

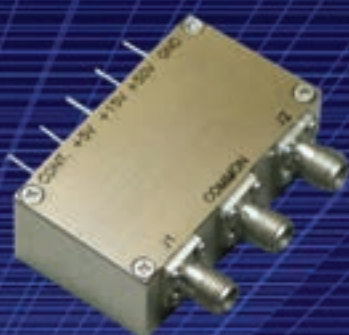
# JFW INDUSTRIES

317-887-1340

877-887-4539

[www.jfwindustries.com](http://www.jfwindustries.com)

50 OHM  
RF COMPONENTS

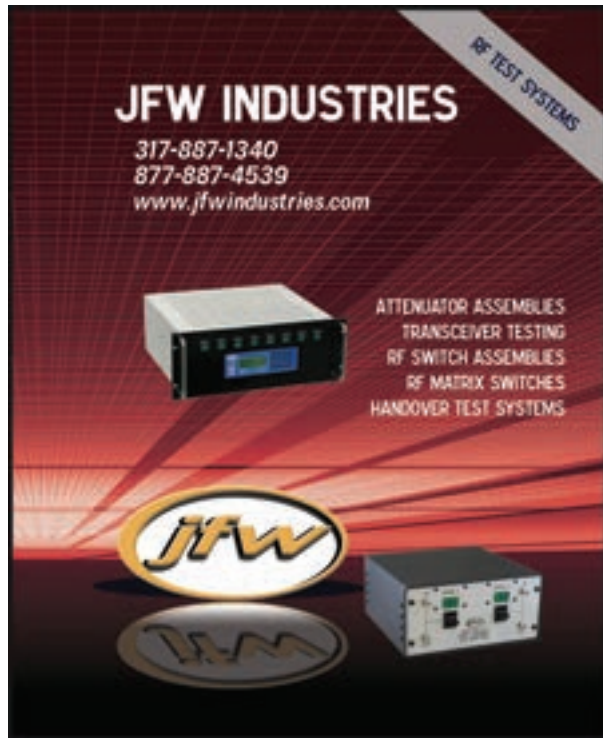


PROGRAMMABLE ATTENUATORS  
MANUALLY VARIABLE ATTENUATORS  
FIXED ATTENUATORS  
TERMINATIONS  
RF SWITCHES  
POWER DIVIDERS AND COMBINERS  
TEST ACCESSORIES





## Additional JFW Brochures



### Test Systems Brochure

Contains information on JFW's standard and custom RF test boxes, including:

- Matrix Switches
- Handover Test Systems
- Programmable Attenuator Assemblies
- Transceiver Test Systems
- Switch Assemblies
- Custom RF Assemblies

### 75 Ohm Components Brochure

See what JFW has to offer for cable TV and other 75 Ohm applications, including:

- Programmable Attenuators
- Rotary Attenuators
- Fixed Attenuators
- Terminations
- RF Switches
- Power Dividers
- Impedance Matching Pads
- DC Blocks
- RF Detectors
- Bias Taps



**www.jfwindustries.com**

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***“JFW is committed to anticipating and exceeding customer’s requirements and expectations through cost-competitive, quality products and services that are delivered on time and through continual improvements to our quality management system.”***

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# Solid-State Programmable Attenuators

- +20 dBm power handling typical
- Long lifetime solid-state design
- Frequencies up to 6 GHz
- 0.1, 0.25, 0.5, 1, 10 dB step sizes available
- Various Connectors available (SMA, N, BNC, TNC)

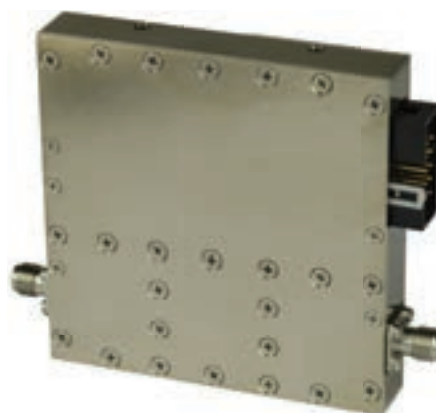
Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50P-1867	0-31.75 x 0.25 dB	30-3000 MHz	2.5 dB
50P-1891	0-63.5 x 0.5 dB	30-3000 MHz	4.0 dB
50P-1893	0-63 x 1 dB	30-3000 MHz	4.0 dB
50P-1897	0-95 x 1 dB	30-3000 MHz	6.0 dB
50P-1782	0-127 x 1 dB	15-2000 MHz	6.0 dB
50P-1501	0-127 x 1 dB	200-3000 MHz	6.0 dB
50P-1900	0-127 x 1 dB	700-3000 MHz	6.0 dB



