4-4
50R-137	DC-2550 MHz	0-80 dB x 10	4-7
50R-234	DC-2550 MHz	0-100 dB x 10	4-7
50R-248	DC-2500 MHz	0-10 dB x 1	4-5
50R-249	DC-2500 MHz	0-1 dB x 0.1	4-5
50R-267	DC-12.4 GHz	0-9 dB x 1	4-9
50R-270	DC-12.4 GHz	0-60 dB x 10	4-9
50R-273	DC-2500 MHz	0-10 dB x 1	4-3
50R-297	DC-2500 MHz	0-5 dB x 0.5	4-3

75 Ohm

75R-001	DC-500 MHz	0-70 dB x 10	4-16
75R-002	DC-500 MHz	0-10 dB x 1	4-17
75R-006	DC-500 MHz	0-1 dB x 0.1	4-17
75R-050	DC-2200 MHz	0-10 dB x 1	4-17
75R-055	DC-1000 MHz	0-70 dB x 10	4-16
75R-056	DC-1000 MHz	0-10 dB x 1	4-17
75R-057	DC-1000 MHz	0-1 dB x 0.1	4-17
75R-089	DC-2200 MHz	0-60 dB x 10	4-16

Dual Concentric

	Frequency Range	Attenuation Range	Page
<u>50 Ohm</u>			
50DR-001	DC-1000 MHz	0-110 dB x 1	4-10
50DR-003	DC-1000 MHz	0-50 dB x 1	4-13
50DR-010	DC-2000 MHz	0-30 dB x 1	4-10
50DR-035	DC-2000 MHz	0-70 dB x 1	4-10
50DR-046	DC-2500 MHz	0-50 dB x 1	4-10
50DR-055	DC-2000 MHz	0-30 dB x 1	4-11
50DR-060	DC-2000 MHz	0-11 dB x 0.1	4-11
50DR-061	DC-2200 MHz	0-80 dB x 1	4-10
50DR-063	DC-1100 MHz	0-50 dB x 1	4-11
50DR-077	DC-2000 MHz	0-90 dB x 1	4-10
50DR-096	DC-3000 MHz	0-30 dB x 1	4-12

75 Ohm

75DR-003	DC-1000 MHz	0-50 dB x 1	4-13
75DR-006	DC-600 MHz	0-80 dB x 1	4-14
75DR-009	DC-1000 MHz	0-70 dB x 1	4-14
75DR-015	DC-1000 MHz	0-11 dB x 0.1	4-15
75DR-018	DC-1000 MHz	0-30 dB x 1	4-15
75DR-021	DC-2100 MHz	0-30 dB x 1	4-15

Bench Top

	Frequency Range	Attenuation Range	Page
<u>50 Ohm</u>			
50BR-001	DC-2000 MHz	0-110 dB x 1	4-19
50BR-008	DC-2200 MHz	0-80 dB x 1	4-21
50BR-009	DC-1000 MHz	0-110 dB x 1	4-21
50BR-016	DC-2550 MHz	0-90 dB x 1	4-19
50BR-017	DC-1000 MHz	0-81 dB x 0.1	4-22
50BR-022	DC-1000 MHz	0-111 dB x 0.1	4-22
50BR-030	DC-2550 MHz	0-110 dB x 1	4-19
50BR-036	DC-2000 MHz	0-110 dB x 1	4-23
50BR-042	DC-2200 MHz	0-81 dB x 0.1	4-22
50BR-046	DC-12.4 GHz	0-69 dB x 1	4-9
50BR-068	DC-2550 MHz	0-110 dB x 1	4-20
<u>75 Ohm</u>			
75BR-014	DC-1000 MHz	0-90 dB x 0.1	4-18
75BR-023	DC-2200 MHz	0-70 dB x 1	4-18

Panel Mounted

	Frequency Range	Attenuation Range	Page
<u>50 Ohm</u>			
50PM-002	DC-1000 MHz	0-81 dB x 0.1	4-24
50PM-003	DC-1000 MHz	0-50 dB x 1	4-24
50PM-009	DC-2200 MHz	0-80 dB x 1	4-24

Pushbutton

	Frequency Range	Attenuation Range	Page
<u>50 Ohm</u>			
50B-001	DC-750 MHz	0-65 dB x 1	4-25
50B-002	DC-750 MHz	0-45.5 dB x 0.5	4-25
50B-035	DC-750 MHz	0-85 dB x 1	4-27
50B-043	DC-750 MHz	0-102 dB x 1	4-26
50B-044	DC-750 MHz	0-82.5 dB x 0.5	4-26
50B-050	DC-1300 MHz	0-102 dB x 1	4-26
<u>75 Ohm</u>			
75B-001	DC-500 MHz	0-65 dB x 1	4-25
75B-002	DC-500 MHz	0-45.5 dB x 0.5	4-25

Toggle Switch

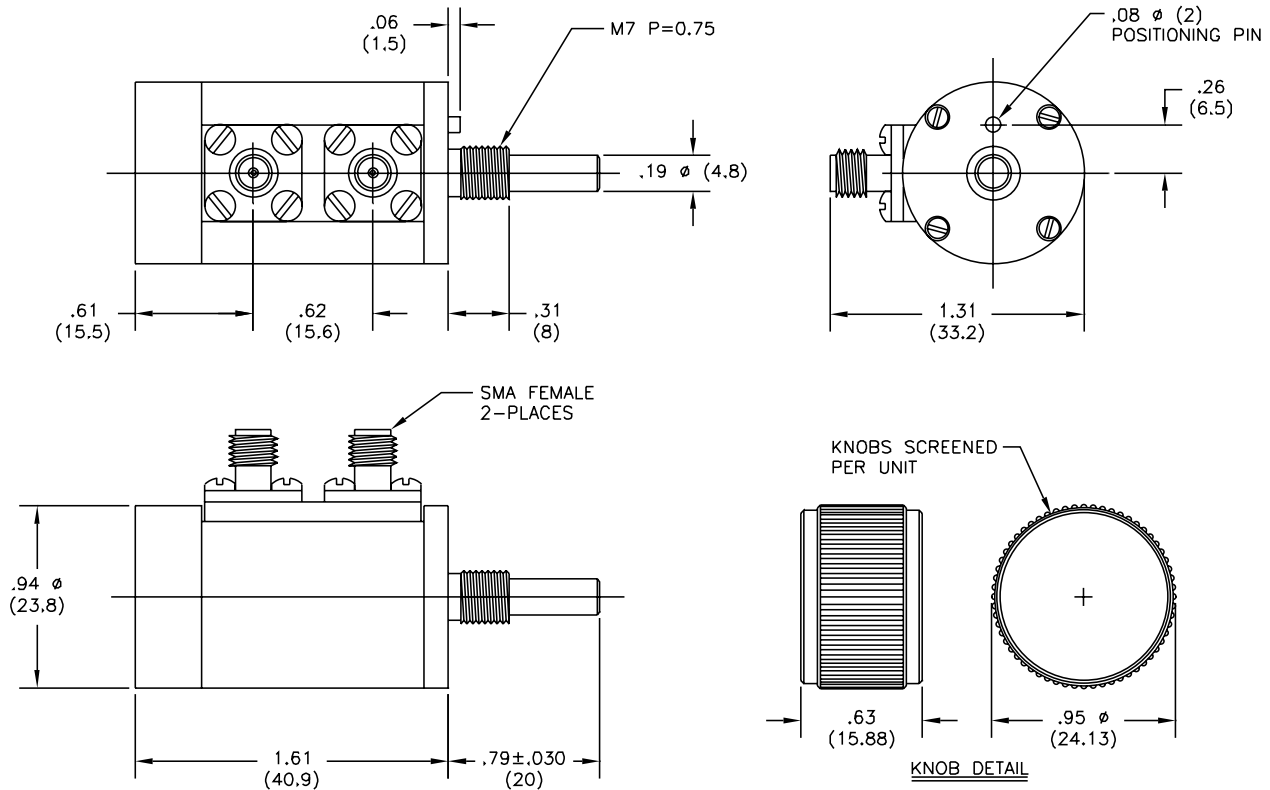
	Frequency Range	Attenuation Range	Page
<u>50 Ohm</u>			
50TA-006	DC-850 MHz	0-65 dB x 1	4-28
50TA-007	DC-850 MHz	0-45.5 dB x 0.5	4-28
<u>75 Ohm</u>			
75TA-006	DC-500 MHz	0-65 dB x 1	4-28
75TA-007	DC-500 MHz	0-45.5 dB x 0.5	4-28

Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss	RF Input Power
50R-273	DC - 2500 MHz	0 to 10 dB in 1 dB steps	0-5 dB +/- .2 dB DC-2000 MHz +/- .2 dB 2000-2500 MHz 6 dB +/- .2 dB DC-2000 MHz + .2 dB/- .35 dB 2000-2500 MHz 7 dB + .2 dB/- .25 dB DC-2000 MHz + .2 dB/- .5 dB 2000-2500 MHz 8 dB + .2 dB/- .35 dB DC-2000 MHz + .2 dB/- .7 dB 2000-2500 MHz 9 and 10 dB + .2 dB/- .5 dB DC-2000 MHz + .2 dB/- .9 dB 2000-2500 MHz	1.25 :1 max.	.25 dB maximum	1 Watt average
50R-297	DC - 2500 MHz	0 to 5 dB in .5 dB steps	+/- .2 dB DC-2000 MHz +/- .25 dB 2000-2500 MHz	1.3:1 max.	.3 dB maximum	1 Watt average

Common Specifications

Impedance	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	-20° C to +85° C	Attenuation increases in clockwise direction	32.7° (no stops)	SMA female



- NOTES: 1) UNIT WILL BE SUPPLIED WITH M7 NUT AND LOCKWASHER
 2) 32.73° INDEXING WITH NO STOP
 3) DIMENSIONS IN PARENTHESES ARE IN mm

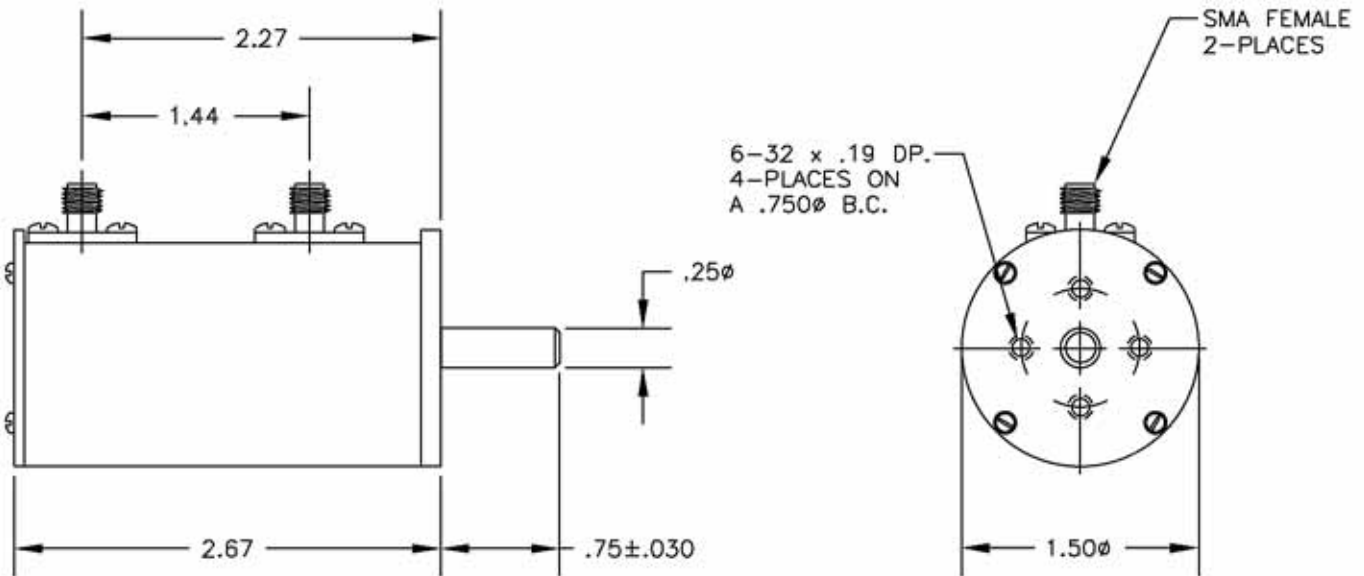
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss	RF Connectors
50R-029	DC-2200 MHz	0-70 dB in 10 dB steps	+/- .5 dB or 1% DC-500 MHz +/- .5 dB or 2% 500-1000 MHz +/- .5 dB or 3% 1000-2200 MHz	1.2:1 maximum DC-1000 MHz 1.4:1 maximum 1000-2200 MHz	.3 dB maximum DC-1000 MHz .5 dB maximum 1000-2200 MHz	BNC, N, SMA or TNC female
50R-043	DC-1000 MHz	0-100 dB in 10 dB steps	+/- .5 dB or 1% DC-500 MHz +/- .5 dB or 2% 500-1000 MHz	1.2:1 maximum	.3 dB maximum	BNC, N, SMA or TNC female
50R-124	DC-2500 MHz	0-70 dB in 10 dB steps	+/- .5 dB or 2%	1.4:1 maximum	.5 dB maximum	BNC, N, SMA or TNC female

