

Manual Variable Attenuators

The JFW rotary attenuator has been a staple to RF engineers for almost 30 years. In that time, our line of manually variable step attenuators has grown to include over 700 models. With a wide variety of attenuation ranges, step sizes and tuning options, JFW has solutions to fit almost any variable attenuator application. At JFW Industries, we can literally put reliable attenuation at your fingertips. Our years of proven quality and performance make a JFW variable attenuator right for any RF environment.



Available Features

- Variable attenuators covering frequency ranges from DC to 18 GHz
- Multiple attenuator tuning options (rotor, dual-concentric rotors, push-button, toggle switch or rocker switch)
- Attenuations step sizes as low as 0.1 dB resolution
- 50 Ohm and 75 Ohm attenuators (other impedance values also available upon request)
- Any RF connector combination (BNC, SMA, N, TNC, F reverse polarity and more)
- Available on 19" rack panels or in stackable bench-top boxes

AFFORDABLE CUSTOM DESIGNS ARE ALSO AVAILABLE!

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Manual Variable Attenuators

Model Number Index

Please add connector type to the end of part number to complete model number (Example: 50R-019 SMA).

Single Rotary Attenuators - 50 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
50R-019	DC-2200 MHz	0-10 x 1	3-4
50R-028	DC-1000 MHz	0-1 x 0.1	3-4
50R-029	DC-2200 MHz	0-70 x 10	3-5
50R-043	DC-1000 MHz	0-100 x 10	3-5
50R-083	DC-2000 MHz	0-10 x 1	3-3
50R-084	DC-2200 MHz	0-60 x 10	3-3
50R-124	DC-2500 MHz	0-70 x 10	3-5
50R-137	DC-2550 MHz	0-80 x 10	3-6
50R-234	DC-2550 MHz	0-100 x 10	3-6
50R-246	DC-2700 MHz	0-70 x 10	3-5
50R-248	DC-2500 MHz	0-10 x 1	3-4
50R-249	DC-2500 MHz	0-1 x 0.1	3-4
50R-310	DC-2700 MHz	0-10 x 1	3-4
50R-400	DC-8 GHz	0-9 x 1	3-7
50R-401	DC-8 GHz	0-60 x 10	3-7

Single Rotary Attenuators - 75 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
75R-001	DC-500 MHz	0-70 x 10	3-17
75R-002	DC-500 MHz	0-10 x 1	3-16
75R-006	DC-500 MHz	0-1 x 0.1	3-16
75R-050	DC-2200 MHz	0-10 x 1	3-16
75R-055	DC-1000 MHz	0-70 x 10	3-17
75R-056	DC-1000 MHz	0-10 x 1	3-16
75R-057	DC-1000 MHz	0-1 x 0.1	3-16
75R-089	DC-2200 MHz	0-60 x 10	3-17

Dual Rotary Attenuators - 50 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
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50DR-035	DC-2000 MHz	0-70 x 1	3-10
50DR-046	DC-2500 MHz	0-50 x 1	3-10
50DR-055	DC-2000 MHz	0-30 x 1	3-8
50DR-060	DC-2000 MHz	0-11 x 0.1	3-8
50DR-061	DC-2200 MHz	0-80 x 1	3-10
50DR-063	DC-1100 MHz	0-50 x 1	3-8
50DR-077	DC-2000 MHz	0-90 x 1	3-10
50DR-096	DC-3000 MHz	0-30 x 1	3-9
50DR-082	DC-2000 MHz	0-110 x 1	3-10
50DR-111	DC-2700 MHz	0-60 x 1	3-10

Dual Rotary Attenuators - 75 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
75DR-003	DC-1000 MHz	0-50 x 1	3-19
75DR-006	DC-600 MHz	0-80 x 1	3-20
75DR-009	DC-1000 MHz	0-70 x 1	3-20
75DR-015	DC-1000 MHz	0-11 x 0.1	3-18
75DR-018	DC-1000 MHz	0-30 x 1	3-18
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Benchtop Rotary Attenuators - 50 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
50BR-008	DC-2200 MHz	0-80 x 1	3-13
50BR-009	DC-1000 MHz	0-110 x 1	3-13
50BR-017	DC-1000 MHz	0-81 x 0.1	3-14
50BR-022	DC-1000 MHz	0-111 x 0.1	3-14
50BR-036	DC-2000 MHz	0-110 x 1	3-13
50BR-068	DC-2550 MHz	0-110 x 1	3-11
50BR-092	DC-1000 MHz	0-81 x 0.1	3-12
50BR-096	DC-2200 MHz	0-80 x 1	3-11
50BR-104	DC-2700 MHz	0-80 x 1	3-11
50BR-105	DC-8 GHz	0-69 x 1	3-7
50BR-112	DC-2700 MHz	0-110 x 1	3-11

Benchtop Rotary Attenuators - 75 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
75BR-014	DC-1000 MHz	0-90 x 1	3-21
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Panel Mounted Rotary Attenuators - 50 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
50PM-002	DC-1000 MHz	0-81 x 0.1	3-15
50PM-003	DC-2500 MHz	0-50 x 1	3-15
50PM-009	DC-2200 MHz	0-80 x 1	3-15

Pushbutton Attenuators - 50 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
50B-001	DC-750 MHz	0-65 x 1	3-23
50B-035	DC-750 MHz	0-85 x 1	3-23

Pushbutton Attenuators - 75 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
75B-001	DC-500 MHz	0-65 x 1	3-23

Toggle Attenuators - 50 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
50TA-006	DC-850 MHz	0-65 x 1	3-24
50TA-007	DC-850 MHz	0-45.5 x 0.5	3-24

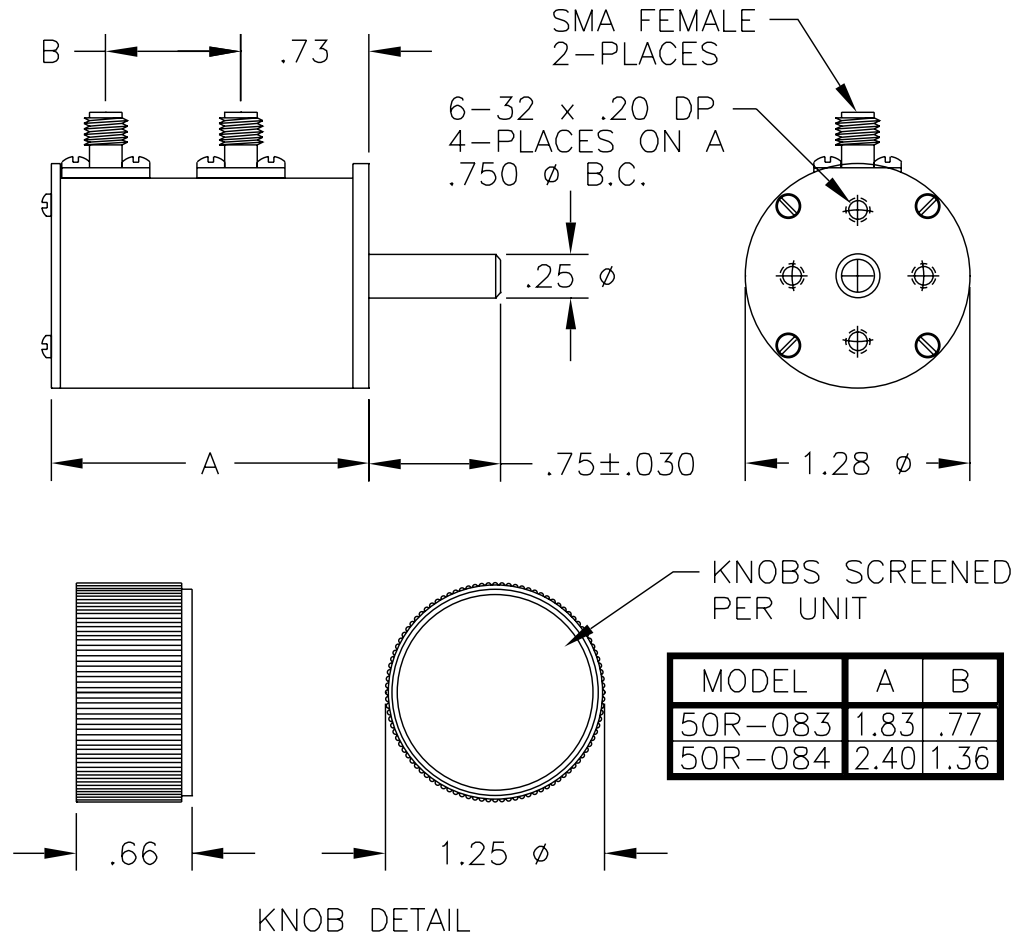
Toggle Attenuators - 75 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
75TA-006	DC-500 MHz	0-65 x 1	3-24
75TA-007	DC-500 MHz	0-45.5 x 0.5	3-24

Rocker Attenuators - 50 Ohm			
Model Number	Frequency Range	Attenuation Range (dB)	Page
50RA-003	DC-500 MHz	0-65 x 1	3-22
50RA-004	DC-1000 MHz	0-65 x 1	3-22

Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50R-083	DC-2000 MHz	0-10 dB in 1 dB steps	+/- 0.2 dB DC-1000 MHz +/- 0.4 dB 1000-2000 MHz	1.2:1 DC-1000 MHz 1.4:1 1000-2000 MHz	0.2 dB DC-1000 MHz 0.4 dB 1000-2000 MHz
50R-084	DC-2200 MHz	0-60 dB in 10 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-2200 MHz	1.2:1 DC-1000 MHz 1.4:1 1000-2200 MHz	0.3 dB DC-1000 MHz 0.5 dB 1000-2200 MHz

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



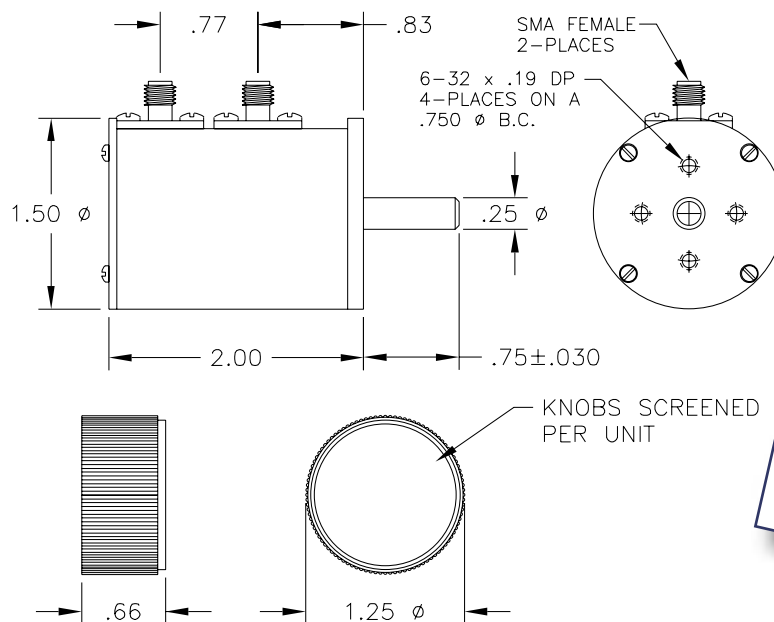
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy
50R-019	DC-2200 MHz	0-10 dB in 1 dB steps	+/- 0.2 dB DC-1000 MHz +/- 0.4 dB 1000-2200 MHz
50R-028	DC-1000 MHz	0-1 dB in 0.1 dB steps	+/- 0.03 dB DC-500 MHz +/- 0.05 dB 500-1000 MHz
50R-248	DC-2500 MHz	0-10 dB in 1 dB steps	+/- 0.25 dB DC-1100 MHz +/- 0.6 dB 1100-2500 MHz
50R-249	DC-2500 MHz	0-1 dB in 0.1 dB steps	+/- 0.05 dB
50R-310	DC-2700 MHz	0-10 dB in 1 dB steps	+/- 0.4 dB DC-1000 MHz +/- 0.5 dB 1000-2700 MHz

