MECA

Microwave Equipment & Components of America

D.A.S. Equipment
Low PIM Components
Power Divider/Combiners
Unequal Splitters/Tappers
Directional & Hybrid Couplers
DC Blocks & Bias Tees
Terminations
Attenuators
Integrated Assemblies
Circulators & Isolators
Jumpers & Adapters

Dr. D.A.S. © Prescribes...

www.e-MECA.com

Short Form Catalog

Issue #10

About MECA Electronics, Inc.

MECA (Microwave Equipment Components of America) was founded in 1961 to serve the microwave industry specific to passive components DC - 40GHz. MECA Electronics, Inc. is a privately-held, ISO 9001:2008 Certified, global designer and manufacturer of products for the communications market.

MECA is recognized worldwide as a primary source of supply for American-made, RUGGED & RELIABLE, equipment components to commercial OEMs, Medical, Service Providers and Installers but has also kept true to the original business focus of supporting military applications with products for HF through Ku band applications.

MECA designs and manufactures an exstensive line of RF/ Microwave components with industry leading performance and unless otherwise noted, all of our products are produced locally in the USA;

- Fixed & Variable Attenuators (2 - 250 Watts up to 40 GHz)
- Jumpers & Adapters (In-Series, Between Series, and Low PIM)
- Circulators & Isolators (2 - 250 Watts, up to 40GHz)
- Couplers (Single & Dual-Directional, 3 dB Hybrids)
- DC Blocks & Bias Tees
- Integrated Assemblies (Enclosures, 1 to 4 RU, 19" rack mounts)
- Power Dividers/Combiners (5MHz - 40GHz, 2 - 120 Watts)
- Terminations (1 - 500 Watts up to 40GHz)

We are proud to introduce our recent release of LOW PIM products. Terminations (up to 250 Watts & -165 dBc typical) rated at FULL POWER to +85°C across the 698 - 2700MHz frequency band. As well as our Unequal Splitters (500W avg power handling, -155 dBc typical).

Extensive distribution channels have increased MECA's domestic and global presence to a large extent; however, the key to sucessfully delivereing products to the field ON TIME, EVERY TIME continues to be MECA's unique ability to manufacture cost-effective products without reliance on foreign materials and labor.
MECA's Value Position = Time to market!

Most models available to ship from STOCK - 4 weeks ARO and custom applications in just 4 to 6 weeks ARO.

The quality and consistency of our products differentiates us from the countless start-up companies and brokers who only buy & resell off-shore materials and is the reason why we proudly offer a 36-month warranty on ALL of our components! MECA also differentiates itself by providing customized brackets, mounting plates and integrated assemblies on 19" rack panels/shelves. This is why MECA is recognized by OEMs and Carriers as a primary source of supply for passive components.

Got questions? Need answers? Our applications team has valuable systems insight from years of experience with engineers, program managers and equipment installers specifying components for your programs & deployments.

MECA's Quality Policy
To provide continuous quality improvement and customer satisfaction - by building quality into every product - by every employee - every step of the way - for the benefit of our customers.

MECA 1960´s

Founder: Ronald Davo

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Table of Contents

MECA Electronics, Inc.
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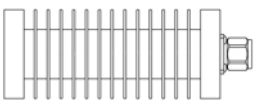
Low PIM Loads

Max Power (Watts)	Series	Connector	Freq (GHz)	PIM (dBc) Typ	L" x OD"
10	LPT10-NM	N-M	0.380 - 2.700	<-175*	6.11 x 1.25
10	LPT10-NF	N-F	0.380 - 2.700	<-175*	6.13 x 1.25
10	LPT10-DM	7/16 DIN-M	0.380 - 2.700	<-175*	6.71 x 1.63
10	LPT10-DF	7/16 DIN-F	0.380 - 2.700	<-175*	6.30 x 1.63
10	LPT10-MDM	4.1/9.5 M	0.380 - 2.700	<-175*	6.21 x 1.25
10	LPT10-MDF	4.1/9.5 F	0.380 - 2.700	<-175*	5.88 x 1.25
30	LPT30-NM	N-M	0.380 - 2.700	<-160	6.30 x 2.25
30	LPT30-NF	N-F	0.380 - 2.700	<-160	6.38 x 2.25
30	LPT30-DM	7/16 DIN-M	0.380 - 2.700	<-160	6.76 x 2.25
30	LPT30-DF	7/16 DIN-F	0.380 - 2.700	<-160	7.17 x 2.25
50	LPTC50-NM	N-M	0.380 - 2.700	<-160	6.30 x 2.25
50	LPTC50-NF	N-F	0.380 - 2.700	<-160	6.38 x 2.25
50	LPTC50-DF	7/16 DIN-F	0.380 - 2.700	<-160	6.76 x 2.25
50	LPTC50-DM	7/16 DIN-M	0.380 - 2.700	<-160	7.17 x 2.25
50	LPT50-NM	N-M	0.380 - 2.700	<-165	9.30 x 3.00
50	LPT50-NF	N-F	0.380 - 2.700	<-165	9.38 x 3.00
50	LPT50-DM	7/16 DIN-M	0.380 - 2.700	<-165	9.76 x 3.00
50	LPT50-DF	7/16 DIN-F	0.380 - 2.700	<-165	9.35 x 3.00
100	LPTC100-NM	N-M	0.380 - 2.700	<-165	9.30 x 3.00
100	LPTC100-NF	N-F	0.380 - 2.700	<-165	9.38 x 3.00
100	LPTC100-DM	7/16 DIN-M	0.380 - 2.700	<-165	9.76 x 3.00
100	LPTC100-DF	7/16 DIN-F	0.380 - 2.700	<-165	9.35 x 3.00
100	LPTC100-MDM	4.1/9.5-DIN-M	0.380 - 2.700	<-165	9.40 x 3.00
100	LPTC100-MDF	4.1/9.5-DIN-F	0.380 - 2.700	<-165	9.13 x 3.00
100	LPT100-NM	N-M	0.380 - 2.700	<-165	12.80 x 4.00
100	LPT100-NF	N-F	0.380 - 2.700	<-165	12.88 x 4.00
100	LPT100-DM	7/16 DIN-M	0.380 - 2.700	<-165	13.26 x 4.00
100	LPT100-DF	7/16 DIN-F	0.380 - 2.700	<-165	12.85 x 4.00
250	LPT250-NM	N-M	0.380 - 2.700	<-165	12.80 x 4.00
250	LPT250-NF	N-F	0.380 - 2.700	<-165	12.88 x 4.00
250	LPT250-DM	7/16 DIN-M	0.380 - 2.700	<-165	13.26 x 4.00
250	LPT250-DF	7/16 DIN-F	0.380 - 2.700	<-165	12.85 x 4.00

* Tested based on maximum power dissipation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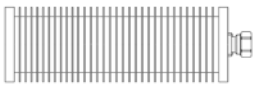
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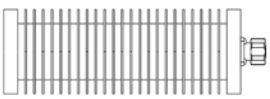
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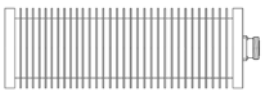
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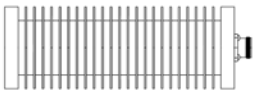
LPTC100-MDF

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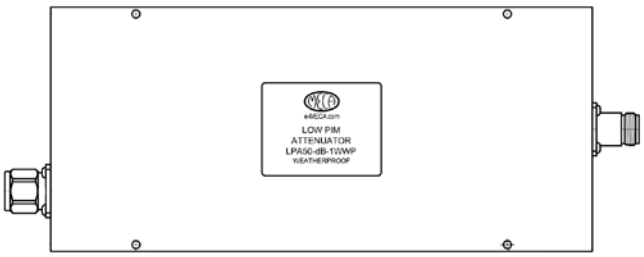
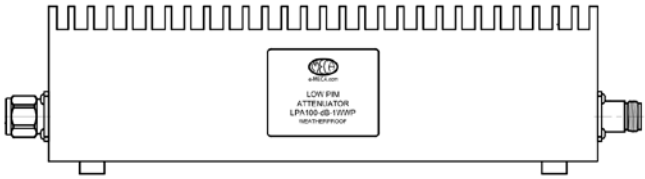
Low PIM Attenuators

Series	Max Power (W)	Freq (GHz)	Connector	PIM (dBc) Typ	L" x D" x W"
LPA50-dB-1WWP	50	0.698 - 2.700	N-M to N-F	<-160	11.94 x 4.35 x 6.4
LPA50-dB-11WWP	50	0.698 - 2.700	7/16 DIN M to 7/16 DIN-F	<-160	12.31 x 4.35 x 6.4
LPA50-dB-14WWP	50	0.698 - 2.700	4.1/9.5 M to 4.1/9.5 F	<-160	11.73 x 4.35 x 6.4
LPA100-dB-1WWP	100	0.698 - 2.700	N-M to N-F	<-160	12.84 x 4.75 x 11.0
LPA100-dB-11WWP	100	0.698 - 2.700	7/16 DIN M to 7/16 DIN-F	<-160	13.21 x 4.75 x 11.0
LPA100-dB-14WWP	100	0.698 - 2.700	4.1/9.5 M to 4.1/9.5 F	<-160	12.63 x 4.75 x 11.0



LPA50-dB-1WWP



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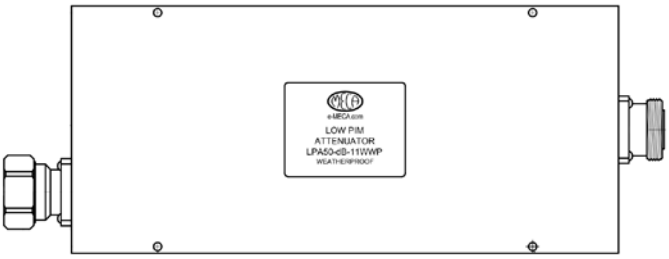

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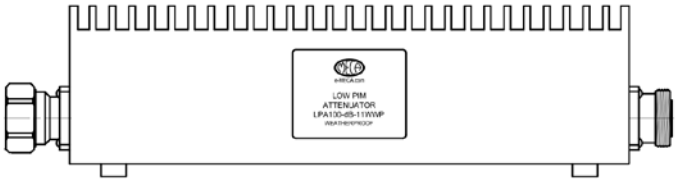
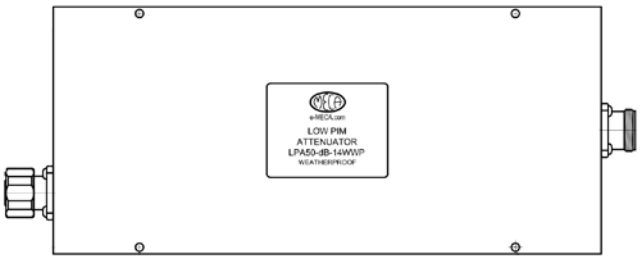


LPA100-dB-11WWP



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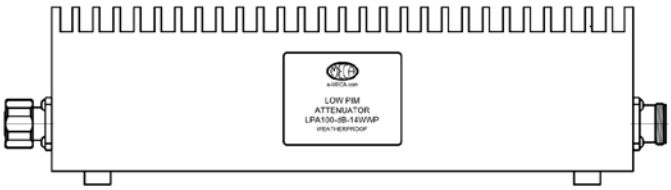
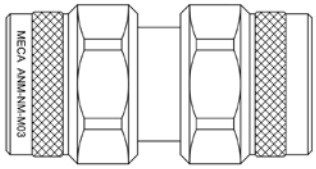


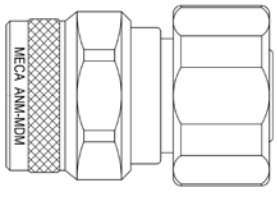
LPA100-dB-14WWP

Low PIM Adapters

Series	Freq (GHz)	Connector	PIM (dBc) Typ	L" x OD"
ANM-NM-M03	Hz - 12.4	N-M to N-M	<-165	1.60 x 0.812
ARNM-NF-M01	Hz - 11.0	N-M to N-F	<-160	1.45 x 1.32
ANF-NF-M02	Hz - 12.4	N-F to N-F	<-165	1.75 x 0.66
ANM-SM-M03	Hz - 18.0	N-M to SMA-M	<-160	1.29 x 0.812
ANM-SF-M02	Hz - 12.4	N-M to SMA-F	<-160	1.24 x 0.812
ANF-SM-M02	Hz - 11.0	N-F to SMA -M	<-160	1.36 x 0.67
ANF-SF-M02	Hz - 18.0	N-F to SMA-F	<-160	1.32 x 067
ADM-DM-M01	Hz - 8.0	7/16-M to 7/16-Ma	<-165	1.37 x 1.88
ADF-DF-M01	Hz - 8.0	7/16-F to 7/16-F	<-165	1.14 x 1.25
ADM-DF-M01	Hz - 8.0	7/16-M to 7/16-F	<-165	1.57 x 1.25
ANM-DF-M01	Hz - 8.0	N-M to DIN-F	<-160	1.95 x 1.25
ANF-DF-M01	Hz - 7.5	N-F to 7/16-F	<-160	1.14 x 1.95
ANF-DM-M01	Hz - 8.0	N-F to 7/16-M	<-165	1.37 x 2.27
ANM-DM-M01	Hz - 8.0	N-M to 7/16-M	<-160	1.37 x 1.95
ANF-SM-M01	Hz - 12.4	N-F to SMA-M	<-165	1.60 x 0.82
ANF-SF-M01	Hz - 12.4	N-F to SMA-F	<-165	1.60 x 0.82
ANM-SM-M01	Hz - 12.4	N-M to SMA-M	<-165	1.60 x 0.82
ANM-SF-M01	Hz - 12.4	N-M to SMA-F	<-165	1.60 x 0.82
ADM-SM-M01	Hz - 8.0	7/16 DIN-M to SMA-M	<-160	1.37 x 1.95
ADM-SF-M01	Hz - 8.0	7/16 DIN-M to SMA-F	<-160	1.37 x 1.95
ADF-SM-M01	Hz - 8.0	7/16 DIN-F to SMA-M	<-160	1.37 x 1.95
ADF-SF-M01	Hz - 8.0	7/16 DIN-F to SMA-F	<-160	1.37 x 1.95
ANM-MDM	Hz - 14.0	N-M to 4.1/9.5 M	<-160	1.37 x 0.86
ANM-MDF	Hz - 14.0	N-M to 4.1/9.5 F	<-160	1.60 x 0.86
ANF-MDM	Hz - 14.0	N-F to 4.1/9.5 M	<-160	1.69 x 0.92
ANF-MDF	Hz - 14.0	N-F to 4.1/9.5 F	<-160	1.93 x 4.1/9.5
ADM-MDM	Hz - 8.0	7/16 DIN-M to 4.1/9.5-M	<-160	1.37 x 4.1/9.5
ADF-MDM	Hz - 8.0	7/16 DIN-F to 4.1/9.5-M	<-160	1.48 x 0.92
ADM-MDF	Hz - 8.0	7/16 DIN-M to 4.1/9.5-F	<-160	2.03 x 1.37
ADF-MDF	Hz - 8.0	7/16 DIN-F to 4.1/9.5-F	<-160	1.71 x 4.1/9.5



ANM-NM-M03



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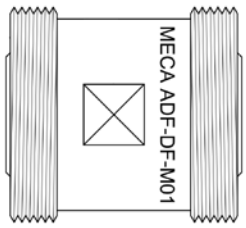

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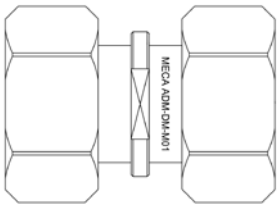

ADM-DM-M01

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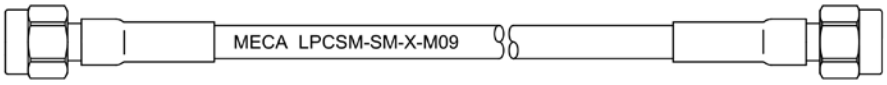
Low PIM Assemblies

SMA-Male to SMA-Male					
Series	**Freq (GHz)**	**Connector**	**PIM (dBc) Typ**	**Cable Type**	**L”**
LPCSM-SM-36-M09	Hz - 6.0	SMA-M to SMA-M	<-155	SRX141	36
LPCSM-SM-72-M09	Hz - 6.0	SMA-M to SMA-M	<-155	SRX141	72
N-Male to N-Male					
Series	**Freq (GHz)**	**Connector**	**PIM (dBc) Typ**	**Cable Type**	**L”**
LPCNM-NM-36-M09	Hz - 6.0	N-M to N-M	<-155	SRX141	36
LPCNM-NM-72-M09	Hz - 6.0	N-M to N-M	<-155	SRX141	72
SMA-Male to N-Male					
Series	**Freq (GHz)**	**Connector**	**PIM (dBc) Typ**	**Cable Type**	**L”**
LPCSM-NM-36-M09	Hz - 6.0	SMA-M to N-M	<-155	SRX141	36
LPCSM-NM-72-M09	Hz - 6.0	SMA-M to N-M	<-155	SRX141	72
4.1/9.5 Mini DIN Male to 4.1/9.5 Mini DIN Male					
Series	**Freq (GHz)**	**Connector**	**PIM (dBc) Typ**	**Cable Type**	**L”**
LPMDM-MDM-36-M09	Hz - 6.0	4.1/9.5-M to 4.1/9.5-M	<-155	T402/SRX141	36
LPMDM-MDM-72-M09	Hz - 6.0	4.1/9.5-M to 4.1/9.5-M	<-155	T402/SRX141	72



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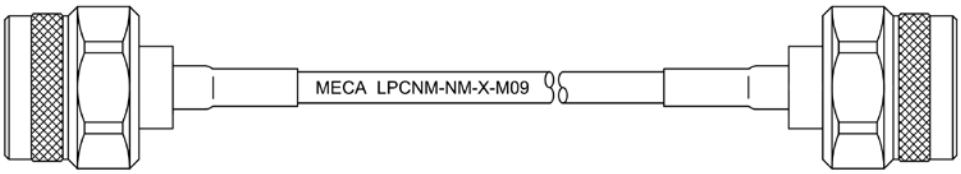

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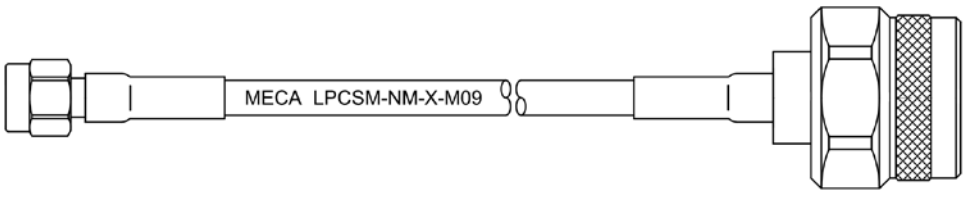
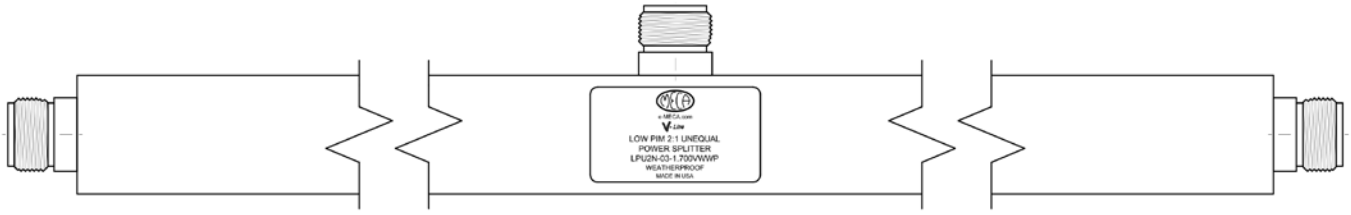


