

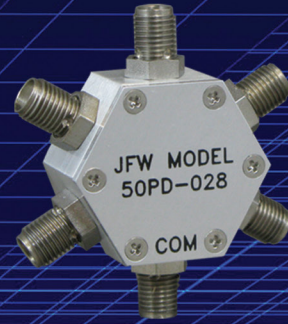
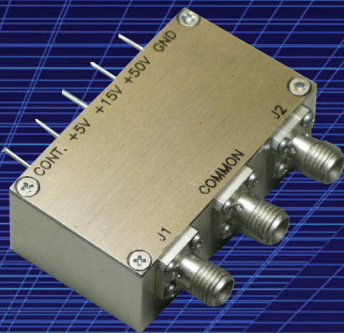
# JFW INDUSTRIES

317-887-1340

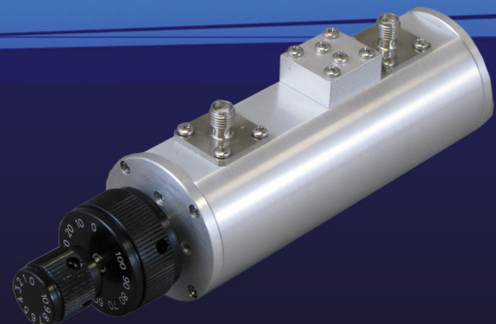
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[www.jfwindustries.com](http://www.jfwindustries.com)

50 OHM  
RF COMPONENTS



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





## 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**

## **JFW's Quality Policy**

***“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.”***

## **JFW's Standard Terms and Conditions**

*JFW Industries, Inc.* has standard terms of Net 30 days with approved credit.

Alternate methods of payment include MASTERCARD,  
American Express, VISA, COD or ADVANCE PAYMENT.

International Payment Terms are ADVANCE PAYMENT or  
MASTERCARD, American Express and VISA.

***Any other payment terms must be negotiated in advance.***

Shipping terms are FOB JFW Ind for Domestic Customers and  
FCA JFW Ind for International Customers.

**ALL SHIPPING CHARGES will be PREPAID and ADDED TO THE INVOICE or  
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## **JFW INDUSTRIES WARRANTY**

JFW PRODUCTS ARE WARRANTED AGAINST DEFECTS IN WORKMANSHIP AND MATERIAL UNDER NORMAL USE AND SERVICE AS FOLLOWS: (2) TWO YEARS FROM DATE OF SHIPMENT FOR ALL FIXED AND SOLID STATE PRODUCTS. (1) ONE YEAR FROM DATE OF SHIPMENT FOR ALL MECHANICAL AND ELECTRO-MECHANICAL PRODUCTS. JFW INDUSTRIES' ONLY OBLIGATION UNDER THIS WARRANTY IS TO REPAIR OR REPLACE, AT ITS FACTORY, ANY JFW PRODUCT OR PART THEREOF THAT IS RETURNED TO JFW INDUSTRIES BY THE ORIGINAL PURCHASER WITHIN THE WARRANTY PERIOD.

THE WARRANTY STATED ABOVE IS YOUR SOLE AND EXCLUSIVE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR FITNESS FOR ANY PARTICULAR PURPOSE. JFW INDUSTRIES SHALL NOT BE LIABLE FOR ANY DIRECT OR CONSEQUENTIAL INJURY, LOSS OR DAMAGE INCURRED THROUGH THE USE, OR INABILITY TO USE, ANY JFW INDUSTRIES PRODUCT.



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**E-mail: [sales@jfwindustries.com](mailto:sales@jfwindustries.com)**

### **JFW International Sales**

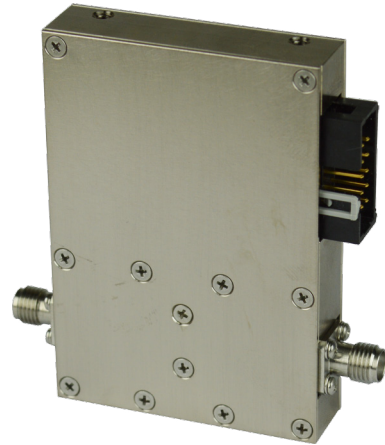
**7 Albion Road  
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Essex, UK SS7 5PU  
Phone +44 7768-662666  
Fax +44 1268-795377**

