

## Directional Couplers (Waveguide and Coaxial)

### FEATURES:

- ❖ Rugged construction
- ❖ High directivity
- ❖ Low insertion loss
- ❖ 0.5-110 GHz

### APPLICATIONS:

- ❖ Test equipment
- ❖ Subsystems
- ❖ Power sampling



### DESCRIPTION:

### CDC Series

Cernex CDC Series multi-hole directional couplers are offered for the frequency range of 0.5 to 110 GHz in seven waveguide bands. The standard coupling levels are 3, 6, 10, 30 and 40 dB with full waveguide operational bandwidth. The high directivity is achieved via low VSWR built-in termination. The couplers are typically used for power sampling or frequency monitoring with minimum signal loss on the main transmitting path. The multi-hole couplers are especially used in the test setups where power reflection measurement is required.

### SPECIFICATIONS:

#### COAXIAL:

Model Number	Frequency Range (MHz)	Insertion Loss (dB) Max.	Coupling (dB)	Directivity (dB)	Power Avg (W) Max.	VSWR Max.	Connector Type	Case Type (mm)
CDCU5020620T	500-2000	0.4	6±0.6	20	10	1.25:1	SMA	139 x 16 x 10
CDCU5021020T	500-2000	0.5	10±0.8	20	30	1.25:1	SMA	139 x 16 x 10
CDCU5021520T	500-2000	0.5	15±0.8	20	50	1.20:1	SMA	139 x 16 x 10
CDCU5022020T	500-2000	0.4	20±1.0	20	50	1.20:1	SMA	139 x 16 x 10
CDCU5081015K	500-8000	1.3	10±1.0	15	20	1.35:1	SMA	133 x 18 x 13
CDCU5081615K	500-8000	0.85	16±1.0	15	20	1.35:1	SMA	133 x 18 x 13
CDCU5082015K	500-8000	0.8	20±1.0	15	20	1.35:1	SMA	133 x 18 x 13
CDCU5181012K	500-18500	1.5	10±1.0	12	20	1.35:1	SMA	111 x 18.5 x 13
CDCU5181612K	500-18500	1.1	16±1.0	12	20	1.35:1	SMA	111 x 18.5 x 13
CDCU5201015K	500-20000	1.65	10±1.0	15	20	1.35:1	SMA	114 x 18 x 13
CDCU5201315K	500-20000	1.4	13±1.0	15	20	1.35:1	SMA	114 x 18 x 13
CDCU5261313K	500-26500	1.5	13±1.0	13	20	1.45:1	SMA	111 x 18.5 x 9.6
CDCU6261013K	600-26500	1.3	10±0.5	13	20	1.40:1	3.5mm-F	28.4 x 16 x 13
CDCU6262014K	600-26500	0.8	20±1.0	14	20	1.40:1	3.5mm-F	28.4 x 16 x 13
CDCU6263014K	600-26500	0.7	30±1.0	14	20	1.45:1	3.5mm-F	28.4 x 16 x 13
CDCU8020320H	800-2500	0.4	3±0.6	20	100	1.2:1	N-F	*
CDCU8020522B	800-2500	0.15	5±0.6	22	-	1.2:1	SMA	168 x 74 x 32.5
CDCU8020522B1	800-2500	0.15	5±0.6	22	-	1.2:1	N-F	156 x 58 x 16.5
CDCU8020520H	800-2500	0.4	5±0.6	20	100	1.2:1	N-F	*
CDCU8020500T	800-2500	2.2	5±0.5	-	30	1.25:1	N-F	100 x 25 x 25