LPCSM-NM-X-M09

Low PIM Tappers

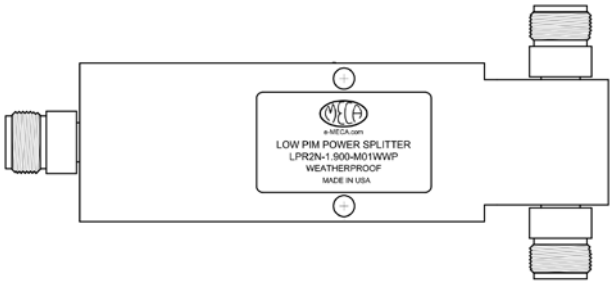
Series	Split Ratio	Freq (GHz)	Connector	PIM (dBc) Typ	Max Power (W)	L" x W x H"
LPU2N-03-1.700VWWP	2:1 / 3.0 dB	0.698 - 2.700	N-F	<-155	300	14.21 x 1.59 x 1.00
LPU2N-05-1.700VWWP	3:1 / 4.78 dB	0.698 - 2.700	N-F	<-155	300	14.21 x 1.59 x 1.00
LPU2N-06-1.700VWWP	4:1 / 6.0 dB	0.698 - 2.700	N-F	<-155	300	14.21 x 1.59 x 1.00
LPU2N-08-1.700VWWP	6:1 / 7.8 dB	0.698 - 2.700	N-F	<-155	300	14.21 x 3.19 x 1.00
LPU2N-09-1.700VWWP	8:1 / 9.03 dB	0.698 - 2.700	N-F	<-155	300	14.21 x 3.19 x 1.00
LPU2N-10-1.700VWWP	10:1 / 10.0 dB	0.698 - 2.700	N-F	<-155	300	14.21 x 3.19 x 1.00



LPU2N-03-1.700VWWP

Low PIM Dividers

Series	Split	Freq (GHz)	Connector	PIM (dBc) Typ	Max Power (W)	L" x W x H"
LPR2N-1.900-M01WWP	2-way	0.698 - 2.700	N-F	<-153	500	6.03 x 2.73 x 0.87
LPR2MD-1.900-M01WWP	2-way	0.698 - 2.700	4.1/9.5-F	<-153	700	6.35 x 2.95 x 1.60
LPR2D-1.900-M01WWP	2-way	0.698 - 2.700	7/16 DIN-F	<-153	700	6.38 x 3.01 x 1.60
LPR3N-1.900-M01WWP	3-way	0.698 - 2.700	N-F	<-153	500	6.77 x 2.73 x 0.87
LPR3MD-1.900-M01WWP	3-way	0.698 - 2.700	4.1/9.5-F	<-153	700	7.14 x 2.95 x 1.60
LPR3D-1.900-M01WWP	3-way	0.698 - 2.700	7/16 DIN-F	<-153	700	7.20 x 3.43 x 1.60



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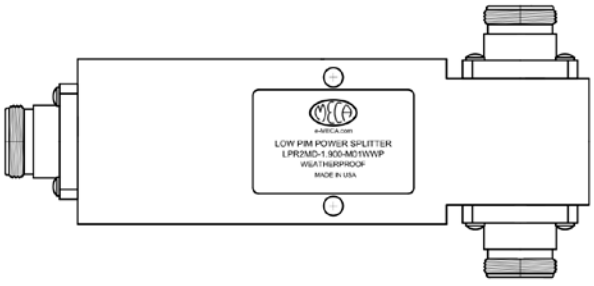

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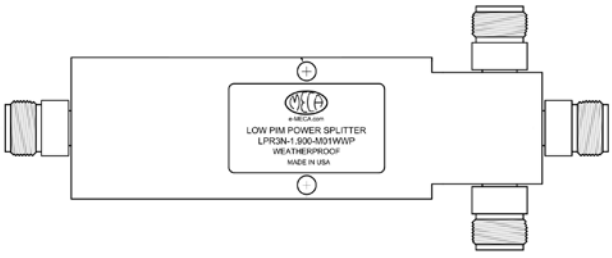
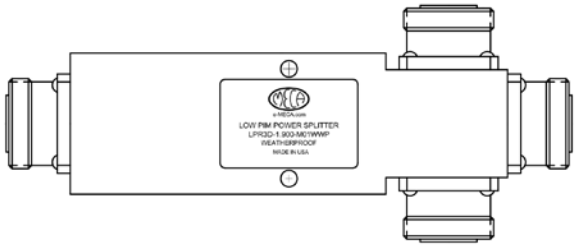


LPR3N-1.900-M01WWP



LPR3D-1.900-M01WWP

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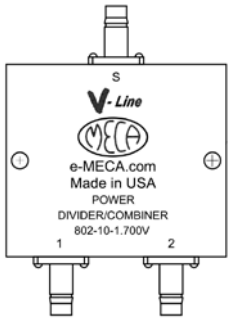
Power Dividers/Combiners

2-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (W)**	**L" x W" x H"**
802-X-0.252	2-way	0.005 - 0.500	SMA, N, TNC & BNC-F	2	2.00 x 2.00 x 0.75*
H2X-0.260WWP	2-way	0.020 - 0.500	SMA & N-F	100	4.03 x 2.50 x 0.90*
H2X-0.252WWP	2-way	0.050 - 0.500	SMA & N-F	100	4.03 x 2.50 x 0.90*
H2X-0.460	2-way	0.400 - 0.520	SMA & N-F	80	2.00 x 2.50 x 1.00*
802-2-0.600-M01	2-way	0.400 - 0.800	SMA-F	20	2.96 x 2.00 x 0.75
802-4-0.600	2-way	0.400 - 0.800	N-F	20	3.48 x 2.00 x 0.75
H2X-0.670	2-way	0.380 - 0.960	SMA & N-F	80	3.98 x 2.50 x 1.00*
H2X-0.900	2-way	0.800 - 1.000	SMA & N-F	80	1.50 x 2.50 x 1.00*
802-2-0.900	2-way	0.800 - 1.000	SMA-F	20	2.60 x 1.50 x 0.44
802-4-0.900	2-way	0.800 - 1.000	N-F	20	3.48 x 2.00 x 0.75
DC802-2-1.500V	2-way	0.800 - 2.200	SMA-F	20	2.60 x 1.50 x 0.44
DC802-4-1.500V	2-way	0.800 - 2.200	N-F	20	3.48 x 2.00 x 0.75
H2XX-1.500VWWP	2-way	0.800 - 2.200	4.1/9.5 & 7/16 DIN-F	80	2.50 x 3.13 x 1.60*
H2X-1.500V	2-way	0.800 - 2.200	SMA & N-F	80	2.50 x 2.50 x 1.00*
802-2-1.500V	2-way	0.800 - 2.200	SMA-F	20	2.60 x 1.50 x 0.44
802-X-1.500V	2-way	0.800 - 2.200	N, TNC & BNC-F	20	2.00 x 2.00 x 0.75*
M2N-1.500W	2-way	0.800 - 2.200	SMA-F	75	2.00 x 2.00 x 0.75*
M2S-1.500W	2-way	0.800 - 2.200	N-F	75	2.00 x 2.00 x 0.75*
H2N-1.950	2-way	1.700 - 2.200	N-F	80	2.98 x 2.50 x 1.00
802-X-1.700V	2-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	1.75 x 2.00 x 0.75*
802-XX-1.700V	2-way	0.698 - 2.700	QMA & RP TNC-F	40	1.75 x 2.00 x 0.75*
P2X-1.700V	2-way	0.698 - 2.700	SMA & N-F	40	2.00 x 2.00 x 0.75*
802-2-1.950	2-way	1.700 - 2.200	SMA-F	20	2.10 x 1.50 x 0.44
802-4-1.950	2-way	1.700 - 2.200	N-F	20	2.98 x 2.0 x 0.75
802-2-2.100	2-way	1.500 - 2.700	SMA-F	20	2.10 x 1.50 x 0.44
802-4-2.100	2-way	1.500 - 2.700	N-F	20	2.98 x 2.0 x 0.75

* Not including connectors

802-2-1.500V



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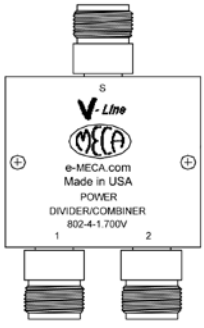

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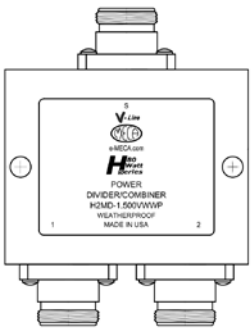

H2MD-1.500VWWP

Theoretical power split (dB) for "n-way" power divider							
2-Way	3-Way	4-Way	6-Way	8-Way	9-Way	12-Way	16-Way
3.01	4.77	6.02	7.78	9.03	9.54	10.79	12.04

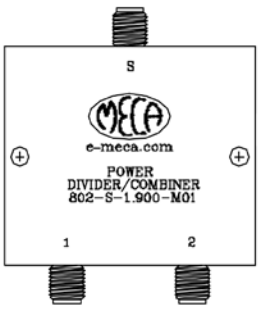
Power Dividers/Combiners

2-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
802-S-1.900-M01	2-way	0.800 - 3.000	SMA-F	20	2.35 x 2.0 x 0.44
802-4-1.900	2-way	0.800 - 3.000	N-F	20	3.23 x 2.0 x 0.75
802-6-1.900-M01	2-way	0.800 - 3.000	TNC-F	20	2.75 x 2.0 x 0.75
P2X-2.450WWP	2-way	2.400 - 2.500	SMA & N-F	20	1.68 x 1.68 x 0.75*
802-2-2.500	2-way	1.000 - 4.000	SMA-F	20	2.60 x 1.50 x 0.44
802-2-3.000	2-way	2.000 - 4.000	SMA-F	20	2.10 x 1.50 x 0.44
802-4-3.100	2-way	2.000 - 4.200	N-F	20	2.98 x 2.00 x 0.75
802-2-4.000-M01	2-way	3.000 - 5.000	SMA-F	20	2.25 x 1.50 x 0.50
802-2-5.000	2-way	2.000 - 8.000	SMA-F	20	2.75 x 1.50 x 0.50
P2X-5.500WWP	2-way	4.900 - 6.000	SMA & N-F	20	1.68 x 1.68 x 0.75*
802-2-6.000	2-way	4.000 - 8.000	SMA-F	20	1.55 x 1.04 x 0.40
802-4-6.100	2-way	5.600 - 6.600	N-F	20	2.98 x 2.00 x 0.75
802-3-9.000	2-way	DC - 18.000	2.92mm-F	1	1.04 x 1.06 x 0.375
802-2-9.700	2-way	7.000 - 12.400	SMA-F	20	1.55 x 1.04 x 0.40
802-2-11.500-M01	2-way	4.000 - 18.000	SMA-F	20	1.55 x 1.04 x 0.40
802-2-10.000	2-way	2.000 - 18.000	SMA-F	20	2.38 x 1.0 x 0.38
802-2-13.000	2-way	8.000 - 18.000	SMA-F	20	1.75 x 1.0 x 0.50
802-3-13.250	2-way	DC - 26.500	2.92mm-F	1	1.04 x 1.06 x 0.375
802-2-15.000	2-way	12.000 - 18.000	SMA-F	20	1.55 x 1.04 x 0.40
802-2-16.250	2-way	6.000 - 26.500	SMA-F	30	0.80 x 1.06 x 0.38

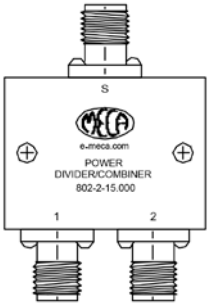
* Not including connectors

802-2-11.500-M01

802-2-10.000



802-S-1.900-M01



802-2-15.000

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Power Dividers/Combiners

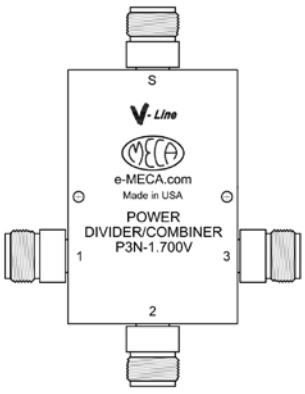
3-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
803-X-0.252	3-way	0.005 - 0.500	SMA, N, TNC & BNC-F	2	2.0 x 2.75 x 0.75*
H3N-0.460	3-way	0.400 - 0.520	N-F	120	4.48 x 3.50 x 1.00
803-2-0.600-M01	3-way	0.400 - 0.800	SMA-F	20	3.96 x 3.00 x 0.75
803-4-0.600	3-way	0.400 - 0.800	N-F	20	4.48 x 2.75 x 0.75
H3N-0.900	3-way	0.800 - 0.960	N-F	120	3.73 x 2.50 x 1.00
803-2-0.900	3-way	0.800 - 1.000	SMA-F	20	2.90 x 2.0 x 0.44
803-4-0.900	3-way	0.800 - 1.000	N-F	20	3.48 x 2.75 x 0.75
M3N-0.900	3-way	0.800 - 1.000	N-F	50	3.48 x 2.75 x 0.75
H3N-1.950	3-way	1.700 - 2.200	N-F	120	3.98 x 3.50 x 1.00
DC803-2-1.500V	3-way	0.800 - 2.200	SMA-F	20	3.10 x 1.75 x 0.44
DC803-4-1.500V	3-way	0.800 - 2.200	N-F	20	3.48 x 2.75 x 0.75
803-2-1.500V	3-way	0.800 - 2.200	SMA-F	20	3.10 x 1.75 x 0.44
803-X-1.500V	3-way	0.800 - 2.200	N, TNC & BNC-F	20	2.50 x 2.75 x 0.75*
803-X-1.700V	3-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	3.00 x 3.00 x 0.75*
803-XX-1.700V	3-way	0.698 - 2.700	QMA & RP TNC-F	40	3.00 x 3.00 x 0.75*
P3X-1.700V	3-way	0.698 - 2.700	SMA & N-F	40	3.00 x 2.20 x 0.75*
803-2-1.950	3-way	1.700 - 2.200	SMA-F	20	2.60 x 1.75 x 0.44
803-4-1.950	3-way	1.700 - 2.200	N-F	20	3.48 x 2.75 x 0.75
803-2-2.100	3-way	1.300 - 2.700	SMA-F	20	2.60 x 1.75 x 0.44
803-4-2.100	3-way	1.300 - 2.700	N-F	20	3.48 x 2.75 x 0.75
803-S-1.900-M01	3-way	0.800 - 3.000	SMA-F	20	3.60 x 3.00 x 0.44
803-4-1.900	3-way	0.800 - 3.000	N-F	20	4.48 x 3.00 x 0.75
P3X-2.450WWP	3-way	2.400 - 2.500	SMA & N-F	20	1.68 x 1.68 x 0.75*
803-2-3.000	3-way	2.000 - 4.000	SMA-F	20	2.10 x 1.50 x 0.44
803-4-3.000	3-way	2.000 - 4.000	N-F	20	3.56 x 2.75 x 0.75
P3X-5.500WWP	3-way	4.900 - 6.000	SMA & N-F	20	1.68 x 1.68 x 0.75*

* Not including connectors

803-2-1.500V

803-4-1.700V

803-S-1.900-M01

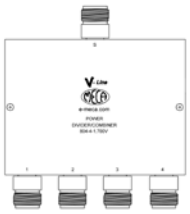


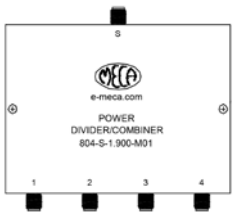
P3N-1.700V

Power Dividers/Combiners

4-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
H4X-0.252WWP	4-way	0.005 - 0.500	SMA & N-F	100	4.00 x 4.50 x 0.90*
804-X-0.252	4-way	0.005 - 0.500	SMA, N, TNC & BNC-F	2	3.00 x 4.00 x 0.75*
H4N-0.460	4-way	0.400 - 0.520	N-F	100	4.98 x 4.50 x 1.00
804-2-0.600-M01	4-way	0.400 - 0.800	SMA-F	20	3.96 x 4.00 x 0.75
804-4-0.600	4-way	0.400 - 0.800	N-F	20	4.56 x 4.00 x 0.75
H4N-0.900	4-way	0.800 - 1.000	N-F	100	3.48 x 4.50 x 1.00
804-2-0.900	4-way	0.800 - 1.000	SMA-F	20	3.60 x 2.50 x 0.44
804-4-0.900	4-way	0.800 - 1.000	N-F	20	3.48 x 4.00 x 0.75
804-2-1.500V	4-way	0.800 - 2.200	SMA-F	20	3.60 x 2.50 x 0.44
DC804-2-1.500V	4-way	0.800 - 2.200	SMA-F	20	3.60 x 2.50 x 0.44
DC804-4-1.500V	4-way	0.800 - 2.200	N-F	20	3.48 x 4.00 x 0.75
H4XX-1.500VWWP	4-way	0.800 - 2.200	4.1/9.5 & 7/16 DIN-F	100	3.87 x 6.50 x 1.60*
H4X-1.500V	4-way	0.800 - 2.200	SMA & N-F	100	3.50 x 4.50 x 1.00*
804-X-1.500V	4-way	0.800 - 2.200	N, TNC & BNC-F	20	2.00 x 4.00 x 0.75*
804-X-1.700V	4-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	3.00 x 4.00 x 0.75*
804-XX-1.700V	4-way	0.698 - 2.700	QMA & RP TNC-F	40	3.00 x 4.00 x 0.75*
DC804-4-1.700V	4-way	0.700 - 2.700	N-F	40	4.48 x 4.00 x 0.75
804-2-1.950	4-way	1.700 - 2.200	SMA-F	20	3.10 x 2.50 x 0.44
H4N-1.950	4-way	1.700 - 2.200	N-F	100	2.98 x 4.50 x 1.00
804-4-1.950	4-way	1.700 - 2.200	N-F	20	3.48 x 4.00 x 0.75
804-2-2.100	4-way	1.300 - 2.700	SMA-F	20	3.10 x 2.50 0.44
804-4-2.100	4-way	1.300 - 2.700	N-F	20	3.48 x 4.00 x 0.75
804-S-1.900-M01	4-way	0.800 - 3.000	SMA-F	20	3.60 x 4.00 x 0.44
804-4-1.900	4-way	0.800 - 3.000	N-F	20	3.48 x 4.00 x 0.75
804-2-2.500	4-way	1.000 - 4.000	SMA-F	20	3.60 x 2.50 x 0.44
804-2-3.000	4-way	2.000 - 4.000	SMA-F	20	3.60 x 4.00 x 0.44
804-4-3.100	4-way	2.000 - 4.200	N-F	20	3.48 x 4.00 x 0.75
804-2-6.000	4-way	4.000 - 8.000	SMA-F	20	2.21 x 1.98 x 0.40
804-2-9.700	4-way	7.000 - 12.400	SMA-F	20	2.21 x 1.98 x 0.40
804-2-11.500-M01	4-way	4.000 - 18.000	SMA-F	20	2.21 x 1.98 x 0.40
804-2-10.000	4-way	2.000 - 18.000	SMA-F	20	3.60 x 2.00 x 0.38
804-2-15.000	4-way	12.000 - 18.000	SMA-F	20	2.21 x 1.98 x 0.40
M4S-1.500W	4-way	0.800 - 2.200	SMA-F	75	3.60 x 2.50 x 0.44
M4N-1.500W	4-way	0.800 - 2.200	N-F	75	3.48 x 4.00 x 0.75

* Not including connectors


804-4-1.700V



804-S-1.900-M01

804-2-11.500-M01


804-2-10.000

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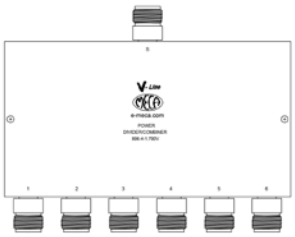
Power Dividers/Combiners