**E-mail: [simon@jfwindustries.com](mailto:simon@jfwindustries.com)**

# Solid-State Programmable Attenuators

- +20 dBm power handling typical
- Long lifetime solid-state design
- 0.1, 0.25, 0.5, 1, 10 dB step sizes available
- Guaranteed monotonic

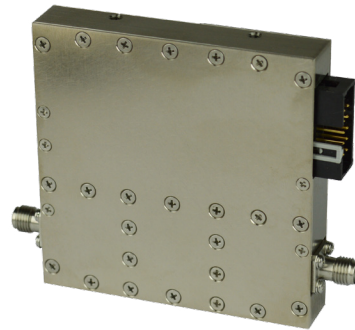
Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50P-1867	0-31.75 x 0.25 dB	30-3000 MHz	2.5 dB
50P-1891	0-63.5 x 0.5 dB	30-3000 MHz	4.0 dB
50P-1893	0-63 x 1 dB	30-3000 MHz	4.0 dB
50P-1897	0-95 x 1 dB	30-3000 MHz	6.0 dB
50P-1782	0-127 x 1 dB	15-2000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

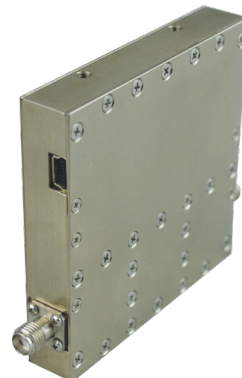
Featured Models*		
Model	Range	Max IL
50P-1855	0-31.5 x 0.5 dB	3.5 dB
50P-1853	0-63 x 1 dB	5.5 dB
50P-1857	0-95 x 1 dB	8.0 dB



## USB Control Series

- 200-6000 MHz
- +20 dBm power handling
- Includes windows-based control software
- Simultaneously control up to 8 units

Featured Models*		
Model	Range	Max IL
50P-2038	0-31 x 1 dB	3.2 dB
50P-2013	0-63 x 1 dB	5.5 dB
50P-2014	0-95 x 1 dB	8.0 dB



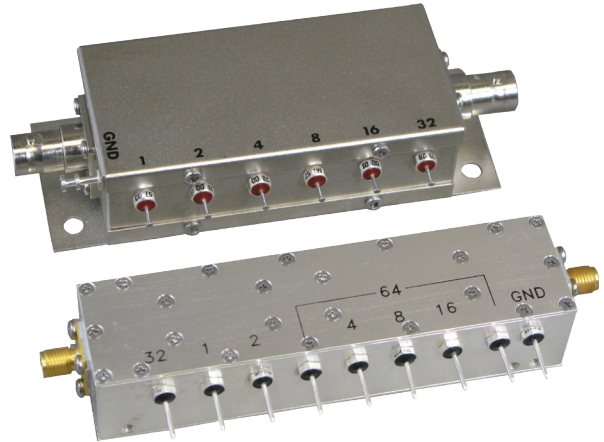
\*Visit our website for an expanded list of models.

[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)

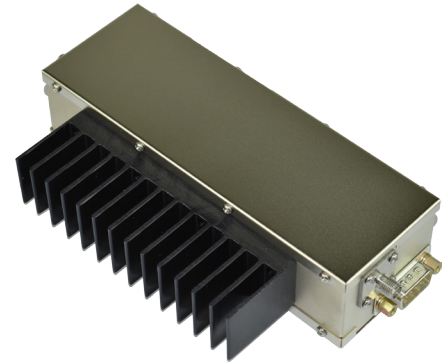
Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50P-542	0-10 x 1 dB	DC-2800 MHz	3.0 dB
50P-1978	0-63 x 1 dB	DC-2700 MHz	4.0 dB
50P-1224	0-63.5 x 0.5 dB	DC-3000 MHz	4.5 dB
50P-1633	0-64.5 x 0.1 dB	DC-1000 MHz	4.0 dB
50P-591	0-85 x 1 dB	DC-3000 MHz	4.5 dB
50P-1976	0-127 x 1 dB	DC-1000 MHz	2.0 dB