## Wide Band Series

- 200-6000 MHz
- +20 dBm power handling
- Digitally latching models also available

Wide Band Series		
Model	Range	Max IL
50P-1855	0-31.5 x 0.5 dB	3.5 dB
50P-1853	0-63 x 1 dB	5.5 dB
50P-1857	0-95 x 1 dB	8.0 dB



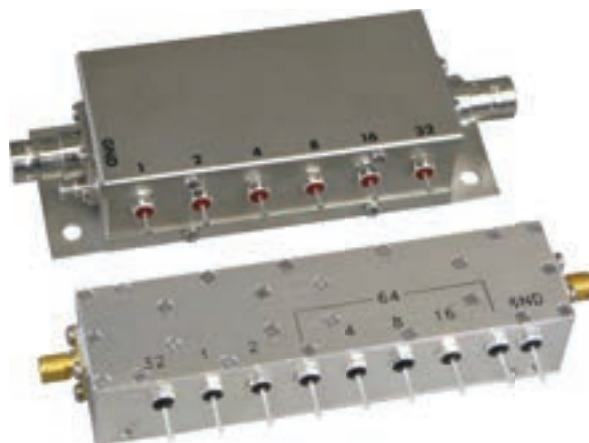
\*Visit our website for  
an expanded list of models.

[www.jfwindustries.com/programmables](http://www.jfwindustries.com/programmables)

# Relay Programmable Attenuators

- 1 Watt power handling typical
- Low distortion
- Frequencies up to 6 GHz
- 0.1, 0.25, 0.5, 1, 10 dB step sizes available
- Various Connectors available (SMA, N, BNC, TNC)

Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50P-542	0-10 x 1 dB	DC-2800 MHz	3.0 dB
50P-847	0-15 x 1 dB	DC-5000 MHz	4.0 dB
50P-1978	0-63 x 1 dB	DC-2700 MHz	4.0 dB
50P-1633	0-64.5 x 0.1 dB	DC-1000 MHz	4.0 dB
50P-1516	0-70 x 10 dB	DC-6000 MHz	3.5 dB
50P-591	0-85 x 1 dB	DC-3000 MHz	4.5 dB
50P-1976	0-127 x 1 dB	DC-1000 MHz	2.0 dB
50P-1436	0-127 x 1 dB	DC-2500 MHz	4.3 dB



## High Power Models

- Designs with power handling up to 10 Watts available
- Frequencies up to 3 GHz
- Various step sizes available

Featured Models* See website for complete specifications and drawings.				
Model	Range	Frequency	Power	Max IL
50P-1941	0-15 x 1 dB	DC-3000 MHz	10 W	5.0 dB
50P-1930	0-63 x 1 dB	DC-200 MHz	10 W	0.2 dB
50P-1849	0-63 x 1 dB	DC-2700 MHz	10 W	4.0 dB



\*Visit our website for an expanded list of models.

[www.jfwindustries.com/programmables](http://www.jfwindustries.com/programmables)

# Manually Variable Attenuators

## Rotors (single shaft)

- 2W power handling
- See website for 6 GHz, 8 GHz and 18 GHz models
- Available in 0.1 dB, 1 dB and 10 dB steps

Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50R-028	0-1 x 0.1 dB	DC-1000 MHz	1.0 dB
50R-215	0-1 x 0.1 dB	DC-2200 MHz	1.0 dB
50R-249	0-1 x 0.1 dB	DC-2500 MHz	1.0 dB
50R-019	0-10 x 1 dB	DC-2200 MHz	0.4 dB
50R-248	0-10 x 1 dB	DC-2500 MHz	0.5 dB
50R-310	0-10 x 1 dB	DC-2700 MHz	0.5 dB
50R-385	0-10 x 1 dB	DC-3000 MHz	0.6 dB
50R-029	0-70 x 10 dB	DC-2200 MHz	0.5 dB
50R-124	0-70 x 10 dB	DC-2500 MHz	0.5 dB
50R-246	0-70 x 10 dB	DC-2700 MHz	0.6 dB
50R-043	0-100 x 10 dB	DC-1000 MHz	0.3 dB
50R-234	0-100 x 10 dB	DC-2550 MHz	1.0 dB