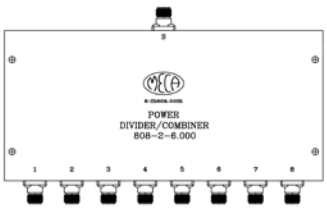
6-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
806-X-0.252WWP	6-way	5 -500	N, SMA-F	2	6.72 x 3.54 x 0.75
806-2-1.500V	6-way	0.800 - 2.200	SMA-F	20	4.10 x 3.25 x 0.44
806-X-1.500V	6-way	0.800 - 2.200	N, TNC & BNC-F	20	3.00 x 6.00 x 0.75*
806-X-1.700V	6-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	3.25 x 6.00 x 0.75*
806-12-1.700V	6-way	0.698 - 2.700	RP-TNC	40	4.21 x 6.00 x 0.75
806-S-1.900-M01	6-way	0.800 - 3.000	SMA-F	20	3.85 x 6.00 x 0.44
806-4-1.900	6-way	0.800 - 3.000	N-F	20	4.73 x 6.00 x 0.75
806-2-3.000	6-way	2.000 - 4.000	SMA-F	20	3.10 x 3.25 x 0.44
806-4-3.100	6-way	2.000 - 4.200	N-F	20	4.48 x 6.00 x 0.75
8-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
808-2-0.600-M01	8-way	0.400 - 0.800	SMA-F	20	4.46 x 8.00 x 0.75
808-4-0.600	8-way	0.400 - 0.800	N-F	20	4.98 x 8.00 x 0.75
808-2-0.900	8-way	0.800 - 1.000	SMA-F	20	4.10 x 4.50 x 0.44
M8N-1.500W	8-way	0.800 - 2.200	N-F	75	3.98 x 8.00 x 0.75
M8S-1.500W	8-way	0.800 - 2.200	SMA-F	75	4.10 x 4.50 x 0.44
808-2-1.500V	8-way	0.800 - 2.200	SMA-F	20	4.10 x 4.50 x 0.44
808-X-1.500V	8-way	0.800 - 2.200	N, TNC & BNC-F	20	3.98 x 8.00 x 0.75*
808-X-1.700V	8-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	3.98 x 8.00 x 0.75*
808-XX-1.700V	8-way	0.698 - 2.700	QMA & RP TNC	40	3.00 x 8.00 x 0.75*
808-S-1.900-M01	8-way	0.800 - 3.000	SMA-F	20	3.60 x 8.00 x 0.44
808-4-1.900	8-way	0.800 - 3.000	N-F	20	4.48 x 8.00 x 0.75
808-2-3.000	8-way	2.000 - 4.000	SMA-F	20	3.10 x 4.50 x 0.48
808-4-3.100	8-way	2.000 - 4.200	N-F	20	3.98 x 8.00 x 0.75
808-2-6.000	8-way	4.000 - 8.000	SMA-F	20	3.20 x 5.20 x 0.38
808-2-15.000	8-way	12.000 - 18.000	SMA-F	20	3.16 x 4.00 x 0.38

* Not including connectors

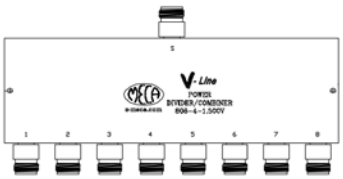


806-4-1.700V

806-S-1.900-M01



808-2-6.000



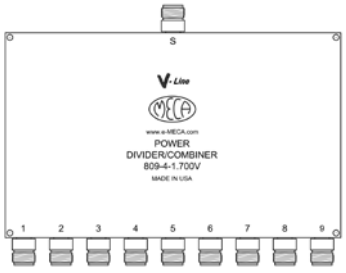
808-4-1.500V

Power Dividers/Combiners

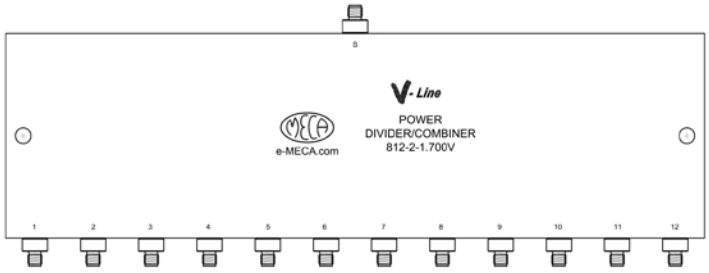
9-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
809-2-0.252	9-way	0.005 - 0.500	SMA-F	2	2.76 x 5.00 x 0.50
809-2-1.500V	9-way	0.800 - 2.200	SMA-F	20	5.10 x 5.00 x 0.44
809-X-1.700V	9-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	5.50 x 9.00 x 0.75*
809-12-1.700V	9-way	0.698 - 2.700	RP TNC-F	40	5.50 x 9.00 x 0.75
809-S-1.900-M01	9-way	0.800 - 3.000	SMA-F	20	6.46 x 9.00 x 0.75
809-4-1.900	9-way	0.800 - 3.000	N-F	20	6.98 x 9.00 x 0.75
809-2-3.100	9-way	2.000 - 4.200	SMA-F	20	3.60 x 4.75 x 0.50

12-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
812-2-1.500V	12-way	0.800 - 2.200	SMA-F	20	5.10 x 6.50 x 0.44
812-4-1.500V	12-way	0.800 - 2.200	N-F	20	4.98 x 12.00 x 0.75
812-X-1.700V	12-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	3.50 x 12.00 x 0.75*
812-S-1.900-M01	12-way	0.800 - 3.000	SMA-F	20	4.46 x 12.00 x 0.81
812-4-1.900	12-way	0.800 - 3.000	N-F	20	4.98 x 12.00 x 0.81
812-2-3.100	12-way	2.000 - 4.200	SMA-F	20	3.10 x 6.50 x 0.50

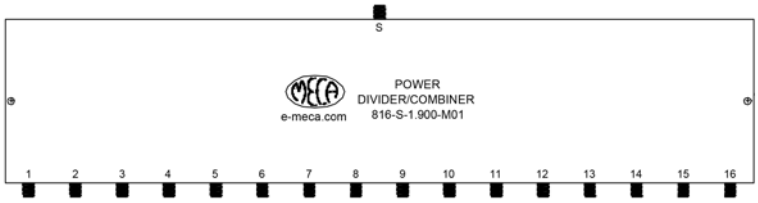
16-way					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
816-2-1.500V	16-way	0.800 - 2.200	SMA-F	20	4.60 x 8.50 x 0.44
816-4-1.500V	16-way	0.800 - 2.200	N-F & SMA-F	20	4.98 x 16.0 x 0.75
M16S-1.500W	16-way	0.800 - 2.200	SMA-F	50	4.60 x 8.50 x 0.44
816-X-1.700V	16-way	0.698 - 2.700	SMA, N, TNC & BNC-F	40	3.50 x 16.0 x 0.75*
816-S-1.900-M01	16-way	0.800 - 3.000	SMA-F	20	4.10 x 16.0 x 0.44
816-4-1.900	16-way	0.800 - 3.000	N-F	20	4.98 x 16.0 x 0.75
816-2-3.100	16-way	2.000 - 4.200	SMA-F	20	4.10 x 8.50 x 0.44
816-4-3.100	16-way	2.000 - 4.200	N-F	20	3.98 x 16.00 x 0.75



809-4-1.700V



812-2-1.700V



816-S-1.900-M01

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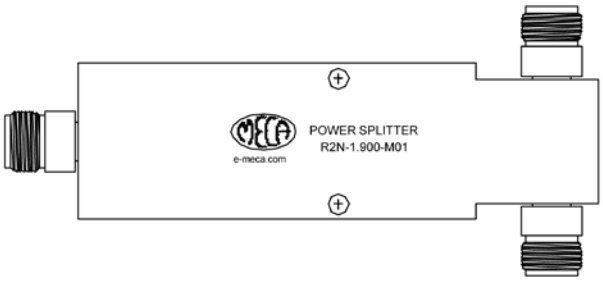
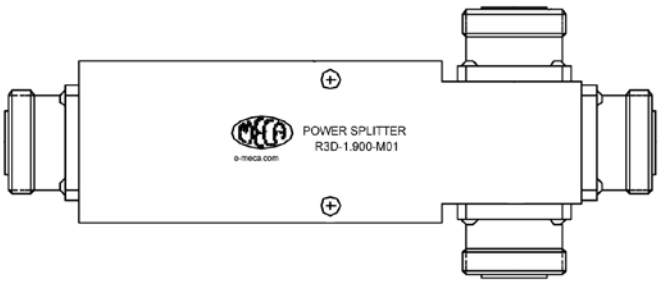
Power Splitters					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
R2X-1.900-M01	2-way	0.698 - 2.700	SMA & N-F	100 & 500	5.29 x 1.274 x 0.87
R2D-1.900-M01	2-way	0.698 - 2.700	DIN-F	700	3.01 x 6.38 x 1.60
R3X-1.900-M01	3-way	0.698 - 2.700	SMA & N-F	100 & 500	5.29 x 1.274 x 0.87
R3D-1.900-M01	3-way	0.698 - 2.700	DIN-F	700	3.01 x 7.70 x 1.60

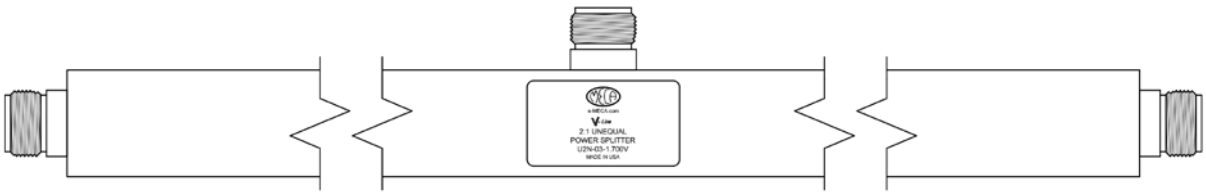


R2N-1.900-M01



R3D-1.900-M01

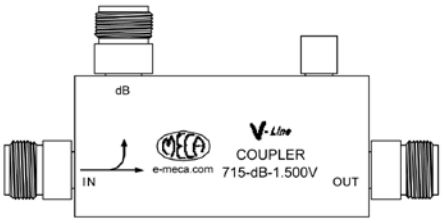
Unequal Power Splitters/Tappers					
Series	**Split**	**Freq (GHz)**	**Connector**	**Max Power (Watts)**	**L" x W" x H"**
U2N-03-1.700V	2:1 / 3.0 dB	0.698 - 2.700	N-F	300	14.25 x 1.59 x 1.00
U2N-05-1.700V	3:1 / 4.8 dB	0.698 - 2.700	N-F	300	14.25 x 1.59 x 1.00
U2N-06-1.700V	4:1 / 6.1 dB	0.698 - 2.700	N-F	300	14.25 x 3.19 x 1.00
U2N-08-1.700V	6:1 / 7.8 dB	0.698 - 2.700	N-F	300	14.25 x 3.19 x 1.00
U2N-09-1.700V	8:1 / 9.0 dB	0.698 - 2.700	N-F	300	14.25 x 3.19 x 1.00
U2N-10-1.700V	10:1 / 10.0 dB	0.698 - 2.700	N-F	300	14.25 x 3.19 x 1.00



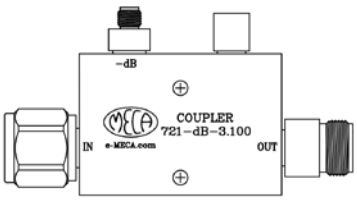
U2N-03-1.700V

Couplers

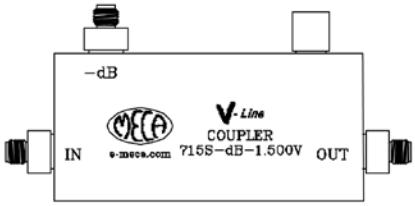
Series	Freq (GHz)	Coupling (dB)	Connector	L" x W" X D"
715-dB-0.375	0.250 - 0.500	10, 20, 30 & 40	Type N-F	10.31 x .88 x 2.25
715S-dB-0.375	0.250 - 0.500	10, 20, 30 & 40	SMA-F	9.84 x .88 x 1.99
715-dB-0.600	0.400 - 0.800	6, 10, 20, 30 & 40	Type N-F	7.58 x .88 x 2.55
715S-dB-0.600	0.400 - 0.800	6, 10, 20, 30 & 40	SMA-F	7.06 x .88 x 1.99
CN-dB-1.500V	0.800 - 2.200	6, 10 & 20	Type N-F	3.67 x .75 x 2.00
CS-dB-1.500V	0.800 - 2.200	6, 10 & 20	SMA-F	3.43 x .75 x 1.73
715-dB-1.500V	0.800 - 2.200	6, 10, 20, 30 & 40	Type N-F	4.65 x .88 x 2.25
715S-dB-1.500V	0.800 - 2.200	6, 10, 20, 30 & 40	SMA-F	4.13 x .88 x 1.99
715-dB-1.500V-M01	0.800 - 2.200	6, 10, 20, 30 & 40	Type N-F	4.65 x .88 x 2.25
715-dB-0.900	0.800 - 1.000	6, 10, 20, 30 & 40	Type N-F	5.96 x .88 x 2.25
715S-dB-0.900	0.800 - 1.000	6, 10, 20, 30 & 40	SMA-F	5.44 x .88 x 1.99
715-dB-1.650W	0.800 - 2.500	6, 10, 20, 30 & 40	Type N-F	4.46 x .88 x 2.25
715S-dB-1.650W	0.800 - 2.500	6, 10, 20, 30 & 40	SMA-F	3.94 x .88 x 1.99
715-dB-1.950	1.700 - 2.200	6, 10, 20, 30 & 40	Type N-F	4.2 x .88 x 2.25
715S-dB-1.950	1.700 - 2.200	6, 10, 20, 30 & 40	SMA-F	3.68 x .88 x 1.99
715-dB-3.100	2.000 - 4.200	6, 10, 20, 30 & 40	Type N-F	3.64 x .88 x 2.25
715S-dB-3.100	2.000 - 4.200	6, 10, 20, 30 & 40	SMA-F	3.12 x .88 x 1.99
715-dB-6.000	4.000 - 8.000	6, 10, 20, 30 & 40	N-F	3.16 x .88 x 2.25
721-dB-0.600	0.400 - 0.800	6, 10, 20, 30 & 40	N-M In, N-F Out, SMA Coupled	7.62 x .88 x 1.99
721-dB-0.900	0.800 - 1.000	6, 10, 20, 30 & 40	N-M In, N-F Out, SMA Coupled	6.00 x .88 x 1.99
721-dB-1.500V	0.800 - 2.200	6, 10, 20, 30 & 40	N-M In, N-F Out, SMA Coupled	4.69 x .88 x 1.99
721-dB-1.650W	0.800 - 2.500	6, 10, 20, 30 & 40	N-M In, N-F Out, SMA Coupled	4.50 x .88 x 1.99
721-dB-1.950	1.700 - 2.200	6, 10, 20, 30 & 40	N-M In, N-F Out, SMA Coupled	4.24 x .88 x 1.99
721-dB-3.100	2.000 - 4.200	6, 10, 20, 30 & 40	N-M In, N-F Out, SMA Coupled	3.68 x .88 x 1.99



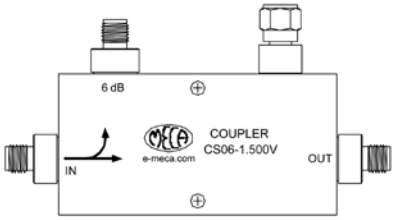
715-dB-1.500V



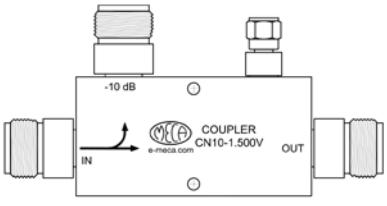
721-dB-3.100



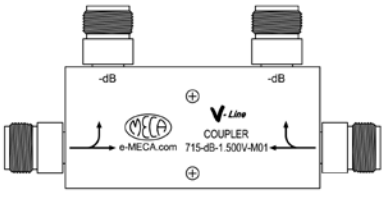
715S-dB-1.500V



CSdB-1.500V



CNdB-1.500V



715-dB-1500V-M01

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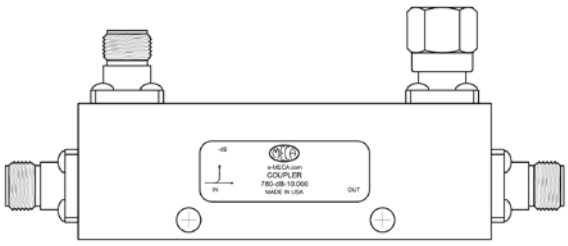
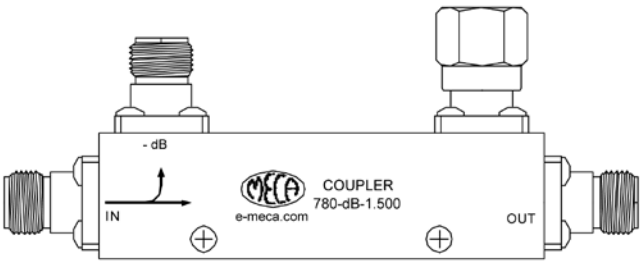
Couplers

Series	Freq (GHz)	Coupling value (dB)	Connector	L" x W" X D"
780-dB-0.750	0.500 - 1.000	6, 10, 20 & 30	SMA-F	3.86 x 0.38 x 0.88
780-dB-1.200	0.800 - 1.600	10, 20 & 30	SMA-F	2.82 x 0.38 x 0.88
780-dB-1.250	0.500 - 2.000	6, 10, 20 & 30	SMA-F	4.36 x 0.38 x 0.88
780-dB-1.500	1.000 - 2.000	6, 10, 20 & 30	SMA-F	2.54 x 0.38 x 0.88
780-dB-2.300	0.600 - 4.000	10	SMA-F	5.16 x 0.38 x 0.88
780-dB-2.500	1.000 - 4.000	6, 10, 20 & 30	SMA-F	3.66 x 0.38 x 0.88
780-dB-3.000	2.000 - 4.000	6, 10, 20 & 30	SMA-F	1.92 x 0.38 x 0.88
780-dB-3.900	2.600 - 5.200	10, 20 & 30	SMA-F	1.76 x 0.38 x 0.88
780-dB-5.000	2.000 - 8.000	6, 10, 20 & 30	SMA-F	2.64 x 0.38 x 1.06
780-dB-6.000	4.000 - 8.000	6, 10, 20 & 30	SMA-F	1.76 x 0.38 x 0.88
780-dB-8.200	4.000 - 12.400	10 & 20	SMA-F	1.98 x 0.38 x 0.893
780-dB-9.500	1.000 - 18.000	10 & 20	SMA-F	4.23 x 0.50 x 1.08
780-dB-9.700	7.000 - 12.400	6, 10, 20 & 30	SMA-F	1.76 x 0.38 x 0.88
780-dB-10.000	2.000 - 18.000	6, 10, 20 & 30	SMA-F	2.89 x 0.40 x 1.08
780-dB-11.750	7.500 - 16.000	10, 20 & 30	SMA-F	1.76 x 0.38 x 0.88
780-dB-12.000	6.000 - 18.000	10, 20 & 30	SMA-F	1.76 x 0.38 x 0.88
780-dB-15.200	12.400 - 18.000	6, 10, 20 & 30	SMA-F	1.76 x 0.38 x 0.88
765-dB-2.900	18.000 - 40.000	10 & 20	2.92mm-F	1.80 x 0.5 x 1.425