## 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

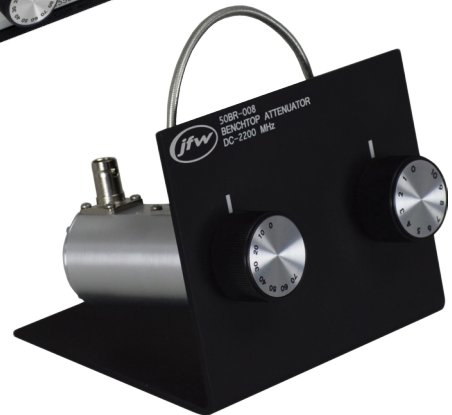
Featured Models* See website for complete specifications and drawings.			
Model	Range	Frequency	Max IL
50R-028	0-1 x 0.1 dB	DC-1000 MHz	1.0 dB
50R-215	0-1 x 0.1 dB	DC-2200 MHz	1.0 dB
50R-249	0-1 x 0.1 dB	DC-2500 MHz	1.0 dB
50R-019	0-10 x 1 dB	DC-2200 MHz	0.4 dB
50R-248	0-10 x 1 dB	DC-2500 MHz	0.5 dB
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-397	0-70 x 10 dB	DC-3000 MHz	0.8 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
50BR-148	0-80 x 1 dB	DC-3000 MHz	1.9 dB
50BR-147	0-110 x 1 dB	DC-3000 MHz	3.0 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)

# 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	Square
50FHAO	DC-3 GHz	100W, 150W, 200W	Round
50HF	DC-6 GHz	100W	Square
50FH	DC-2 GHz	300W	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 & Mismatches

## Low Power

- See website for complete listing of low power terminations/mismatches
- Many models available with beadchain

Featured Models* See website for complete specifications and drawings.			
Model	Frequency	Power	Connector
50T-001	DC-2.2 GHz	1W	BNC male
50T-215	DC-4 GHz	2W	TNC 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



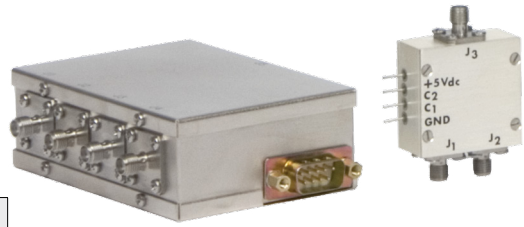
Many terminations also available in mismatch version. \*See website for more details.

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

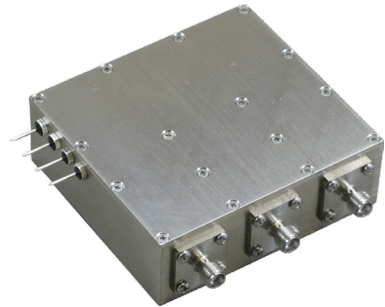
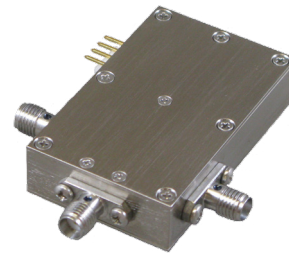


# Solid-State RF Switches

- 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-2064	1P1T	5-2000 MHz	2.75 dB	55 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.

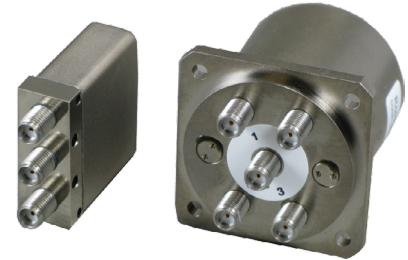
[www.jfwindustries.com/switch](http://www.jfwindustries.com/switch)

# 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-1638	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.

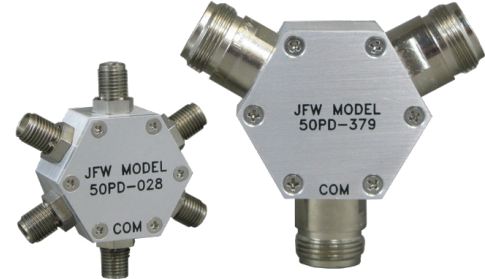
[www.jfwindustries.com/switch](http://www.jfwindustries.com/switch)