Model	VSWR (maximum)	Insertion Loss (maximum)	RF Connectors
50R-019	1.2:1 DC-1000 MHz 1.4:1 1000-2200 MHz	0.2 dB DC-1000 MHz 0.4 dB 1000-2200 MHz	SMA, BNC or TNC female
50R-028	1.2:1	0.7 dB	SMA, BNC or TNC female
50R-248	1.25:1 DC-1100 MHz 1.50:1 1100-2500 MHz	0.25 dB DC-1100 MHz 0.5 dB 1100-2500 MHz	SMA, BNC or TNC female
50R-249	1.2:1 DC-1100 MHz 1.4:1 1100-2500 MHz	1.0 dB	SMA, BNC or TNC female
50R-310	1.2:1 DC-1000 MHz 1.3:1 1000-2700 MHz	0.4 dB	SMA female

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



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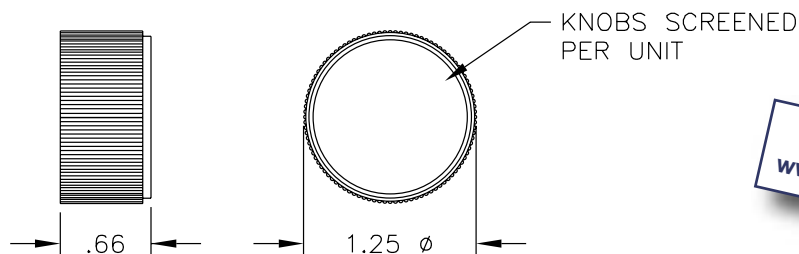
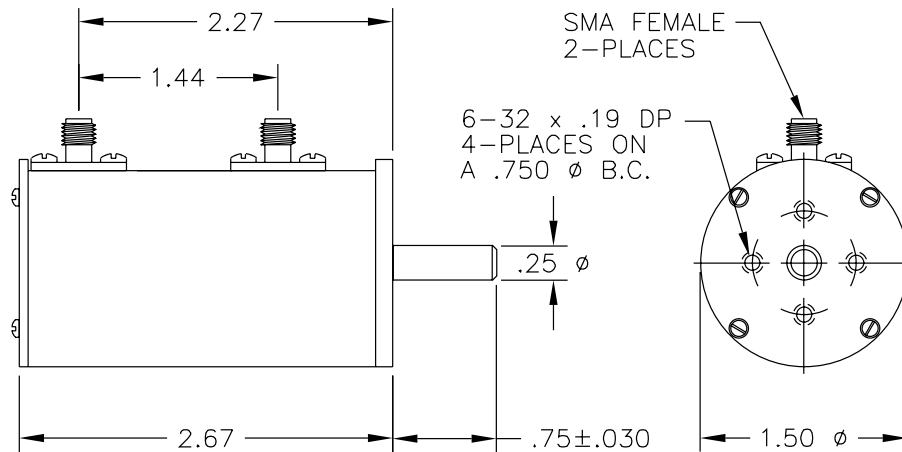
Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy
50R-029	DC-2200 MHz	0-70 dB in 10 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-2200 MHz
50R-043	DC-1000 MHz	0-100 dB in 10 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz
50R-124	DC-2500 MHz	0-70 dB in 10 dB steps	+/- 0.5 dB or 2.5%
50R-246	DC-2700 MHz	0-70 dB in 10 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-2700 MHz

Model	VSWR (maximum)	Insertion Loss (maximum)	RF Connectors
50R-029	1.2:1 DC-1000 MHz 1.4:1 1000-2200 MHz	0.3 dB DC-1000 MHz 0.5 dB 1000-2200 MHz	BNC, N, SMA or TNC female
50R-043	1.2:1	0.3 dB	BNC, N, SMA or TNC female
50R-124	1.4:1	0.5 dB	BNC, N, SMA or TNC female
50R-246	1.2:1 DC-1000 MHz 1.4:1 1000-2700 MHz	0.6 dB	SMA female

Common Specifications

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



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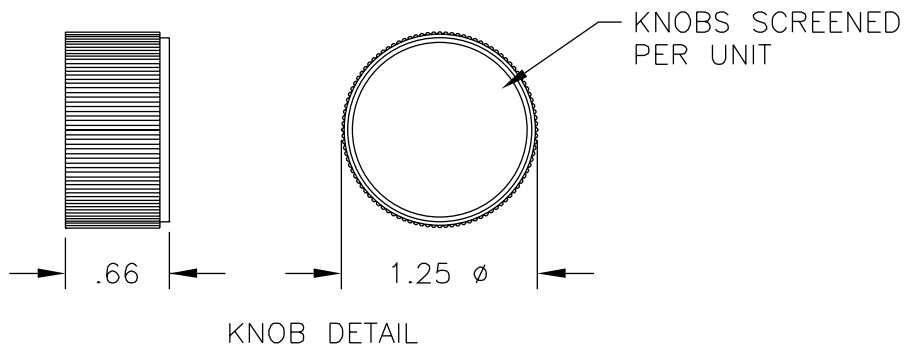
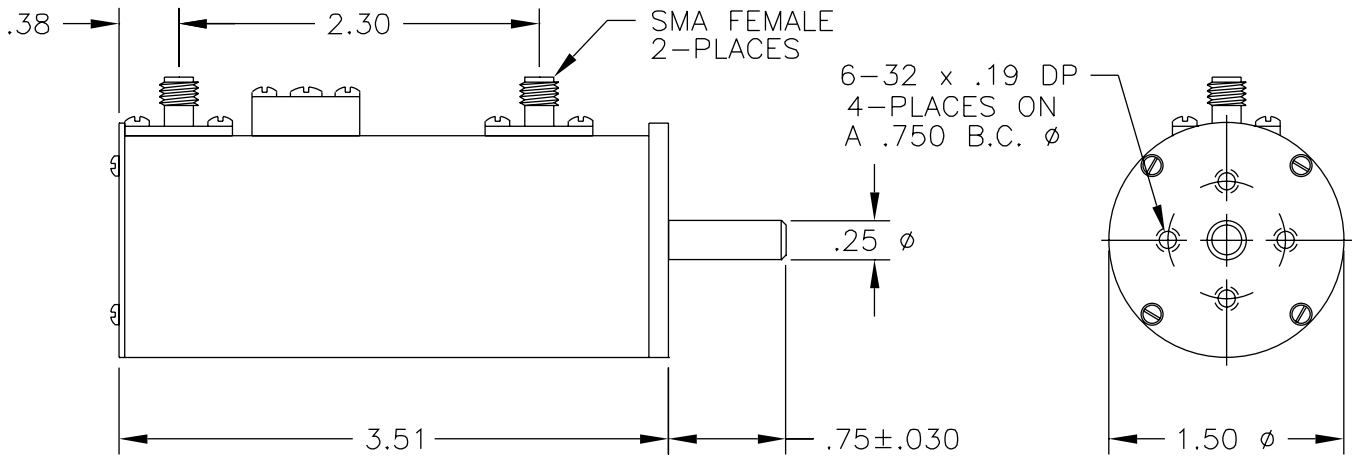
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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50R-137	DC-2550 MHz	0-80 dB in 10 dB steps	+/- 0.3 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-2550 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-2550 MHz	1 dB
50R-234	DC-2550 MHz	0-100 dB in 10 dB steps	+/- 0.3 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-1500 MHz +/- 0.5 dB or 4% 1500-2550 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-1500 MHz 1.7:1 1500-2550 MHz	1 dB

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



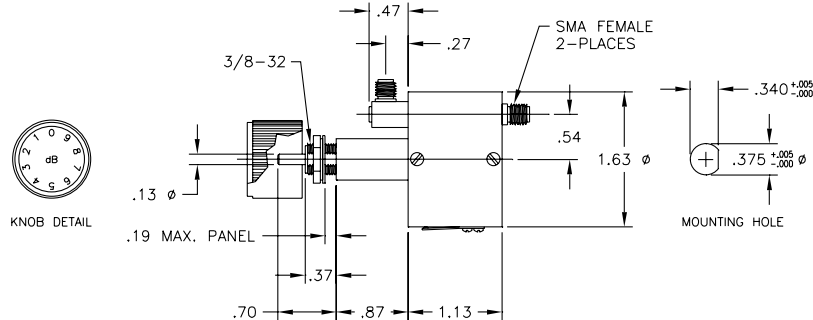
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High Frequency Rotary Attenuators

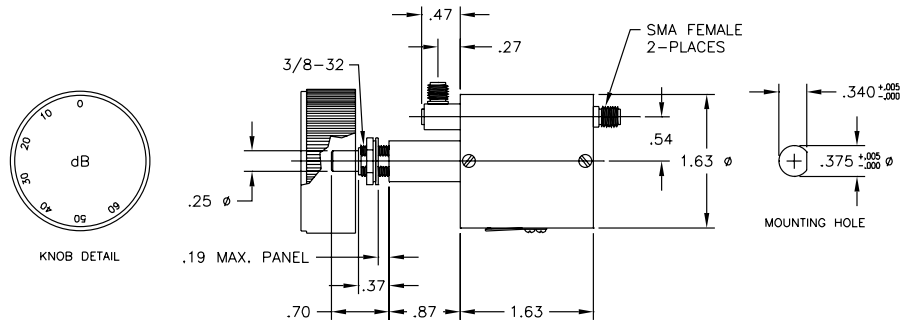
Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50R-400	DC-8 GHz	0-9 dB in 1 dB steps	+/- 0.3 dB DC-4 GHz +/- 0.5 dB 4-8 GHz	1.3:1 DC-4 GHz 1.6:1 4-8 GHz	0.6 dB
50R-401	DC-8 GHz	0-60 dB in 10 dB steps	+/- 0.5 dB or 2% DC-4 GHz +/- 1.0 dB or 3% 4-8 GHz	1.3:1 DC-4 GHz 1.6:1 4-8 GHz	0.7 dB
50BR-105	DC-8 GHz	0-69 dB in 1 dB steps	1 dB Steps +/- 0.3 dB DC-4 GHz +/- 0.5 dB 4-8 GHz 10 dB Steps +/- 0.5 dB or 2% DC-4 GHz +/- 1.0 dB or 3% 4-8 GHz	1.6:1 DC-4 GHz 1.9:1 4-8 GHz	1.8 dB

Model	Impedance	RF Input Power	Standard Rotation	Indexing	Operating Temperature	RF Connectors
50R-400	50 Ohms	2 Watts average 200 Watts peak	Attenuation increases in clockwise direction	36 degrees with no stop between minimum and maximum	0° C to +50° C	SMA female
50R-401	50 Ohms	2 Watts average 200 Watts peak	Attenuation increases in clockwise direction	36 degrees with stop between minimum and maximum	0° C to +50° C	SMA female
50BR-105	50 Ohms	2 Watts average 200 Watts peak	Attenuation increases in clockwise direction	1dB steps - 36 degrees with no stop between minimum and maximum 10dB steps - 36 degrees with stop between minimum and maximum	0° C to +50° C	SMA female