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum



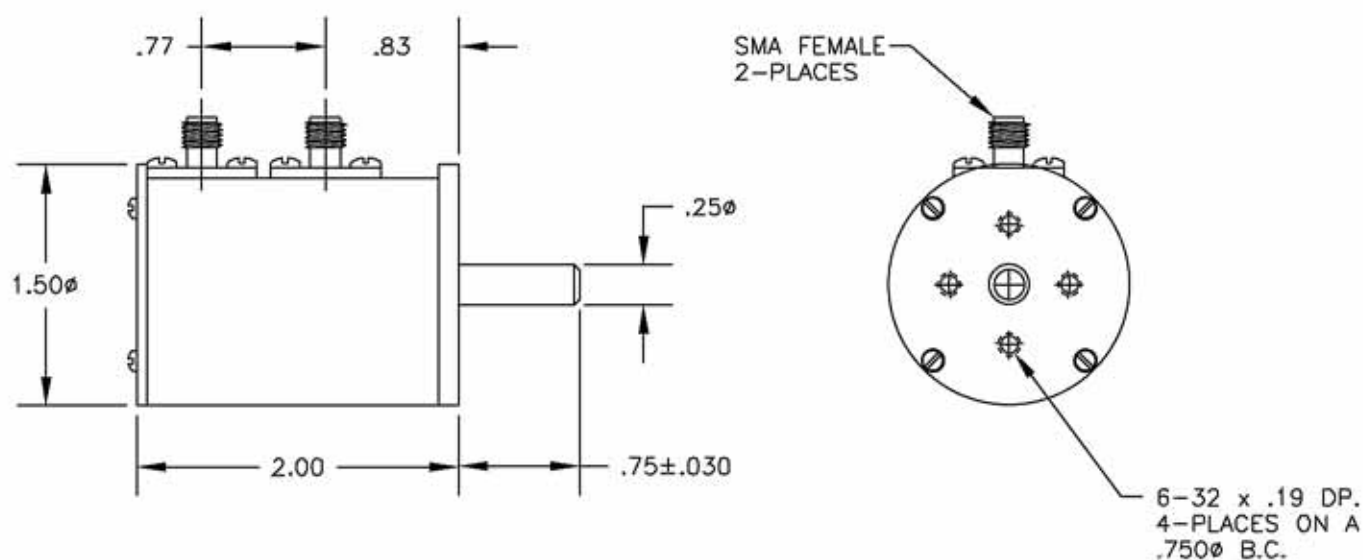
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss	RF Input Power
50R-019	DC-2200 MHz	0-10 dB in 1 dB steps	+/- .2 dB maximum DC-1000 MHz +/- .4 dB maximum 1000-2200 MHz	1.2:1 maximum DC-1000 MHz 1.4:1 maximum 1000-2200 MHz	.2 dB maximum DC-1000 MHz .4 dB maximum 1000-2200 MHz	2 Watts average 1000 Watts peak
50R-028	DC-1000 MHz	0-1 dB in .1 dB steps	+/- .01 dB maximum DC-30 MHz +/- .03 dB maximum 30-500 MHz +/- .05 dB maximum 500-1000 MHz	1.2:1 maximum	.7 dB maximum	2 Watts average 1000 Watts peak
50R-248	DC-2500 MHz	0-10 dB in 1 dB steps	+/- .25 dB maximum DC-1100 MHz +/- .6 dB maximum 1100-2500 MHz	1.25:1 maximum DC-1100 MHz 1.5:1 maximum 1100-2500 MHz	.25 dB maximum DC-1100 MHz .5 dB maximum 1100-2500 MHz	2 Watts average 1000 Watts peak
50R-249	DC-2500 MHz	0-1 dB in .1 dB steps	+/- .05 dB maximum	1.2:1 maximum DC-1100 MHz 1.4:1 maximum 1100-2500 MHz	1 dB maximum	2 Watts average 1000 Watts peak

Common Specifications

Impedance	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	SMA, BNC or TNC female



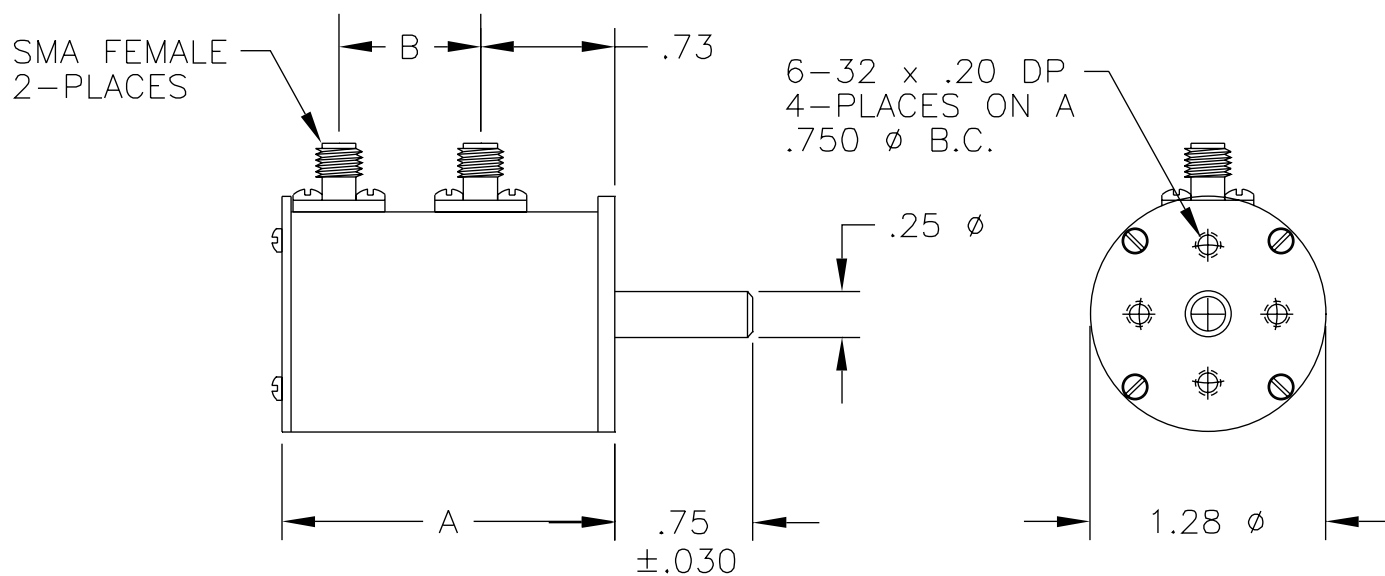
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50R-083	DC-2000 MHz	0-10 dB in 1 dB steps	+/- .2 dB maximum DC-1000 MHz +/- .4 dB maximum 1000-2000 MHz	1.2:1 maximum DC-1000 MHz 1.4:1 maximum 1000-2000 MHz	.2 dB maximum DC-1000 MHz .4 dB maximum 1000-2000 MHz
50R-084	DC-2200 MHz	0-60 dB in 10 dB steps	+/- .5 dB or 1% DC-500 MHz +/- .5 dB or 2% 500-1000 MHz +/- .5 dB or 3% 1000-2200 MHz	1.2:1 maximum DC-1000 MHz 1.4:1 maximum 1000-2200 MHz	.3 dB maximum DC-1000 MHz .5 dB maximum 1000-2200 MHz

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	SMA female



MODEL	DIM: A	DIM: B
50R-083	1.83	.77
50R-084	2.40	1.36

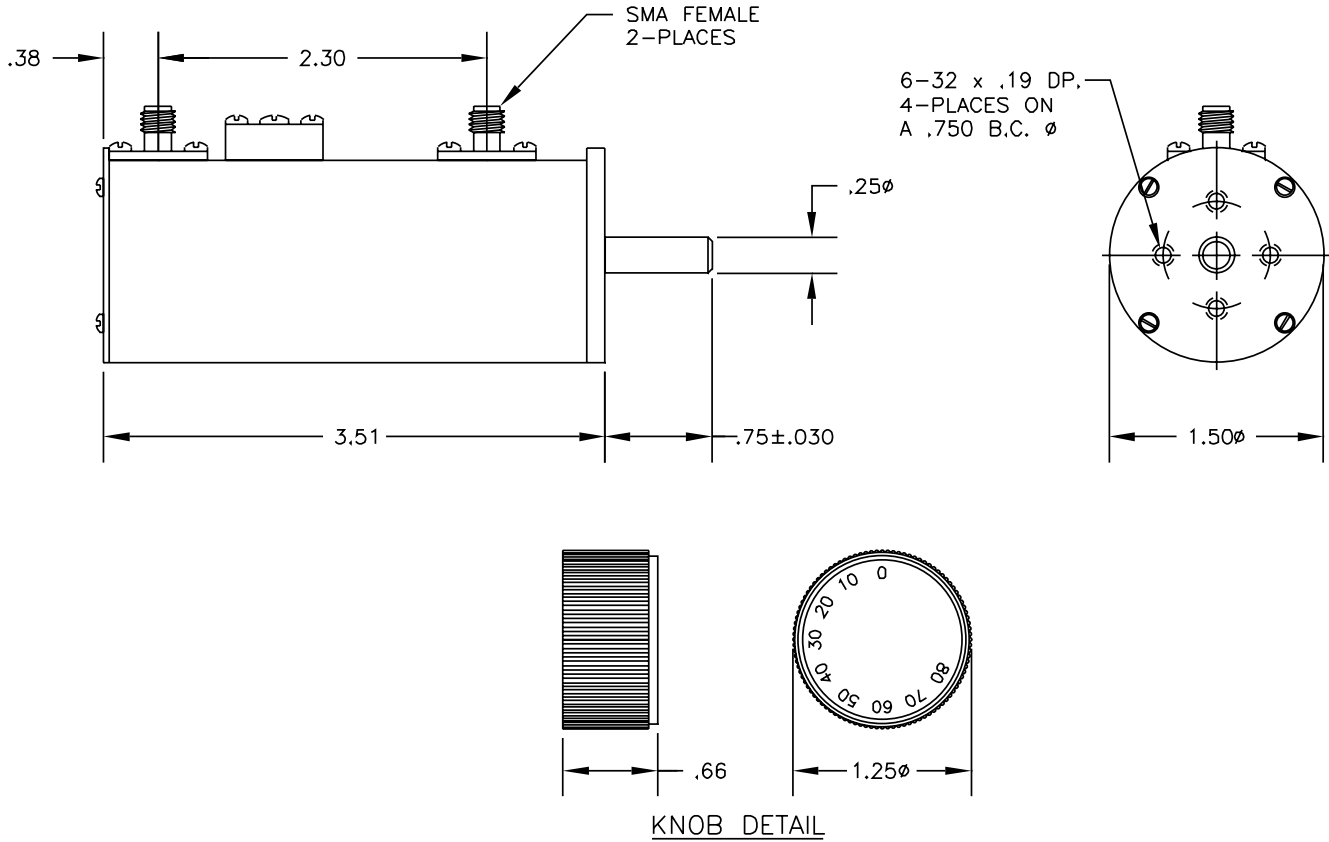
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50R-137	DC-2550 MHz	0-80 dB in 10 dB steps	+/- .3 dB or 1% DC-500 MHz +/- .5 dB or 2% 500-1000 MHz +/- .5 dB or 3% 1000-1500 MHz +/- .5 dB or 3% 1500-2550 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-2550 MHz	1 dB maximum
50R-234	DC-2550 MHz	0-100 dB in 10 dB steps	+/- .3 dB or 1% DC-500 MHz +/- .5 dB or 2% 500-1000 MHz +/- .5 dB or 3% 1000-1500 MHz +/- 4% 1500-2550 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-1500 MHz 1.7:1 maximum 1500-2550 MHz	1 dB maximum