## Rotors (benchtop)

- Enclosed or L-bracket models available
- 2W power handling
- See website for 6 GHz, 8 GHz and 18 GHz models
- Available in 0.1 dB, 1 dB and 10 dB steps

Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50BR-092	0-81 X 0.1 dB	DC-1000 MHz	1.5 dB
50BR-068	0-110 x 1 dB	DC-2550 MHz	1.8 dB
50BR-112	0-110 x 1 dB	DC-2700 MHz	2.2 dB



Don't see what you're looking for?

\*Visit our website for additional models including Pushbutton, Toggle and Rocker Switch Attenuators.

[www.jfwindustries.com/rotors](http://www.jfwindustries.com/rotors)



# Manually Variable Attenuators

## Rotors (dual shaft)

- 2W power handling
- See website for 6 GHz, 8 GHz and 18 GHz models
- Available in 0.1 dB or 1 dB steps

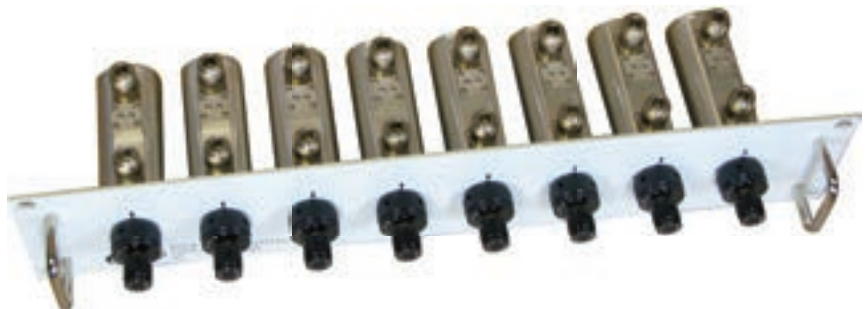
Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50DR-060	0-11 X 0.1 dB	DC-2000 MHz	1.25 dB
50DR-055	0-30 X 1 dB	DC-2000 MHz	0.8 dB
50DR-096	0-30 X 1 dB	DC-3000 MHz	1.1 dB
50DR-063	0-50 X 1 dB	DC-1100 MHz	0.5 dB
50DR-046	0-50 X 1 dB	DC-2500 MHz	1.1 dB
50DR-111	0-60 X 1 dB	DC-2700 MHz	1.2 dB
50DR-061	0-80 X 1 dB	DC-2200 MHz	1.0 dB
50DR-125	0-80 X 1 dB	DC-2700 MHz	1.5 dB
50DR-001	0-110 x 1 dB	DC-1000 MHz	0.5 dB
50DR-082	0-110 x 1 dB	DC-2000 MHz	1.0 dB
50DR-119	0-110 x 1 dB	DC-2200 MHz	1.0 dB



## Rotors (panel mounted)

- 19 inch rack mount panel typical
- Panel mounting available for any JFW rotor
- Custom designs in-line w/ catalog pricing

Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Panel Height
50PM-020	(8) 0-110 x 1 dB	DC-2000 MHz	2RU
50PM-060	(2) 0-50 x 1 dB	DC-2500 MHz	1RU
50PM-075	(4) 0-50 x 1 dB	DC-2500 MHz	1RU
50PM-003	(8) 0-50 x 1 dB	DC-2500 MHz	2RU
50PM-059	(2) 0-60 x 1 dB	DC-2700 MHz	1RU
50PM-074	(4) 0-60 x 1 dB	DC-2700 MHz	1RU
50PM-057	(8) 0-60 x 1 dB	DC-2700 MHz	2RU



# Fixed Attenuators

## Low Power

- See website for complete listing of low power fixed attenuators.

Featured Models* See website for complete specifications and drawings.			
Series	Frequency	Power	Connector
50F	DC-2200 MHz	1W	BNC or TNC
50HB	DC-6 GHz	2W	SMA
50HN	DC-6 GHz	2W	N
50HF	DC-18 GHz	2W	SMA or N



## Medium Power

- See website for complete listing of 5-50 Watt fixed attenuators.