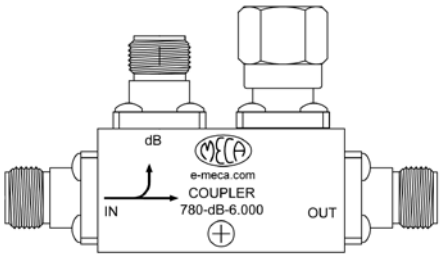
780-dB-0.750



780-dB-10.000



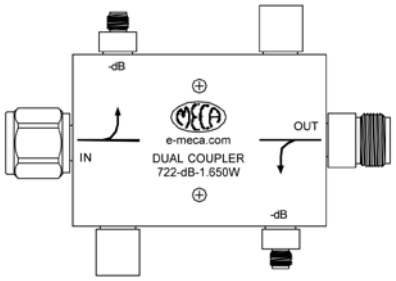
780-dB-1.500



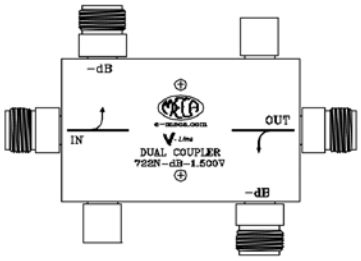
780-dB-6.000

Dual Couplers

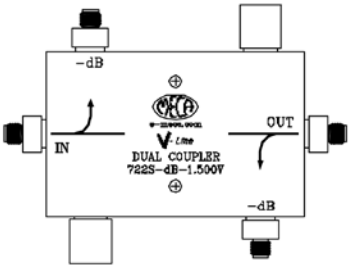
Series	Freq (GHz)	Coupling value (dB)	Connector	L" x W" X D*
720-20-0.162-M01	0.150 - 0.174	20	N & SMA-F	2.79 x 0.85 x 1.17
720-dB-0.375	0.250 - 0.500	6, 10, 20, 30 & 40	Type N-F	21.7 x .88 x 2.25
722N-dB-0.600	0.400 - 0.800	10, 20, 30 & 40	Type N-F	7.58 x .88 x 2.75
722S-dB-0.600	0.400 - 0.800	10, 20, 30 & 40	SMA-F	7.06 x .88 x 2.49
722-dB-0.600	0.400 - 0.800	10, 20, 30 & 40	N & SMA-F	7.62 x. 88 x 2.49
722N-dB-0.900	0.800 - 1.000	10, 20, 30 & 40	Type N-F	5.96 x .88 x 2.75
722S-dB-0.900	0.800 - 1.000	10, 20, 30 & 40	SMA-F	5.44 x .88 x 2.49
722-dB-0.900	0.800 - 1.000	10, 20, 30 & 40	N & SMA-F	6.0 x .88 x 2.49
722N-dB-1.500V	0.800 - 2.200	10, 20, 30 & 40	Type N-F	4.65 x .88 x 2.75
722S-dB-1.500V	0.800 - 2.200	10, 20, 30 & 40	SMA-F	4.13 x .88 x 2.49
722-dB-1.500V	0.800 - 2.200	10, 20, 30 & 40	N & SMA-F	4.69 x .88 x 2.49
722N-dB-1.650W	0.800 - 2.500	10, 20, 30 & 40	Type N-F	4.46 x .88 x 2.75
722S-dB-1.650W	0.800 - 2.500	10, 20, 30 & 40	SMA-F	3.94 x .88 x 2.49
722-dB-1.650W	0.800 - 2.500	10, 20, 30 & 40	N & SMA-F	4.0 x .88 x 2.49
722N-dB-1.950	1.700 - 2.200	10, 20, 30 & 40	Type N-F	4.2 x .88 x 2.75
722S-dB-1.950	1.700 - 2.200	10, 20, 30 & 40	SMA-F	3.68 x .88 x 2.49
722-dB-1.950	1.700 - 2.200	10, 20, 30 & 40	N & SMA-F	4.24 x .88 x 2.49
722N-dB-3.100	2.000 - 4.200	10, 20, 30 & 40	Type N-F	3.64 x .88 x 2.75
722S-dB-3.100	2.000 - 4.200	10, 20, 30 & 40	SMA-F	3.12 x .88 x 2.49
722-dB-3.100	2.000 - 4.200	10, 20, 30 & 40	N & SMA-F	3.68 x .88 x 2.49



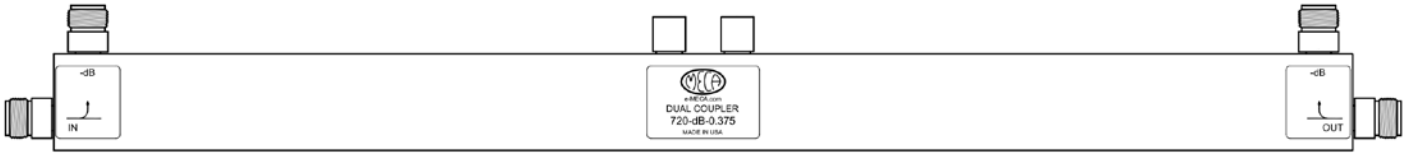
722-dB-1.650W



722N-dB-1.500V



722S-dB-1.500V



720-dB-0.375

Average Power (Watts)				
Coupling Factor	**10 dB**	**20 dB**	**30 dB**	**40 dB**
722N Series	25	250	500	500
Theoretical Mainline Power Split Due to Coupling Factor (dB				
722N Series	0.912	0.0872	0.0086	0.0008

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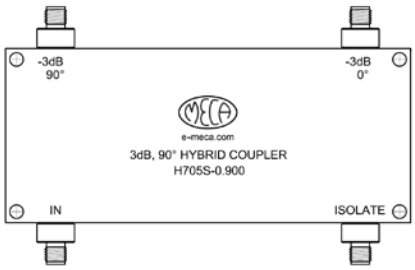
3dB Hybrid Couplers - 90°

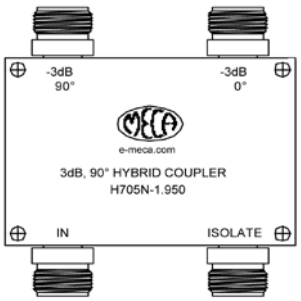
Series	Freq (GHz)	Power Handling	Connector	L" x W" X D*
705S-0.750	0.500 - 1.000	50	SMA-F	3.06 x 1.25 x .38
705S-1.500	1.000 - 2.000	50	SMA-F	1.78 x 1.25 x .38
705N-1.700V	0.698 - 2.700	120	N-F	5.00 x 2.9 x .88
705S-1.700V	0.698 - 2.700	50	SMA-F	5.00 x 2.38 x .88
705S-2.600	2.500 - 2.700	50	SMA-F	1.15 x 1.26 x .38
705S-2.950	2.700 - 3.200	50	SMA-F	1.15 x 1.26 x .38
705S-3.000	2.000 - 4.000	50	SMA-F	1.15 x 1.26 x .38
705S-3.900	2.600 - 5.200	50	SMA-F	1.0 x 1.26 x .38
705S-6.000	4.000 - 8.000	50	SMA-F	1.0 x 1.26 x .38
705S-9.200	6.000 - 12.400	50	SMA-F	1.0 x 1.26 x .38
705S-9.700	7.000 - 12.400	50	SMA-F	1.0 x 1.26 x .38
705S-11.750	7.500 - 16.000	40	SMA-F	1.0 x 1.34 x .38
705S-15.000	12.000 - 18.000	40	SMA-F	1.0 x 1.34 x .38
H705N-0.460	0.400 - 0.520	500	N-F	2.28 x 3.08 x 1.25
H705D-0.460	0.400 - 0.520	500	DIN-F	2.28 x 3.6 x 1.38
H705X-0.849	0.698 - 1.000	500	N,SMA & 7/16 DIN-F	4.65 x 3.08 x 1.0 *
H705X-0.900	0.800 - 1.000	500, 100, 500	N,SMA & 7/16 DIN-F	4.65 x 3.08 x 1.0 *
H705X-1.950	1.700 - 2.200	500, 100, 500	N,SMA & 7/16 DIN-F	2.9 x 3.08 x 1.0 *

* Less connectors

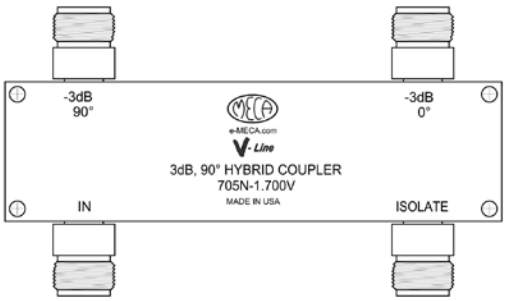
H705D-0.460



H705S-0.900



H705N-1950



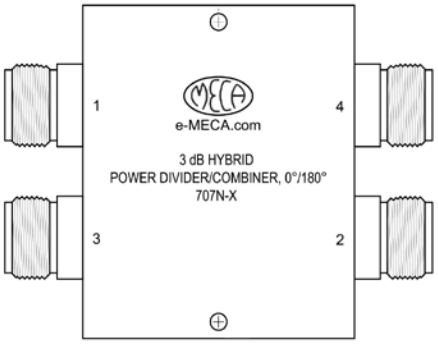
705N-1.700V

705S-0.750

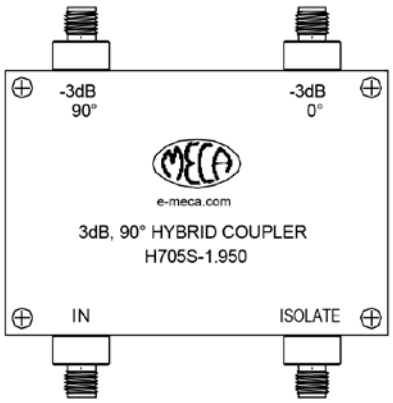
3dB Hybrid Couplers - 0°/180°

Series	Freq (GHz)	Power Handling	Connector	L" x W" x D"/X, Y, Z
707X-0.900	0.810 - 0.960	100	SMA, N-F	4.18 x 3.0 x .82 *
700X-0.900	0.810 - 0.960	1000	7/16 DIN, N-F	7.53 x 2.10 *
707X-1.085	1.020 - 1.150	100	SMA, N-F	4.18 x 3.0 x .82
700-1.085	1.020 - 1.150	1000	N-F	6.35 x 2.10
707X-1.300	1.200 - 1.400	100	SMA, N-F	4.18 x 3.0 x .82 *
700-1.300	1.200 - 1.400	1000	N-F	5.48 x 2.10
707X-1.550	1.450 - 1.650	100	SMA, N-F	4.18 x 3.0 x .82 *
700-1.550	1.450 - 1.650	1000	N-F	4.78 x 2.10
707X-1.850	1.700 - 2.000	100	SMA, N-F	3.22 x 2.5 x .82 *
700X-1.850	1.700 - 2.000	1000	7/16 DIN, N-F	4.21 x 2.10
707X-2.250	2.100 - 2.400	100	SMA, N-F	3.22 x 2.5 x .82*
700-2.250	2.100 - 2.400	1000	N-F	3.69 x 2.10
707X-2.450	2.300 - 2.600	100	SMA, N-F	3.22 x 2.5 x .82*
700-2.450	2.300 - 2.600	1000	N-F	3.44 x 2.10
707X-2.850	2.700 - 3.000	100	SMA, N-F	3.22 x 2.5 x .82*
700-2.850	2.700 - 3.000	1000	N-F	3.17 x 2.10
707X-3.950	3.700 - 4.200	100	SMA, N-F	3.22 x 2.5 x .82*
700-3.950	3.700 - 4.200	1000	N-F	2.59 x 2.10
707X-4.700	4.400 - 5.000	100	SMA, N-F	3.22 x 2.5 x .82*
700-4.700	4.400 - 5.000	1000	N-F	2.34 x 2.10
707X-5.700	5.400 - 6.000	100	SMA, N-F	3.22 x 2.5 x .82*
700-5.700	5.400 - 6.000	1000	N-F	2.12 x 2.10

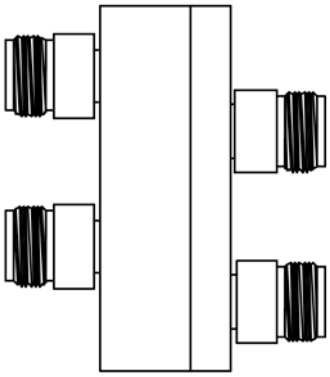
* Less connectors



707N



H705S-1.950



700X

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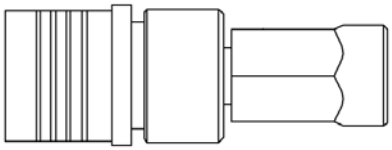
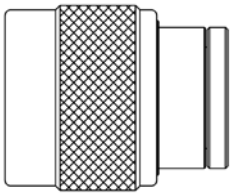
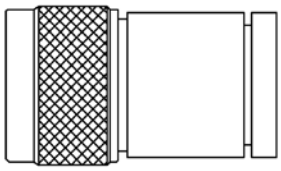
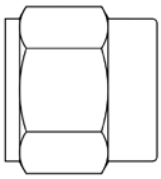
Terminations 1 - 2 Watts

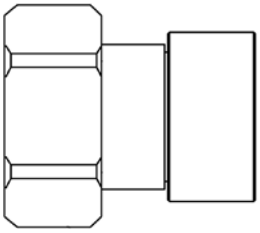
Max Power (Watts)	Series	Connector	Freq (GHz)	L" x OD" (Nom)
1	TQ1-3	QMA-M	Hz - 3.0	1.35 x .30
1	TMDX1-3	4.1/9.5 M / F	Hz - 3.0	1.58 x .92
1	TN1-3	N-M	Hz - 3.0	.99 x .82
1	TN1-6	N-M	Hz - 6.0	.99 x .82
1	TN1-18	N-M	Hz - 18.0	.99 x .82
1	462-1F3	SMA-M	Hz - 3.0	.43 x 3.12
1	462-1	SMA-M	Hz - 18.0	.33 x 3.12
1	462-1C	SMA-M-w/chain	Hz - 18.0	.42 x 3.12
1	462-1RP	RP SMA-M	Hz - 6.0	.33 x 3.12
1	401-11A / -12A	7/16-M / F	Hz - 3.0	2.0 x 1.06
2	401-11 / 12WWP	7/16 DIN-M / F	Hz - 3.0	2.0 x 1.06
1	468-1 / -2	2.92mm M / F	Hz - 40.0	.58 x .36
2	464-1 / -2	SMA-M / F	Hz - 18.0	.58 x .36
2	401-1F3	N-M	Hz - 3.0	1.50 x .82
2	401-1 / -2	N-M / F	Hz - 6.0	1.50 x .82
2	401-3 / -4	BNC-M / F	Hz - 6.0	1.30 x .60
2	401-5	TNC-M	Hz - 6.0	1.35 x .65
2	401-11 / -12	7/16 DIN M / F	Hz - 3.0	2.0 x 1.60
2	TMDM2-4	4.1/9.5 M	Hz - 4.0	.77 x .92
2	401-1C	N-M w/Chain	Hz - 6.0	1.60 x .83
2	401-5C	TNC-M w/Chain	Hz - 6.0	1.50 x .65
2	401-5RP	(Reverse Polarity) TNC-M	Hz - 6.0	1.35 x .65
2	402-1 / 402-2	N-M / N-F	Hz - 12.4	1.50 x .82
2	402-1C / -2C	N-M / F w/Chain	Hz - 12.4	1.60 x .83
2	406X-MF	N-M / F	0.3 - 1.0	2.20 x .82
2	406S-MF	SMA-M / F	0.3 - 1.0	1.31 x 3.44
2	406B-MF	BNC-M / F	0.3 - 1.0	1.82 x .57
2	406T-MF	TNC-M / F	0.3 - 1.0	1.82 x .59


TQ1-3


TN1-3


401-1


468-1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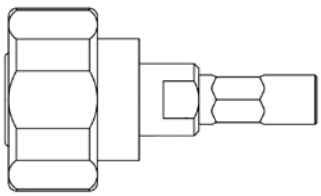
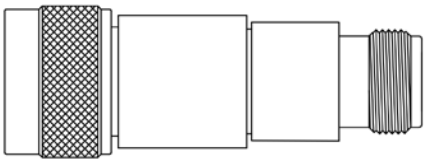
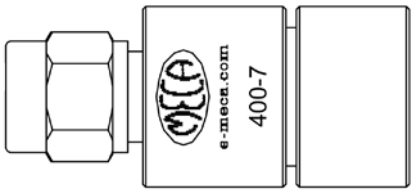

TMDM1-3

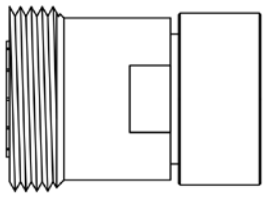

406N-MF

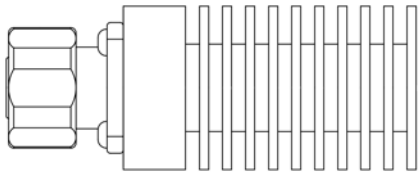
Terminations 5 - 25 Watts

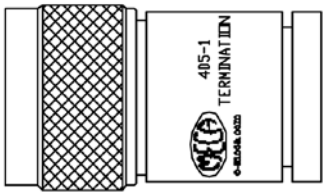
Max Power (Watts)	Series	Connector	Freq (GHz)	L" x OD" (Nom)
5	400-X	N-M / F	Hz - 12.4	1.50 x .82
5	400-7 / -8	SMA-M / F	Hz - 18.0	1.12 x .50
5	405-X	N, BNC, TNC M / F	Hz - 3.0	1.50 x .82
5	405-1C	N-M w/Chain	Hz - 3.0	1.60 x .83
5	405-11 / -12	7/16 DIN M / F	Hz - 3.0	2.0 x 1.06
5	400-11 / -12	7/16 DIN M / F	Hz - 7.5	2.0 x 1.06
5	405-14 / -15WWP	4.1/9.5 M / F	Hz - 4.0	2.4 x 1.25
10	417-1 / -2	SMA-M / F	Hz - 18.0	1.97 x .64
10	417-11A / -12A	7/16 DIN M / F	Hz - 3.0	2.0 x 1.06
10	417-14 / -15WWP	4.1/9.5 M / F	Hz - 4.0	3.15 x 1.25
15	403-X	N, SMA M / F	Hz - 12.4	2.50 x 1.25
25	407-X	N, SMA M / F	Hz - 6.0	2.77 x 1.62
25	407-11 / -12	DIN-M / F	Hz - 4.0	4.03 x 1.62



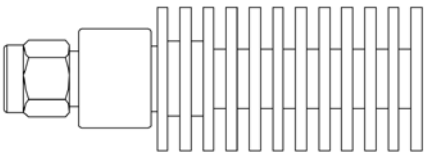
400-7


400-12


417-14WWP



405-1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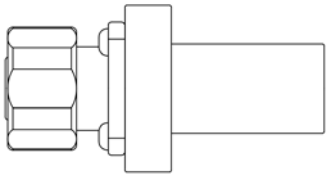
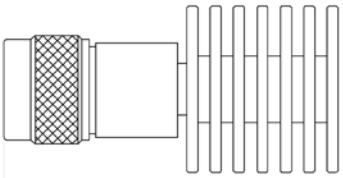
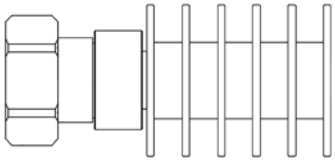