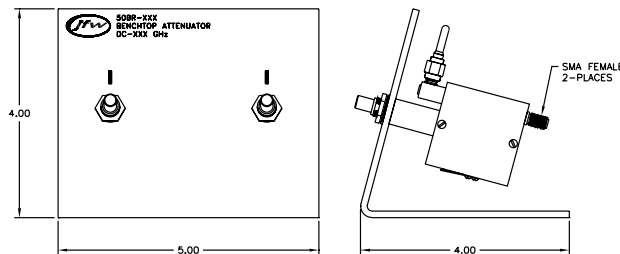
50R-400



50R-401



50BR-105



NOTE:
KNOB WILL BE MARKED
WITH ATTENUATION STEPS

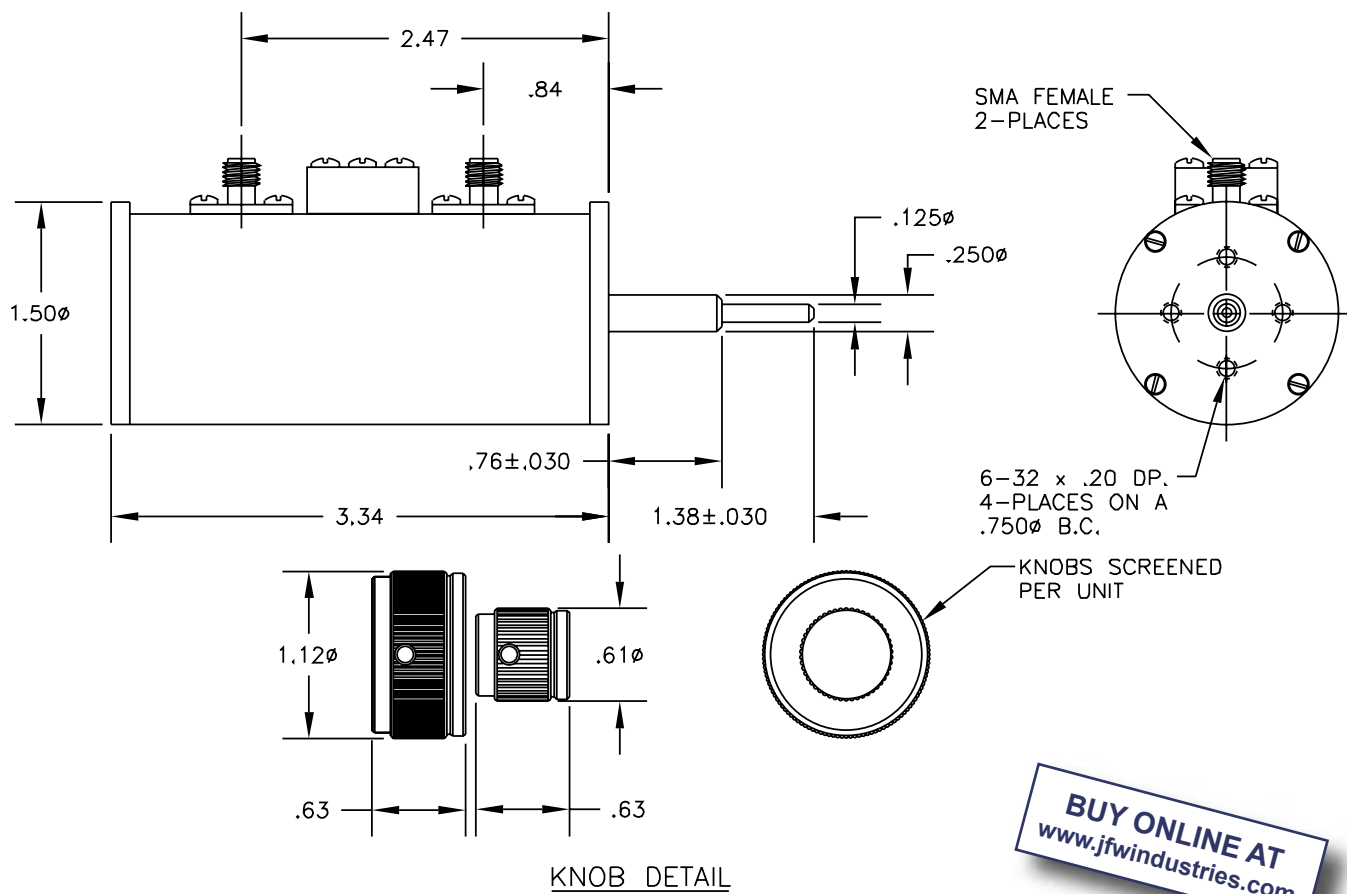
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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50DR-055	DC-2000 MHz	0-30 dB in 1 dB steps	+/- 0.25 dB or 2% DC-1000 MHz +/- 0.4 dB or 3% 1000-2000 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-2000 MHz	0.8 dB
50DR-060	DC-2000 MHz	0-11 dB in 0.1 dB steps	+/- 0.05 dB (0.1dB steps) DC-1100 MHz +/- 0.06 dB (0.1dB steps) 1100-2000 MHz +/- 0.2 dB (1dB steps) DC-1100 MHz +/- 0.4 dB (1dB steps) 1100-2000 MHz	1.3:1 DC-1100 MHz 1.5:1 1100-2000 MHz	1 dB DC-1100 MHz 1.25 dB 1100-2000 MHz
50DR-063	DC-1100 MHz	0-50 dB in 1 dB steps	+/- 0.2 dB DC-250 MHz +/- 0.5 dB 250-500 MHz +/- 1.0 dB 500-1100 MHz	1.1:1 DC-250 MHz 1.2:1 250-500 MHz 1.4:1 500-1100 MHz	0.5 dB

Common Specifications

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



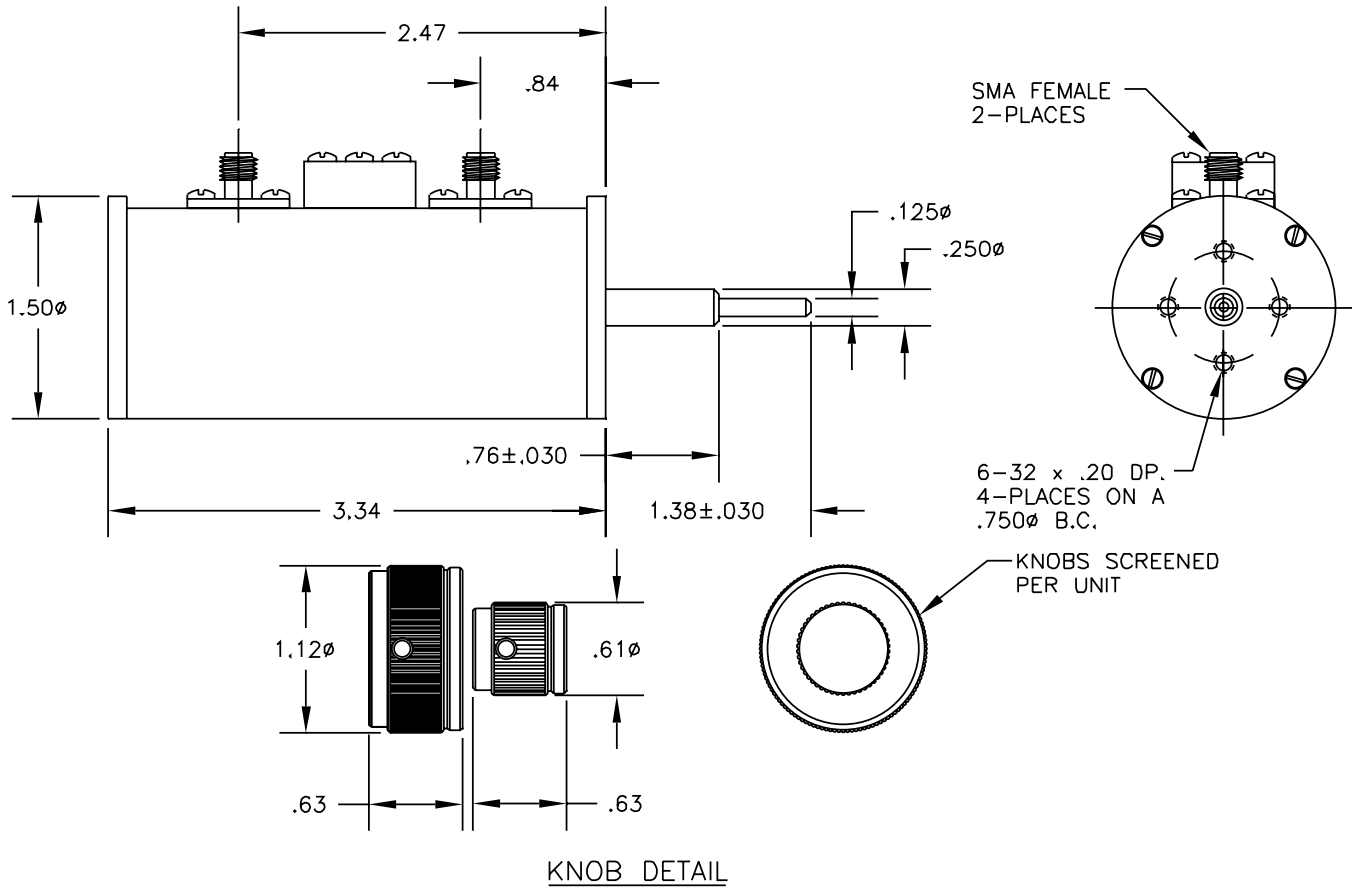
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Dual Concentric Rotary Attenuator

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50DR-096	DC-3000 MHz	0-30 dB in 1 dB steps	+/- 0.25 dB or 2% DC-1000 MHz +/- 0.4 dB or 3% 1000-2000 MHz +/- 0.5 dB or 4% 2000-3000 MHz	1.4:1 to 1000 MHz 1.5:1 to 2000 MHz 1.7:1 to 3000 MHz	1.1 dB