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	N,SMA or TNC female



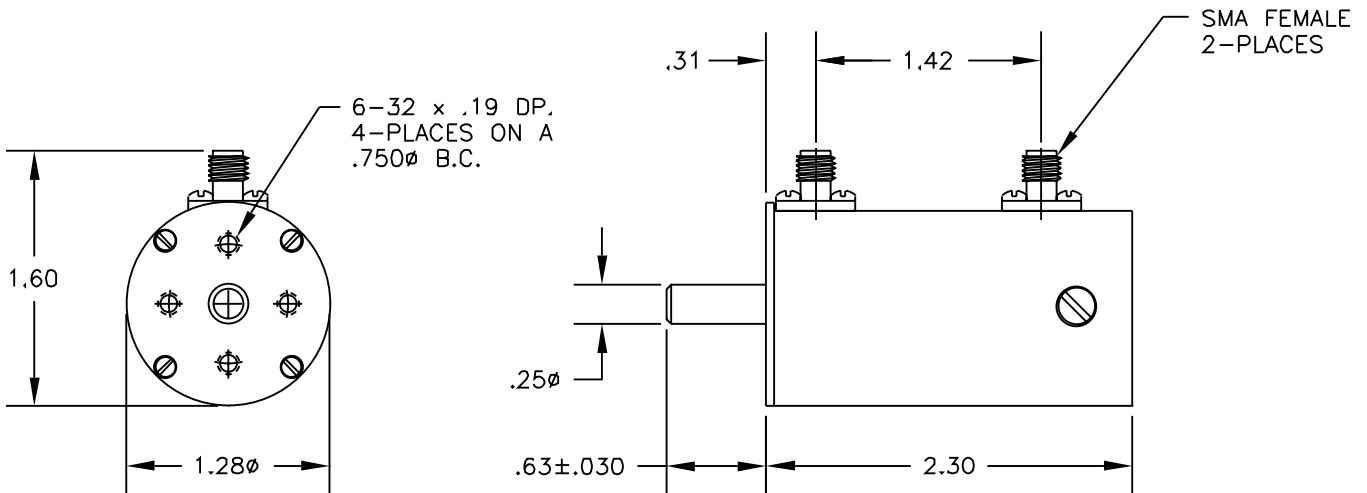
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Rotary Attenuator

Long Lifetime : 100,000 Cycles

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50R-096	DC-1200 MHz	0-100 dB in 10 dB steps	+/-1.5 %	1.3:1 maximum	.2 dB maximum

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in c'lockwise direction	30 degrees with stops at minimum and maximum	SMA female



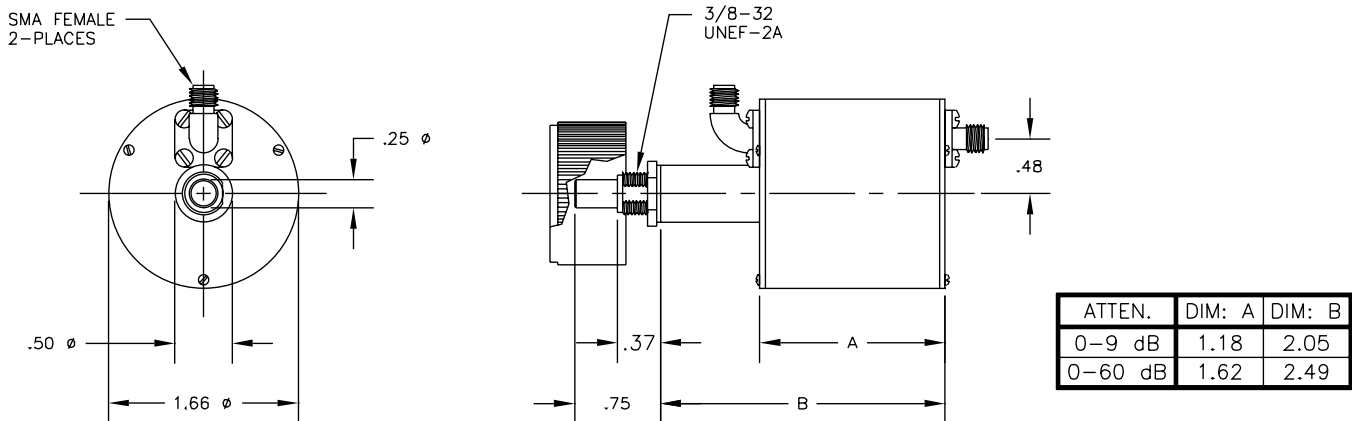
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High Frequency Rotary Attenuators

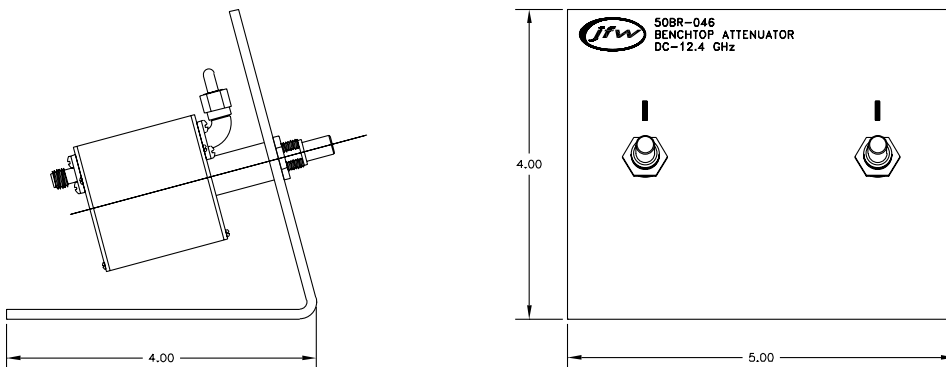
Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50R-267	DC-12.4 GHz	0-9 dB in 1 dB steps	+/- .35 dB maximum	1.5:1 maximum	1 db maximum
50R-270	DC-12.4 GHz	0-60 dB in 10 dB steps	+/- .5 dB or 2%	1.5:1 maximum	1 dB maximum
50BR-046	DC-12.4 GHz	0-69 dB in 1 dB steps	+/- .35 dB 0-9 dB +/- .5 dB or 2% 0-60 dB	1.6:1 maximum DC-4 GHz 2.0:1 maximum 4-12.4 GHz	1.5 dB maximum DC-4 GHz 2.5 db maximum 4-12.4 GHz

Model	Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50R-267	50 Ohms	2 Watts average 200 Watts peak	0° C to +55° C	Attenuation increases in clockwise direction	36° with stops at min. and max.	SMA female
50R-270	50 Ohms	2 Watts average 200 Watts peak	0° C to +55° C	Attenuation increases in clockwise direction	36° with stops at min. and max.	SMA female
50BR-046	50 Ohms	2 Watts average 200 Watts peak	0° C to +55° C	Attenuation increases in clockwise direction	36° with stops at min. and max.	SMA female

50R-267 / 50R-270



50BR-046



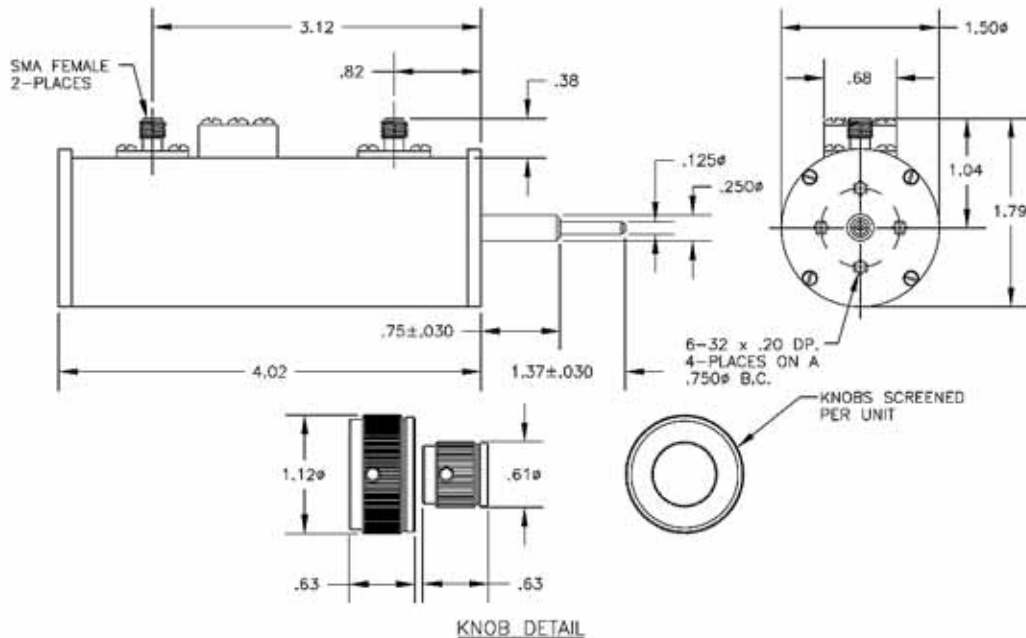
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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50DR-001	DC-1000 MHz	0-110 dB in 1 dB steps	+/- .2 dB maximum or 1% DC-500 MHz +/- .3 dB maximum or 2% 500-1000 MHz	1.2:1 maximum DC-500 MHz 1.4:1 maximum 500-1000 MHz	.5 dB maximum
50DR-010	DC-2000 MHz	0-30 dB in 1 dB steps	+/- .3 dB maximum or 1% DC-1000 MHz +/- .5 dB maximum or 2% 1000-2000 MHz	1.4:1 maximum	.5 dB maximum DC-1000 MHz .7 dB maximum 1000-2000 MHz
50DR-035	DC-2000 MHz	0-70 dB in 1 dB steps	+/- .5 dB maximum or 3%	1.25:1 maximum DC-1000 MHz 1.5:1 maximum 1000-2000 MHz	.6 dB maximum DC-1000 MHz 1 dB maximum 1000-2000 MHz
50DR-046	DC-2500 MHz	0-50 dB in 1 dB steps	+/- .2 dB maximum or 1% DC-500 MHz +/- .3 dB maximum or 3% 500-1000 MHz +/- .4 dB maximum or 3% 1000-2500 MHz	1.2:1 maximum DC-500 MHz 1.4:1 maximum 500-1000 MHz 1.5:1 maximum 1000-2500 MHz	.5 dB maximum DC-1000 MHz 1 dB maximum 1000-2500 MHz
50DR-061	DC-2200 MHz	0-80 dB in 1 dB steps	+/- .5 dB maximum or 3%	1.25:1 maximum DC-1000 MHz 1.5:1 maximum 1000-2200 MHz	.6 dB maximum DC-1000 MHz 1 dB maximum 1000-2200 MHz
50DR-077	DC-2000 MHz	0-90 dB in 1 dB steps	+/- .5 dB maximum or 1% DC-500 MHz +/- .5 dB maximum or 2% 500-2000 MHz	1.2:1 maximum DC-500 MHz 1.4:1 maximum 500-1000 MHz 1.5:1 maximum 1000-2000 MHz	.5 dB maximum DC-1000 MHz 1 dB maximum 1000-2000 MHz

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connector
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, N, SMA or TNC female