405-14WWP


403-1


407-11

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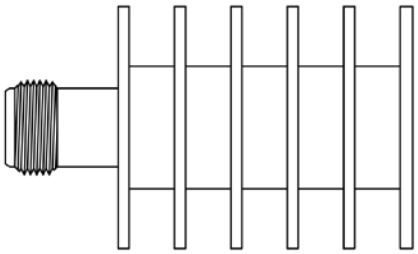
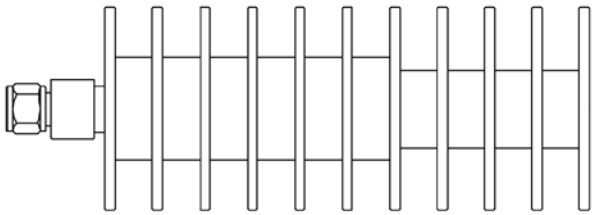
Terminations 35 - 500 Watts

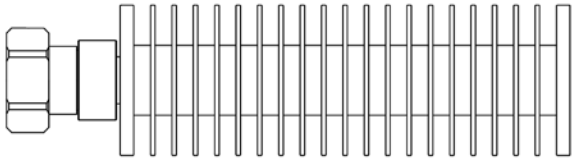
Max Power (Watts)	Series	Connector	Freq (GHz)	L" x OD" (Nom)
35	404-X	N, SMA, 7/16 DIN, M/F	Hz - 6.0	2.77 x 1.62
50	480-X	N, SMA, 7/16 DIN, M/F	Hz - 6.0	4.67 x 1.62
50	480-M02	N-M	Hz - 6.0	4.67 x 1.30
75	485-1 / -2	N-M / F	Hz - 4.0	6.79 x 2.00
75	485-11 / -12	7/16 DIN-M / F	Hz - 4.0	6.00 x 2.00
100	490-1 / -2	N-M / F	Hz - 4.0	6.00 x 2.73
100	490-11 / -12	7/16 DIN-M / F	Hz - 4.0	6.00 x 2.73
250	CTN-250-1 / -2	N-M / F	Hz - 3.0	2.25 x 2.30 x 1.06
500	CTN-500-1 / -2	N-M / F	Hz - 2.0	2.25 x 2.30 x 1.06



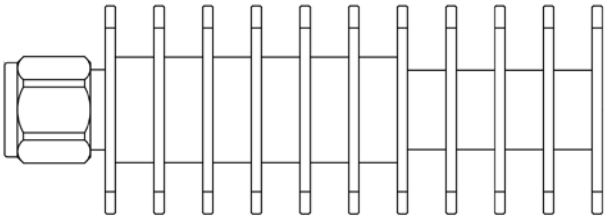
404-2



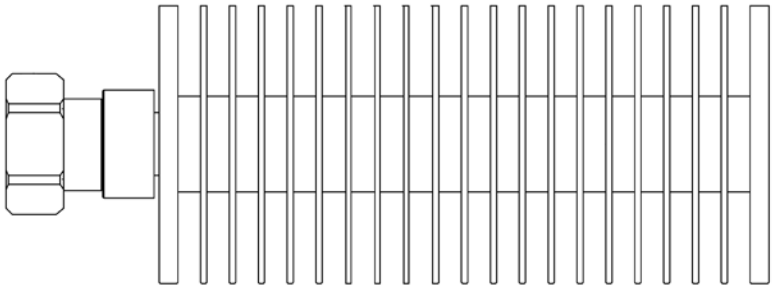
480-7



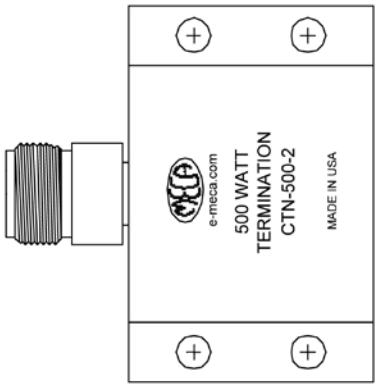
485-11



480-M02



490-11

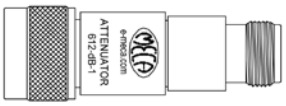


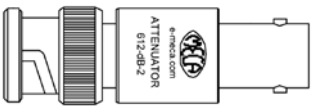
CTN500-2

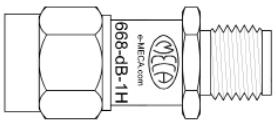
Attenuators 2 Watt

Max Power (Watts)	Series	Attenuation (dB)	Freq (GHz)	Connector	L" x OD"
2	612-dB-1	0 - 32	Hz - 4.0	N M / F	2.20 x 0.82
2	612-dB-2	0 - 32	Hz - 4.0	BNC M / F	1.82 x 0.57
2	612-dB-3	0 - 32	Hz - 4.0	BNC M / F	1.82 x 0.57
2	612-dB-3RP	0 - 32	Hz - 4.0	RP-TNC M / F	1.82 x 0.59
2	605-dB-1F3	3, 6, 10, 20 & 30	Hz - 6.0	N M / F	1.76 x 0.82
2	605-dB-1	3, 6, 10, 20, 30 & 40	Hz - 6.0	N M / F	1.76 x 0.82
2	605-dB-1	50 & 60	Hz - 6.0	N M / F	2.04 x 0.82
2	605-dB-3	3, 6, 10, 20, 30 & 40	Hz - 6.0	TNC M / F	1.36 x 0.630
2	605-dB-3F18	3, 6, 10, 20 & 30	Hz - 18.0	TNC M / F	2.07 x 0.56
2	605-dB-1F18	3, 6, 10, 20, 30 & 40	Hz - 18.0	N M / F	1.76 x 0.82
2	662-dB-1	0 - 32	Hz - 4.0	SMA M / F	1.31 x 0.31
2	662-dB-1RA	0 - 32	Hz - 4.0	SMA M/F (Right Angle)	1.31 x 0.31
2	663-dB-1	0 - 32	Hz - 4.0	QMA M / F	1.63 x 0.41
2	665-dB-1F3	3, 6, 10, 20 & 30	Hz - 6.0	SMA M / F	0.86 x 0.28
2	665-dB-1F3	30 & 40	Hz - 6.0	SMA M / F	0.97 x 0.28
2	665-dB-1F3RP	3,6,10,20 & 30	Hz - 6.0	RP-SMA M / F	0.86 x 0.28
2	665-dB-1F3RP	30 & 40	Hz - 6.0	RP-SMA M / F	0.97 x 0.28
2	665-dB-1	0 - 12	Hz - 18.0	SMA M / F	0.86 x 0.28
2	665-dB-1	12 - 30 & 40	Hz - 18.0	SMA M / F	0.97 x 0.28
2	665-dB-1	50 & 60	Hz - 18.0	SMA M / F	1.49 x 0.28
2	665-dB-1H	3, 6, & 10	Hz - 18.0	SMA M / F	0.86 x 0.28
2	665-dB-1H	20 & 30	Hz - 18.0	SMA M / F	0.97 x 0.28
2	667-dB-1	3, 6 & 10	Hz - 26.5	2.92mm M / F	0.88 x 0.28
2	667-dB-1	20 & 30	Hz - 26.5	2.92mm M / F	1.01 x 0.28
2	668-dB-1H	3, 6, 10, 20 & 30	Hz - 40.0	2.92mm M / F	0.88 x 0.28
2.5	615-dB-1	30, 40, 50	Hz - 2.5	N M / F	3.20 x 1.00

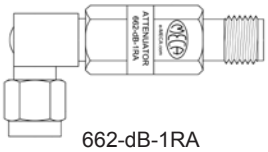

605-dB-1F18

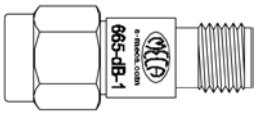

612-dB-1


612-dB-2


668-dB-1H


662-dB-1


662-dB-1RA


665-dB-1

615-dB-1

Input Power Attenuated						
0 dB	**1 dB**	**2 dB**	**3 dB**	**4 dB**	**5 dB**	**6 dB**
0 %	20.57 %	36.9 %	49.88 %	60.19 %	68.38 %	74.88 %
7 dB	**8 dB**	**9 dB**	**10 dB**	**20 dB**	**30 dB**	**40 dB**
80.05 %	84.15 %	87.41 %	90 %	99 %	99.9 %	99.99 %

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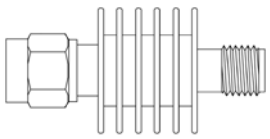
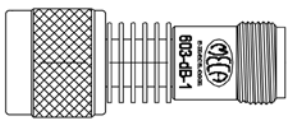
459 East Main Street, Denville, NJ 07834 T. 973-625-0661 F. 973-625-9277

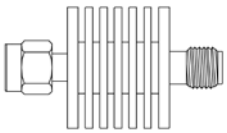
Attenuators 5 - 50 Watt

Max Power (Watts)	Series	Attenuation (dB)	Freq (GHz)	Connector	L" x OD"
5	602-dB-1	3, 6, 10, 20, 30 & 40	Hz - 6.0	SMA M / F	1.20 x 0.61
5	602-dB-1F18	3, 6, 10, 20, 30 & 40	Hz - 18.0	SMA M / F	1.20 x 0.61
5	603-dB-1	3, 6, 10, 20, 30 & 40	Hz - 6.0	N M / F	1.9 x 0.82
5	603-dB-F18	3, 6, 10, 20, 30 & 40	Hz - 18.0	N M / F	1.9 x 0.82
5	603-dB-11	3, 6, 10, 20, 30 & 40	Hz - 2.5	7/16 DIN M / F	2.98 x 1.25
10	604-dB-1	3, 6, 10 & 20	Hz - 6.0	SMA M / F	1.70 x 1.0
10	604-dB-1	30 & 40	Hz - 6.0	SMA M / F	1.95 x 1.0
10	604-dB-1F18	3, 6, 10 & 20	Hz - 18.0	SMA M / F	1.70 x 1.0
10	604-dB-1F18	30 & 40	Hz - 18.0	SMA M / F	1.95 x 1.0
10	606-dB-1F4	3, 6, 10, 20, 30 & 40	Hz - 4.0	N M / F	3.15 x 1.25
10	606-dB-1F18	3, 6 & 10	Hz - 18.0	N M / F	2.41 x 1.0
10	606-dB-1F18	30 & 40	Hz - 18.0	N M / F	2.66 x 1.0
10	606-dB-11	3, 6, 10, 20, 30 & 40	Hz - 2.5	7/16 DIN M / F	3.48 x 1.25
20	630-dB-1F4	3, 6, 10, 20 & 30	Hz - 4.0	N M / F	3.62 x 1.75
20	630-dB-1F4	40 & 50	Hz - 3.0	N M / F	3.62 x 1.75
20	630-dB-1F18	3, 6,10, 20, 30, 40 & 50	Hz - 18.0	N M / F	3.04 x 1.49
20	631-dB-1	3, 6, 10, 20, 30 & 40	Hz - 6.0	SMA M / F	2.33 x 1.50
20	631-dB-1F18	3, 6, 10, 20, 30 & 40	Hz - 18.0	SMA M / F	2.33 x 1.50
25	635-dB-11	3, 6, 10, 20, 30 & 40	Hz - 4.0	7/16 DIN M / F	4.80 x 1.50
50	650-dB-1F4	3, 6, 10, 20, 30 & 40	Hz - 4.0	N M / F	3.62 x 2.25
50	650-dB-1F18	3, 6, 10, 20, 30 & 40	Hz - 18.0	N M / F	4.50 x 3.50
50	650-dB-11	3, 6, 10, 20, 30 & 40	Hz - 4.0	7/16 DIN M / F	5.98 x 1.62


602-dB-1



603-dB-1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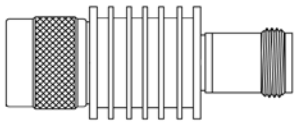
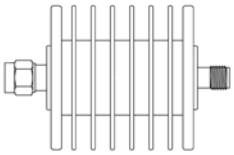
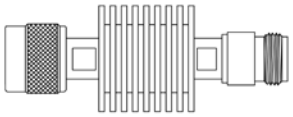
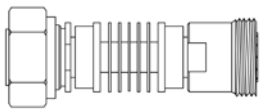
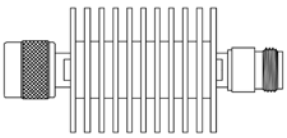
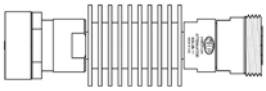

606-dB-1F18

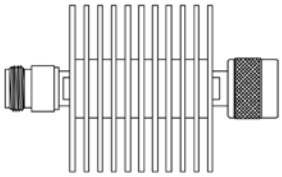

631-dB-1

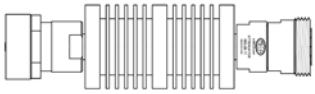

606-dB-1F4


606-dB-11


630-dB-1

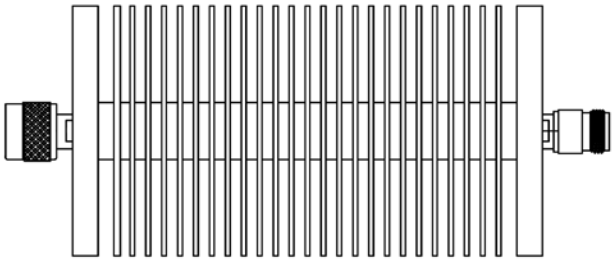

635-dB-11


650-dB-1F4

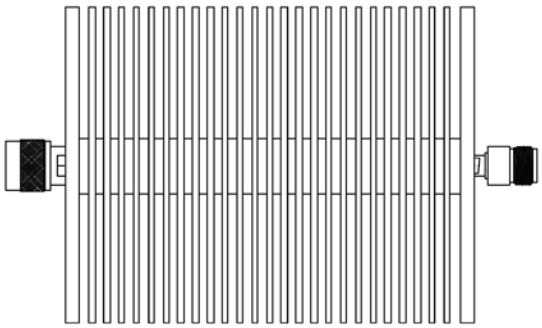

650-dB-11

Attenuators 100-150 Watt

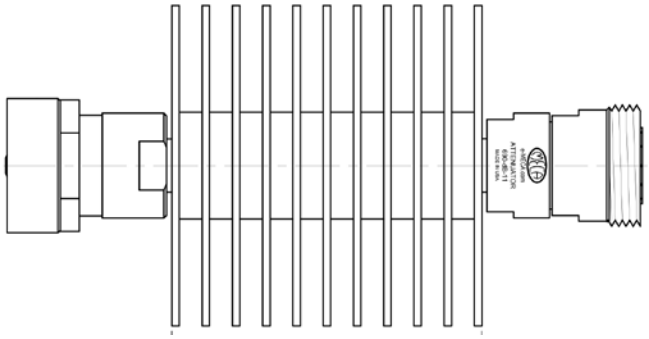
Max Power (Watts)	Series	Attenuation (dB)	Freq (GHz)	Connector	L" x OD"
100	690-dB-1	3, 6, 10, 20, 30 & 40	Hz - 3.0	N M / F	8.0 x 3.50
100	BRK690-dB-1	3, 6, 10, 20, 30 & 40	Hz - 3.0	N M / F	8.0 x 8.31
100	690-dB-11	3, 6, 10, 20, 30 & 40	Hz - 4.0	7/16 DIN M / F	5.98 x 3.0
150	697-dB-1	3, 6, 10, 20, 30 & 40	Hz - 3.0	N M/F M / F	7.97 x 5.0
150	BRK697-dB-1	3, 6, 10, 20, 30 & 40	Hz - 3.0	N M / F	7.97 x 8.31



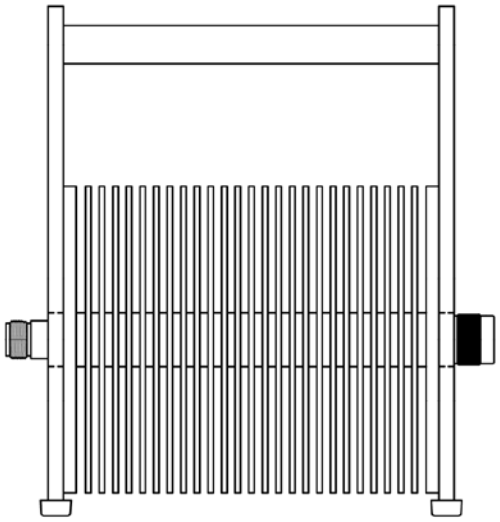
690-dB-1



697-dB-1



690-dB-11



BRK697-dB-1

Input Power Attenuated						
0 dB	**1 dB**	**2 dB**	**3 dB**	**4 dB**	**5 dB**	**6 dB**
0 %	20.57 %	36.9 %	49.88 %	60.19 %	68.38 %	74.88 %
7 dB	**8 dB**	**9 dB**	**10 dB**	**20 dB**	**30 dB**	**40 dB**
80.05 %	84.15 %	87.41 %	90 %	99 %	99.9 %	99.99 %

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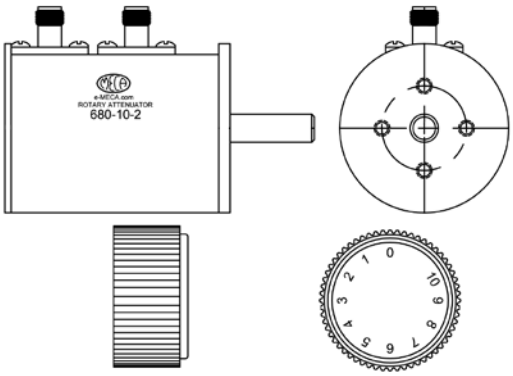
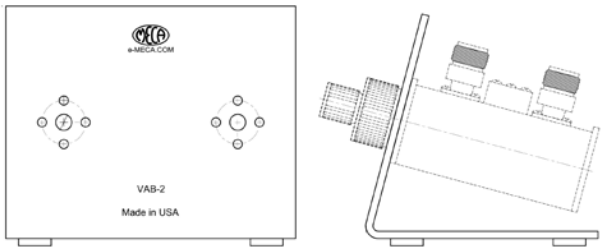
Variable Step Attenuators

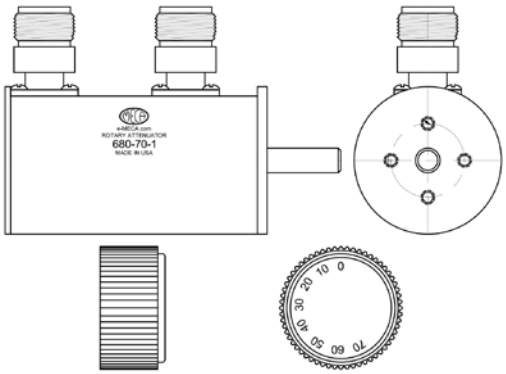
Max Power (Watts)	Series	Attenuation	Freq (GHz)	Connector	L" x OD"
2	680-10-1	0-10 dB 1dB steps	Hz - 2.4	N-F	3.42 x 1.50
2	680-10-2	0-10 dB 1dB steps	Hz - 2.2	SMA-F	2.45 x 1.50
2	680-10-1-M01	0-10 dB 1dB steps	Hz - 2.7	N-F	2.75 x 1.50
2	680-10-2-M01	0-10 dB 1dB steps	Hz - 2.7	SMA-F	2.75 x 1.50
2	680-70-1	0-70 dB 10dB steps	Hz - 2.2	N-F	3.42 x 1.50
2	680-70-2	0-70 dB 10dB steps	Hz - 2.2	SMA-F	3.42 x 1.50
2	680-80-1	0-80 dB 10dB steps	Hz - 2.5	N-F	4.26 x 1.50
2	680-80-2	0-80 dB 10dB steps	Hz - 2.5	SMA-F	4.26 x 1.50
2	680-100-1	0-100 dB 10dB steps	Hz - 2.5	N-F	4.26 x 1.50
2	680-100-2	0-100 dB 10dB steps	Hz - 2.5	SMA-F	4.26 x 1.50
2	685-30-1	0-30 dB 1dB steps	Hz - 2.0	N-F	4.72 x 1.50
2	685-30-2	0-30 dB 1dB steps	Hz - 2.0	SMA-F	4.72 x 1.50
2	685-50-1	0-50 dB 1dB steps	Hz - 2.5	N-F	5.38 x 1.50
2	685-50-2	0-50 dB 1dB steps	Hz - 2.5	SMA-F	5.38 x 1.50
2	685-80-1	0-80 dB 1dB steps	Hz - 2.2	N-F	4.26 x 1.50
2	685-80-2	0-80 dB 1dB steps	Hz - 2.2	SMA-F	4.26 x 1.50
N/A	VAB-1	Benchtup Bracket	N/A	N/A	4.13 x 3.00
N/A	VAB-2	Dual Benchtup Bracket	N/A	N/A	4.13 x 5.00