Featured Models* See website for complete specifications and drawings.			
Series	Frequency	Power	Heatsink
50FPE	DC-6 GHz	5W	None
50HF	DC-18 GHz	5W, 10W	Round*
50HF	DC-18 GHz	25W, 50W	Square
50FHC	DC-4 GHz	10W, 15W, 20W, 25W	Round*
50FHXC	DC-4 GHz	40W, 50W	Round*
50FH	DC-3 GHz	30W, 50W	Square

\* These models with round heatsinks lack mounting holes.



## High Power

- See website for complete listing of 75-1000 Watt fixed attenuators.

Featured Models* See website for complete specifications and drawings.			
Series	Frequency	Power	Heatsink
50FHAO	DC-3 GHz	75W	Square
50FH	DC-3 GHz	80W, 100W, 300W	Square
50FHAO	DC-3 GHz	100W, 150W, 200W	Round
50HF	DC-6 GHz	100W	Square
50FHDQ	DC-3 GHz	500W	Square
50FHIE	DC-3 GHz	1000W	Square



\*Visit our website for an expanded list of models.

[www.jfwindustries.com/fixed](http://www.jfwindustries.com/fixed)



# Terminations

## Low Power

- See website for complete listing of low power terminations/mismatches.

Featured Models* See website for complete specifications and drawings.			
Model	Frequency	Power	Connector
50T-001	DC-2200 MHz	1W	BNC male
50T-007	DC-8 GHz	2W	N male
50T-455	DC-18 GHz	1W	SMA male
50T-199	DC-18 GHz	2W	N male



## Medium Power

- See website for complete listing of 5-50 Watt terminations/mismatches.

Featured Models* See website for complete specifications and drawings.				
Model	Frequency	Power	Connector	Heatsink*
50T-410	DC-4 GHz	5W	BNC, N, SMA, TNC or RPT	None
50T-128	DC-18 GHz	5W	SMA	Round*
50T-191	DC-18 GHz	5W	N	Round*
50T-439	DC-3 GHz	10W	BNC, N, SMA, TNC, 7/16	Round*
50T-440	DC-3 GHz	25W	BNC, N, SMA, TNC, 7/16	Round*
50T-506	DC-3 GHz	50W	BNC, N, SMA, TNC, 7/16	Round*
50T-533	DC-6 GHz	50W	N, SMA, 7/16	Square
50T-489	DC-18 GHz	50W	N, SMA	Square



\* These models with round heatsinks lack mounting holes.

## High Power

- See website for complete listing of 75-1000 Watt terminations/mismatches.

Featured Models* See website for complete specifications and drawings.				
Model	Frequency	Power	Connector	Heatsink
50T-549	DC-3 GHz	75W	BNC, N, SMA, TNC, 7/16	Square
50T-243	DC-3 GHz	100W	BNC, N, SMA, TNC, 7/16	Square
50T-390	DC-6 GHz	100W	N, 7/16	Round
50T-338	DC-3 GHz	200W	N, 7/16	Round
50T-421	DC-3 GHz	500W	N, TNC, 7/16	Square
50T-495	DC-3 GHz	1000W	N, 7/16	Square



Many terminations also available in mismatch version. \*See website for more details.

[www.jfwindustries.com/term](http://www.jfwindustries.com/term)

# Solid-State RF Switches

- 1P1T to 1P16T standard configurations
- Long lifetime solid-state design
- 1 Watt power handling typical
- See website for 18 GHz models
- Typical switching speed in the microseconds
- Reflective or absorptive models available



Featured Models* See website for complete specifications and drawings.				
Model	Type	Frequency	Max IL	Min Isolation
50S-1560	1P1T	5-3000 MHz	3.5 dB	50 dB
50S-1970	1P2T	5-3000 MHz	3.5 dB	60 dB
50S-1971	1P4T	5-3000 MHz	3.5 dB	60 dB
50S-1972	1P8T	5-3000 MHz	3.5 dB	60 dB
50S-1220	1P2T	20-4300 MHz	3.0 dB	55 dB
50S-1075	1P4T	20-4300 MHz	4.0 dB	55 dB
50S-1310	1P8T	20-4300 MHz	4.5 dB	50 dB
50S-1567	1P12T	20-4300 MHz	4.5 dB	50 dB
50S-1584	1P16T	20-4300 MHz	5.5 dB	50 dB
50S-1876	1P2T	20-6000 MHz	2.5 dB	55 dB