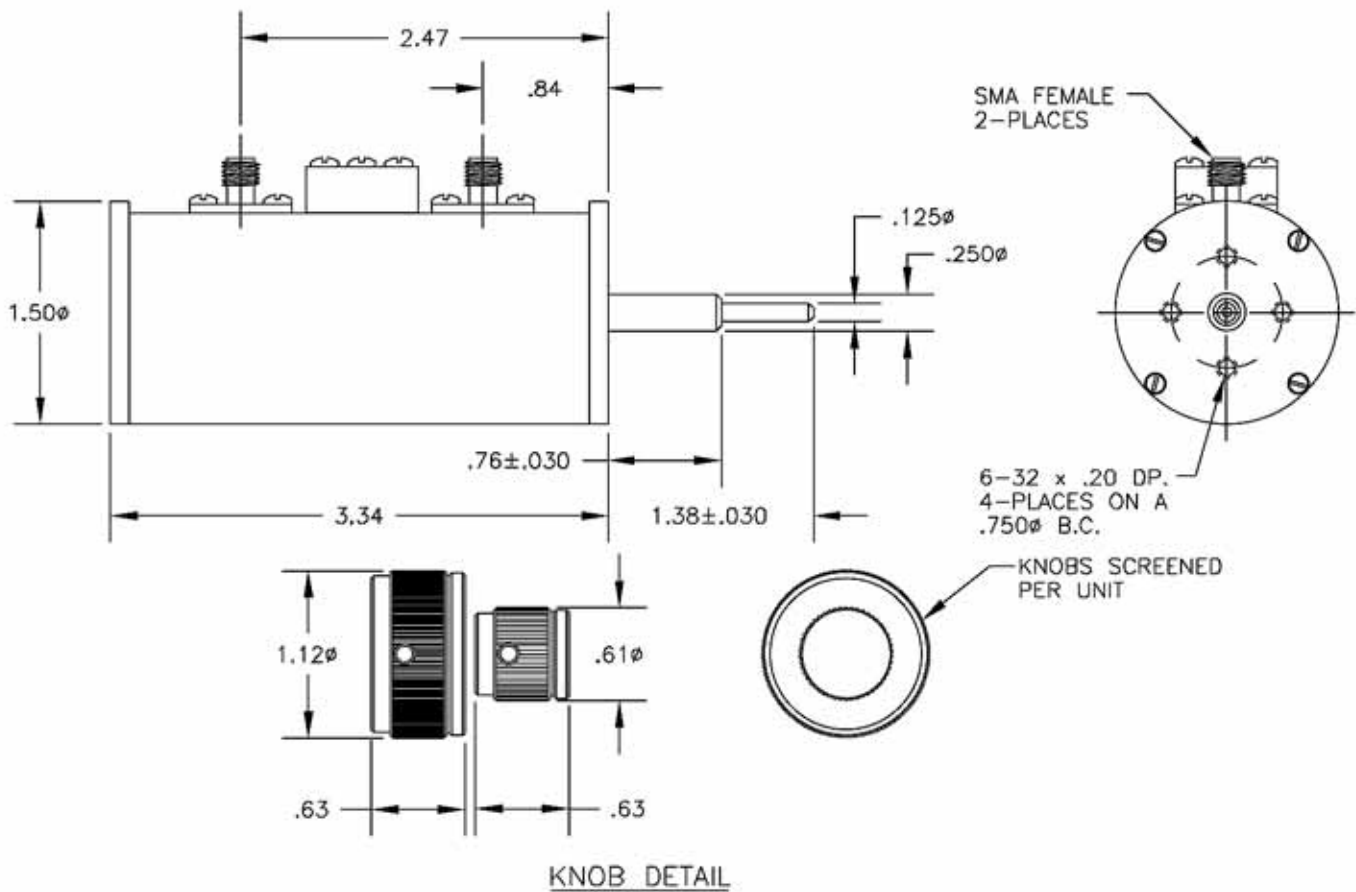
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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50DR-055	DC-2000 MHz	0-30 dB in 1 dB steps	+/- .25 dB maximum or 2% DC-1000 MHz +/- .4 dB maximum or 3% 1000-2000 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-2000 MHz	.8 dB maximum
50DR-060	DC-2000 MHz	0-11 dB in .1 dB steps	+/- .05 dB maximum .1dB steps DC-1100 MHz +/- .06 dB maximum .1dB steps 1100-2000 MHz +/- .2 dB maximum 1dB steps DC-1100 MHz +/- .4 dB maximum 1dB steps 1100-2000 MHz	1.3:1 maximum DC-1100 MHz 1.5:1 maximum 1100-2000 MHz	1 dB maximum DC-1100 MHz 1.25 dB maximum 1100-2000 MHz
50DR-063	DC-1100 MHz	0-50 dB in 1 dB steps	+/- .2 dB maximum DC-250 MHz +/- .5 dB maximum 250-500 MHz +/- 1 dB maximum 500-1100 MHz	1.1:1 maximum DC-250 MHz 1.2:1 maximum 250-500 MHz 1.4:1 maximum 500-1100 MHz	.5 dB maximum

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connector
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, N, SMA or TNC female

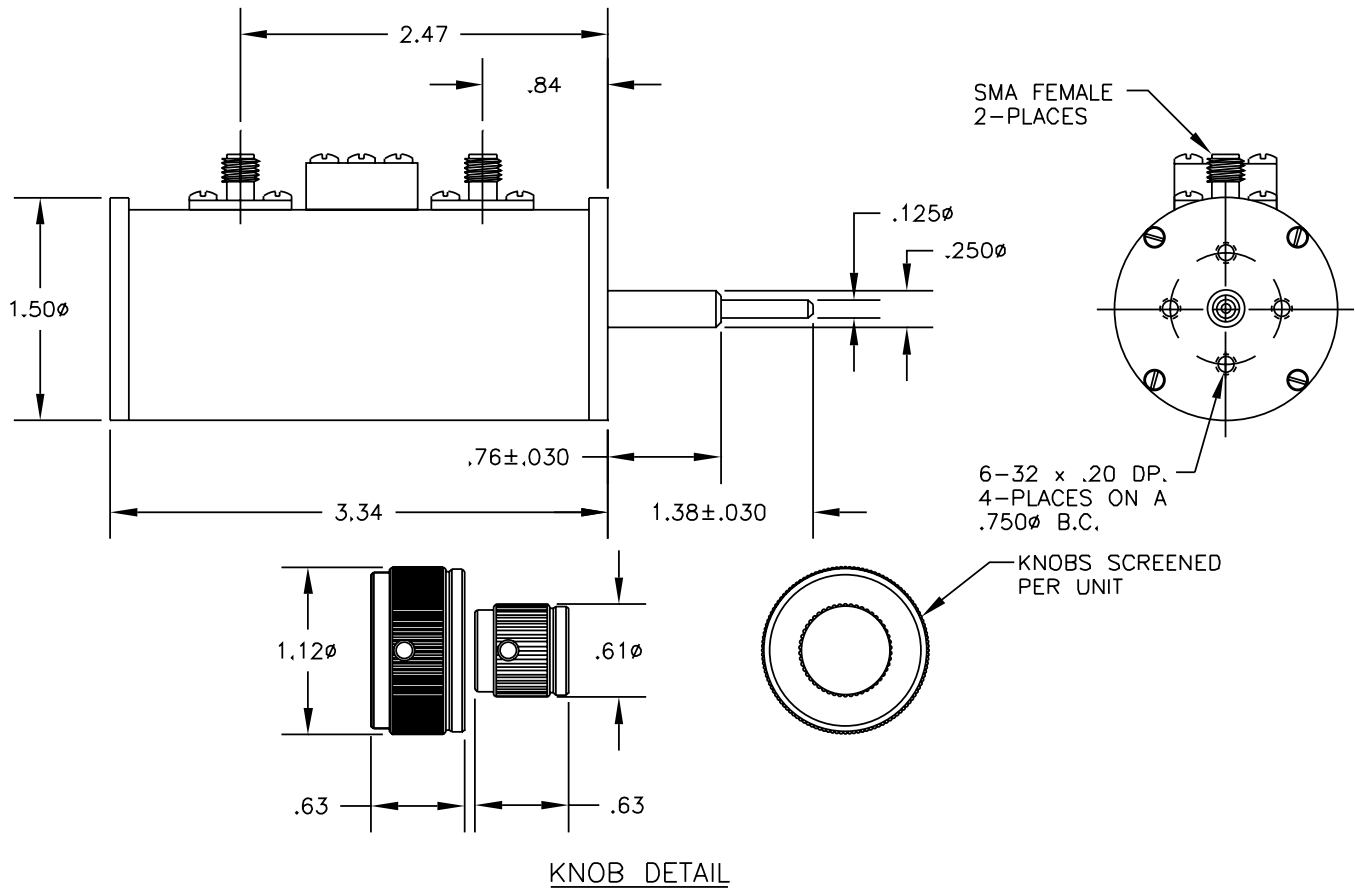


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Dual Concentric Rotary Attenuator

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50DR-096	DC-3000 MHz	0-30 dB in 1 dB steps	+/- .25 dB or 2 % DC-1000 MHz +/- .4 dB or 3% 1000-2000 MHz +/- .5 dB or 4% 2000-3000 MHz	1.4:1 to 1000 MHz 1.5:1 to 2000 MHz 1.7:1 to 3000 MHz	1 dB maximum

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	SMA female

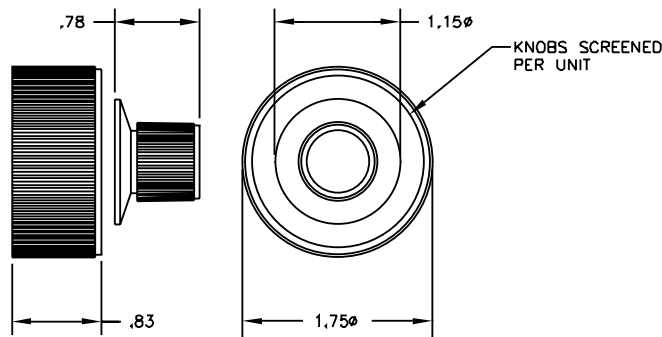
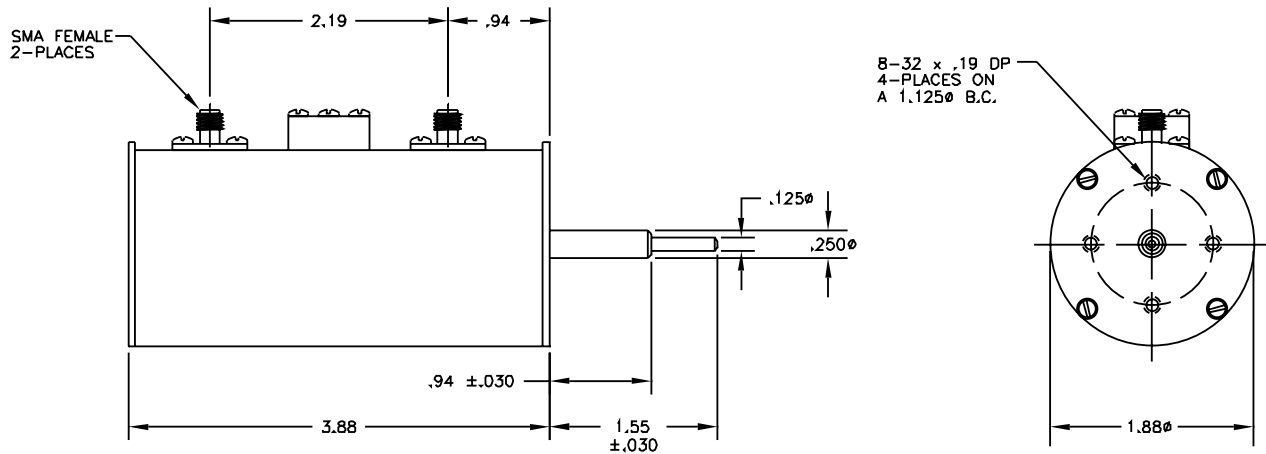


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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss	RF Connectors
50DR-003	DC-1000 MHz	0-50 dB in 1 dB steps	+/- .2 dB DC-250 MHz +/- .5 dB 250-500 MHz +/- 1 dB 500-1000 MHz	1.1:1 maximum DC-250 MHz 1.2:1 maximum 250-500 MHz 1.4:1 maximum 500-1000 MHz	.5 dB maximum	BNC,N,SMA or TNC female
75DR-003	DC-1000 MHz	0-50 dB in 1 dB steps	+/- .2 dB DC-250 MHz +/- .5 dB 250-500 MHz +/- 1 dB 500-1000 MHz	1.1:1 maximum DC-250 MHz 1.2:1 maximum 250-500 MHz 1.4:1 maximum 500-1000 MHz	.5 dB maximum	BNC, F, or N female

Model	Impedance	RF Input Power	Operating Temperature	Standard Rotation	I n d e x i n g
50DR-003	50 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum
75DR-003	75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum