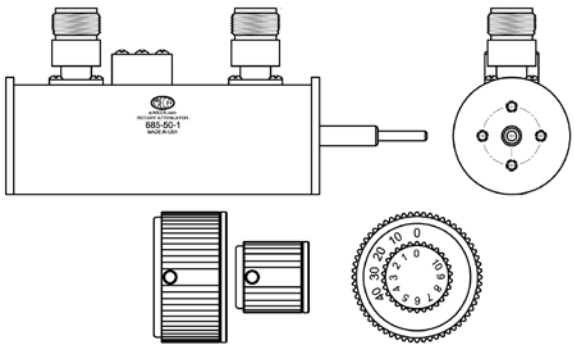
680-10-2



VAB-2



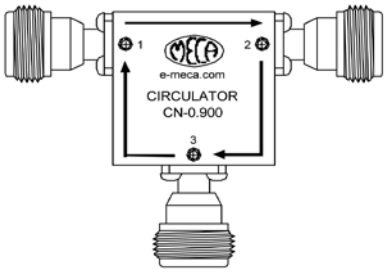
680-70-1



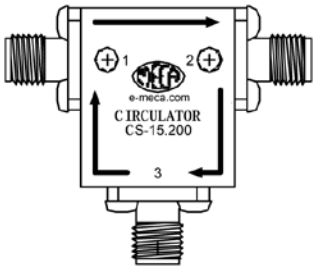
685-50-1

Circulators

Max Power (Watts)	Series	Connector	Freq (GHz)	Isolation (Typ)	L" x W" X D"
500W	CN-0.600	N-F	0.542 - 0.656	20	4.21 x 1.25 x 3.67
250W	CN-0.750	N-F	0.700 - 0.800	20	3.22 x 0.73 x 2.44
250W	CS-0.750	SMA-F	0.700 - 0.800	20	2.33 x 0.73 x 2.03
100W	CN-0.849	N-F	0.698 - 1.000	18	3.21 x 0.73 x 2.43
100W	CS-0.849	SMA-F	0.698 - 1.000	18	2.33 x 0.73 x 2.00
250W	CN-0.900	N-F	0.800 - 1.000	23	2.89 x 0.73 x 2.07
250W	CS-0.900	SMA-F	0.800 - 1.000	23	2.00 x 0.73 x 1.62
50W	CN-1.400	N-F	0.800 - 2.000	15	4.28 x 1.00 x 3.54
50W	CS-1.400	SMA-F	0.800 - 2.000	15	3.52 x 1.00 x 3.16
50W	CN-1.500-M03	N-F	1.000 - 2.000	17	4.28 x 1.00x 3.54
50W	CS-1.500-M01	SMA-F	1.000 - 2.000	20	3.52 x 1.00 x 3.16
350W	HCN-1.500	N-F	1.400 - 1.600	20	3.09 x 1.00 x 2.36
150W	CN-1.950	N-F	1.700 - 2.200	23	2.89 x 0.73 x 2.07
150W	CS-1.950	SMA-F	1.700 - 2.200	23	2.00 x 0.73 x 1.62
150W	CN-2.500	N-F	2.300 - 2.700	23	2.89 x 0.73 x 2.07
150W	CS-2.500	SMA-F	2.300 - 2.700	23	2.00 x 0.73 x 1.62
20W	CN-3.000	N-F	2.000 - 4.000	20	3.22 x 0.70 x 2.44
100W	HCN-3.000	N-F	2.000 - 4.000	20	2.71 x 1.00 x 2.23
20W	CS-3.000	SMA-F	2.000 - 4.000	20	2.33 x 0.70 x 2.00
2W	CN-6.000	N-F	4.000 - 8.000	20	2.64 x 0.50 x 1.82
100W	HCN-6.000	N-F	4.000 - 6.000	18	2.71 x 1.00 x 2.11
2W	CS-6.000	SMA-F	4.000 - 8.000	20	1.75 x 0.50 x 1.375
2W	CS-10.200	SMA-F	8.000 - 12.400	20	1.50 x 0.50 x 1.275
2W	CS-15.200	SMA-F	12.400 - 18.000	20	1.40 x 0.50 x 1.125



CN-0.900



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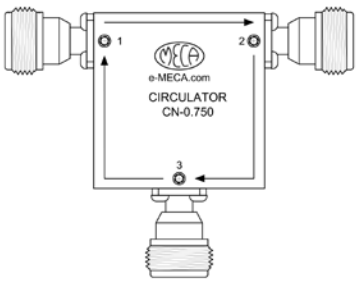

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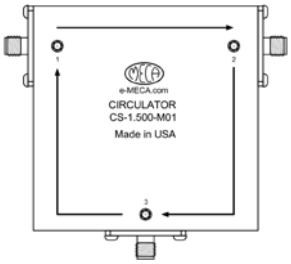

CS-1.500-M01

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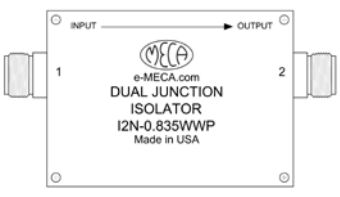
Isolators

Max Power (Watts)	Series	Connector	Freq (GHz)	Isolation (Typ)	L" x W" X D"
2W	IN-0.750	N-F	0.700 - 0.800	20	3.22 x .73 x 2.44
2W	IS-0.750	SMA-F	0.700 - 0.800	20	2.34 x .73 x 1.79
2W	IN-0.849	N-F	0.698 - 1.000	20	3.21 x .73 x 1.79
2W	IS-0.849	SMA-F	0.698 - 1.000	18	2.34 x .73 x 1.79
2W	IN-0.900	N-F	0.800 - 1.000	23	2.89 x .73 x 1.42
2W	IS-0.900	SMA-F	0.800 - 1.000	23	2.01 x .73 x 1.42
10W	IN-1.400	N-F	0.800 - 2.000	15	4.28 x 1.00 x 2.97
10W	IS-1.400	SMA-F	0.800 - 2.000	15	3.53 x 1.00 x 2.97
2W	IN-1.500-M03	N-F	1.000 - 2.000	20	4.28 x 1.00 x 4.55
2W	IS-1.500-M01	SMA-F	1.000 - 2.000	20	3.52 x 1.00 x 2.34
2W	IN-1.950	N-F	1.700 - 2.200	20	2.89 x .73 x 1.42
2W	IS-1.950	SMA-F	1.700 - 2.200	23	2.01 x .73 x 1.42
2W	IN-2.500	N-F	2.300 - 2.700	20	2.89 x .73 x 1.42
2W	IS-2.500	SMA-F	2.300 - 2.700	20	2.01 x .73 x 1.42
2W	IN-3.000	N-F	2.000 - 4.000	20	3.22 x .70 x 1.79
2W	IS-3.000	SMA-F	2.000 - 4.000	20	2.34 x .70 x 1.79
2W	IN-6.000	N-F	4.000 - 8.000	20	2.64 x .50 x 1.17
2W	IS-6.000	SMA-F	4.000 - 8.000	20	1.76 x .50 x 1.17
2W	IS-10.200	SMA-F	8.000 - 12.400	20	1.51 x .63 x 1.05
2W	IS-15.200	SMA-F	12.400 - 18.000	20	1.51 x .63 x 1.05
2W	IK-22.250	2.92mm-F	18.000 - 26.500	20	0.85 x 1.25 x 0.50
2W	IK-29.000	2.92mm-F	27.000 - 31.000	22	0.85 x 1.25 x 0.50
2W	IK-33.250	2.92mm-F	26.500 - 40.000	16	0.85 x 1.25 x 0.50
Dual Junction Isolator - Weatherproof					
100W	I2N-0.835WWP	N-F	0.824 - 0.849	40	2.43 x 4.34 x 0.89
100W	I2N-1.575WWP	N-F	1.555 - 1.595	40	2.43 x 4.34 x 0.89
100W	I2N-1.880WWP	N-F	1.850 - 1.910	40	2.43 x 4.34 x 0.89
100W	I2S-0.835WWP	SMA-F	0.824 - 0.829	40	2.43 x 4.12 x 0.89
100W	I2S-1.575WWP	SMA-F	1.555 - 1.595	40	2.43 x 4.12 x 0.89
100W	I2S-1.880WWP	SMA-F	1.850 - 1.910	40	2.43 x 4.12 x 0.89

* Consult factory for other models



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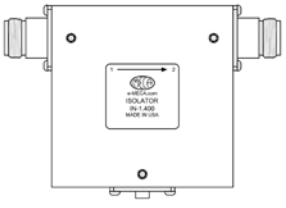
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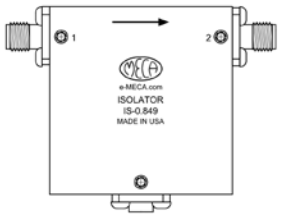

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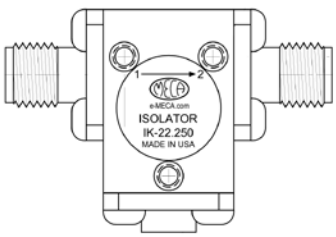
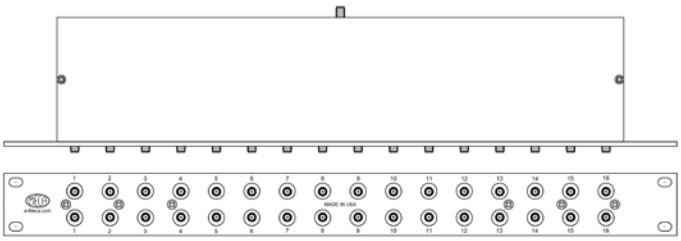


IK-22.250

Integrated Assemblies

Catalog No	Description	# of Dividers	Freq (GHz)	RU
R2806-S-1.900-M01	Rack Mount 6-way SMA	2	0.800 - 3.000	1 (1.75”)
R2808-2-1.700V	Rack Mount 8-way	2	0.698 - 2.700	1 (1.75”)
R2808-8-1.700V	Rack Mount 8-way BNC	2	0.698 - 2.700	1 (1.75”)
R2816-S-1.900-M01	Rack Mount 16-way SMA	2	0.800 - 3.000	1 (1.75”)
R4806-4-1.700V	Rack Mount 6-way N	4	0.698 - 2.700	1 (1.75”)
R4802-8-1.700V-M01	Rack Mount 2-way BNC	4	0.698 - 2.700	1 (1.75”)
R4804-8-1.700V	Rack Mount 4-way BNC	4	0.698 - 2.700	1 (1.75”)
R8802-2-1.700V	Rack Mount 2-way SMA	8	0.698 - 2.700	1 (1.75”)
R12802-4-1.700V	Rack Mount 2-way N	12	0.698 - 2.700	1 (1.75”)
R4808-2-1.700V	Rack Mount 8-way SMA	4	0.698 - 2.700	1 (1.75”)
R6808-10-1.700V	Rack Mount 8-way QMA	6	0.698 - 2.700	2 (3.5”)
R16802-10-1.700V	Rack Mount 2-way QMA	16	0.698 - 2.700	1 (1.75”)
R16804-10-1.700V	Rack Mount 2-way QMA	16	0.698 - 2.700	2 (3.5”)
Catalog No	**Description**	**Connector**	**Freq (GHz)**	**RU**
RM-6N	Rack Mount Patch Panel x 6	Type N-Female	DC-11.000	1 (1.75”)
RM-10N	Rack Mount Patch Panel x 10	Type N-Female	DC-11.000	1 (1.75”)
RM-12N	Rack Mount Patch Panel x 12	Type N-Female	DC-11.000	1 (1.75”)
Catalog No	**Patch Panels**			**RU**
BM-6-SMA	6 x ABSF-SF			N/A
BM-12-SMA	12 x ABSF-SF			N/A



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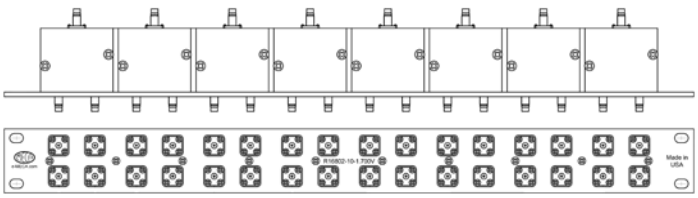

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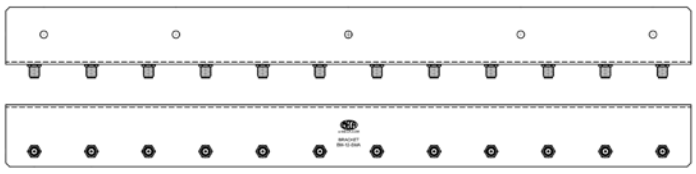
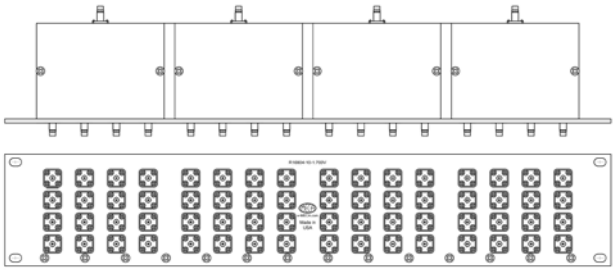


BM-12-SMA



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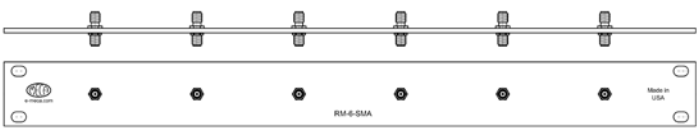
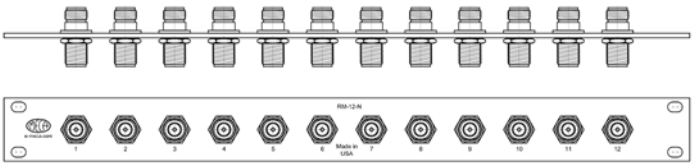


RM-6-SMA



RM-12N

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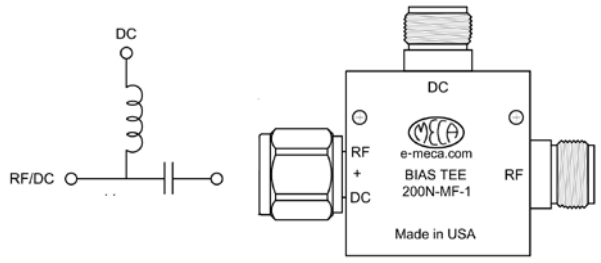
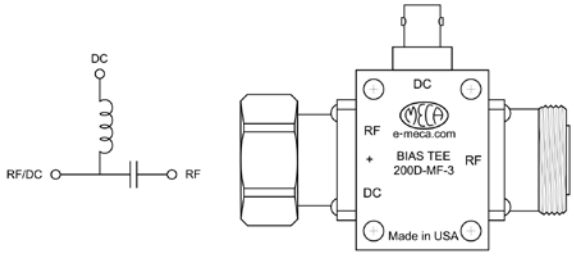
Bias Tees & Diplexers/Cross Band Couplers

Series	Freq (GHz)	Connector	Power	L" x W" x D"
205X-XX-X	0.001 - 0.100	N, SMA, TNC, BNC	10W RF, 30 VDC/ 1A	1.68 x 1.68 x 0.88*
205S-FF-2-M01	0.010 - 2.500	SMA-F	5W RF, 100 VDC/ 4A	1.41 x 1.57 x 0.55
205S-FF-5	0.100 - 6.000	SMA-F	5W RF, 100 VDC/ 2.5A	1.41 x 1.60 x 0.55
200X-XX-X	0.500 - 2.500	N, SMA, TNC, BNC	300W RF, 100 VDC/ 7A	1.68 x 1.68 x 0.88*
200D-XX-X	0.500 - 2.500	7/16 DIN	300W RF, 100 VDC/ 7A	1.39 x 1.88 x 1.55
202N-XX-3-M01	3.500 - 4.500	Type N	300W RF, 100 VDC/ 7A	1.68 x 1.68 x 0.88
207X-XX-X	0.698 - 2.700	N, SMA, TNC, BNC	300W RF, 100 VDC/ 7A	1.68 x 1.68 x 0.88*
207D-XX-X	0.698 - 2.700	7/16 DIN	300W RF, 100 VDC/ 7A	1.39 x 1.88 x 1.55

* Not including connectors

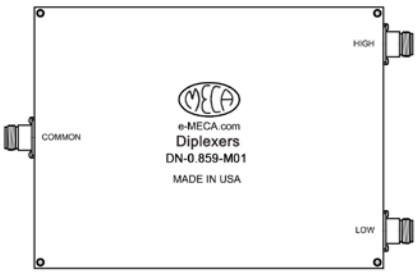


200N-MF-1



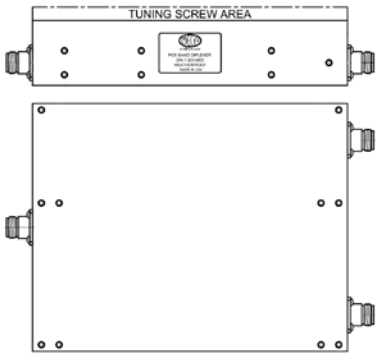
200D-MF-3

Catalog No	Band	Connector	PIM (dBc)	Frequency Bands Low/High (GHz)	L" x W" x D"
DN-0.859-M01	Cell	N-F	<-153	0.824-0.849 & 0.869-0.894	8.7 x 6.5 x 2.75
DN-1.349	LTE/Cell & AWS	7/16 DIN-F	<-153	0.698-0.793 & 0.824-2.000	11.0 x 8.5 x 3
DD-1.349	LTE/Cell & AWS	7/16 DIN-F	<-153	0.698-0.793 & 0.824-2.000	11.26 x 8.5 x 3
DN-1.920-M03	AWS	N-F	<-153	1.850-1.910 & 1.930-1.990	8.4 x 7.0 x 2.2
DN-1.933-M03	PCS	N-F	<-153	1.710-1.795 & 2.110-2.155	3.9 x 4.3 x 1.88
DCD-1.933	AWS/PCS	7/16 DIN-F	<-153	1.710-1.755/2.110-2.155 & 1.850-1.990	9.09 x 7.49 x 2
DCN-1.933	AWS/PCS	N-F	<-153	1.710-1.755/2.110-2.155 & 1.850-1.990	8.88 x 7.49 x 2