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



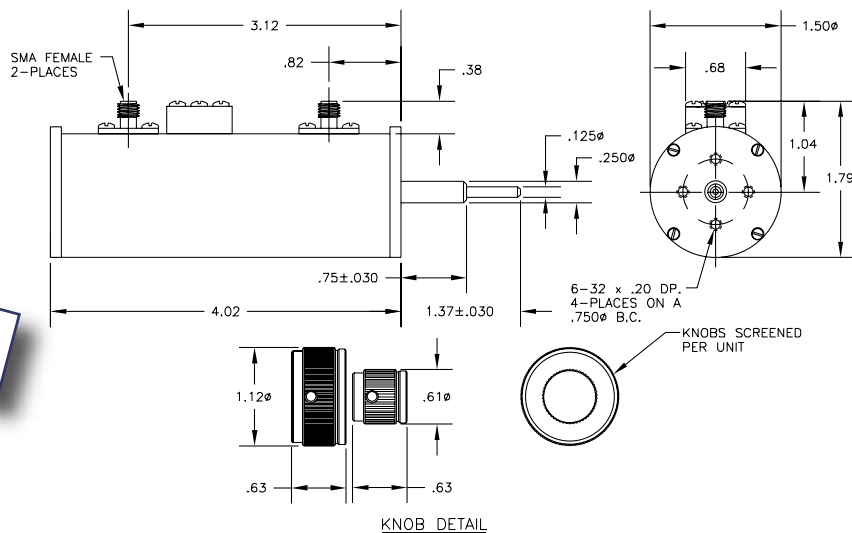
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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy (maximum)	VSWR (maximum)	Insertion Loss (maximum)	RF Connectors
50DR-001	DC-1000 MHz	0-110 dB in 1 dB steps	+/- 0.2 dB or 1% DC-500 MHz +/- 0.3 dB or 2% 500-1000 MHz	1.2:1 DC-500 MHz 1.4:1 500-1000 MHz	0.5 dB	BNC, N, SMA or TNC female
50DR-035	DC-2000 MHz	0-70 dB in 1 dB steps	+/- 0.5 dB or 3%	1.25:1 DC-1000 MHz 1.5:1 1000-2000 MHz	0.6 dB DC-1000 MHz 1.0 dB 1000-2000 MHz	BNC, N, SMA or TNC female
50DR-046	DC-2500 MHz	0-50 dB in 1 dB steps	+/- 0.2 dB or 1% DC-500 MHz +/- 0.3 dB or 3% 500-1000 MHz +/- 0.4 dB or 3% 1000-2500 MHz	1.2:1 DC-500 MHz 1.4:1 500-1000 MHz 1.5:1 1000-2500 MHz	0.5 dB DC-1000 MHz 1.0 dB 1000-2500 MHz	BNC, N, SMA or TNC female
50DR-061	DC-2200 MHz	0-80 dB in 1 dB steps	+/- 0.5 dB or 3%	1.25:1 DC-1000 MHz 1.5:1 1000-2200 MHz	0.6 dB DC-1000 MHz 1.0 dB 1000-2200 MHz	BNC, N, SMA or TNC female
50DR-077	DC-2000 MHz	0-90 dB in 1 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-2000 MHz	1.2:1 DC-500 MHz 1.4:1 500-1000 MHz 1.5:1 1000-2000 MHz	0.5 dB DC-1000 MHz 1.0 dB 1000-2000 MHz	BNC, N, SMA or TNC female
50DR-082	DC-2000 MHz	0-110 dB in 1 dB steps	+/- 0.5 dB or 2% DC-500 MHz +/- 0.5 dB or 3% 500-2000 MHz	1.2:1 DC-500 MHz 1.4:1 500-1000 MHz 1.5:1 1000-2000 MHz	0.5 dB DC-1000 MHz 1.0 dB 1000-2000 MHz	BNC, N, SMA or TNC female
50DR-111	DC-2700 MHz	0-60 dB in 1 dB steps	+/- 0.5 dB or 3%	1.35:1 DC-1000 MHz 1.5:1 1000-2700 MHz	0.6 dB DC-1000 MHz 1.2 dB 1000-2700 MHz	SMA Female

Common Specifications

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



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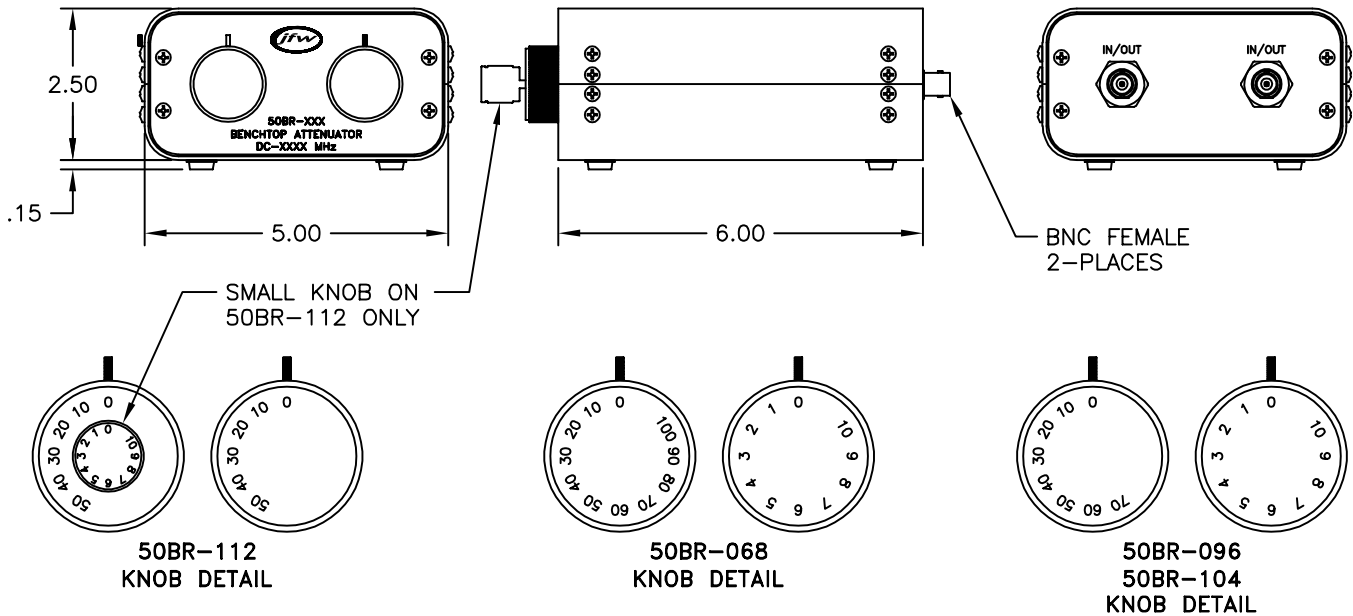
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Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy (maximum)	VSWR (maximum)	Insertion Loss (maximum)	RF Connectors
50BR-068	DC-2550 MHz	0-110 dB in 1 dB steps	+/- 0.3 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-1500 MHz +/- 0.5 dB or 4% 1500-2550 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-1500 MHz 1.7:1 1500-2550 MHz	1.6 dB	BNC, N, SMA or TNC female
50BR-096	DC-2200 MHz	0-80 dB in 1 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-2200 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-2200 MHz	1.5 dB	BNC, SMA or N female
50BR-104	DC-2700 MHz	0-80 dB in 1 dB steps	DC-1000 MHz +/- 0.4 dB (1 dB steps) +/- 0.5 dB or 2% (10 dB steps) 1000-2700 MHz +/- 0.5 dB (1 dB steps) +/- 0.5 dB or 3% (10 dB steps)	1.5:1 DC-1000 MHz 1.8:1 1000-2700 MHz	1.5 dB	SMA female
50BR-112	DC-2700 MHz	0-110 dB in 1 dB steps	+/- 0.5 dB (1 dB steps) +/- 0.7 dB or 3% (10 dB steps)	1.5:1 DC-700 MHz 1.8:1 700-2700 MHz	2.0 dB	BNC, N, SMA or TNC female

Common Specifications

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

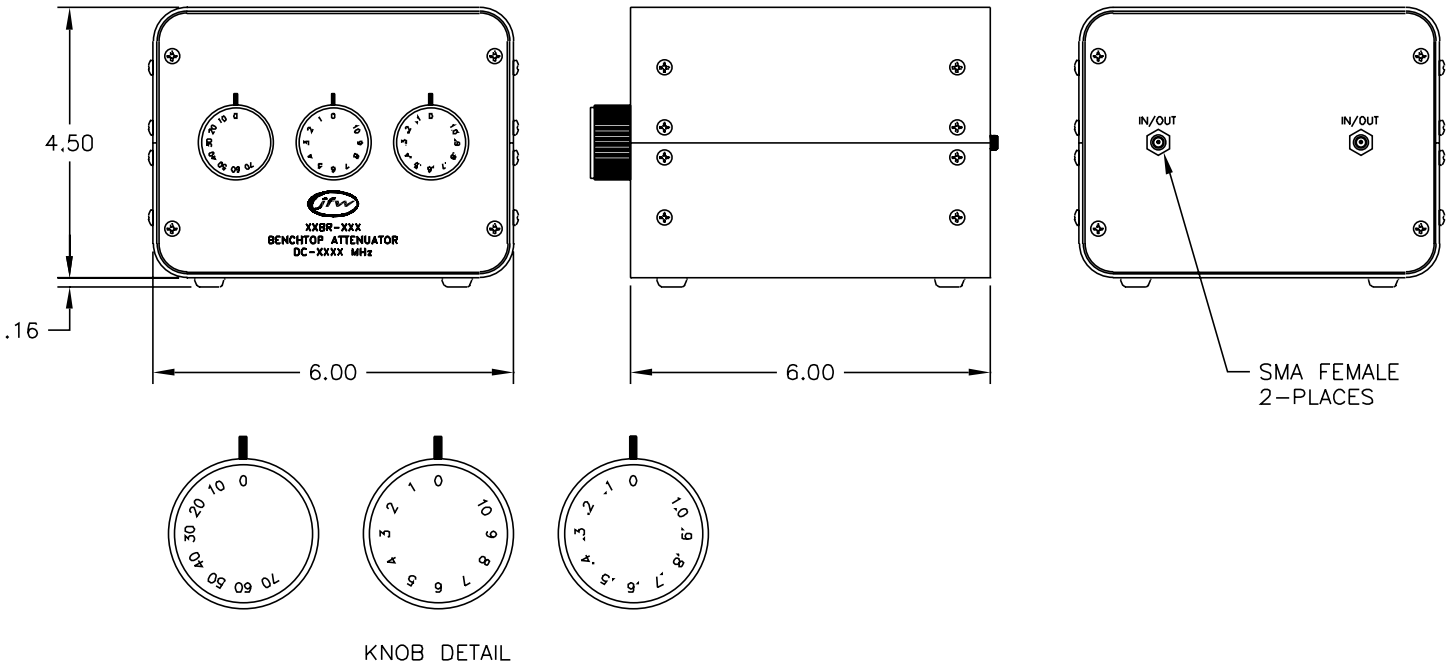


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Bench Top Attenuator

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss	RF Connectors
50BR-092	DC-1000 MHz	0-81 dB in 0.1 dB steps	DC-500 MHz +/- 0.04 dB (0-1 dB) +/- 0.2 dB (1-10 dB) +/- 0.5 dB (10-81 dB) 500-1000 MHz +/- 0.06 dB (0-1 dB) +/- 0.3 dB (1-10 dB) +/- 0.8 dB (10-81 dB)	1.3:1 DC-500 MHz 1.5:1 500-1000 MHz	1.5 dB	N, BNC, SMA or TNC female