## High Power Models

- 1P2T to 1P6T standard configurations
- Frequencies up to 3 GHz
- Up to 250W cold-switching, 100W hot-switching and 2kW peak power handling
- Typical switching speeds < 40 microseconds

Featured Models* See website for complete specifications and drawings.					
Model	Type	Frequency	Max IL	Min Isolation	Input Power
50S-1872	1P2T	20-500 MHz	0.6 dB	50 dB	5W cold switch, 5W hot switch
50S-1559	1P2T	20-1000 MHz	0.75 dB	40 dB	150W cold switch, 50W hot switch
50S-1422	1P2T	100-500 MHz	0.5 dB	55 dB	250W cold switch, 100W hot switch
50S-1841	1P2T	500-3000 MHz	1.25 dB	55 dB	30W cold switch, 30W hot switch
50S-1820	1P2T	800-2700 MHz	1.2 dB	60 dB	100W cold switch, 30W hot switch
50S-1832	1P2T	960-1300 MHz	0.75 dB	40 dB	200W cold switch, 1kW peak w/ 35 usec pulse

\*Visit our website for an expanded list of models.

[www.jfwindustries.com/switch](http://www.jfwindustries.com/switch)

# Electro-Mechanical RF Switches

## Reflective Switches (Unused ports open)

- All models operate from DC-18 GHz
- Voltage options include +12V, +15V, +24V, +28V
- TTL controlled models available upon request.
- 20 milliseconds typical switching speed



Featured Models* See website for complete specifications and drawings.			
Reflective Models	Type	Max IL	Min Isolation
50S-1313	1P2T failsafe	0.35 dB	60 dB
50S-1360	1P3T normally open	0.5 dB	60 dB
50S-1315	1P4T normally open	0.5 dB	60 dB
50S-1316	1P6T normally open	0.5 dB	60 dB
50S-1317	1P8T normally open	0.8 dB	55 dB
50S-1443	1P12T normally open	0.8 dB	60 dB
50S-1361	Transfer switch	0.5 dB	60 dB

## Absorptive Switches (Unused ports self-terminating into 50 Ohms)

- All models operate from DC-18 GHz
- Voltage options include +12V, +15V, +24V, +28V
- TTL controlled models available upon request.
- 20 milliseconds typical switching speed



Featured Models* See website for complete specifications and drawings.			
Absorptive Models	Type	Max IL	Min Isolation
50S-1603	1P2T failsafe	0.5 dB	60 dB
50S-1657	1P3T normally open	0.5 dB	60 dB
50S-1650	1P4T normally open	0.5 dB	60 dB
50S-1437	1P6T normally open	0.5 dB	60 dB
50S-1614	1P8T normally open	0.5 dB	60 dB

Power Table								
Frequency Range	DC-100 MHz	100-200 MHz	200-500 MHz	500-1000 MHz	1-4 GHz	4-8 GHz	8-12 GHz	12-18 GHz
Max Average RF Power	500 Watts	400 Watts	300 Watts	200 Watts	100 Watts	90 Watts	70 Watts	60 Watts

\*Visit our website for more models.

[www.jfwindustries.com/switch](http://www.jfwindustries.com/switch)



# Resistive Power Dividers / Combiners

## Resistive - Low Power

- Models listed below available with SMA only.
- See website for additional types and connector options (N, BNC, TNC).

Featured Models* See website for complete specifications and drawings.				
Model	Type	Frequency	Power	IL
50PD-016	2-Way	DC-4000 MHz	2W	6 dB
50PD-292	3-Way	DC-4000 MHz	2W	9.5 dB
50PD-293	4-Way	DC-4000 MHz	2W	12 dB
50PD-785	16-Way	DC-2000 MHz	1W	24 dB



## DC-6 GHz Series

SMA female connectors  
1W RF Input Power

Type	Model
2-Way	50PD-478
3-Way	50PD-469
4-Way	50PD-771
5-Way	50PD-732
7-Way	50PD-734
8-Way	50PD-746
9-Way	50PD-760
11-Way	50PD-735



## High Power Models

Up to 200W RF Input Power

Model	Type	Frequency	Power
50PD-377	2-Way	DC-500 MHz	200W
50PD-670	2-Way	DC-3000 MHz	30W
50PD-667	3-Way	DC-3000 MHz	30W
50PD-631	4-Way	DC-2000 MHz	30W



Visit our website for an expanded list of models.