DN-0.859-M01

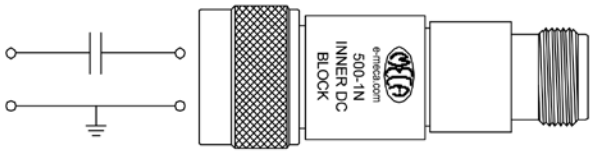
DN-1.933



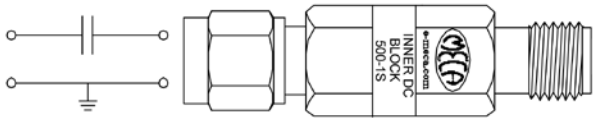
DN-1.920-M03

DC Blocks

Series	Type	Connector	Freq (GHz)	Max Power (Watts)	L" x OD"
500-1B	Inner	BNC M / F	0.400 - 3.000	100 watts	1.82 x 0.56
500-1K	Inner	2.92mm M / F	0.250 - 40.000	75 volts	0.86 x 0.28
500-1N	Inner	N M / F	0.400 - 3.000	100 watts	2.20 x 0.82
500-1S	Inner	SMA M / F	0.400 - 3.000	80 watts	1.31 x 0.334
500-1T	Inner	TNC M / F	0.400 - 3.000	100 watts	1.82 x 0.56
500-1Q	Inner	QMA M / F	0.400 - 3.000	80 watts	1.63 x 0.41
590-11	Inner	7/16 DIN M / F	0.400 - 2.500	500watts	4.15 x 1.25
500-1SF18	Inner	SMA M / F	0.010 - 18.000	200 volts	1.20 x 0.50
500-1NF18	Inner	N M / F	0.010 - 18.000	200 volts	1.91 x 0.82
500-1TF18	Inner	TNC M / F	0.010 - 18.000	200 volts	2.07 x 1.56
501-1B	Outer	BNC M / F	0.400 - 4.000	200 volts	1.60 x 0.56
501-1N	Outer	N M / F	0.010 - 18.000	200 volts	1.91 x 0.82
501-1S	Outer	SMA M / F	0.010 - 18.000	200 volts	1.20 x 0.50
501-1T	Outer	TNC M / F	0.010 - 18.000	200 volts	2.07 x 0.56
502-1B	Inner/Outer	BNC M / F	0.400 - 4.000	200 volts	1.60 x 0.56
502-1N	Inner/Outer	N M / F	0.010 - 18.000	200 volts	1.91 x 0.82
502-1S	Inner/Outer	SMA M / F	0.010 - 18.000	200 volts	1.20 x 0.50
502-1T	Inner/Outer	TNC M / F	0.010 - 18.000	200 volts	2.07 x 0.56



500-1N



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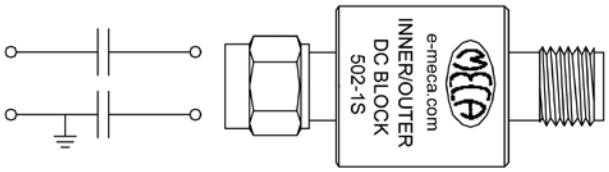

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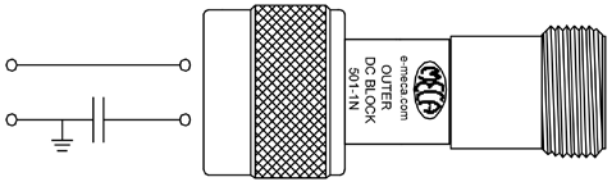
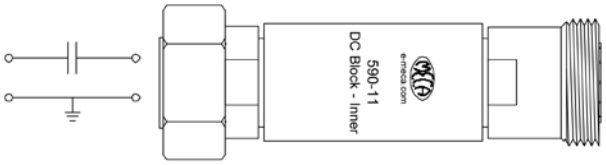


501-1N



590-11

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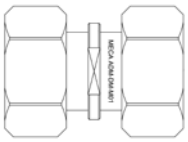
Adapters

MECA P#	Freq (GHz)	Description	L" x OD"
N to N			
ANM-NM-M01	DC - 11.0	N-M to N-M	1.60 x 0.91
ANF-NF-M01	DC - 12.4	N-F to N-F	1.75 x 0.66
ARNM-NF	DC - 11.0	N M to N F Right Angle	1.45 x 1.32
N to SMA			
ANM-SF-M01	DC - 18.0	N-M to SMA-F	1.24 x 0.91
ANM-SM-M01	DC - 18.0	N-M to SMA-M	1.29 x 0.91
ANF-SM-M01	DC - 18.0	N-F to SMA-M	1.36 x 0.66
ANF-SF-M01	DC - 12.4	N-F to SMA-F	1.32 x 0.87
SMA to SMA			
ASM-SM-M01	DC - 18.0	SMA-M to SMA-M	0.75 x 0.36
ASF-SF-M01	DC - 18.0	SMA-F to SMA-F	0.66 x 0.26
7/16 DIN to 7/16 DIN			
ADM-DM-M01	DC - 8.0	DIN-M to DIN-M	1.88 x 1.37
ADM-DF-M01	DC - 8.0	DIN-M to DIN-F	1.57 x 1.37
ADF-DF-M01	DC - 8.0	DIN-F to DIN-F	1.25 x 1.25
N to 7/16 DIN			
ANM-DM-M01	DC - 8.0	N-M to DIN-M	1.95 x 1.37
ANM-DF-M01	DC - 7.5	N-M to DIN-F	1.64 x 1.25
ANF-DM-M01	DC - 8.0	N-F to DIN-M	2.27 x 1.37
ANF-DF-M01	DC - 7.5	N-F to DIN-F	1.95 x 1.14
SMA to 7/16 DIN			
ADM-DM-M01	DC - 8.0	N-M to DIN-M	1.88 x 1.37
ADM-DF-M01	DC - 7.5	N-M to DIN-F	1.57 x 1.37
ADF-DM-M01	DC - 8.0	N-F to DIN-M	
ADF-DF-M01	DC - 7.5	N-F to DIN-F	1.25 x 1.25
Bulkhead (s)			
ABNF-NF-M01	DC - 11.0	Blkd N-F to N-F	1.749 x 0.870
ABNF-NM-M01	DC - 11.0	Blkd N-F to N-M	2.052 x 0.870
ABDF-DF	DC - 11.0	Blk Din-F to Din-F	1.99 x 1.77

ADF-DF-M01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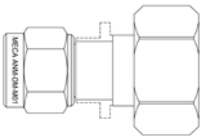
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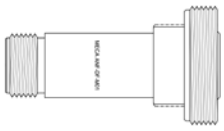
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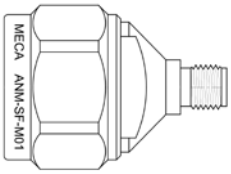
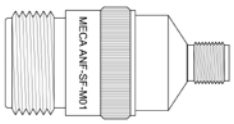


ANM-SF-M01



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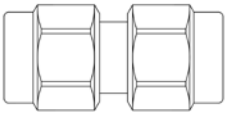
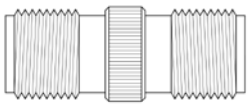
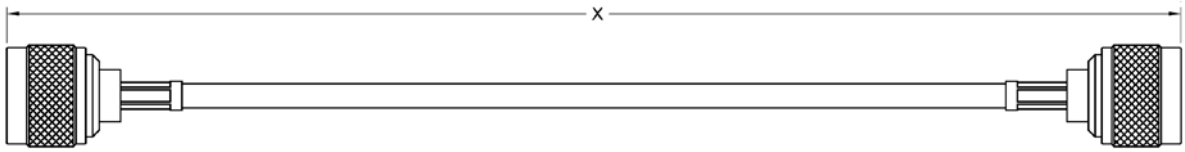

ASM-SM-M01


ASF-SF-M01

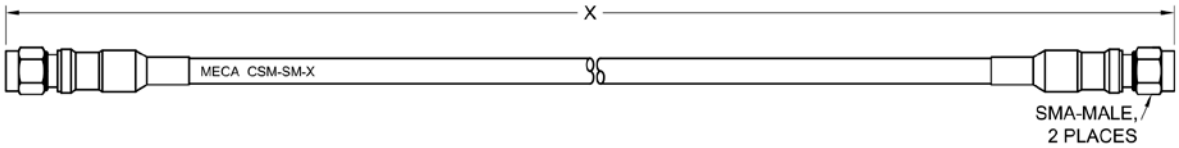
Cable Assemblies/Jumpers

Series	Freq (GHz)	Connector	Cable Type *	L”
CSM-SM-XX	Hz - 6.0	SMA-M to SMA-M	RG 142	12, 24, 36, 48, 72 & 120
CNM-NM-X	Hz - 6.0	N-M to N-M	RG 142	12, 24, 36, 48, 72 & 120
CSM-SM-XX-M01	Hz - 6.0	SMA-M to SMA-M	LMR 240	12, 24, 36, 48, 72 & 120
CSM-SM-XX-M03	Hz - 6.0	SMA-M to SMA-M	141 Conformable	12, 24, 36 & 48
CNM-NM-XX-M01	Hz - 6.0	N-M to N-M	LMR 240	12, 24, 36, 48, 72 & 120
CNM-NM-XX-M02	Hz - 6.0	N-M to N-M	LMR 400	12, 24, 36, 48, 72 & 120
CDM-DM-XX-M01	Hz - 6.0	DIN-M to DIN-M	LMR 240	12, 24, 36, 48, 72 & 120
CDM-DM-XX-M02	Hz - 6.0	DIN-M to DIN-M	LMR 400	12, 24, 36, 48, 72 & 120

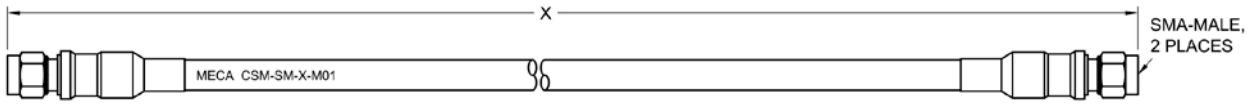
* Other cable types available in RG-178, LMR195, RG-400, RG-402, RG-58, T401, T402 & SPP-250CCPC.



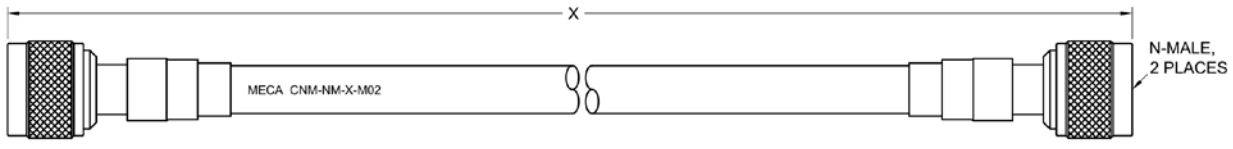
CNM-NM-X



CSM-SM-X



CSM-SM-XX-M01



CNM-NM-XX-M02

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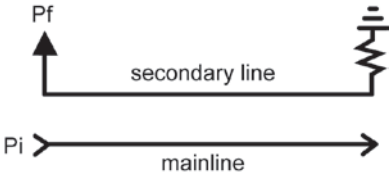
How to Specify the Best Directional Coupler for Your Critical Application

Introduction

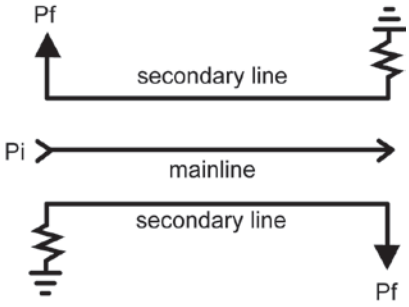
Over the years many different techniques have been utilized to bring about the physical realization of directional couplers. The scope of this article is limited to discussion of quarter-wavelength, coaxial, directional couplers, as this type of coupler represents a balanced compromise between functional range, performance and cost for most broadband applications covering up to an octave bandwidth.



Pi = Incident Power
Pf = Forward Power

Single Directional Coupler
Fig. 1

The basic directional coupler is a four port junction that is used in a wide variety of microwave systems to satisfy almost any requirement for sampling incident and reflected microwave power conveniently and accurately with minimal disturbance to the transmission line. The basic configuration of a single directional coupler is shown in **figure 1** which illustrates two parallel transmission lines over a length of one-quarter wavelength, corresponding with the center frequency of operation. The main and secondary lines are separated by a calculated physical distance which determines the coupling factor of the device. The physically closer the lines are to each other, the more power will be introduced on the secondary line. The term coupling denotes how much of the input power is sampled to the coupled port and is defined as 10 times ratio of IncidentPower to Forward Power **C = 10 log10(Pf/Pi)**. Typical coupling values found in practice are 3, 6, 10, 20, 30 & 40 dB; however, practically anycoupling value may be obtained through proper design.



Dual Directional Coupler
Fig. 2

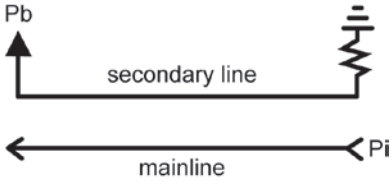
A dual directional coupler **(figure 2)** is essentially two single directional couplers connected back-to-back sharing a common mainline and providing two output ports with high isolation between those ports. This high isolation is critical for the accuracy of reflectometer set-ups that simultaneously sample input power to a device or load providing a ratio of signals for the purpose of determining return loss in decibels.

Directional Coupler Theory and Definitions

When power is introduced at the input port, all of the power appears at the output port except for the portion intended to be sampled. If power is reflected back from the output port, the ideal directional coupler does not allow any of the reflected power to appear on the secondary line.

Regrettably, the ideal directional coupler does not exist in our world. Consequently, a small amount of backward power will be coupled to the secondary line 180° out of phase from the incident wave canceling power on the secondary line and adding uncertainty to the measurement. The term directivity **(figure 3)** denotes the ratio of forward to backward coupling and is defined as 10 times the common log of the ratio of forward to backward power **D = 10 log10(Pf/Pb)**. The higher the value of directivity, the less backward power is sampled and measurement uncertainty is significantly improved. Directivity is the qualitative benchmark by which couplers are compared.

Since we are on the subject of measurement errors, we should also deal with the importance of Voltage Standing Wave Ratio (VSWR) because reflections will add and subtract to the incident signal causing uncertainty in the coupling factor. VSWR is defined as the ratio of incident to reflected signals and is ideally 1.00:1, meaning these signals are in phase and will not cancel. The better the VSWR, the less return loss is encountered. Unsatisfactory coupler VSWR will degrade measurement accuracy and is usually attributable to lesser quality connectors or inadequate design techniques.



Pi = Incident Power
Pb = Backward Power

Directivity
Fig. 3

The **frequency sensitivity** or “flatness” of a coupler is a measure of how coupling varies over a given frequency range. Optimum coupling frequency response is achieved by “centering” the design within the specified band of interest. Typical coupling flatness for a quarter-wavelength coupler operating over an octave band is within ± 0.75 dB of nominal.

All things being equal, stronger coupling factors (3, 6 & 10 dB) exhibit greater flatness than weaker coupling factors (20 through 50 dB). When operating over frequency bands greater than an octave, the flatness tolerance may need to be relaxed due to the inherent characteristics of coupling roll-off.

Another important consideration when specifying a coupler is to ensure the device has minimal mainline insertion loss. Through virtue of their design, coaxial air-line couplers offer the lowest possible loss when inserted in a transmission path.

Generally, **the insertion loss** of a coupler (or any microwave device for that matter) becomes more significant at higher frequency, namely because loss increases with frequency and higher frequency power sources are considerably more expensive. Accordingly, the criteria of low insertion loss will prevent precious power from being wasted on measurement components.

When specifying a directional coupler with a coupling factor stronger than 20 dB (3, 6 or 10 dB), consideration should also be given to the theoretical insertion loss caused by power coupling from the mainline. **Table 1** illustrates the amount of additional loss the device exhibits as a function of the proximity of the two transmission lines. It should also be noted that dual directional couplers exhibit twice the loss of single directional models because there are two secondary lines drawing power from the mainline.

Theoretical Mainline Insertion Loss Due to Coupling Factor (dB)							
Coupling Factor (dB)	3	6	10	20	30	40	50
Single Directional Coupler	3.01	1.2560	7.78	9.03	9.54	10.79	12.04
Dual Directional Coupler	--	--	0.9120	0.0872	0.0086	0.0008	0.00008

Table 1

Directional Coupler Solutions from MECA
MECA designs and manufactures both coaxial air-line and stripline couplers. Through virtue of their design, air-line couplers are high power capable and offer the lowest possible insertion loss. The unique matching techniques used in their construction also provide exceptionally high directivity and the best possible VSWR. Stripline couplers offer the advantage of multi-octave frequency coverage in miniature package sizes for improved packaging density. MECA offers a wide selection of directional couplers optimized to the microwave engineer's critical specifications with standard coupling values of 3, 6, 10, 20, 30 and 40 dB available from STOCK – 4 weeks after receipt of your order.

Conclusion
System performance will benefit greatly by keeping key concepts and parameters in mind such as directivity, insertion loss, frequency sensitivity and VSWR when selecting directional couplers for general applications such as line monitoring, power measurements and load source isolators.

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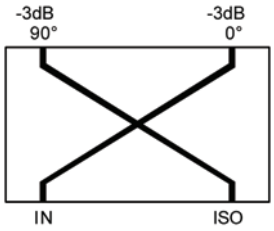
Hybrid Coupler Basics



3dB, 90° Hybrid Couplers

A 3 dB, 90° hybrid coupler is a four-port device that is used either to equally split an input signal with a resultant 90° phase shift between output ports or to combine two signals while maintaining high isolation between the ports.

The basic configuration of a hybrid coupler is shown in Figure 1 which illustrates two cross-over transmission lines over a length of one-quarter wavelength, corresponding with the center frequency of operation. When power is introduced at the IN port, half the power (3dB) flows to the 0° port and the other half is coupled (in the opposite direction) to the 90° port. Reflections from mismatches sent back to the output ports will flow directly to the ISO port or cancel at the input. This is why hybrids are so widely used to split high power signals in applications where unwanted reflections could easily damage the driver device.

3 dB, 90° degree hybrids are also know as quadrature hybrids because a signal applied to any input, will result in two equal amplitude signals that are quadrant (90° apart). It also makes no difference which port is the input because the relationship at the outputs remains the same as these devices are electrically and mechanically symmetrical. This configuration ensures a high degree of isolation between the two output ports and the two input ports without unwanted interaction between them.

Common Applications

Carriers are often faced with the challenge of adding next generation services while trying to keep CAPX equipment costs low. An economical solution to this problem is to combine two transmitters with a hybrid coupler to share one antenna, thus freeing up another antenna for the overlay. The hybrid coupler provides excellent isolation between the receivers and group delay is extremely small having no effect on current receiver calibration or operation.

Hybrid couplers can also be used to split signals from tower top amplifiers to BTS receivers (remember mismatches on the input side have no effect on the output ports).

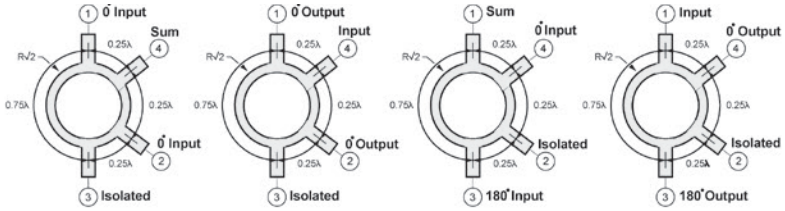
For in-Building distribution systems, hybrids are useful in carrying multiple carrier inputs because the high degree of isolation between the two output ports and the two input ports without unwanted interaction between carriers.

3dB, 180° Hybrid Ring Couplers

180° hybrid ring couplers (also called “rat race” couplers) are four-port devices used to either equally split an input signal or to sum two combined signals. An additional benefit of the hybrid ring is to alternately provide equally-split but 180 degree phase-shifted output signals.

The center conductor ring is 1½ wavelengths in circumference (or six ¼ wavelengths) and each port is separated by 90°. This configuration creates a lossless device with low VSWR, excellent phase & amplitude balance, high output isolation and match output impedances. The low loss, airline construction also makes the device a perfect choice for combining high power mixed signals.

Figure 2 below shows all four possible port configurations and the resultant phase relationships at the outputs of the device. Again, it makes no difference which port is the input because the device is electrically and mechanically symmetrical.



