

Directional Couplers





Directional couplers are used in a wide variety of applications and can satisfy almost any requirement for sampling incident and reflected microwave power conveniently and accurately with minimal disturbance to the transmission line. Some general applications for directional couplers include line monitoring, power measurements and load source isolators.




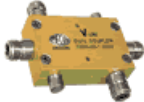
DrawCom offers a wide selection of directional couplers designed to exceed commercial specifications. Standard coupling values of **6, 10, 20, 30** and **40 dB** are available from stock. Custom configurations with special coupling values, external high power terminations and alternate connector styles or plating are also readily available in quantity. All models may be specified without an internal termination for bi-directional coupling. Passive intermodulation (PIM) compliant and weather resistant models are also available.

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

When line monitoring, for the purpose of power level measuring and VSWR alarms, a directional coupler is used to sample power from the transmission line without altering line characteristics. In power measurements, insertion of a directional coupler in the transmission line allows measurement with simple low level detectors or field strength meters and power measuring equipment. By reversing the coupler in the transmission line, an indication of impedance match and/or reflected power can be derived by comparing the forward to reflected power levels. This may be more easily accomplished by using a dual directional coupler in the line. A signal can be taken from the source to the tap with high attenuation (directivity) between the tap and the load.

Part No.	Frequency (GHz)	Coupling Variation (Total)	Insertion Loss (Max)	Directivity (Min)	VSWR (Max)
 CS Series Directional Couplers, 50 Watts, SMA Female					
CS10-1.400	0.800 - 2.000	10 ± 0.75 dB	0.3 dB	20 dB	1.20:1
CS10-1.500V	0.800 - 2.200	10 ± 0.75 dB	0.3 dB	22 dB	1.15:1
CS15-1.500V	0.800 - 2.200	15 ± 0.75 dB	0.3 dB	22 dB	1.15:1
CS20-1.500V	0.800 - 2.200	20 ± 0.75 dB	0.3 dB	22 dB	1.15:1
 CN Series Directional Couplers, 50 Watts, N Female					