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



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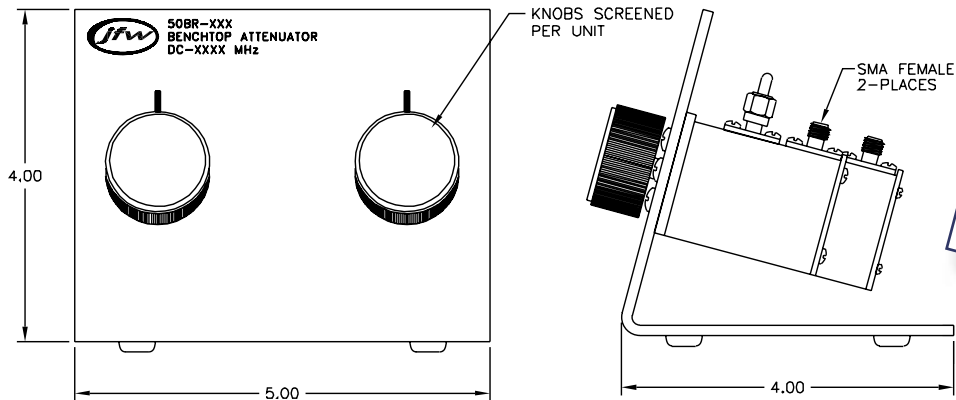
Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50BR-008	DC-2200 MHz	0-80 dB in 1 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-2200 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-2200 MHz	0.5 dB DC-1000 MHz 1.0 dB 1000-2200 MHz
50BR-009	DC-1000 MHz	0-110 dB in 1 dB steps	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz	1.3:1	1.2 dB
50BR-036	DC-2000 MHz	0-110 dB in 1 dB steps	+/- 0.3 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-1000 MHz +/- 0.5 dB or 3% 1000-1500 MHz +/- 0.5 dB or 4% 1500-2000 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-1500 MHz 1.7:1 1500-2000 MHz	0.75 dB DC-1000 MHz 1.25 dB 1000-2000 MHz

Common Specifications

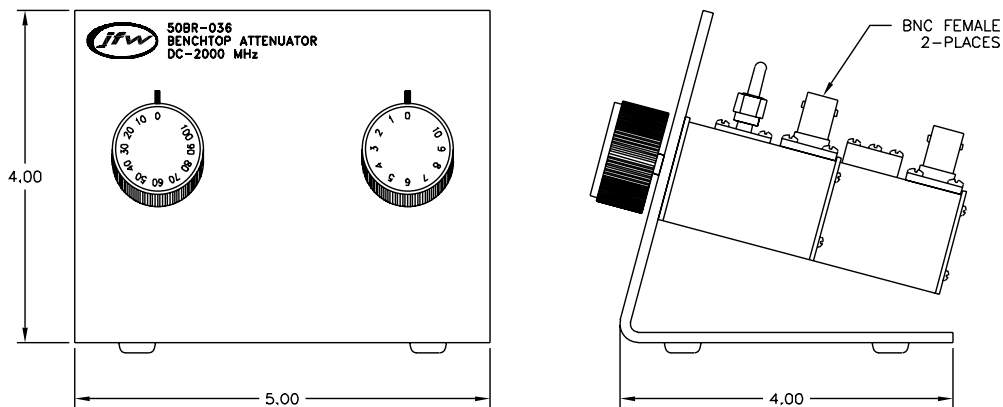
Impedance	RF Input Power	Standard Rotation	Indexing	Operating Temperature	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum	-20° C to +85° C	BNC, SMA or N female

50BR-008 / 50BR-009



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50BR-036



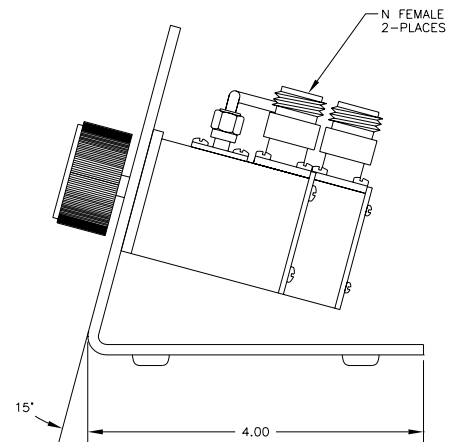
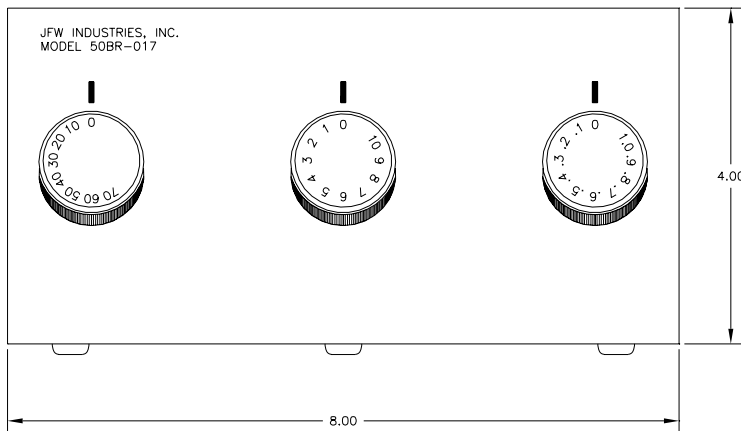
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Bench Top Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50BR-017	DC-1000 MHz	0-81 dB in 0.1 dB steps	DC-500 MHz +/- 0.04 dB (0-1 dB) +/- 0.2 dB (1-10 dB) +/- 0.5 dB (10-81 dB) 500-1000 MHz +/- 0.06 dB (0-1 dB) +/- 0.3 dB (1-10 dB) +/- 0.8 dB (10-81 dB)	1.3:1 DC-500 MHz 1.5:1 500-1000 MHz	1.25 dB
50BR-022	DC-1000 MHz	0-111 dB in 0.1 dB steps	DC-500 MHz +/- 0.04 dB (0-1 dB) +/- 0.2 dB (1-10 dB) +/- 0.5 dB or 1% (10-111 dB) 500-1000 MHz +/- 0.06 dB (0-1 dB) +/- 0.3 dB (1-10 dB) +/- 0.5 dB or 2% (10-111 dB)	1.3:1 DC-500 MHz 1.5:1 500-1000 MHz	1.25 dB

Common Specifications

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



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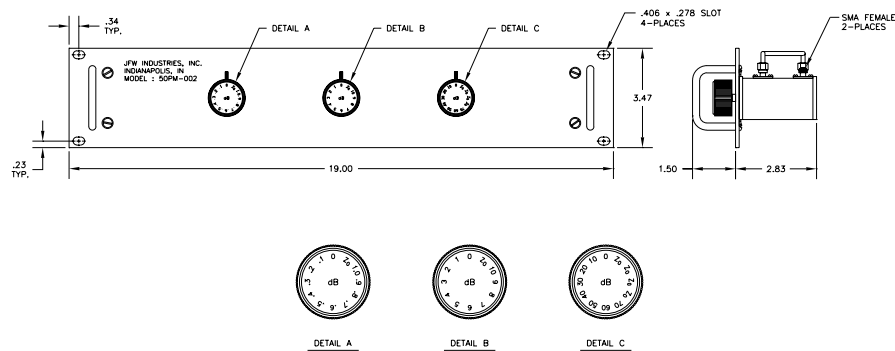
Panel Mounted Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50PM-002	DC-1000 MHz	0-81 dB in 0.1 dB steps	DC-500 MHz +/- 0.04 dB (0-1 dB) +/- 0.2 dB (1-10 dB) +/- 0.5 dB (10-81 dB) 500-1000 MHz +/- 0.06 dB (0-1 dB) +/- 0.3 dB (1-10 dB) +/- 0.8 dB (10-81 dB)	1.3:1 DC-500 MHz 1.5:1 500-1000 MHz	1.5 dB
50PM-003	DC-2500 MHz	0-50 dB in 1 dB steps Eight 50DR-046 panel mounted attenuators	+/- 0.2 dB or 1% (DC-500 MHz) +/- 0.3 dB or 3% (500-1000 MHz) +/- 0.4 dB or 3% (1000-2500 MHz)	1.2:1 DC-500 MHz 1.4:1 500-1000 MHz 1.5:1 1000-2500 MHz	0.5 dB DC-1000 MHz 1.0 dB 1000-2500 MHz
50PM-009	DC-2200 MHz	0-80 dB in 1 dB steps Eight 50DR-061 panel mounted attenuators	+/- 0.5 dB or 3%	1.25:1 DC-1000 MHz 1.5:1 1000-2200 MHz	0.6 dB DC-1000 MHz 1.0 dB 1000-2200 MHz

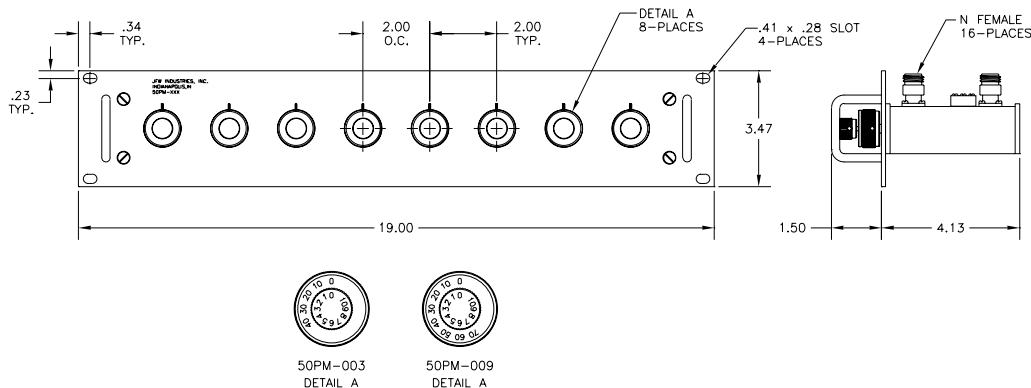
Common Specifications

Impedance	RF Input Power	Standard Rotation	Indexing	Operating Temperature	RF Connectors
50 Ohms	2 Watts average 1000 Watts peak	Attenuation increases in clockwise direction	30 degrees with stops at minimum and maximum / except 50PM-002 which has no stops	-20° C to +85° C	BNC, N, SMA or TNC female

50PM-002



50PM-003 / 50PM-009



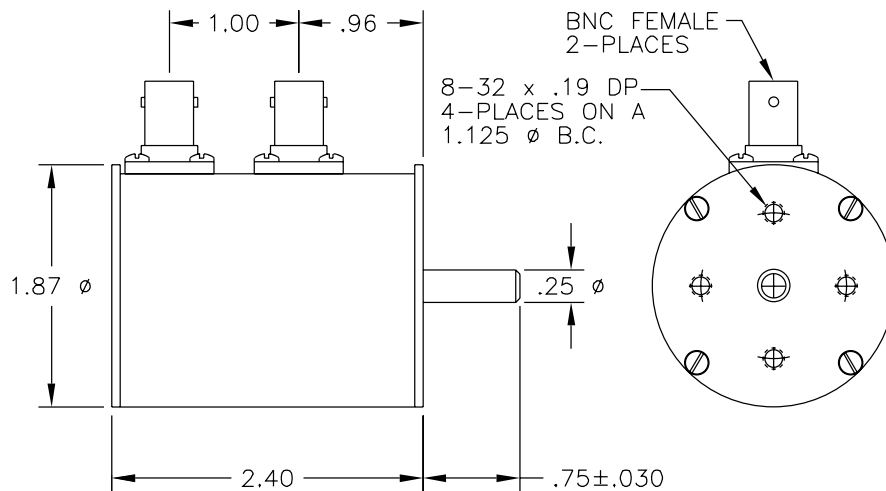
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Rotary Attenuators