KNOB DETAIL

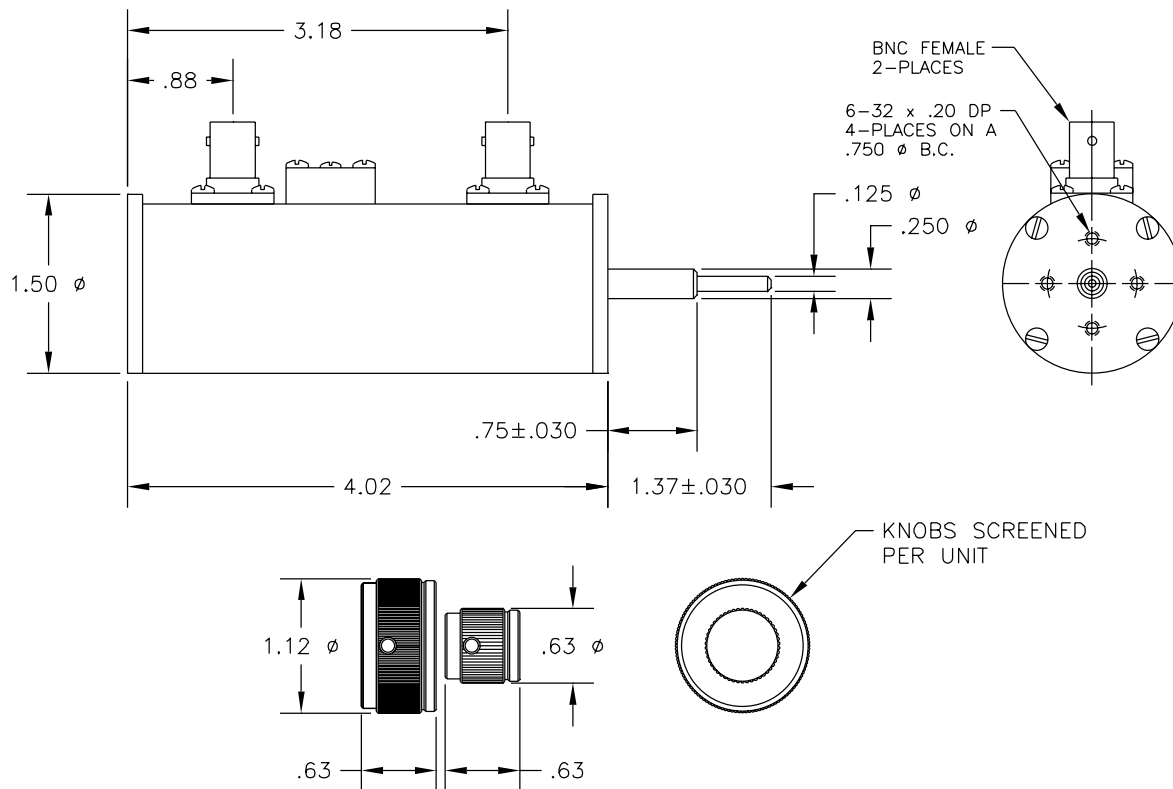
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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
75DR-006	DC-600 MHz	0-80 dB in 1 dB steps	+/- .1 dB 0-10 dB +/- .3 dB 10-80 dB DC-100 MHz +/- .2 dB 0-10 dB +/- .6 dB 10-80 dB 100-400 MHz +/- .3 dB 0-10 dB +/- .8 dB 10-80 dB 400-600 MHz	1.3:1 maximum	.75 dB maximum
75DR-009	DC-1000 MHz	0-70 dB in 1 dB steps	+/- .5 dB or 3%	1.4:1 maximum	.75 dB maximum

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, F or N female

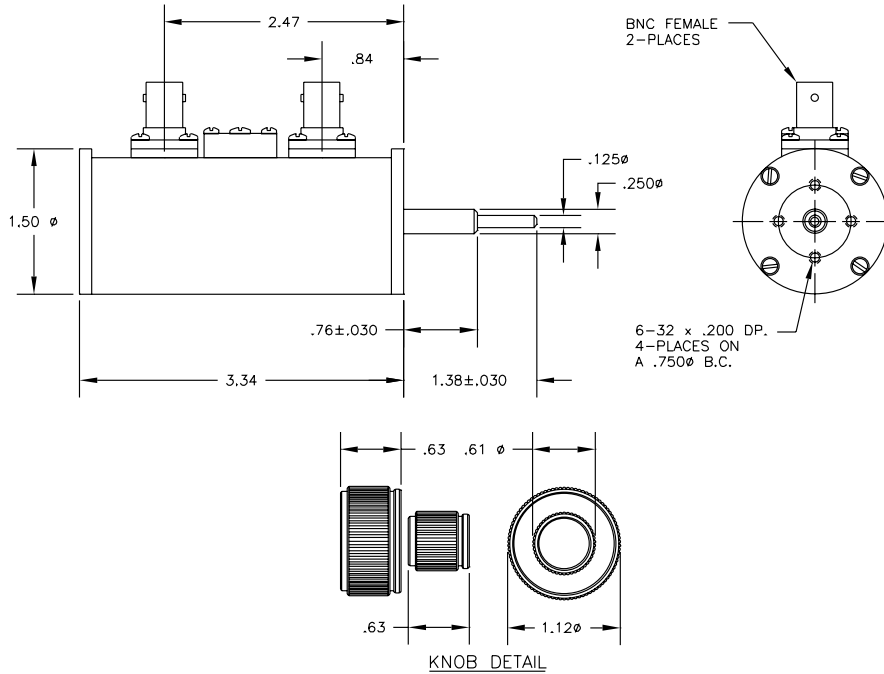


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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
75DR-015	DC-1000 MHz	0-11 dB in .1 dB steps	+/- .02 dB maximum 0-1 dB +/- .05 dB maximum 1-11 dB DC-100 MHz +/- .04 dB maximum 0-1 dB +/- .2 dB maximum 1-11 dB 100-500 MHz +/- .05 dB maximum 0-1 dB +/- .3 dB maximum 1-11 dB 500-1000 MHz	1.1:1 maximum DC-100 MHz 1.4:1 maximum 100-500 MHz 1.5:1 maximum 500-1000 MHz	1 dB maximum
75DR-018	DC-1000 MHz	0-30 dB in 1 dB steps	+/- .2 dB 0-10 dB +/- .5 dB 10-30 dB DC-500 MHz +/- .4 dB 0-10 dB +/- .5 dB 10-30 dB 500-1000 MHz	1.35:1 maximum	.5 dB maximum
75DR-021	DC-2100 MHz	0-30 dB in 1 dB steps	+/- .25 dB 0-10 dB +/- .5 dB 10-30 dB DC-1000 MHz +/- .4 dB 0-10 dB +/- .75 dB 10-30 dB 1000-1500 MHz +/- .5 dB 0-10 dB +/- 1 dB 10-30 dB 1500-2100 MHz	1.5:1 maximum	.5 dB maximum

Model	Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
75DR-015	75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with no stops	BNC or F female
75DR-018	75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC or F female
75DR-021	75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC or F female



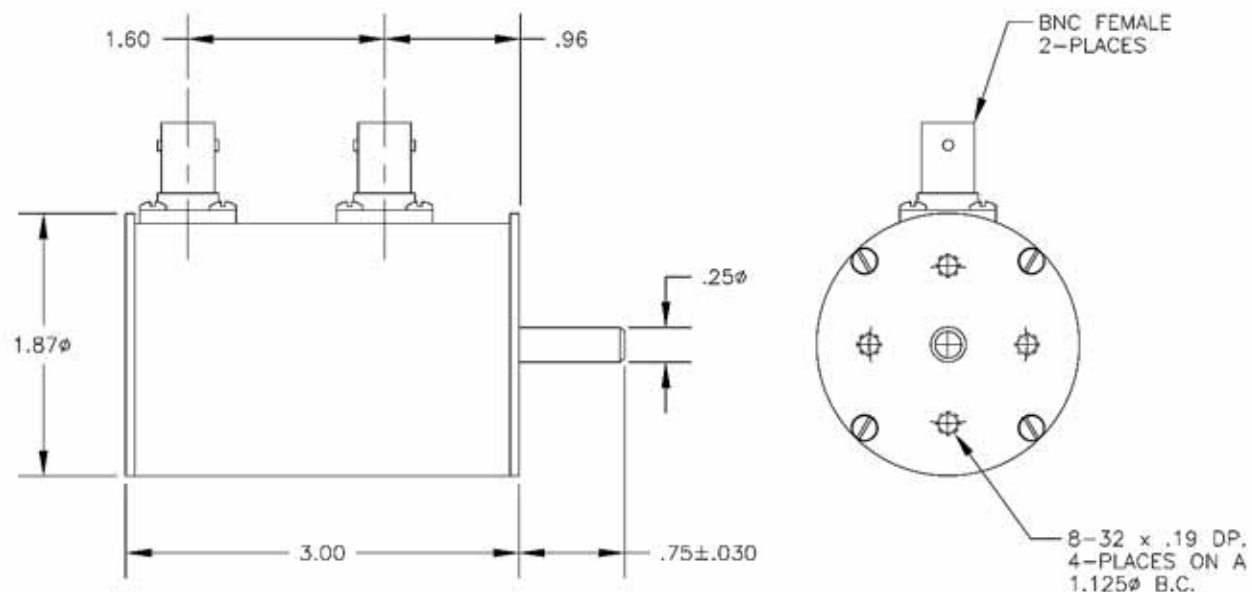
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
75R-001	DC-500 MHz	0-70 dB in 10 dB steps	+/- .2 dB maximum DC-30 MHz +/- .5 dB maximum 30-300 MHz +/- 1 dB maximum 300-500 MHz	1.3:1 maximum	.4 dB maximum
75R-055	DC-1000 MHz	0-70 dB in 10 dB steps	+/- .2 dB maximum DC-30 MHz +/- .5 dB maximum 30-500 MHz +/- 1 dB maximum 500-1000 MHz	1.3:1 maximum DC-500 MHz 1.5:1 maximum 500-1000 MHz	.4 dB maximum
75R-089	DC-2200 MHz	0-60 dB in 10 dB steps	+/- .5 dB or 2% DC-1000 MHz +/- .5 dB or 3% 1000-2200 MHz	1.4:1 maximum DC-1000 MHz 1.6:1 maximum 1000-2200 MHz	.3 dB maximum DC-1000 MHz .5 dB maximum 1000-2200 MHz

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in c'lockwise direction	30 degrees with stops at minimum and maximum	BNC, F or N female



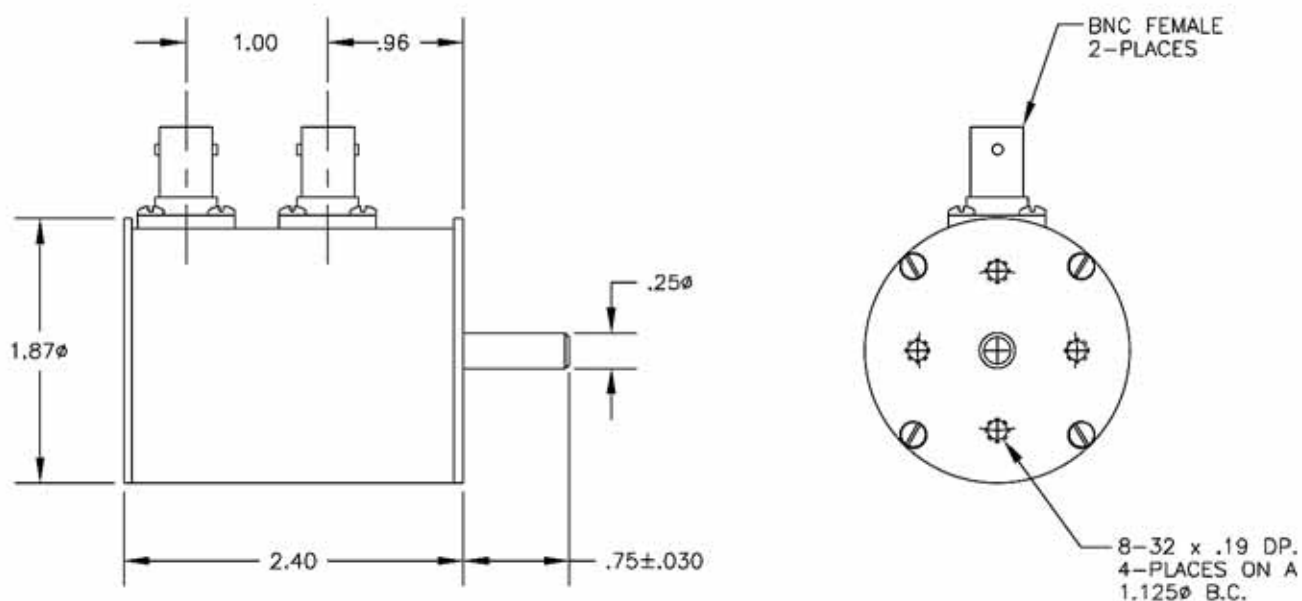
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
75R-002	DC-500 MHz	0-10 dB in 1 dB steps	+/- .1 dB maximum DC-30 MHz +/- .2 dB maximum 30-300 MHz +/- .3 dB maximum 300-500 MHz	1.3:1 maximum	.4 dB maximum
75R-006	DC-500 MHz	0-1 dB in .1 dB steps	+/- .01 dB maximum DC-30 MHz +/- .02 dB maximum 30-300 MHz +/- .03 dB maximum 300-500 MHz	1.3:1 maximum	.7 dB maximum
75R-056	DC-1000 MHz	0-10 dB in 1 dB steps	+/- .1 dB maximum DC-30 MHz +/- .2 dB maximum 30-500 MHz +/- .3 dB maximum 500-1000 MHz	1.3:1 maximum DC-500 MHz 1.5:1 maximum 500-1000 MHz	.4 dB maximum
75R-057	DC-1000 MHz	0-1 dB in .1 dB steps	+/- .04 dB maximum DC-500 MHz +/- .08 dB maximum 500-1000 MHz	1.3:1 maximum DC-500 MHz 1.4:1 maximum 500-1000 MHz	.7 dB maximum
75R-050	DC-2200 MHz	0-10 dB in 1 dB steps	+/- .1 dB maximum DC-30 MHz +/- .2 dB maximum 30-500 MHz +/- .3 dB maximum 500-1000 MHz +/- .4 dB maximum 1000-2200 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-2200 MHz	.4 dB maximum DC-1000 MHz .6 dB maximum 1000-2200 MHz