# Resistive Power Dividers / Combiners

## 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

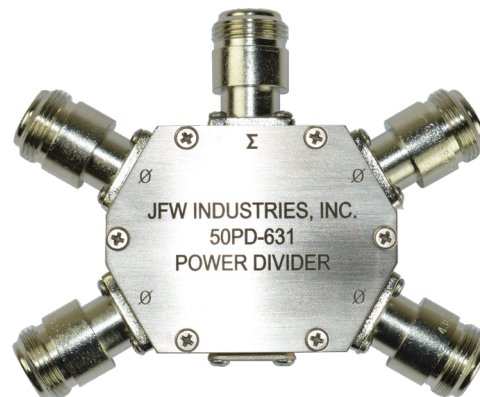
Type	Model
2-Way	50PD-478
3-Way	50PD-469
4-Way	50PD-771
5-Way	50PD-732
7-Way	50PD-734
8-Way	50PD-746
9-Way	50PD-760
11-Way	50PD-735



## 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.

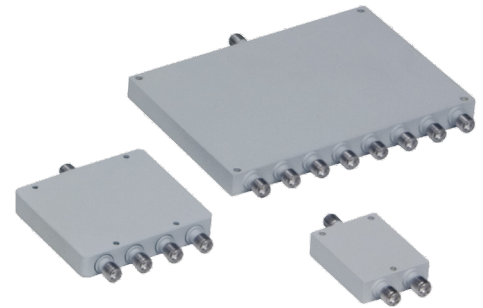
[www.jfwindustries.com/divider](http://www.jfwindustries.com/divider)

# Reactive Power Dividers / Combiners

## 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

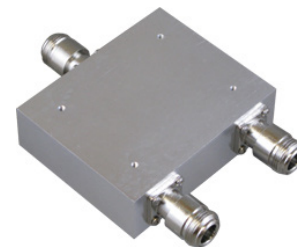
Model	Description
50PDA-040	24-Way divider in a 3U 19" rack
50PDA-071	8-Way divider in a 1U 19" rack
50PDA-096	4-Way divider in a 1U 19" rack



## 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 - See website for complete specifications and drawings</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	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)

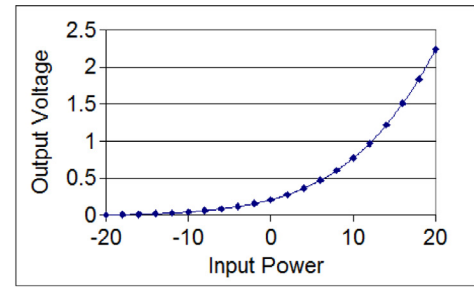
# Test Accessories

## 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

Typical Response



## DC Blocks

- Blocks DC voltage while passing RF signal
- All models listed are "Inner Only"

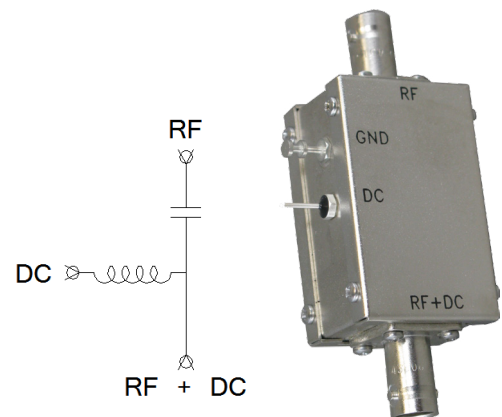
Featured Models* See website for complete specifications and drawings.		
Model	Frequency	Max DC Voltage
50DB-007	10 MHz-18 GHz	200V
50DB-009	10-4000 MHz	50V
50DB-039	200 KHz-2000 MHz	100V



## 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)

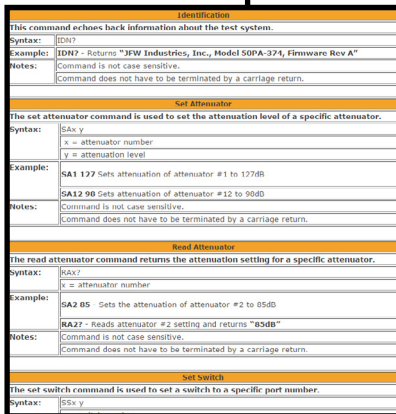
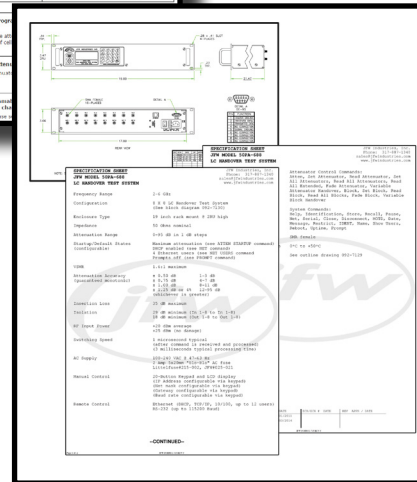
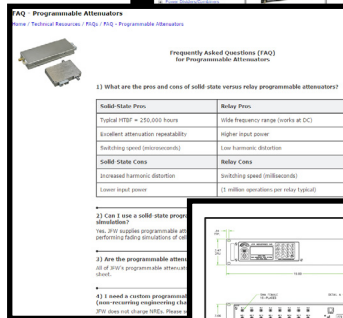
# Additional Info and Support