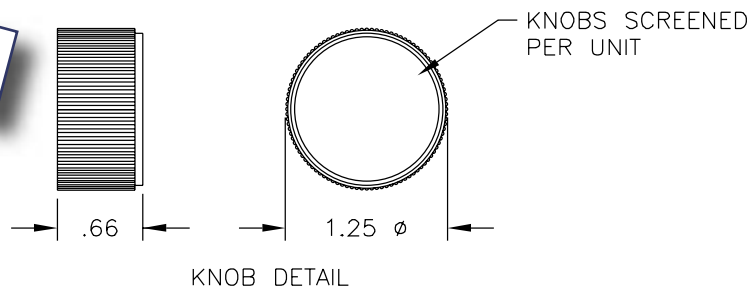
Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
75R-002	DC-500 MHz	0-10 dB in 1 dB steps	+/- 0.1 dB DC-30 MHz +/- 0.2 dB 30-300 MHz +/- 0.3 dB 300-500 MHz	1.3:1	0.4 dB
75R-006	DC-500 MHz	0-1 dB in 0.1 dB steps	+/- 0.02 dB DC-300 MHz +/- 0.03 dB 300-500 MHz	1.3:1	0.7 dB
75R-050	DC-2200 MHz	0-10 dB in 1 dB steps	+/- 0.1 dB DC-30 MHz +/- 0.2 dB 30-500 MHz +/- 0.3 dB 500-1000 MHz +/- 0.4 dB 1000-2200 MHz	1.3:1 DC-1000 MHz 1.5:1 1000-2200 MHz	0.4 dB DC-1000 MHz 0.6 dB 1000-2200 MHz
75R-056	DC-1000 MHz	0-10 dB in 1 dB steps	+/- 0.1 dB DC-30 MHz +/- 0.2 dB 30-500 MHz +/- 0.3 dB 500-1000 MHz	1.3:1 DC-500 MHz 1.5:1 500-1000 MHz	0.4 dB
75R-057	DC-1000 MHz	0-1 dB in 0.1 dB steps	+/- 0.04 dB DC-500 MHz +/- 0.08 dB 500-1000 MHz	1.3:1 DC-500 MHz 1.4:1 500-1000 MHz	0.7 dB

Common Specifications

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



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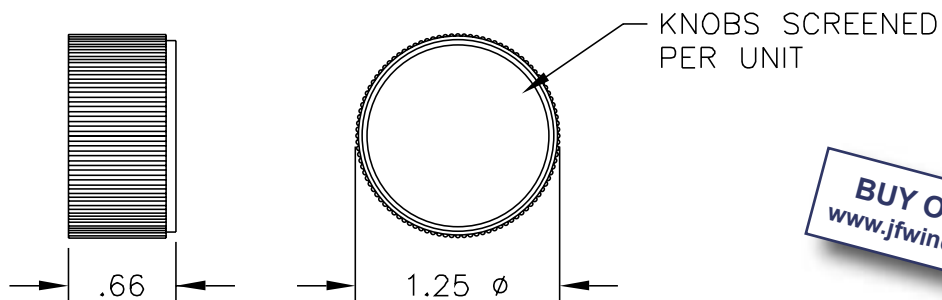
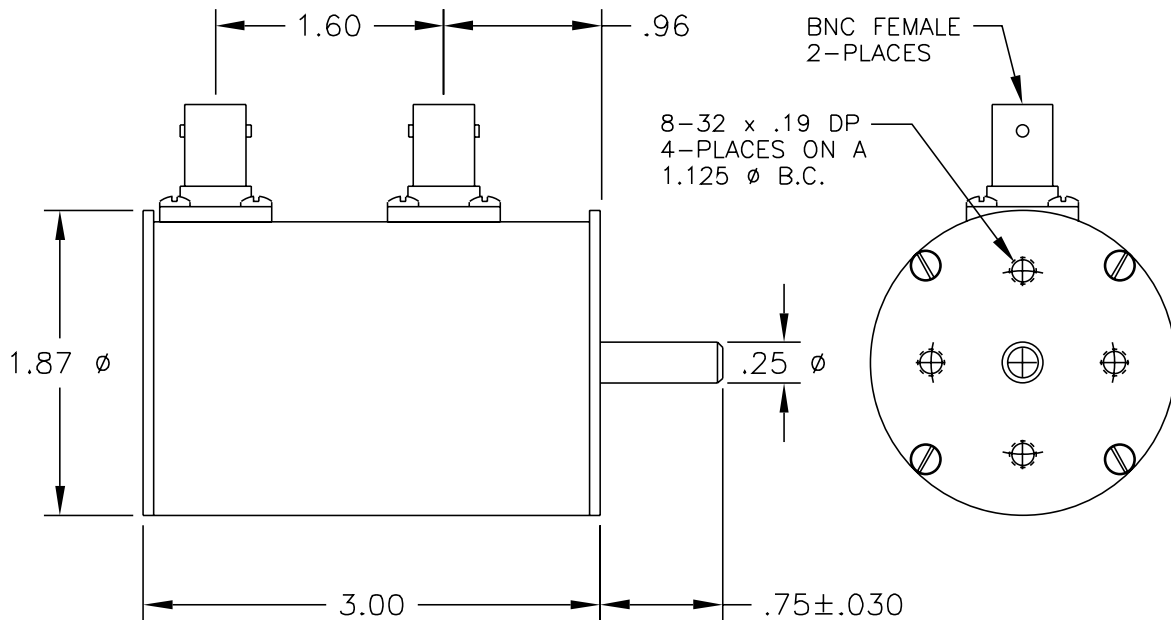


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Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
75R-001	DC-500 MHz	0-70 dB in 10 dB steps	+/- 0.2 dB DC-30 MHz +/- 0.5 dB 30-300 MHz +/- 1.0 dB 300-500 MHz	1.3:1	0.4 dB
75R-055	DC-1000 MHz	0-70 dB in 10 dB steps	+/- 0.2 dB DC-30 MHz +/- 0.5 dB 30-500 MHz +/- 1.0 dB 500-1000 MHz	1.3:1 DC-500 MHz 1.5:1 500-1000 MHz	0.4 dB
75R-089	DC-2200 MHz	0-60 dB in 10 dB steps	+/- 0.5 dB or 2% DC-1000 MHz +/- 0.5 dB or 3% 1000-2200 MHz	1.4:1 DC-1000 MHz 1.6:1 1000-2200 MHz	0.3 dB DC-1000 MHz 0.5 dB 1000-2200 MHz

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



Knob Detail

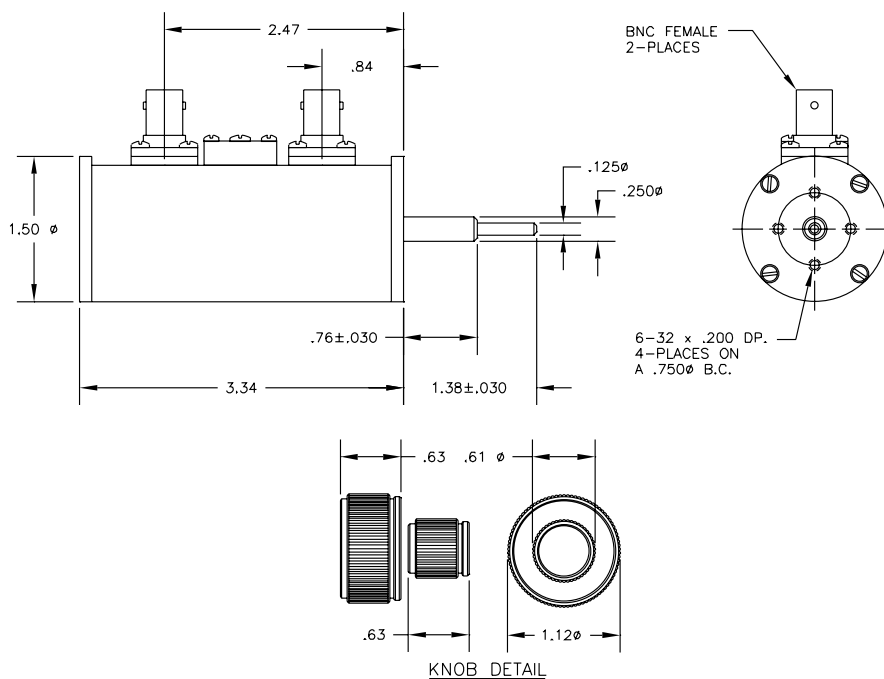
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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss
75DR-015	DC-1000 MHz	0-11 dB in 0.1 dB steps	DC-100 MHz +/- 0.02 dB (0-1 dB) +/- 0.05 dB (1-11 dB) 100-500 MHz +/- 0.04 dB (0-1 dB) +/- 0.2 dB (1-11 dB) 500-1000 MHz +/- 0.05 dB (0-1 dB) +/- 0.3 dB (1-11 dB)	1.1:1 DC-100 MHz 1.4:1 100-500 MHz 1.5:1 500-1000 MHz	1.0 dB typical 1.25 dB maximum
75DR-018	DC-1000 MHz	0-30 dB in 1 dB steps	DC-500 MHz +/- 0.2 dB (0-10 dB) +/- 0.5 dB (10-30 dB) 500-1000 MHz +/- 0.4 dB (0-10 dB) +/- 0.5 dB (10-30 dB)	1.35:1	0.5 dB maximum
75DR-021	DC-2100 MHz	0-30 dB in 1 dB steps	DC-1000 MHz +/- 0.25 dB (0-10 dB) +/- 0.5 dB (10-30 dB) 1000-1500 MHz +/- 0.4 dB (0-10 dB) +/- 0.75 dB (10-30 dB) 1500-2100 MHz +/- 0.5 dB (0-10 dB) +/- 1.0 dB (10-30 dB)	1.5:1	0.65 dB maximum 0.55 dB typical

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

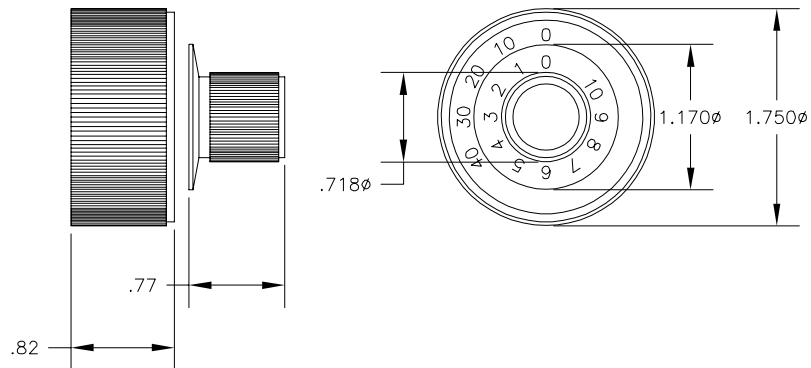
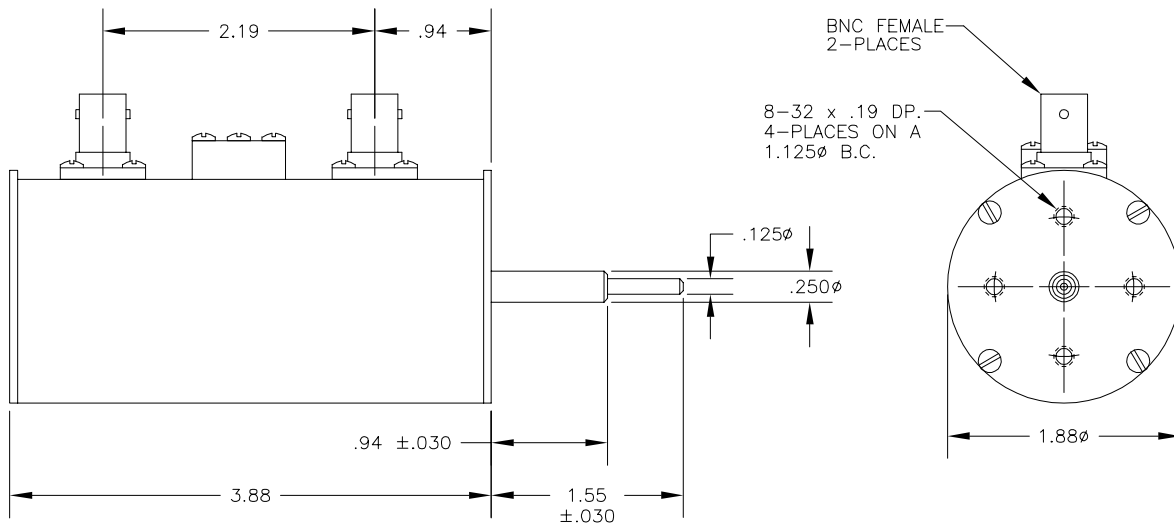