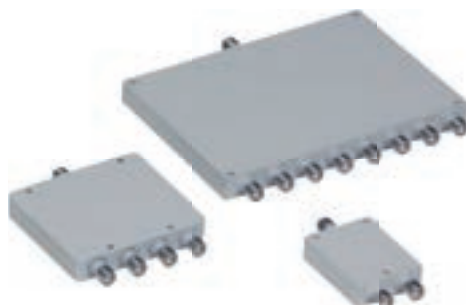
[www.jfwindustries.com/divider](http://www.jfwindustries.com/divider)

# Reactive Power Dividers / Combiners

## Reactive - Low Power

- Several series available that cover common frequency bands
- 5 Watts average power handling when used as a divider
- 20 dB isolation typical

Featured Models* See website for complete specifications and drawings.				
Frequency	Connector	2-Way	4-Way	8-Way
800-2400 MHz	SMA	50PD-559	50PD-560	50PD-570
20-3000 MHz	SMA	50PD-590	50PD-591	50PD-687
698-3000 MHz	SMA	50PD-659	50PD-660	50PD-665
698-3000 MHz	N	50PD-727	50PD-728	50PD-742
2000-6000 MHz	SMA	50PD-634	50PD-638	50PD-647
500-6000 MHz	SMA	50PD-645	50PD-650	50PD-662



## 19" Rack Assemblies

Contact JFW for your custom solution.  
Custom designed in-line w/ catalog pricing.

Model	Description
50PDA-040	24-Way divider in a 3U 19" rack
50PDA-071	8-Way divider in a 1U 19" rack
50PDA-040	4-Way divider in a 1U 19" rack



## High Power Models

Up to 250W RF Input Power  
Various Connectors available (SMA, N, TNC)

Model	Type	Frequency	Power
50PD-700	2-Way	380-400 MHz	200W
50PD-424	2-Way	800-900 MHz	200W
50PD-698	2-Way	700-3000 MHz	100W
50PD-759	4-Way	350-500 MHz	250W



Visit our website for an expanded list of models.

[www.jfwindustries.com/divider](http://www.jfwindustries.com/divider)

# Test Accessories

## Impedance Matching

57Z series	57ZT series	57ZTT series
<b>Typical Specifications</b>		
<b>Resistive Matching Pad</b>	<b>Toroidal Matching Transformer</b>	<b>Microstrip Matching Transformer</b>
Frequency coverage from DC up to 3 GHz	Low Frequency 0.5-1000 MHz	Frequencies starting @ 300 MHz Up to 3 GHz
5.7 dB Insertion Loss	<1 dB Insertion Loss	<1 dB Insertion Loss
1W average	1W average	20W average



## Resistive Coupler

Resistive couplers differ from standard directional couplers in several important ways:

- Minimum coupling value of 20dB
- Couples signal in both directions
- No directivity

Model	Frequency Range	Power
50C-041	DC-2 GHz	5 W
50C-045	DC-6 GHz	1 W
50C-051	DC-3 GHz	2 W



Visit our website for an expanded list of models.

[www.jfwindustries.com/testaccessories](http://www.jfwindustries.com/testaccessories)

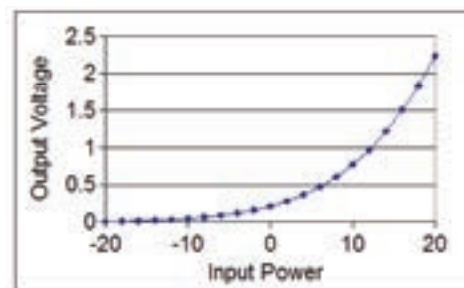


# Test Accessories

## RF Detectors

- Converts an RF signal into a DC voltage level
- The DC voltage level corresponds to the RF signal amplitude

Featured Models* See website for complete specifications and drawings.		
Model	Frequency	Max RF Input Power
50D-050	1-1000 MHz	100 mW
50D-051	1-2000 MHz	100 mW
50D-052	1-3000 MHz	100 mW