Many interactive tools can be found on JFW's website.

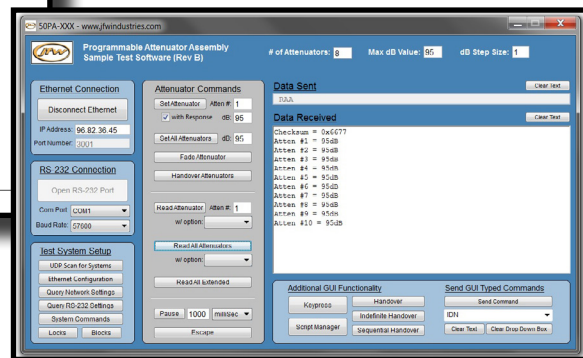
[www.jfwindustries.com](http://www.jfwindustries.com)

## Some samples include:

- Find detailed specifications and drawings
- Request new quotes
- Email engineering
- Answers to frequently asked questions
- Access our free RF Conversion Tool
- Buy Online
- Information about 75 Ohm products
- Information about custom RF Test Systems



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# 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

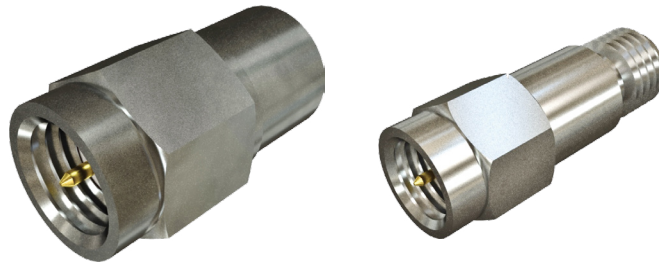
dBm	Milliwatts	dBm	Watts
-20	0.01	25.0	0.32
-19	0.01	25.5	0.35
-18	0.02	26.0	0.40
-17	0.02	26.5	0.45
-16	0.03	27.0	0.50
-15	0.03	27.5	0.56
-14	0.04	28.0	0.63
-13	0.05	28.5	0.71
-12	0.06	29.0	0.79
-11	0.08	29.5	0.89
-10	0.10	30.0	1.00
-9	0.13	30.5	1.12
-8	0.16	31.0	1.26
-7	0.20	31.5	1.41
-6	0.25	32.0	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

## 40 GHz FIXED ATTENUATOR and TERMINATION

Introducing the 50HFAH-XX 2.9mm and 50T-274 2.9mm M, JFW's first ever DC-40 GHz fixed attenuators and RF terminations.

The 50T-274 2.9mm M is rated at 1 Watt and has an impressive VSWR of 1.2:1 maximum, while the 50FHAH series of attenuators handles 0.5 Watts with a maximum VSWR of 1.4:1. Both come standard with 2.9mm connectors (attenuators are male/female, terminations are male).



## 3 GHz and 3.6 GHz ROTARY ATTENUATORS

Introducing JFW's newest family of manual, rotary attenuators... now offering more attenuation than ever before at 3 GHz and beyond. The single-rotor, 50R-397 is DC-3 GHz with 0-70 dB in 10 dB steps; while our bench-top assembly, the 50BR-147 allows for up to 110 dB in 1 dB increments.

This family also includes two versions of our versatile dual-rotary attenuators, which can be easily integrated into RF systems for OEM or test applications. The 50DR-143 offers 0-80 dB x 1 dB of attenuation from DC-3 GHz and the 50DR-141 goes all the way from DC-3.6 GHz with a dynamic range of 0-40 dB in 1 dB steps.





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