CN10-1.500V	0.800 - 2.200	10 ± 0.75 dB	0.3 dB	20 dB	1.20:1
CN15-1.500V	0.800 - 2.200	15 ± 0.75 dB	0.3 dB	22 dB	1.15:1
CN20-1.500V	0.800 - 2.200	20 ± 0.75 dB	0.3 dB	22 dB	1.15:1




Directional Couplers (cont.)

Part No.	Frequency (GHz)	Coupling Variation (Total)	Insertion Loss (Max)	Directivity (Min)	VSWR (Max)
 780 Series - Stripline RF Coupler, 50 Watts, SMA Female					
780-dB-0.750	0.500 - 1.000	± 1.25	0.15 dB	20 dB	1.10:1
780-dB-1.500	1.000 - 2.000	± 1.25	0.20 dB	25 dB	1.10:1
780-dB-3.000	2.000 - 4.000	± 1.25	0.20 dB	22 dB	1.15:1
780-dB-3.900	2.600 - 5.200	± 1.25	0.20 dB	20 dB	1.25:1
780-dB-6.000	4.000 - 8.000	± 1.25	0.25 dB	20 dB	1.25:1
780-dB-9.700	7.000 - 12.400	± 1.00	0.30 dB	17 dB	1.30:1
780-dB-11.750	7.500 - 16.000	± 1.25	0.50 dB	12 dB	1.30:1
780-dB-15.200	12.400 - 18.000	± 1.00	0.60 dB	15 dB	1.40:1
 715 Series Directional Couplers, 500 Watts, N Female					
715-dB-0.600	0.400 - 0.800	± 1.00	0.1 dB	25 dB	1.15:1
715-dB-0.900	0.800 - 1.000	± 0.60	0.1 dB	30 dB	1.10:1
	0.600 - 1.200	± 1.60	0.1 dB	25 dB	1.15:1
715-dB-1.500V	0.800 - 2.200	± 1.75	0.1 dB	25 dB	1.15:1
715-dB-1.650W	0.800 - 2.500	± 2.20	0.1 dB	25 dB	1.15:1
715-dB-1.950	1.700 - 2.200	± 0.60	0.1 dB	25 dB	1.10:1
	1.300 - 2.600	± 1.20	0.1 dB	25 dB	1.15:1
715-dB-3.100	2.000 - 4.200	± 1.20	0.1 dB	25 dB	1.15:1
 715S Series Directional Couplers, 100 Watts, SMA Female					
715S-dB-0.600	0.400 - 0.800	± 1.00	0.1 dB	25 dB	1.15:1
715S-dB-0.900	0.800 - 1.000	± 0.60	0.1 dB	27 dB	1.10:1
	0.600 - 1.200	± 1.60	0.1 dB	25 dB	1.15:1
715S-dB-1.500V	0.800 - 2.200	± 1.75	0.1 dB	25 dB	1.15:1
715S-dB-1.650W	0.800 - 2.500	± 2.20	0.1 dB	25 dB	1.15:1
715S-dB-1.950	1.700 - 2.200	± 0.60	0.1 dB	25 dB	1.10:1
	1.300 - 2.600	± 1.60	0.1 dB	25 dB	1.15:1
715S-dB-3.100	2.000 - 4.200	± 1.20	0.1 dB	25 dB	1.15:1
 722N Series Dual Directional Couplers, 500 Watts, N Female					
722N-dB-0.600	0.400 - 0.800	± 1.00	0.1 dB	25 dB	1.15:1
722N-dB-0.900	0.800 - 1.000	± 0.60	0.1 dB	27 dB	1.10:1
	0.600 - 1.200	± 1.60	0.1 dB	25 dB	1.15:1
722N-dB-1.500V	0.800 - 2.200	± 1.75	0.1 dB	25 dB	1.15:1
722N-dB-1.650W	0.800 - 2.500	± 2.20	0.1 dB	22 dB	1.15:1
722N-dB-1.950	1.700 - 2.200	± 0.60	0.1 dB	25 dB	1.10:1
	1.300 - 2.600	± 1.20	0.1 dB	22 dB	1.15:1
722N-dB-3.100	2.000 - 4.200	± 1.20	0.1 dB	25 dB	1.15:1