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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
75DR-003	DC-1000 MHz	0-50 dB in 1 dB steps	+/- 0.2 dB DC-250 MHz +/- 0.5 dB 250-500 MHz +/- 1.0 dB 500-1000 MHz	1.1:1 DC-250 MHz 1.2:1 250-500 MHz 1.4:1 500-1000 MHz	0.5 dB

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



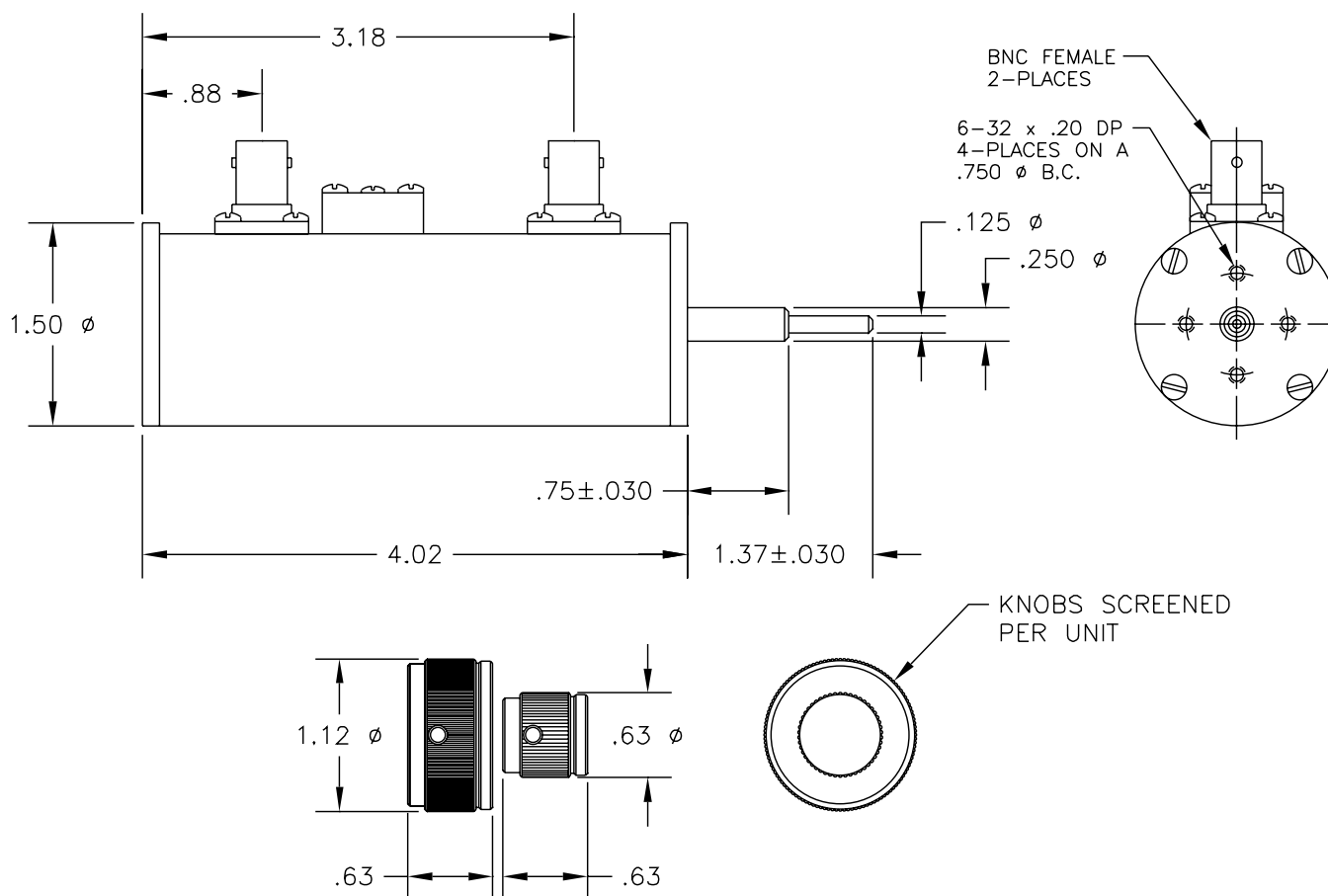
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Dual Concentric Rotary Attenuators

Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
75DR-006	DC-600 MHz	0-80 dB in 1 dB steps	DC-100 MHz +/- 0.1 dB (0-10 dB) +/- 0.3 dB (10-80 dB) 100-400 MHz +/- 0.2 dB (0-10 dB) +/- 0.6 dB (10-80 dB) 400-600 MHz +/- 0.3 dB (0-10 dB) +/- 0.8 dB (10-80 dB)	1.3:1	0.75 dB
75DR-009	DC-1000 MHz	0-70 dB in 1 dB steps	+/- 0.5 dB or 3%	1.4:1	0.75 dB

Common Specifications

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



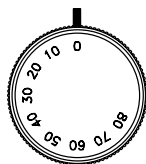
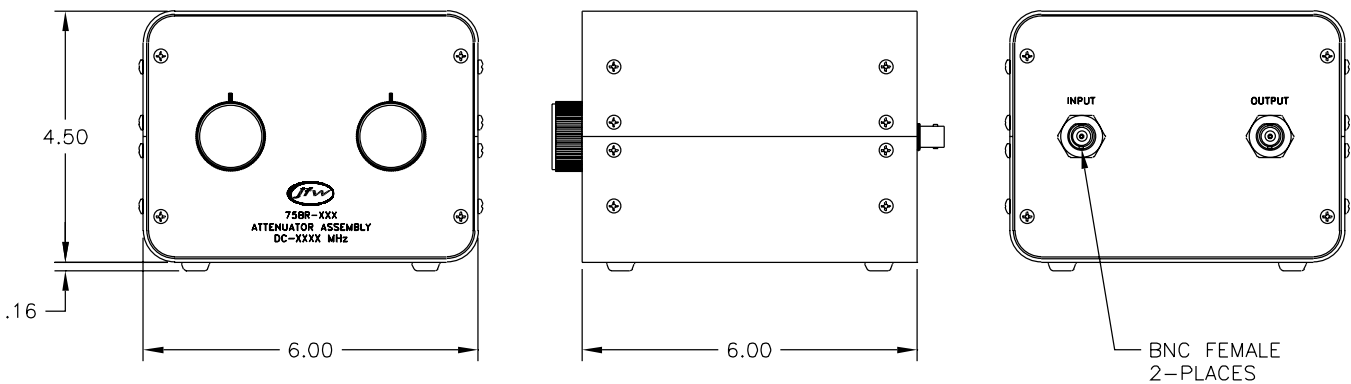
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Bench Top Attenuators

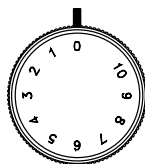
Model	Frequency Range	Attenuation Range	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
75BR-014	DC-1000 MHz	0-90 dB in 1 dB steps	DC-100 MHz +/- 0.1 dB (0-10 dB) +/- 0.2 dB (10-70 dB) +/- 0.3 dB (80-90 dB) 100-250 MHz +/- 0.2 dB (0-10 dB) +/- 0.3 dB (10-70 dB) +/- 0.4 dB (80-90 dB) 250-500 MHz +/- 0.3 dB (0-10 dB) +/- 0.5 dB (10-70 dB) +/- 0.75 dB (80-90 dB) 500-1000 MHz +/- 0.4 dB (0-10 dB) +/- 1.0 dB (10-70 dB) +/- 1.5 dB (80-90 dB)	1.2:1 DC-250 MHz 1.3:1 250-500 MHz 1.5:1 500-1000 MHz	0.75 dB
75BR-023	DC-2150 MHz	0-70 dB in 1 dB steps	DC-1000 MHz +/- 0.4 dB (0-10 dB) +/- 0.6 dB or 2% (11-70 dB) 1000-2150 MHz +/- 0.5 dB (0-10 dB) +/- 0.6 dB or 3% (11-70 dB)	1.5:1 DC-1000 MHz 1.7:1 1000-2150 MHz	1 dB DC-1000 MHz 1.5 dB 1000-2150 MHz

Common Specifications

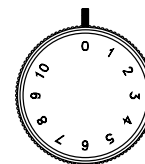
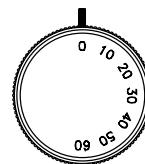
Impedance	RF Input Power	Standard Rotation	Indexing	Operating Temperature	RF Connectors
75 Ohms	1 Watt average 1000 Watts peak	See knob detail below	30 degrees with stops at minimum and maximum	-20° C to +85° C	BNC, F or N female



Knob Detail
75BR-014



Knob Detail
75BR-023

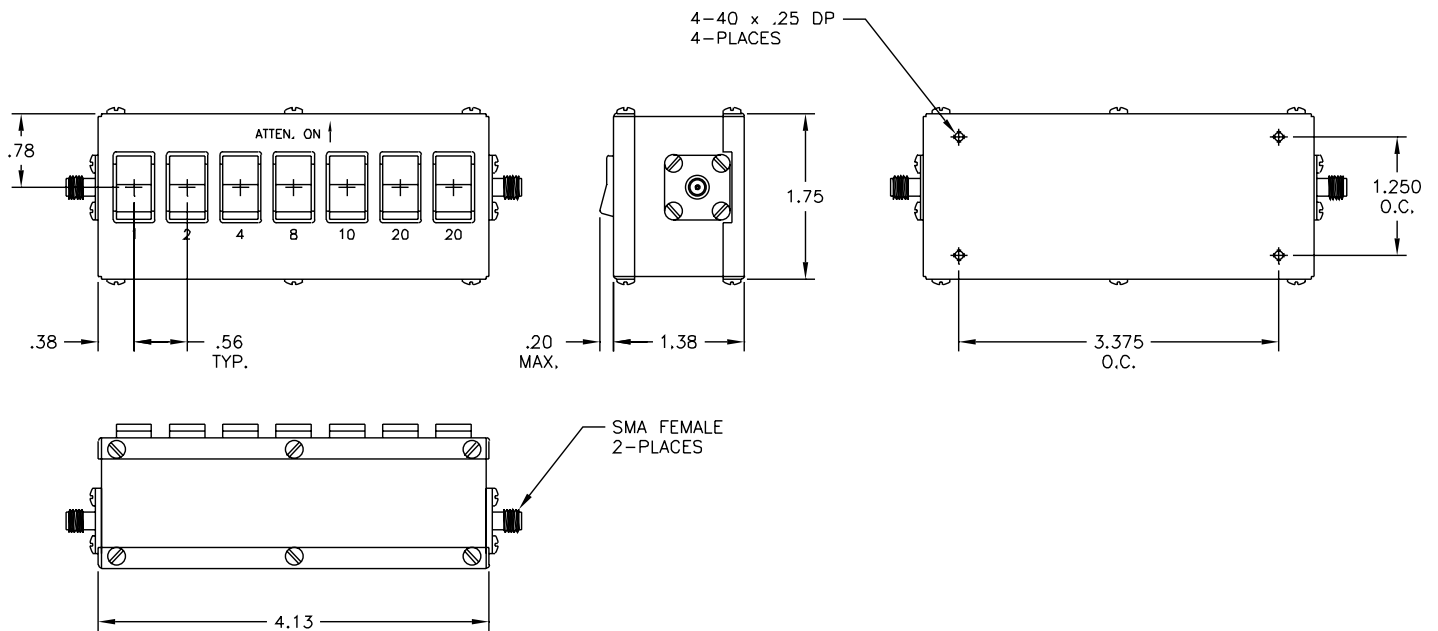


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Rocker Attenuators

Model	Frequency Range	Attenuation Range/ Steps	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50RA-003	DC-500 MHz	0-65 dB in 1 dB steps 1, 2, 4, 8, 10, 20, and 20 dB	+/- 0.4 dB	1.25:1	1.1 dB
50RA-004	DC-1000 MHz	0-65 dB in 1 dB steps 1, 2, 4, 8, 10, 20, and 20 dB	+/- 0.4 dB or 1% (whichever is greater)	1.3:1	1.5 dB