## DC Blocks

- Blocks DC voltage while passing RF signal

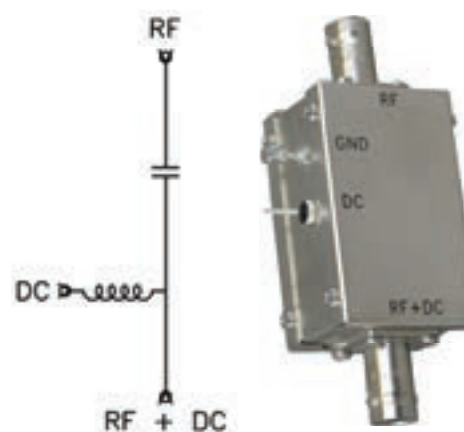
Featured Models* See website for complete specifications and drawings.		
Model	Frequency	Max DC Voltage
50DB-007	10 MHz-18 GHz	200V
50DB-009	10-4000 MHz	50V
50DB-039	200 KHz-2000 MHz	100V



## Bias Taps

- Used to add or remove DC voltage from a coaxial cable

Featured Models* See website for complete specifications and drawings.			
Model	Frequency	DC Voltage	DC Current
50BT-014	800-2500 MHz	150V	5A
50BT-017	100-1750 MHz	200V	2A
50BT-029	250-3000 MHz	100V	1A
50BT-067	10-2200 MHz	100V	4A



Visit our website for an expanded list of models.

[www.jfwindustries.com/testaccessories](http://www.jfwindustries.com/testaccessories)

# Engineering Reference Guide

## Effect of VSWR on Transmitted Power

VSWR	Return Loss (dB)	Trans. Loss (dB)	Volt Refl. Coeff.	Power Trans. (%)	Power Refl. (%)
1.01	46.1	.000	.01	99.9	.0
1.02	40.1	.000	.01	99.9	.0
1.03	36.6	.001	.02	99.9	.0
1.04	34.2	.002	.02	99.9	.0
1.05	32.3	.003	.02	99.9	.1
1.06	30.7	.004	.03	99.9	.1
1.07	29.4	.005	.03	99.9	.1
1.08	28.3	.006	.04	99.9	.1
1.09	27.3	.008	.04	99.8	.2
1.10	26.4	.010	.05	99.8	.2
1.15	23.1	.021	.07	99.5	.5
1.20	20.8	.036	.09	99.2	.8
1.25	19.1	.054	.11	98.8	1.2
1.30	17.7	.075	.13	98.3	1.7
1.40	15.6	.122	.17	97.2	2.8
1.50	14.0	.177	.20	96.0	4.0
1.60	12.7	.238	.23	94.7	5.3
1.70	11.7	.302	.26	93.3	6.7
1.80	10.9	.370	.29	91.8	8.2
1.90	10.2	.440	.31	90.4	9.6
2.00	9.5	.512	.33	88.9	11.1
2.50	7.4	.881	.43	81.6	18.4
3.00	6.0	1.249	.50	75.0	25.0
3.50	5.1	1.603	.56	69.1	30.9
4.00	4.4	1.938	.60	64.0	36.0
4.50	3.9	2.255	.64	59.5	40.5
5.00	3.5	2.553	.67	55.6	44.4
5.50	3.2	2.834	.69	52.1	47.9
6.00	2.9	3.100	.71	49.0	51.0
6.50	2.7	3.351	.73	46.2	53.8
7.00	2.5	3.590	.75	43.7	56.2
7.50	2.3	3.817	.76	41.5	58.5
8.00	2.2	4.033	.78	39.5	60.5
8.50	2.1	4.240	.79	37.7	62.3
9.00	1.9	4.437	.80	36.0	64.0
9.50	1.8	4.626	.81	34.5	65.5
10.00	1.7	4.807	.82	33.1	66.9
11.00	1.6	5.149	.83	30.6	69.4
12.00	1.5	5.466	.85	28.4	71.6
13.00	1.3	5.762	.86	26.5	73.5
14.00	1.2	6.042	.87	24.9	75.1
15.00	1.2	6.301	.88	23.4	76.6
16.00	1.1	6.547	.88	22.1	77.9
17.00	1.0	6.780	.89	21.0	79.0
18.00	1.0	7.002	.89	19.9	80.1
19.00	.9	7.212	.90	19.0	81.0
20.00	.9	7.413	.90	18.1	81.9
25.00	.7	8.299	.92	14.8	85.2
30.00	.6	9.035	.94	12.5	87.5