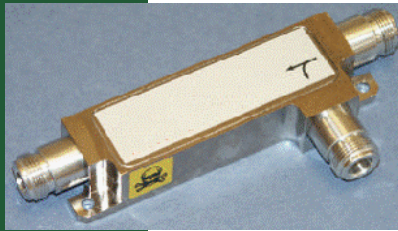
Print Date: 29/05/2009

All information contained in the present data sheet is subject to confirmation at time of ordering.

Directional Couplers (cont.)

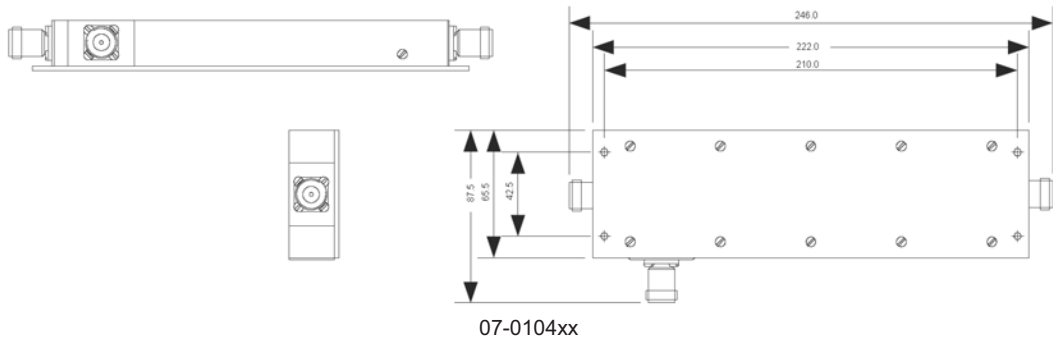
Part No.	Frequency (GHz)	Coupling Variation (Total)	Insertion Loss (Max)	Directivity (Min)	VSWR (Max)
 722S Series Dual Directional Couplers, 100 Watts, SMA Female					
722S-dB-0.600	0.400 - 0.800	± 1.00	0.1 dB	25 dB	1.15:1
722S-dB-0.900	0.800 - 1.000 0.600 - 1.200	± 0.60 ± 1.60	0.1 dB 0.1 dB	27 dB 25 dB	1.10:1 1.15:1
722S-dB-1.500V	0.800 - 2.200	± 1.75	0.1 dB	25 dB	1.15:1
722S-dB-1.650W	0.800 - 2.500	± 2.20	0.1 dB	25 dB	1.15:1
722S-dB-1.950	1.700 - 2.200 1.300 - 2.600	± 0.60 ± 1.20	0.1 dB 0.1 dB	25 dB 25 dB	1.10:1 1.15:1
722S-dB-3.100	2.000 - 4.200	± 1.20	0.1 dB	25 dB	1.15:1
 722 Series Dual Directional Coupler, 500 Watts, N Male to N Female					
722-dB-0.600	0.400 - 0.800	± 1.00	0.1 dB	25 dB	1.15:1
722-dB-0.900	0.800 - 1.000 0.600 - 1.200	± 0.60 ± 1.60	0.1 dB 0.1 dB	27 dB 25 dB	1.10:1 1.15:1
722-dB-1.500V	0.800 - 2.200	± 1.75	0.1 dB	25 dB	1.15:1
722-dB-1.650W	0.800 - 2.500	± 2.20	0.1 dB	25 dB	1.15:1
722-dB-1.950	1.700 - 2.200 1.300 - 2.600	± 0.60 ± 1.20	0.1 dB 0.1 dB	25 dB 25 dB	1.10:1 1.15:1
722-dB-3.100	2.000 - 4.200	± 1.20	0.1 dB	25 dB	1.15:1
 721 Series Directional Coupler, 500 Watts, N Male to N Female					
721-dB-0.600	0.400 - 0.800	± 1.00	0.1 dB	25 dB	1.15:1
721-dB-0.900	0.800 - 1.000 0.600 - 1.200	± 0.60 ± 1.60	0.1 dB 0.1 dB	27 dB 25 dB	1.10:1 1.15:1
721-dB-1.500V	0.800 - 2.200	± 1.75	0.1 dB	25 dB	1.15:1
721-dB-1.650W	0.800 - 2.500	± 2.20	0.1 dB	25 dB	1.15:1
721-dB-1.950	1.700 - 2.200 1.300 - 2.600	± 0.60 ± 1.20	0.1 dB 0.1 dB	25 dB 25 dB	1.10:1 1.15:1
721-dB-3.100	2.000 - 4.200	± 1.20	0.1 dB	25 dB	1.15:1

Note: The power ratings in this datasheet are nominal average power in the forward direction. DrawCom can supply more data on request that contains detailed forward and reverse power specifications.



A wide range of directional or transmitter couplers are available from miniature low power to broadband, high power versions. Directional couplers are available to sample power/frequency at a pre-set coupling level with a sampling/coupling range 6dB to 30dB. Single or dual outputs can be provided. The broadband transmitter coupler design allows operation across the range from 800 –2500MHz making it particularly suitable for use in the distribution of multiple operators into buildings and tunnels. All units are manufactured to IP65 standard.