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Model Number	Frequency Range (MHz)	Insertion Loss (dB) Max.	Coupling (dB)	Directivity (dB)	Power Avg (W) Max.	VSWR Max.	Connector Type	Case Type (mm)
CDCU8020620H	800-2500	0.4	6±0.6	20	100	1.2:1	N-F	*
CDCU8020600T	800-2500	1.9	6±0.5	-	30	1.25:1	N-F	100 x 25 x 25
CDCU8020720H	800-2500	0.4	7±0.6	20	100	1.2:1	N-F	*
CDCU8020700T	800-2500	1.4	7±0.5	-	30	1.25:1	N-F	100 x 25 x 25
CDCU8020820H	800-2500	0.4	8±0.6	20	100	1.2:1	N-F	*
CDCU8021022B	800-2500	0.15	10±0.8	22	-	1.2:1	N-F	156 x 58 x 16.5
CDCU8021022B1	800-2500	0.15	10±0.8	22	-	1.2:1	SMA	168 x 74 x 32.5
CDCU8021000T	800-2500	0.9	10±0.5	-	50	1.25:1	N-F	100 x 25 x 25
CDCU8021020H	800-2500	0.4	10±1.0	20	100	1.2:1	N-F	*
CDCU8021220H	800-2500	0.4	12±1.0	20	100	1.2:1	N-F	*
CDCU8021522B	800-2500	0.15	15±0.8	22	-	1.2:1	N-F	156 x 58 x 16.5
CDCU8021522B1	800-2500	0.15	15±0.8	22	-	1.2:1	SMA	168 x 74 x 32.5
CDCU8021520H	800-2500	0.4	15±1.0	20	100	1.2:1	N-F	*
CDCU8021500T	800-2500	0.5	15±1.0	-	50	1.25:1	N-F	100 x 25 x 25
CDCU8022022B	800-2500	0.15	20±1.0	22	-	1.2:1	N-F	156 x 58 x 16.5
CDCU8022022B1	800-2500	0.15	20±1.0	22	-	1.2:1	SMA	168 x 74 x 32.5
CDCU8022020H	800-2500	0.4	20±1.0	20	100	1.2:1	N-F	*
CDCU8022000T	800-2500	0.4	20±1.0	-	50	1.25:1	N-F	100 x 25 x 25
CDCU8022520H	800-2500	0.4	25±1.0	20	100	1.2:1	N-F	*
CDCU8023022B	800-2500	0.15	30±1.0	22	-	1.2:1	N-F	156 x 58 x 16.5
CDCU8023022B1	800-2500	0.15	30±1.0	22	-	1.2:1	SMA	168 x 74 x 32.5
CDCU8023020H	800-2500	0.4	30±1.0	20	100	1.2:1	N-F	*
CDCU8024022B	800-2500	0.15	40±1.0	22	-	1.2:1	N-F	156 x 58 x 16.5
CDCU8024022B1	800-2500	0.15	40±1.0	22	-	1.2:1	SMA	168 x 74 x 32.5
CDCU8025022B	800-2500	0.15	50±1.0	22	-	1.2:1	N-F	156 x 58 x 16.5
CDCU8025022B1	800-2500	0.15	50±1.0	22	-	1.2:1	SMA	168 x 74 x 32.5
CDC01040620T	1000-4000	0.4	6±1.0	20	10	1.25:1	SMA	77 x 16 x 10
CDC01041020T	1000-4000	0.5	10±1.0	20	30	1.25:1	SMA	77 x 16 x 10
CDC01041520T	1000-4000	0.5	15±1.0	20	50	1.20:1	SMA	77 x 16 x 10
CDC01042020T	1000-4000	0.4	20±1.0	20	50	1.20:1	SMA	77 x 16 x 10
CDC01181016K	1000-18000	1.3	10±1.0	16	20	1.35:1	SMA	88 x 18.5 x 13
CDC01181616K	1000-18000	0.9	16±1.0	16	20	1.35:1	SMA	88 x 18.5 x 13
CDC01201016K	1000-20000	1.4	10±1.0	16	20	1.35:1	SMA	88.9 x 18.5 x 13.4
CDC01201616K	1000-20000	1.1	16±1.0	16	20	1.35:1	SMA	88.9 x 18.5 x 13.4
CDC01202016K	1000-20000	1.0	20±1.0	16	20	1.35:1	SMA	88.9 x 18.5 x 13.4
CDC01261014K	1000-26500	1.6	10±1.0	14	20	1.4:1	3.5mm-F	73 x 16 x 13
CDC01262014K	1000-26500	1.2	20±1.0	14	20	1.4:1	3.5mm-F	73 x 16 x 13
CDC01401010K	1000-40000	2.0	10±1.0	10	20	1.7:1	2.4mm-F	51 x 16.51 x 10