## Power Conversion Table

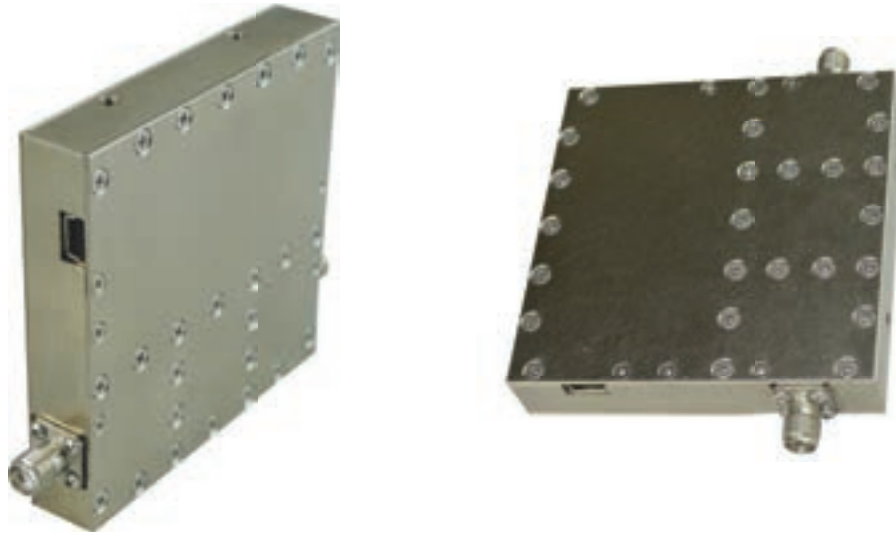
dBm	Milliwatts	dBm	Watts
-20	0.01	25.0	0.32
-19	0.01	25.5	0.35
-18	0.02	26.0	0.40
-17	0.02	26.5	0.45
-16	0.03	27.0	0.50
-15	0.03	27.5	0.56
-14	0.04	28.0	0.63
-13	0.05	28.5	0.71
-12	0.06	29.0	0.79
-11	0.08	29.5	0.89
-10	0.10	30.0	1.00
-9	0.13	30.5	1.12
-8	0.16	31.0	1.26
-7	0.20	31.5	1.41
-6	0.25	32.0	1.58
-5	0.32	32.5	1.78
-4	0.40	33.0	2.00
-3	0.50	33.5	2.24
-2	0.63	34.0	2.51
-1	0.79	34.5	2.82
0	1.00	35.0	3.16
1	1.26	35.5	3.55
2	1.58	36.0	3.98
3	2.00	36.5	4.47
4	2.51	37.0	5.01
5	3.16	37.5	5.62
6	3.98	38.0	6.31
7	5.01	38.5	7.08
8	6.31	39.0	7.94
9	7.94	39.5	8.91
10	10.00	40.0	10.00
11	12.59	40.5	11.22
12	15.85	41.0	12.59
13	19.95	41.5	14.13
14	25.12	42.0	15.85
15	31.62	42.5	17.78
16	39.81	43.0	19.95
17	50.12	43.5	22.39
18	63.10	44.0	25.12
19	79.43	44.5	28.18
20.0	100.0	45.0	31.62
20.5	112.2	45.5	35.48
21.0	125.9	46.0	39.81
21.5	141.3	46.5	44.67
22.0	158.5	47.0	50.12
22.5	177.8	47.5	56.23
23.0	199.5	48.0	63.10
23.5	223.9	48.5	70.79
24.0	251.2	49.0	79.43
24.5	281.8	49.5	89.13
		50.0	100.00

# New Products from JFW Industries

## USB Programmable Attenuator - 50P-2014

The 50P-2014 from JFW Industries is a 200-6000 MHz, solid-state variable attenuator with 0-95 dB of attenuation in 1 dB steps.

It's designed with USB control (via USB Mini-B connector), so it's perfect for research & development labs or other flexible test environments (JFW software included or .dll file for integration into your own applications supplied upon request).



## Low PIM Attenuators and Terminations

JFW is proud to introduce our latest innovation in RF fixed attenuation.

Responding to the growth over the past several years of the need for low PIM RF components, JFW has several models of fixed attenuators and terminations that are specified at -155 dBc minimum (-165 dBc typical). They cover cellular frequencies up to 2700 MHz and are available in several standard values and power levels. Please contact the factory with your requirement.







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