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	Attenuation increases in c'lockwise direction	30 degrees with stops at minimum and maximum	BNC, F or N female



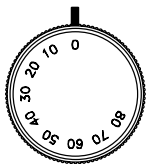
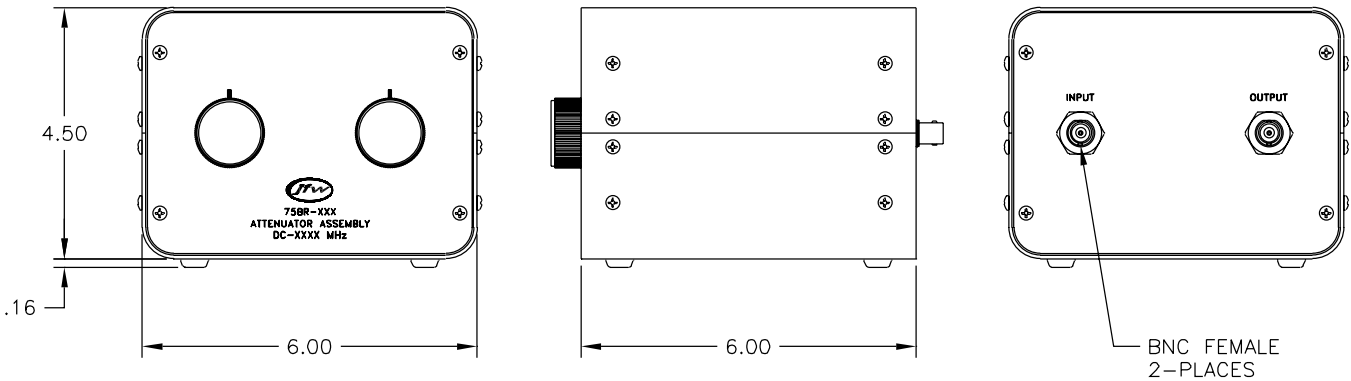
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Bench Top Attenuators

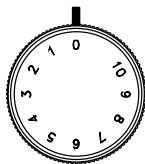
Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
75BR-014	DC-1000 MHz	0-90 dB in 1 dB steps	DC-100 MHz +/- .1 dB (0-10 dB) +/- .2 dB (10-70 dB) +/- .3 dB (80-90 dB) 100-250 MHz +/- .15 dB (0-10 dB) +/- .3 dB (10-70 dB) +/- .4 dB (80-90 dB) 250-500 MHz +/- .2 dB (0-10 dB) +/- .5 dB (10-70 dB) +/- .75 dB (80-90 dB) 500-1000 MHz +/- .3 dB (0-10 dB) +/- 1.0 dB (10-70 dB) +/- 1.5 dB (80-90 dB)	1.2:1 maximum DC-250 MHz 1.3:1 maximum 250-500 MHz 1.5:1 maximum 500-1000 MHz	.75 dB maximum
75BR-023	DC-2200 MHz	0-70 dB in 1 dB steps	DC-1000 MHz +/- .4 dB (0-10 dB) +/- .6 dB (10-70 dB) 1000-2200 MHz +/- .5 dB (0-10 dB) +/- .6 dB (10-70 dB)	1.5:1 maximum DC-1000 MHz 1.7:1 maximum 1000-2200 MHz	.75 dB maximum DC-1000 MHz 1.25 dB maximum 1000-2200 MHz

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
75 Ohms	1 Watt average 1000 Watts peak	-20° C to +85° C	See knob detail below	30 degrees with stops at minimum and maximum	BNC, F or N female



KNOB DETAIL
75BR-014



KNOB DETAIL
75BR-023

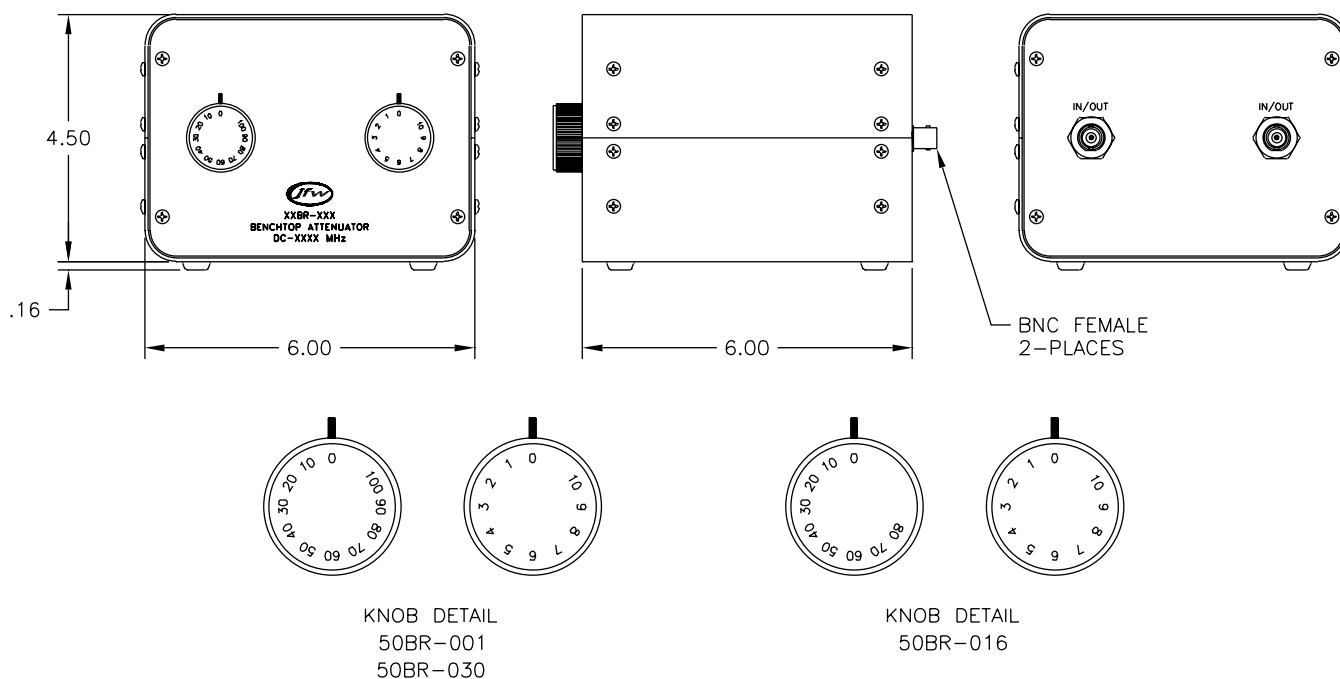
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Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50BR-001	DC-2000 MHz	0-110 dB in 1 dB steps	+/- .3 dB maximum or 1% DC-500 MHz +/- .5 dB maximum or 2% 500-1000 MHz +/- .5 dB maximum or 3% 1000-1500 MHz +/- .5 dB maximum or 4% 1500-2000 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-1500 MHz 1.7:1 maximum 1500-2000 MHz	1 dB maximum DC-1000 MHz 1.5 dB maximum 1000-2000 MHz
50BR-016	DC-2550 MHz	0-90 dB in 1 dB steps	+/- .3 dB maximum or 1% DC-500 MHz +/- .5 dB maximum or 2% 500-1000 MHz +/- .5 dB maximum or 3% 1000-1500 MHz +/- 4% 1500-2550 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-1500 MHz 1.7:1 maximum 1500-2550 MHz	1.5 dB nominal
50BR-030	DC-2550 MHz	0-110 dB in 1 dB steps	+/- .3 dB maximum or 1% DC-500 MHz +/- .5 dB maximum or 2% 500-1000 MHz +/- .5 dB maximum or 3% 1000-1500 MHz +/- 4% 1500-2550 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-1500 MHz 1.7:1 maximum 1500-2550 MHz	1.5 dB nominal

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, N, SMA or TNC female

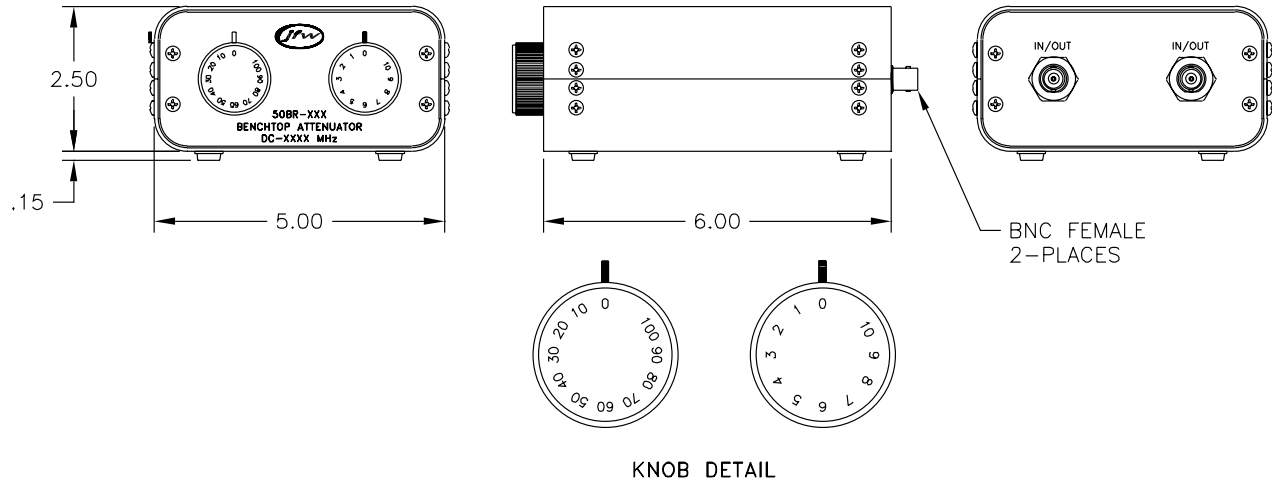


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Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50BR-068	DC-2550 MHz	0-110 dB in 1 dB steps	+/- .3 dB maximum or 1% DC-500 MHz +/- .5 dB maximum or 2% 500-1000 MHz +/- .5 dB maximum or 3% 1000-1500 MHz +/- .5 dB maximum or 4% 1500-2550 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-1500 MHz 1.7:1 maximum 1500-2550 MHz	1.5 dB maximum

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, N, SMA or TNC female



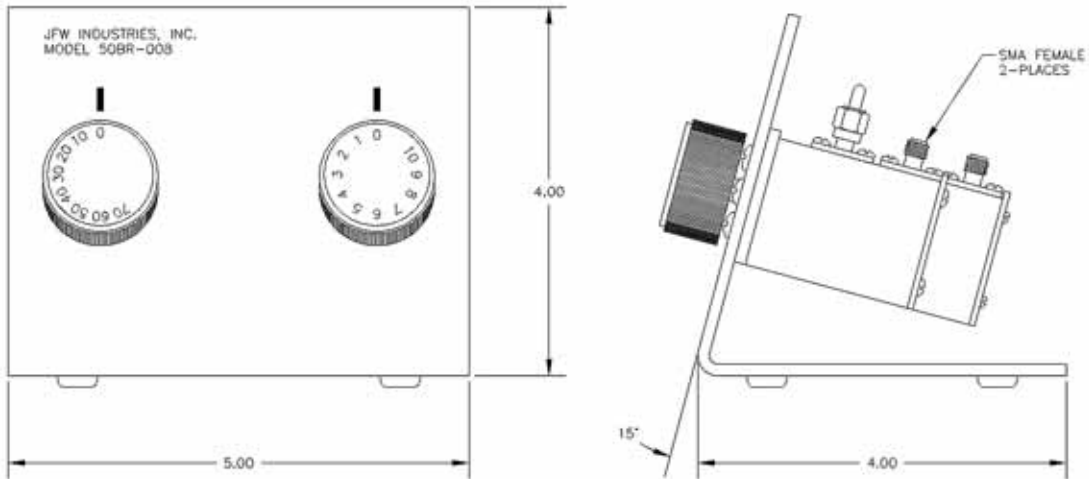
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Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50BR-008	DC-2200 MHz	0-80 dB in 1 dB steps	+/- .5 dB maximum or 1% DC-500 MHz +/- .5 dB maximum or 2% 500-1000 MHz +/- .5 dB maximum or 3% 1000-2200 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-2200 MHz	.5 dB maximum DC-1000 MHz 1 dB maximum 1000-2200 MHz
50BR-009	DC-1000 MHz	0-110 dB in 1 dB steps	+/- .5 dB maximum or 1% DC-500 MHz +/- .5 dB maximum or 2% 500-1000 MHz	1.3:1 maximum	1.2 dB maximum