Model	Impedance	RF Input Power	RF Connectors
50RA-003	50 Ohms	1 Watt average @ +25° C 250 Watts peak (1 microsecond)	BNC, TNC, SMA or N female
50RA-004	50 Ohms	1 Watt average @ +25° C 250 Watts peak (1 microsecond)	BNC, TNC, SMA or N female



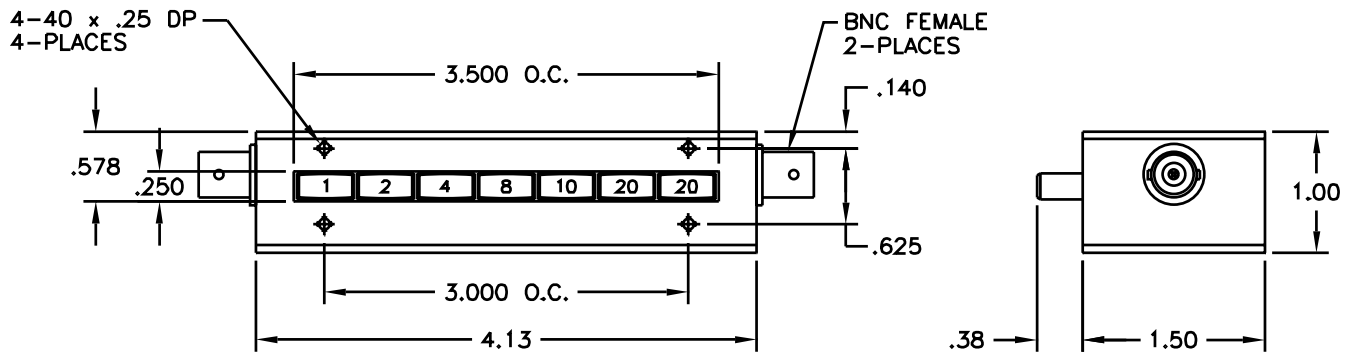
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Pushbutton Attenuators

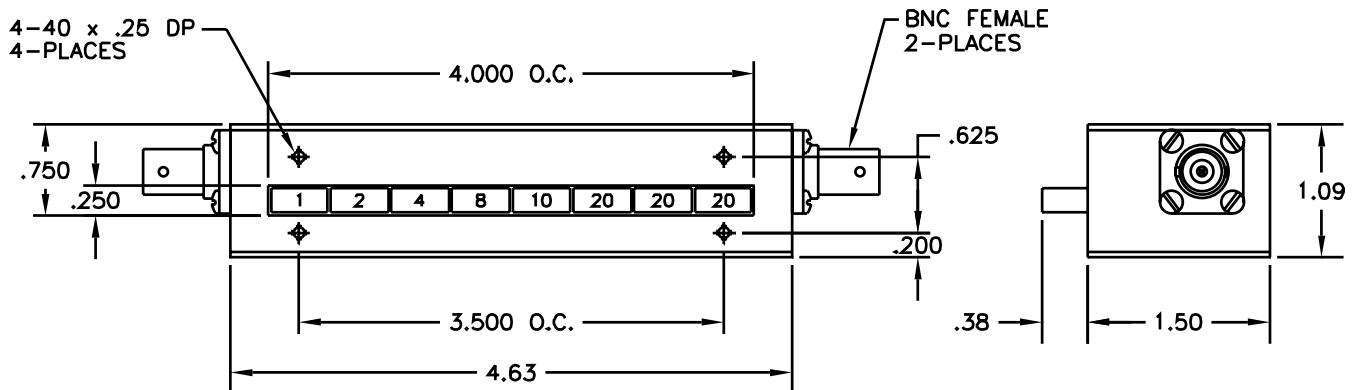
Model	Frequency Range	Attenuation Range/ Steps	Attenuation Accuracy	VSWR (maximum)	Insertion Loss
50B-001	DC-750 MHz	0-65 dB in 1 dB steps/ 1, 2, 4, 8, 10, 20 and 20 dB	+/- 0.3 dB DC-100 MHz +/- 0.5 dB 100-300 MHz +/- 0.8 dB 300-500 MHz +/- 1.3 dB 500-750 MHz	1.1:1 DC-100 MHz 1.25:1 100-500 MHz 1.4:1 500-750 MHz	1.5 dB maximum 1.0 dB typical @ 750 MHz 0.7 dB typical @ 500 MHz
50B-035	DC-750 MHz	0-85 dB in 1 dB steps/ 1, 2, 4, 8, 10, 20, 20 and 20 dB	+/- 0.5 dB or 1% DC-500 MHz +/- 0.5 dB or 2% 500-750 MHz	1.3:1 DC-500 MHz 1.4:1 500-750 MHz	1.0 dB nominal DC-500 MHz 1.5 dB nominal 500-750 MHz
75B-001	DC-500 MHz	0-65 dB in 1 dB steps/ 1, 2, 4, 8, 10, 20 and 20 dB	+/- 0.3 dB DC-100 MHz +/- 0.5 dB 100-300 MHz +/- 0.8 dB 300-500 MHz	1.1:1 DC-100 MHz 1.2:1 100-300 MHz 1.3:1 300-500 MHz	1.2 dB @ 500 MHz maximum

Model	Impedance	Power Rating	Operating Temperature	RF Connectors
50B-001	50 Ohms	1 Watt average (1000 Watts peak)	-20° C to +85° C	BNC female
50B-035	50 Ohms	1 Watt average (100 Watts peak)	-20° C to +85° C	BNC female
75B-001	75 Ohms	1 Watt average (1000 Watts peak)	-20° C to +85° C	BNC or F female

50B-001 / 75B-001



50B-035

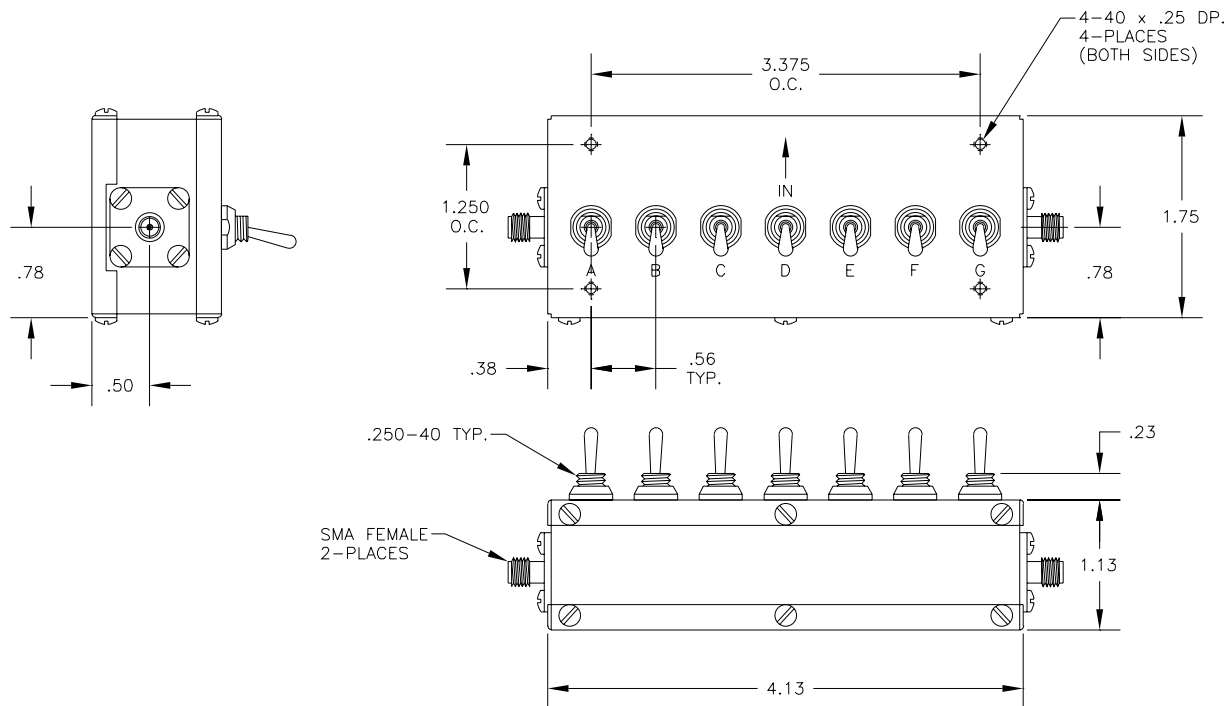


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Toggle Switch Attenuators

Model	Frequency Range	Attenuation Range/ Steps	Attenuation Accuracy	VSWR (maximum)	Insertion Loss (maximum)
50TA-006	DC-850 MHz	0-65 dB in 1 dB steps/ 1, 2, 4, 8, 10, 20 and 20 dB	+/- 0.3 dB or 2%	1.4:1	1.5 dB
50TA-007	DC-850 MHz	0-45.5 dB in 0.5 dB steps/ 0.5, 1, 2, 4, 8, 10 and 20 dB	+/- 0.3 dB or 1% DC-500 MHz +/- 0.3 dB or 2% 500-850 MHz	1.4:1	1.5 dB
75TA-006	DC-500 MHz	0-65 dB in 1 dB steps/ 1, 2, 4, 8, 10, 20 and 20 dB	+/- 0.3 dB or 2%	1.4:1	1.5 dB
75TA-007	DC-500 MHz	0-45.5 dB in 0.5 dB steps/ 0.5, 1, 2, 4, 8, 10 and 20 dB	+/- 0.3 dB or 1%	1.4:1	1.5 dB

Model	Impedance	Power Rating	Operating Temperature	RF Connectors
50TA-006	50 Ohms	0.5 Watt average (100 Watts peak)	-20° C to +85° C	BNC, N, SMA and TNC female
50TA-007	50 Ohms	0.5 Watt average (100 Watts peak)	-20° C to +85° C	BNC, N, SMA and TNC female
75TA-006	75 Ohms	0.5 Watt average (100 Watts peak)	-20° C to +85° C	BNC, N and F female
75TA-007	75 Ohms	0.5 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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