- High directivity
- Good VSWR
- High power
- Broadband 800 to 2500MHz

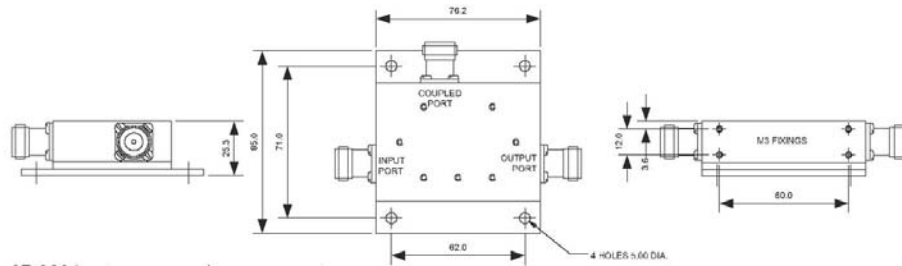


Selection Guide: VHF & UHF couplers

Part No.	Frequency Range (MHz)	Coupling Value (dB)	Max Insertion Loss (dB)	VSWR	Power Rating (W)	RF Connectors
07-018001	70 - 1000	6	2.1	1.4:1	100	N female
07-018002	70 - 1000	10	1.2	1.3:1	100	N female
07-018003	70 - 1000	15	0.8	1.3:1	100	N female
07-018004	70 - 1000	20	0.8	1.3:1	100	N female
07-018005	70 - 1000	30	0.5	1.3:1	100	N female
07-003801	70 - 2200	6	2dB	1.5:1	50	N female
07-003803	70 - 2200	20	1.5dB	1.5:1	50	7-16 Female
07-010401	140 - 470	6	1.7	1.3:1	150	7-16 Female
07-010402	140 - 470	10	0.8	1.3:1	150	7-16 Female
07-010403	140 - 470	15	0.5	1.3:1	150	7-16 Female
07-010404	140 - 470	20	0.5	1.3:1	150	7-16 Female
07-010405	140 - 470	30	0.3	1.3:1	150	7-16 Female
07-010901	140 - 470	6	1.7	1.3:1	150	N female
07-010902	140 - 470	10	0.8	1.3:1	150	N female
07-010903	140 - 470	15	0.5	1.3:1	150	N female
07-010904	140 - 470	20	0.5	1.3:1	150	N female
07-010905	140 - 470	30	0.3	1.3:1	150	N female
07-014002	170 - 2200	6	1.0	1.5:1	100	N female
07-014001	170 - 2200	10	2.0	1.5:1	100	N female
07-014003	170 - 2200	15	1.0	1.5:1	100	N female
07-014004	170 - 2200	20	1.0	1.5:1	100	N female

Selection Guide: VHF & UHF couplers (cont.)

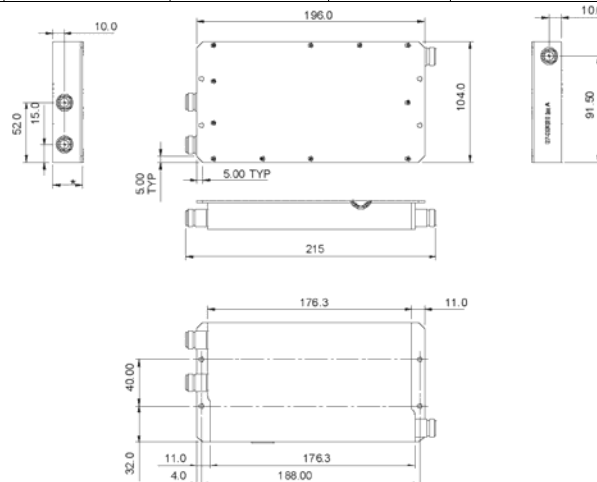
Part No.	Frequency Range (MHz)	Coupling Value (dB)	Max Insertion Loss (dB)	VSWR	Power Rating (W)	RF Connectors
07-021301	170 -2200	6	1.0	1.5:1	100	7-16 Female
07-021302	170 -2200	10	2.0	1.5:1	100	7-16 Female
07-021303	170 -2200	15	1.0	1.5:1	100	7-16 Female
07-021301	170 -2200	20	1.0	1.5:1	100	7-16 Female
07-000109	300 - 500	6	1.6	1.3:1	150	Type-N female
07-000105	300 - 500	10	0.8	1.3:1	150	Type-N female
07-000123	300 - 500	15	0.65	1.3:1	150	Type-N female
07-000106	300 - 500	20	0.5	1.3:1	150	Type-N female
07-000117	300 - 500	30	0.4	1.3:1	150	Type-N female



07-0001xx type general arrangement

Selection Guide: Cellular Couplers

Part No.	Frequency Range (MHz)	Coupling Value (dB)	Max Insertion Loss (dB)	VSWR	Power Rating (W)	RF Connectors
07-011801	800 - 2500	6	1.7	1.4:1	200	7-16 Female
07-011802	800 - 2500	10	0.9	1.4:1	200	7-16 Female
07-011803	800 - 2500	15	0.5	1.4:1	200	7-16 Female
07-011804	800 - 2500	20	0.4	1.4:1	200	7-16 Female
07-011805	800 - 2500	30	0.3	1.4:1	200	7-16 Female
07-015101	800 - 2500	6	1.7	1.4:1	200	N female
07-015102	800 - 2500	10	0.9	1.4:1	200	N female
07-015103	800 - 2500	15	0.5	1.4:1	200	N female
07-015104	800 - 2500	20	0.4	1.4:1	200	N female
07-015105	800 - 2500	30	0.3	1.4:1	200	N female
07-000109	800 - 2500	6	1.6	1.4:1	200	N Female
07-000105	800 - 2500	10	0.9	1.4:1	200	N Female
07-000123	800 - 2500	15	0.5	1.4:1	200	N Female
07-000106	800 - 2500	20	0.4	1.4:1	200	N Female
07-000117	800 - 2500	30	0.3	1.4:1	200	N Female



07-0180 xx type general arrangement

DrawCom Pty Ltd