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, SMA or N female



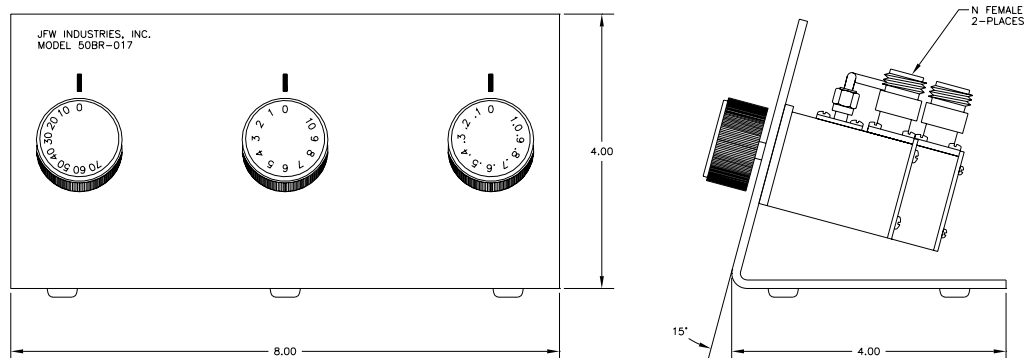
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Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50BR-017	DC-1000 MHz	0-81 dB in .1 dB steps	+/- .02 dB 0-1 dB +/- .1 dB 1-10 dB +/- .2 dB 10-81 dB DC-30 MHz +/- .04 dB 0-1 dB +/- .2 dB 1-10 dB +/- .5 dB 10-81 dB 30-500 MHz +/- .06 dB 0-1 dB +/- .3 dB 1-10 dB +/- .8 dB 10-81 dB 500-1000 MHz	1.1:1 maximum DC-30 MHz 1.3:1 maximum 30-500 MHz 1.5:1 maximum 500-1000 MHz	1.25 dB maximum
50BR-022	DC-1000 MHz	0-111 dB in .1 dB steps	+/- .02 dB 0-1 dB +/- .1 dB 1-10 dB +/- .2 dB or .5% 10-111 dB DC-30 MHz +/- .04 dB 0-1 dB +/- .2 dB 1-10 dB +/- .5 dB or 1% 10-111 dB 30-500 MHz +/- .06 dB 0-1 dB +/- .3 dB 1-10 dB +/- .5 dB or 2% 10-111 dB 500-1000 MHz	1.1:1 maximum DC-30 MHz 1.3:1 maximum 30-500 MHz 1.5:1 maximum 500-1000 MHz	1.25 dB maximum
50BR-042	DC-2200 MHz	0-81 dB in .1 dB steps	+/- .05 dB 0-1 dB +/- .25 dB 1-10 dB +/- .5 dB or 2% 10-81 dB DC-1000 MHz +/- .05 dB 0-1 dB +/- .5 dB 1-10 dB +/- .5 or 3% 10-81 dB 1000-2200 MHz	1.3:1 maximum DC-1000 MHz 1.6:1 maximum 1000-2200 MHz	1.5 dB maximum DC-1000 MHz 2.0 dB maximum 1000-2200 MHz

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connector
50 Ohms	2 Watts average 1000 Watts peak	-20° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, N, SMA or TNC female

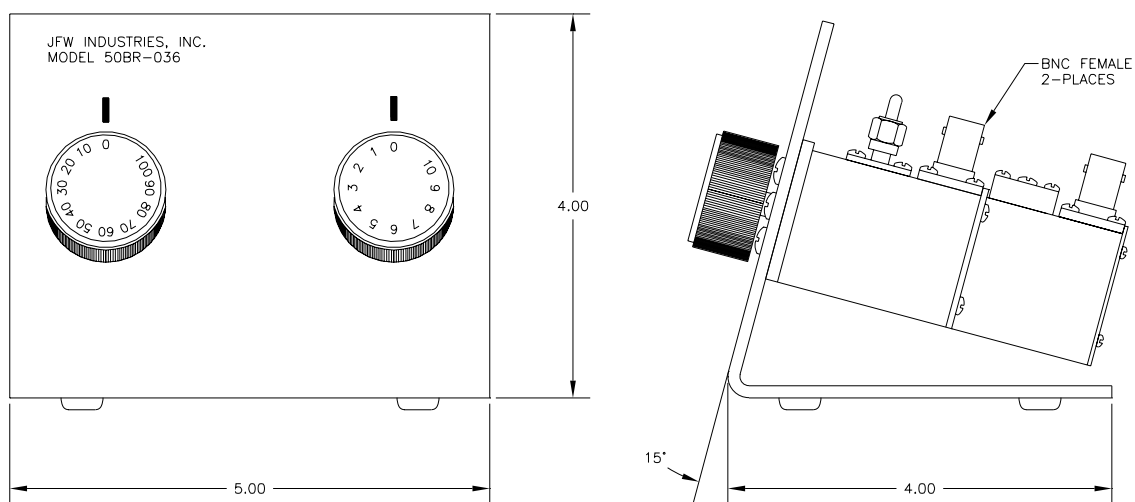


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Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50BR-036	DC-2000 MHz	0-110 dB in 1 dB steps	+/- .3 dB or 1% DC-500 MHz +/- .5 dB or 2% 500-1000 MHz +/- .5 dB or 3% 1000-1500 MHz +/- .5 dB or 4% 1500-2000 MHz	1.3:1 maximum DC-1000 MHz 1.5:1 maximum 1000-1500 MHz 1.7:1 maximum 1500-2000 MHz	.75 dB maximum DC-1000 MHz 1.25 dB maximum 1000-2000 MHz

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-40° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	BNC, N, SMA or TNC female



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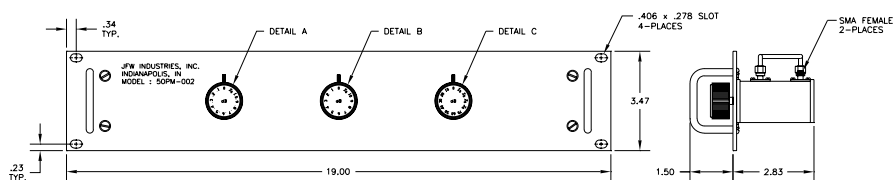
Panel Mounted Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR	Insertion Loss
50PM-002	DC-1000 MHz	0-81 dB in .1 dB steps (1) 50R-210 (1) 50R-211 (1) 50R-212	+/- .02 dB 0-1 dB +/- .1 dB 1-10 dB +/- .2 dB 10-81 dB DC-30 MHz +/- .04 dB 0-1 dB +/- .2 dB 1-10 dB +/- .5 dB 10-81 dB 30-500 MHz +/- .06 dB 0-1 dB +/- .3 dB 1-10 dB +/- .8 dB 10-81 dB 500-1000 MHz	1.1:1 maximum DC-30 MHz 1.3:1 maximum 30-500 MHz 1.5:1 maximum 500-1000 MHz	1.5 dB maximum
50PM-003	DC-1000 MHz	0-50 dB in 1 dB steps (8) 50DR-046	+/- .2 dB DC-250 MHz +/- .5 dB 250-500 MHz +/- 1 dB 500-1000 MHz	1.1:1 maximum DC-250 MHz 1.2:1 maximum 250-500 MHz 1.4:1 maximum 500-1000 MHz	.5 dB maximum
50PM-009	DC-2200 MHz	0-80 dB in 1 dB steps (8) 50DR-061	+/- .5 dB or 3%	1.25:1 maximum DC-1000 MHz 1.5:1 maximum 1000-2200 MHz	.6 dB maximum DC-1000 MHz 1 dB maximum 1000-2200 MHz

Common Specifications

Impedance	RF Input Power	Operating Temperature	Standard Rotation	Indexing	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	-40° C to +85° C	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum / except 50PM-002 which has no stops	BNC, N, SMA or TNC female

50PM-002



DETAIL A

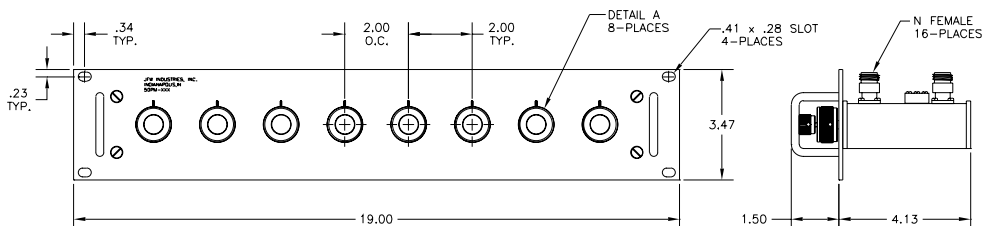


DETAIL B



DETAIL C

50PM-003 / 50PM-009



50PM-003
DETAIL A



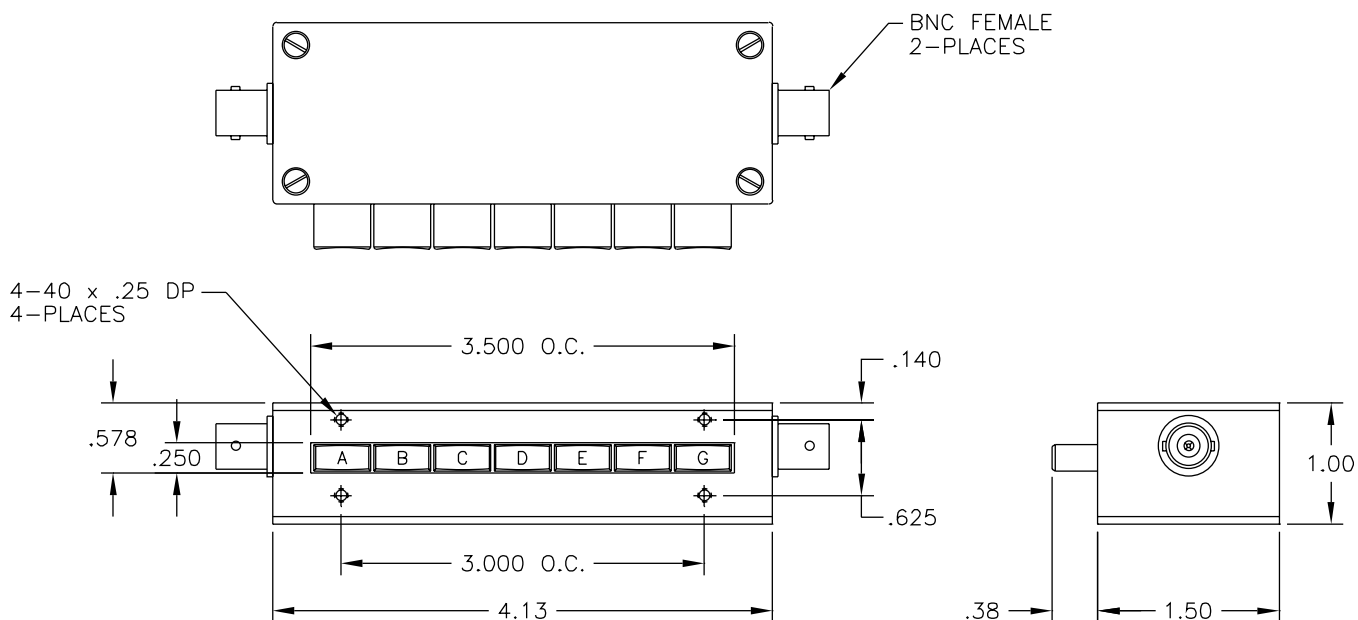
50PM-009
DETAIL A

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Pushbutton Attenuators

Model	Frequency Range	Impedance	Attenuation Range / Steps	Attenuation Accuracy	VSWR Maximum
50B-001	DC-750 MHz	50 Ohms	0-65 dB in 1 dB steps / 1,2,4,8,10,20 and 20 dB	+/- .3 dB DC-100 MHz +/- .5 dB 100-300 MHz +/- .8 dB 300-500 MHz +/- 1.3 dB 500-750 MHz	1.1:1 DC-100 MHz 1.25:1 100-500 MHz 1.4:1 500-750 MHz
50B-002	DC-750 MHz	50 Ohms	0-45.5 dB in .5 dB steps / .5,1,2,4,8,10 and 20 dB	+/- .2 dB DC-100 MHz +/- .3 dB 100-300 MHz +/- .5 dB 300-500 MHz +/- .75 dB 500-750 MHz	1.1:1 DC-100 MHz 1.25:1 100-500 MHz 1.4:1 500-750 MHz
75B-001	DC-500 MHz	75 Ohms	0-65 dB in 1 dB steps / 1,2,4,8,10,20 and 20 dB	+/- .3 dB DC-100 MHz +/- .5 dB 100-300 MHz +/- .8 dB 300-500 MHz	1.1:1 DC-100 MHz 1.2:1 100-300 MHz 1.3:1 300-500 MHz
75B-002	DC-500 MHz	75 Ohms	0-45.5 dB in .5 dB steps / .5,1,2,4,8,10 and 20 dB	+/- .2 dB DC-100 MHz +/- .3 dB 100-300 MHz +/- .5 dB 300-500 MHz	1.1:1 DC-100 MHz 1.2:1 100-300 MHz 1.3:1 300-500 MHz