Circulator & Isolator Basics

An RF isolatoris a two-port ferromagnetic passive device which is used to protect other RF components from excessive signal reflection. Isolators are common place in laboratory applications to separate a device under test (DUT) from sensitive signal sources. An RF circulatoris a three-port ferromagnetic passive device used to control the direction of signal flow in a circuit and is a very effective, low-cost alternative to expensive cavity duplexers in base station and in-building mesh networks. Examples of both applications will be covered later in this article.

To understand how these components control the signal flow, think of a cup of water into which you place a spoon and stir in a clockwise motion. If you sprinkle some pepper into the cup and continue to stir, you will notice that the pepper easily follows the circular motion of the water. You can also see that it would be impossible for the pepper to move in a counterclockwise direction because the water motion is just too strong. The interaction of the magnetic field to the ferrite material inside isolators and circulators creates magnetic fields similar to the water flow in the cup. The rotary field is ver y strong and will cause any RF/microwave signals in the frequency band of interest at one port to follow the magnetic flow to the adjacent port and not in the opposite direction.

FIGURE 1

Figure 1 shows the schematics for a circulator and an isolator. Notice how an isolator is a circulator with the third port terminated. The arrows represent the direction of the magnetic fields and the signal when applied to any port of these devices. Example: If a signal is placed at port A, and port B is well matched, the signal will exit at port B with very little loss (typically 0.4dB). If there is a mismatch at port B, the reflected signal from port B will be directed to port C.

Isolation

An important consideration when specifying an isolator or circulator is to ensure the device has adequate isolation for your given application. Isolation is a unit of measure (in dB) that states the separation of signal levels on adjacent ports of a device. The greater the isolation value, the less interference from a signal on one port is present at the other. The amount of isolation is directly affected by the VSWR presented at port 3 of the isolator. If the match on port 3 is poor, you can expected isolation below 10 dB, but if the match is improved to 1.10:1 by using a good termination device in the circuit, then the isolation would improve to over 20 dB.

Insertion Loss

Another important consideration when specifying circulators and isolators is to ensure the device has minimal insertion loss when inserted in a transmission path. Generally, the insertion loss of a circulator/isolator (or any microwave device for that matter) becomes more significant at higher frequency, namely because loss increases with frequency and higher frequency power sources are considerably more expensive. Accordingly, the criteria of low insertion loss will prevent precious power from being wasted.

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Circulator & Isolator Basics... Continued.

Common Applications

As described earlier, a common application for a circulator is as an inexpensive duplexer (a transmitter and receiver sharing one antenna). **Figure 2** shows that when the transmitter sends a signal, the output goes directly to the antenna port and is isolated from the receiver. Good isolation is key to ensure that a high-power transmitter output signal does not get back the receiver front end as is governed by the return loss of the antenna. In this configuration, all signals from the antenna go straight to the receiver and not the transmitter because of the circular signal flow (remember the cup of water).

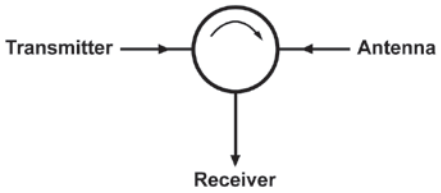

FIGURE 2 - Duplexor

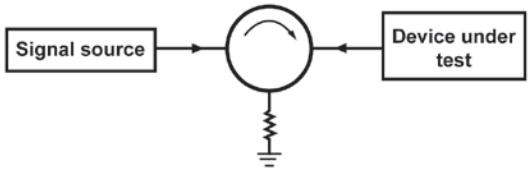

FIGURE 3

Figure 3 illustrates the most common application for an isolator. The isolator is placed in the measurement path of a test bench between a signal source and the device under test (DUT) so that any reflections caused by any mismatches will end up at the termination of the isolator and not back into the signal source. This example also clearly illustrates the need to be certain that the termination at the isolated port is sufficient to handle 100% of the reflected power should the DUT be disconnected while the signal source is at full power. If the termination is damaged due to excessive power levels, the reflected signals will be directed back to the receiver because of the circular signal flow.

Power Ratings

MECA isolators are designed with an internal 10w load capability. However, the recommended maximum power that our devices can sustain is 2w to allow for de-rating and heat transfer. Higher isolator power levels can be achieved utilizing our circulators with an external load which would make the limiting factor the ferrite material and not an internal resistor. As previously outlined, if the match on the terminated port is poor, you can expect isolation below 10 dB, but if the match is improved to 1.10:1 by using a good termination device in the circuit, then the isolation would improve to over 20 dB. MECA manufactures an extensive selection of high power, low loss RF loads. Please consult with a MECA applications engineer to discuss your requirements and select the proper termination for your high power isolator.

Special Handling & Storage

Isolators and circulators have magnets that produce strong fields to control signal flow. As is the case with any magnet, when placed in close proximity to another, the magnetic fields oppose one another, and over time, will weaken the strength of the magnets. This is called degaussing. A similar effect can be seen when stored in close proximity to ferrous metals. Special care should be taken when storing any isolators/circulators and MECA recommends that the devices should be separated by 3 inches from each other and all ferrous surfaces to reduce degaussing effects.

Why Most Power Dividers Are Not Suitable For Combining

“We can help you avoid costly mistakes!”
The limiting factor for most Wilkinson power dividers used as combiners is power dissipation. When input signals are out ofphase, non-coherent or have amplitude unbalance this causes a cancellation across the isolation resistors resulting in power dissipation.

Since these devices are most commonly used as dividers, typical industry designs utilize low power alumina surface mount resistor chips on a thermally insulative circuit board. However, maximum input for combining non-coherent signals on adjacent ports is:(rated input power of divider * 5%) / “N” # of input channels. If the rated power is exceeded, the chip resistors will heat up and degrade resulting in loss of port-to-port isolation and VSWR.

H 100 Watt Series

MECA’s industry leading high power Wilkinson combiner/divider series ideally designed for systems applications utilizing multiple high-power transmitter or antenna feeds. Standard models are available in 2-way, 3-way and 4-way configurations for all wireless bands between 0.800 and 2.200 GHz. Your applications will benefit from high isolation, low insertion loss and exceptional VSWR. Mechanical features include a rugged aluminum housing specially designed to provide excellent heat transfer for applications where additional heatsink required and your choice of 7/16 DIN, N or SMA connectors. Weatherproof models (IP65) available.

MECA’s compact, high performance, 75-watt, Wilkinson power divider/combiner series is ideally suited for system applications from 0.8 to 2.2 GHz where increased power is used to extend system coverage. Your applications will benefit from high isolation, low insertion loss and exceptional VSWR. Standard models are available in 2-way through 8-way configurations in both N-Female and SMA-Female connectors with gold-plated contact pins and a rugged aluminum housing to minimize RF EMI.

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Reactive RF Splitter Basics

Introduction

Reactive splitters have long been the prevailing signal distribution component for antenna arrays and radiating cable systems for in-building deployments because of their low loss and rugged nature. Unlike Wilkinson power dividers that use internal resistors to provide isolation between the output paths, reactive splitters are quarter wave length lines matched to split signals evenly to the output paths. This characteristic allows for efficient, high power, broadband operation with minimal solder joints and low passive intermodulation (PIM) characteristics.

Why reactive splitters are not suitable for combining

Reactive splitters, by design, do not provide isolation between the output ports and exhibit very poor VSWR looking back into the device, so they should not be used as combiners. Applications that employ a need for both combining and dividing benefit greatly by use of a Wilkinson power divider/combiner, but special care must be taken to not damage the input resistor.

Most industry Wilkinson power dividers are rated between 10–30 watts but can only handle a few mW as an unbalanced combiner. As a general rule to calculate combining rated power, the following formula is used:
(rated input power of divider * 5%) / “N” # of input channels = max input at each port for combining

For higher power Wilkinson combining applications, check out MECA H-Series Combiners.

Ordering

MECA introduces a new line of compact, high-power capable (700 watts) reactive splitters covering all wireless frequencies from 0.698 - 2.700 GHz. Available in 2-way and 3-way configurations fitted with 7/16 DIN , N or SMA-4.1/9.5 connectors at all ports. Indoor or Outdoor use (IP67).

This RF power splitter series provides a low loss, equal power split at all output ports while maintaining excellent amplitude and phase balance. MECA’s unique design eliminates the need for extraneous (often misplaced) mounting hardware

Regulatory Compliance

MECA Electronics is fully compliant with the following Government regulations:

DEFENSE FEDERAL ACQUISITION REGULATIONS (DFAR)
- Buy American Act
- Preference for Domestic Specialty Metals

IINTERNATIONAL TRAFFIC IN ARMS REGULATIONS
- (ITAR)

SECURITIES AND EXCHANGE COMMISION (SEC)
- Dodd-Frank Wall Street Reform and Consumer Protection Act

COUNTERFIT PARTS PROGRAM
MECA Electronics is the manufacturer and OEM for all products sold except for cables and adapters. All products including those distributed are in compliance with our in-house anti-counterfeit parts program.

EUROPEAN DIRECTIVE FOR RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS).
All MECA Electronic products are currently compliant to the European Directive for Restriction of Hazardous Substances.
MECA Electronics has offered RoHS compliant products starting in 2004 with a phased in approach. At that time we began by clearly labeling all products as follows:

MECA products already compliant with the RoHS directive.

This labeling method continued until March of 2013. At which time since all standard products we produced are RoHS compliant including finished inventory, we began labeling all products that were not RoHS compliant only
(which typically represented nonstandard products).

Consequently, as of March 2013 all MECA Electronic products are RoHS compliant unless labeled otherwise as follows:

MECA products not compliant but pending with the RoHS directive

QUALITY SYSTEMS
As a result of our proactive approach designing in quality systems into our internal processes; we offer and stand behind our products with an industry leading workmanship warranty of 3 years as highlighted below.
- MECA Electronics Quality Assurance system is registered to ISO 9001.
- Our assembly operators are trained and certified to IPC standard J-STD-001.
- Rigorous parts control program incorporated into our manufacturing process. This includes but is not limited to manufacturing products without reliance on foreign materials and labor.
- All products are internally tested to insure compliance to our rated specifications prior to production manufacturing.
- Our products are 100% inspected and electrically tested to our published specifications.

36 Month Warranty!
We proudly offer a 36 month warranty on ALL of our rugged & reliable, US made RF/Microwave components. The quality and consistency of our products is why MECA is recognized by OEM's and Carriers as a primary source of supply for passive components.

Quality Policy
To provide continuous quality improvement and customer satisfaction - by building quality into every product - by every employee - every step of the way - for the benefit of our customers

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Terms and Conditions

1) Quotations
Unless otherwise specified, all quotations are valid for a period of 60 days subject to change and availability of materials at order inception. Stock subject to prior sale.

2) How to Order
When placing an order, please state both the catalog number and description. For example: 715-20-1.500V for 20 dB, 0.8 - 2.2 GHz, dual-band, V-Line coupler. If any custom features are required, please contact our Application Engineers and a special part number will be assigned. Orders may be placed factory direct or through a MECA sales representative in your area. Orders will be accepted via phone, fax or e-mail pending receipt of a confirming purchase order (when applicable).

3) Payment Terms
MECA accepts VISA, MasterCard and American Express. Net 30 days for customers with established accounts. International orders are prepaid.

Additional Charges: All orders are subject to $6.95 order handling fee. This fee is waived for customers with established NET 30 Terms. MECA will charge a $25 Fee for Bank Transfers on International Orders.

4) Minimum Orders
The minimum order accepted is $250 domestic and $500 international.

5) Delivery
Delivery is based on the prevailing conditions at the time of quotation or order. Agreements as to delivery are subject to contingencies of fire, accident or cause of delay beyond the control of MECA Electronics, Inc.

6) Shipping
All domestic sales are F.O.B. Denville, NJ. When mode of transportation is not specified, shipment will be made via the best carrier using our discretion. All international sales are F.O.B. Ex-works.

Preferred Methods of Shipment:
1. UPS Ground, UPS 3-Day Air (Orange), UPS 2-Day Air (Blue), Next-Day Air (Red).
2. UPS International Services: UPS Worldwide Expedited (Blue), UPS Express (Red).
3. Federal Express Economy, Standard or Priority One.
4. Federal Express International Services.

7) Quality Assurance

MECA Electronics, Inc. is an ISO 9001:2008 certified company. Certified by Intertek. Certificate No. CERT US-2846A.

8) Source Inspection
If Source Inspection is required, additional charges will apply.

9) Warranty
MECA Electronics, Inc. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If within 36 months of delivery determined by the manufacturing date code, and after prepaid return by the owner, any MECA product that is found to be defective, MECA shall, at its option, repair or replace the defective item. This warranty does not apply to products that have been disassembled, misused, modified or subjected to conditions exceeding the applicable specifications or ratings. MECA reserves the right to make design changes, without notice, on any of its products without any obligation to make same or similar changes to items previously purchased. In no event does MECA assume liability for installation labor or for consequential damages. This warranty is the extent of the obligation or liability assumed by MECA, with respect to products, and no other warranty or guarantee is either expressed or implied.

10) Past Warranty Period
MECA Electronics, Inc. products that have exceeded the 36 month warranty period and are returned to the factory for repair shall be repaired or replaced at a determined cost billed to the customer. The customer shall receive an estimate of the repair cost prior to effecting repairs.

11) Returned Material
All returned items are inspected upon receipt for quantity, physical condition and electrical function. All claims for shortage must be made within thirty (30) days of date of shipment from MECA's facility. Title to goods passes to the buyer upon delivery to carrier, and risk of loss or damage shall thereafter rest with the buyer. The buyer must make claims for damage or loss while material is in transit. Returned products will not be accepted without a Return Material Authorization (RMA) number. This number may be obtained by calling our quality assurance department. Freight charges for returned material are the responsibility of the buyer. In addition, an evaluation fee will be charged to the buyer to cover inspection and testing cost for any item returned by the buyer, that is found to be within specifications and/or otherwise deemed to be within the terms of the original purchase.

12) Cancelled Orders/Restocking Charge
Cancelled orders and/or returned items are subject to a 25% restocking charge (of sale price) or a $125.00 minimum charge per item (whichever is greater) for standard catalog items. This charge may vary at the discretion of MECA Electronics, Inc depending on the amount of materials on order at the time of cancellation and the resulting cancellation charges from our supply chain. All sales are final for non-catalog and are therefore NCNR/custom.

13) Federal Manufacturing Code: 22424

14) Return Address

Customer Service Department
MECA Electronics, Inc.
ATTN: RMA ####
459 East Main Street,
Denville, NJ 07834
Phone: 973-625-0661

15) For on-line via RF Parts On Demand additional terms apply.

www.e-MECA.com

RF/Microwave Conversion Tables and Formulas

Power Conversion									
dBm	Watts	dBm	Watts	dBm	Watts	dBm	Watts	dBm	Watts
0	1.0 mW	13	20 mW	26	398 mW	39	8.0 W	52	158 W
1	1.3 mW	14	25 mW	27	500 mW	40	10 W	53	200 W
2	1.6 mW	15	32mW	28	630 mW	41	13 W	54	251 W
3	2.0 mW	16	40 mW	29	800 mW	42	16 W	55	316 W
4	2.5 mW	17	50 mW	30	1.0 W	43	20 W	56	398 W
5	3.2 mW	18	63 mW	31	1.3 W	44	25 W	57	501 W
6	4 mW	19	79 mW	32	1.6 W	45	32 W	58	631 W
7	5 mW	20	100 mW	33	2.0 W	46	40 W	59	794 W
8	6 mW	21	126 mW	34	2.5 W	47	50 W	60	1000 W
9	8 mW	22	158 mW	35	3.2 W	48	63.1 W	61	1260 W
10	10 mW	23	200 mW	36	4.0 W	49	79.4 W	62	1580 W
11	13 mW	24	250 mW	37	5.0 W	50	100 W	63	2000 W
12	16mW	25	316 mW	38	6.3 W	51	126 W	64	2510 W

dBm to watts: $dBm = 10\log_{10} mW$

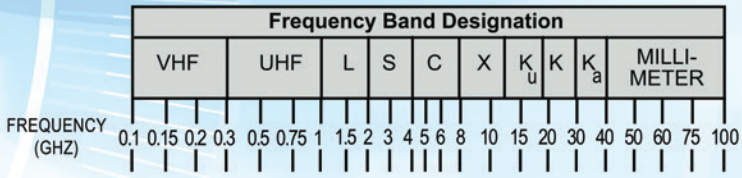
VSWR vs Return Loss									
VSWR	RL(dB)	VSWR	RL(dB)	VSWR	RL(dB)	VSWR	RL(dB)	VSWR	RL(dB)
1.001	66.025	1.120	24.943	1.320	17.207	2.400	7.707	9.000	1.938
1.002	60.009	1.130	24.298	1.330	16.997	2.500	7.360	9.500	1.835
1.003	56.491	1.140	23.686	1.340	16.755	2.600	7.044	10.000	1.743
1.004	53.997	1.150	23.127	1.350	16.540	2.700	6.755	11.000	1.584
1.005	52.063	1.160	22.607	1.400	15.563	2.800	6.490	12.000	1.451
1.006	50.484	1.170	22.120	1.450	14.719	2.900	6.246	13.000	1.339
1.007	49.149	1.180	21.664	1.500	13.979	3.000	6.021	14.000	1.243
1.008	47.993	1.190	21.234	1.550	13.324	3.250	5.524	15.000	1.160
1.009	46.975	1.200	20.828	1.600	12.793	3.500	5.105	20.000	0.869
1.010	46.064	1.210	20.443	1.650	12.207	3.750	4.747	25.000	0.695
1.020	40.086	1.220	20.079	1.700	11.725	4.000	4.437	30.000	0.579
1.030	36.607	1.230	19.732	1.750	11.285	4.500	3.926	35.000	0.496
1.040	34.151	1.240	19.401	1.800	10.881	5.000	3.522	40.000	0.434
1.050	32.256	1.250	19.085	1.850	10.509	5.500	3.194	45.000	0.386
1.060	30.714	1.260	18.783	1.900	10.163	6.000	2.923	50.000	0.347
1.070	29.417	1.270	18.493	1.950	9.842	6.500	2.694	60.000	0.290
1.080	28.299	1.280	18.216	2.000	9.542	7.000	2.499	70.000	0.248
1.090	27.318	1.290	17.949	2.100	8.999	7.500	2.330	80.000	0.217
1.100	26.444	1.300	17.692	2.200	8.519	8.000	2.183	90.000	0.193
1.110	25.658	1.310	17.445	2.300	8.091	8.500	2.053	100.000	0.174

VSWR to return loss: $RL(dB) = 20\log_{10}\left(\frac{VSWR + 1}{VSWR - 1}\right)$

% Input Power Attenuated			
dB	%	dB	%
1	20.57	12	93.70
2	36.90	13	94.98
3	49.88	14	96.02
4	60.19	15	96.84
5	68.38	16	97.58
6	74.88	17	98.00
7	80.05	18	98.42
8	84.15	19	98.74
9	87.41	20	99.00
10	90.00	30	99.90
11	92.06	40	99.99

Theoretical Power Split (dB) for "n-way" Power Divider							
2-Way	3-Way	4-Way	6-Way	8-Way	9-Way	12-Way	16-Way
3.01	4.77	6.02	7.78	9.03	9.54	10.79	12.04

Attenuation (db) = $10\log_{10} \frac{P_{Input}}{P_{Output}}$



Theoretical Mainline Power Split Due to Coupling Factor (dB)								
Coupling Factor	40 dB	30 dB	20 dB	15 dB	10 dB	8 dB	6 dB	3 dB
Single	0.0004	0.0043	0.0436	0.140	0.4560	0.749	1.2560	3.01
Dual	0.0008	0.0086	0.0872	0.28	0.9120	1.498	2.5120	~

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