Model	Insertion Loss Maximum	Power Rating	Operating Temperature	RF Connectors
50B-001	1 dB @ 500 MHz	1 Watt average, 1000 Watts peak	-20° C to +85° C	BNC female
50B-002	1 dB @ 500 MHz	1 Watt average, 1000 Watts peak	-20° C to +85° C	BNC female
75B-001	1.2 dB @ 500 MHz	1 Watt average, 1000 Watts peak	-20° C to +85° C	BNC or F female
75B-002	1.2 dB @ 500 MHz	1 Watt average, 1000 Watts peak	-20° C to +85° C	BNC or F female



MODEL #	A	B	C	D	E	F	G
50B-001	1	2	4	8	10	20	20
50B-002	.5	1	2	4	8	10	20
75B-001	1	2	4	8	10	20	20
75B-002	.5	1	2	4	8	10	20

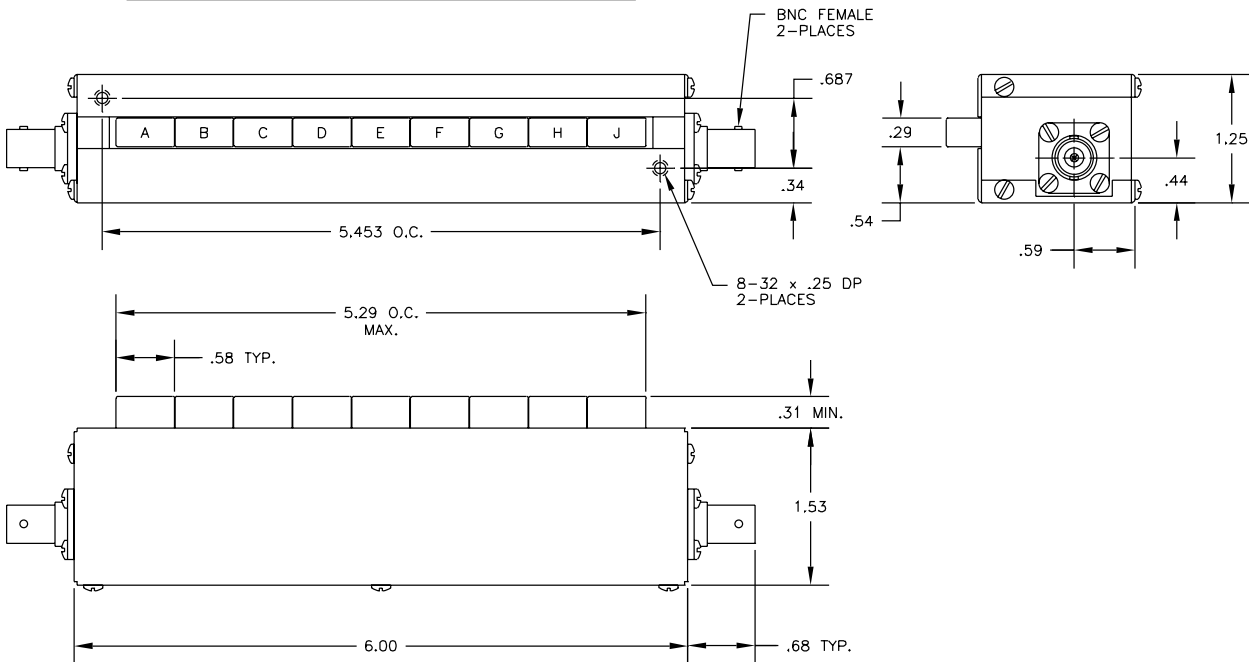
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Pushbutton Attenuators

Model	Frequency Range	Impedance	Attenuation Range / Steps	Attenuation Accuracy	VSWR Maximum
50B-043	DC-750 MHz	50 Ohms	0-102 dB in 1 dB steps / 1,2,3,6,10,20,20,20 and 20 dB	+/- .3 dB or 1%	1.4:1
50B-044	DC-750 MHz	50 Ohms	0-82.5 dB in .5 dB steps / .5,1,2,3,6,10,20,20 and 20 dB	+/- .3 dB or 1%	1.4:1
50B-050	DC-1300 MHz	50 Ohms	0-102 dB in 1 dB steps / 1,2,3,6,10,20,20,20 and 20 dB	+/- .5 dB or 2% of programmed DC-750 MHz +/- .5 db or 3% of programmed 750-1300 MHz	1.5:1

Model	Insertion Loss Maximum	Power Rating	Operating Temperature	RF Connectors
50B-043	1.5 dB	1 Watt average, 1000 Watts peak	-20° C to +85° C	BNC, N, SMA and TNC female
50B-044	1.5 dB	1 Watt average, 1000 Watts peak	-20° C to +85° C	BNC, N, SMA and TNC female
50B-050	2 dB DC-750 MHz 4 dB 750-1300 MHz	1 Watt average, 1000 Watts peak	-20° C to +85° C	BNC female

MODEL #	A	B	C	D	E	F	G	H	J
50B-043	1	2	3	6	10	20	20	20	20
50B-044	.5	1	2	3	6	10	20	20	20
50B-050	1	2	3	6	10	20	20	20	20

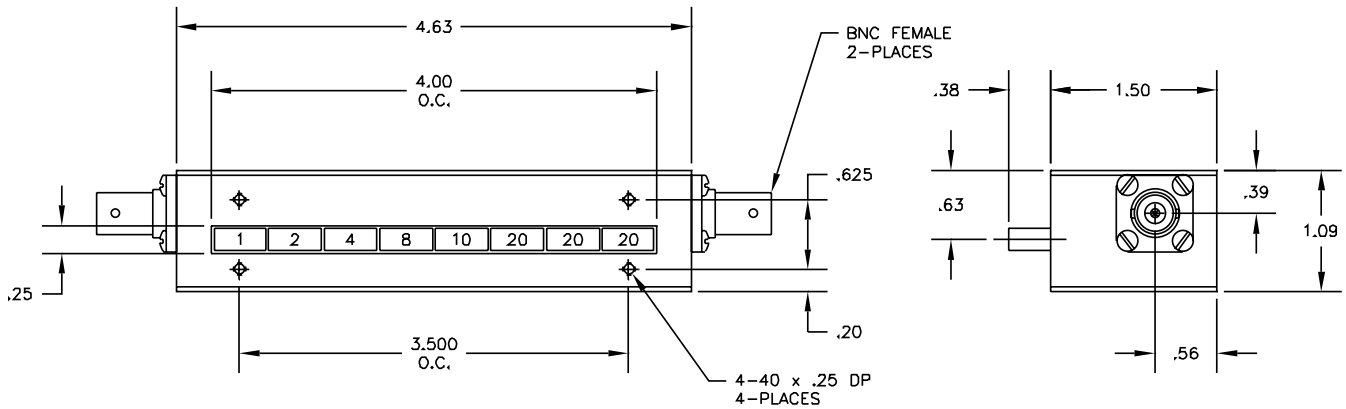


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Pushbutton Attenuators

Model	Frequency Range	Impedance	Attenuation Range / Steps	Attenuation Accuracy	VSWR Maximum
50B-035	DC-750 MHz	50 Ohms	0-85 dB in 1 db steps / 1,2,4,8,10,20,20 and 20 dB	+/- .5 dB or 1% DC-500 MHz +/- .5 dB or 2% 500-750 MHz	1.3:1 DC-500 MHz 1.4:1 500-750 MHz

Insertion Loss	Power Rating	Operating Temperature	RF Connector
DC-500 MHz 1 dB nominal 500-750 MHz 1.5 dB nominal	1 Watt average	-20° C to +85° C	BNC, SMA, N and TNC female

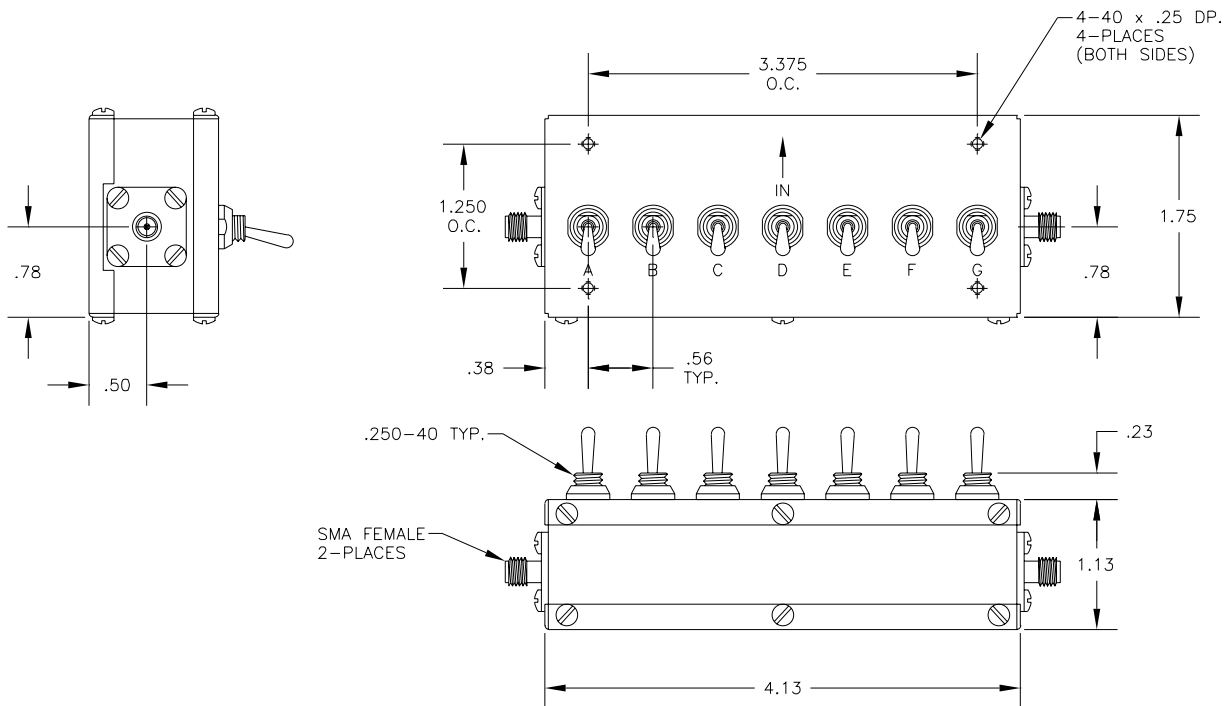


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Toggle Switch Attenuators

Model	Frequency Range	Impedance	Attenuation Range / Steps	Attenuation Accuracy	VSWR Maximum
50TA-006	DC-850 MHz	50 Ohms	0-65 dB in 1 dB steps / 1,2,4,8,10,20 and 20 dB	+/- .3 dB or 2%	1.4:1
50TA-007	DC-850 MHz	50 Ohms	0-45.5 dB in .5 dB steps / .5,1,2,4,8,10 and 20 dB	+/- .3 dB or 1% DC-500 MHz +/- .3 dB or 2% 500-850 MHz	1.4:1
75TA-006	DC-500 MHz	75 Ohms	0-65 dB in 1 dB steps / 1,2,4,8,10,20 and 20 dB	+/- .3 dB or 2%	1.4:1
75TA-007	DC-500 MHz	75 Ohms	0-45.5 dB in .5 dB steps / .5,1,2,4,8,10 and 20 dB	+/- .3 dB or 1%	1.4:1

Model	Insertion Loss Maximum	Power Rating	Operating Temperature	RF Connectors
50TA-006	1.5 dB	.25 Watt average, 100 Watts peak	-20° C to +85° C	BNC, N, SMA and TNC female
50TA-007	1.5 dB	.25 Watt average, 100 Watts peak	-20° C to +85° C	BNC, N, SMA and TNC female
75TA-006	1.5 dB	.25 Watt average, 100 Watts peak	-20° C to +85° C	BNC, N and F female
75TA-007	1.5 dB	.25 Watt average, 100 Watts peak	-20° C to +85° C	BNC, N and F female



MODEL #	A	B	C	D	E	F	G
50TA-006	1	2	4	8	10	20	20
50TA-007	.5	1	2	4	8	10	20
75TA-006	1	2	4	8	10	20	20
75TA-007	.5	1	2	4	8	10	20

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