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Model Number	Frequency Range (MHz)	Insertion Loss (dB) Max.	Coupling (dB)	Directivity (dB)	Power Avg (W) Max.	VSWR Max.	Connector Type	Case Type (mm)
CDC01401310K	1000-40000	1.8	13±1.0	10	20	1.7:1	2.4mm-F	51 x 16.51 x 10
CDC01020520S	1700-2500	0.4	5±0.5	20	50	1.3:1	N-F	62 x 21 x 28
CDC01020520H	1700-2500	0.4	5±0.6	20	100	1.2:1	N-F	*
CDC01020620S	1700-2500	0.4	6±0.5	20	50	1.3:1	N-F	62 x 21 x 28
CDC01020620H	1700-2500	0.4	6±0.6	20	100	1.2:1	N-F	*
CDC01020720S	1700-2500	0.4	7±0.5	20	50	1.3:1	N-F	62 x 21 x 28
CDC01020720H	1700-2500	0.4	7±0.6	20	100	1.2:1	N-F	*
CDC01021020S	1700-2500	0.4	10±0.5	20	50	1.3:1	N-F	62 x 21 x 29
CDC01021020H	1700-2500	0.4	10±0.8	20	100	1.2:1	N-F	*
CDC01021220S	1700-2500	0.4	12±0.7	20	50	1.3:1	N-F	51 x 34 x 18
CDC01021220H	1700-2500	0.4	12±0.8	20	100	1.2:1	N-F	*
CDC01021520S	1700-2500	0.4	15±0.7	20	50	1.3:1	N-F	51 x 34 x 18
CDC01021520H	1700-2500	0.4	15±0.8	20	100	1.2:1	N-F	*
CDC01022020S	1700-2500	0.4	20±0.7	20	50	1.3:1	N-F	51 x 34 x 18
CDC01022020H	1700-2500	0.4	20±1.0	20	100	1.2:1	N-F	*
CDC01022520S	1700-2500	0.4	25±1.0	20	50	1.3:1	N-F	51 x 34 x 18
CDC01022520H	1700-2500	0.4	25±1.0	20	100	1.2:1	N-F	*
CDC01023020S	1700-2500	0.4	30±1.0	20	50	1.3:1	N-F	51 x 34 x 18
CDC01023020H	1700-2500	0.4	30±1.0	20	100	1.2:1	N-F	*
CDC01023520S	1700-2500	0.4	35±1.0	20	50	1.3:1	N-F	51 x 34 x 18
CDC01023520H	1700-2500	0.4	35±1.5	20	100	1.2:1	N-F	*
CDC01024020S	1700-2500	0.4	40±1.0	20	50	1.3:1	N-F	51 x 34 x 18
CDC01024020H	1700-2500	0.4	40±1.5	20	100	1.2:1	N-F	*
CDC01261014K	1700-26500	1.5	10±1.0	14	20	1.45:1	3.5mm-F	61 x 17.5 x 13.4
CDC01261614K	1700-26500	1.2	16±1.0	14	20	1.45:1	3.5mm-F	61 x 17.5 x 13.4
CDC02080620T	2000-8000	0.4	6±1.0	20	10	1.25:1	SMA	47 x 16 x 10
CDC02081020T	2000-8000	0.5	10±1.0	20	30	1.25:1	SMA	47 x 16 x 10
CDC02081520T	2000-8000	0.5	15±1.0	20	50	1.20:1	SMA	47 x 16 x 10
CDC02082020T	2000-8000	0.4	20±1.0	20	50	1.20:1	SMA	47 x 16 x 10
CDC02180616K	2000-18000	1.9	6±1.0	16	20	1.30:1	SMA	53 x 17.5 x 13
CDC02181012T	2000-18000	1.5	10±1.0	12	30	1.6:1	SMA	68 x 24 x 10
CDC02181512T	2000-18000	1.5	15±1.0	12	30	1.6:1	SMA	68 x 24 x 10
CDC02182010T	2000-18000	1.5	20±1.0	10	50	1.6:1	SMA	68 x 24 x 10
CDC02201016K	2000-20000	1.3	10±1.0	16	20	1.35:1	SMA	52.8 x 17.5 x 13
CDC02201616K	2000-20000	1.0	16±1.0	16	20	1.35:1	SMA	52.8 x 17.5 x 13
CDC02202016K	2000-20000	0.9	20±1.0	16	20	1.35:1	SMA	52.8 x 17.5 x 13
CDC02401311K	2000-40000	1.7	13±1.0	11	20	1.7:1	2.4mm-F	44 x 16.5 x 10
CDC02501010K	2000-50000	2.0	10±1.0	10	20	1.8:1	2.4mm-F	44 x 16.5 x 10



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Model Number	Frequency Range (MHz)	Insertion Loss (dB) Max.	Coupling (dB)	Directivity (dB)	Power Avg (W) Max.	VSWR Max.	Connector Type	Case Type (mm)
CDC02501310K	2000-50000	1.8	13±1.0	10	20	1.8:1	2.4mm-F	44 x 16.5 x 10
CDC02501610K	2000-50000	1.7	16±1.0	10	20	1.8:1	2.4mm-F	44 x 16.5 x 10
CDC04121015K	4000-12400	0.9	10±0.5	15	*	1.35:1	SMA	*
CDC04122015K	4000-12400	0.5	20±1.0	15	*	1.35:1	SMA	*
CDC04181010T	4000-18000	1.2	10±1.0	10	30	1.6:1	SMA	38.5 x 16 x 10
CDC04182010T	4000-18000	0.7	20±1.0	10	50	1.6:1	SMA	37 x 16 x 10
CDC04200615K	4000-20000	1.9	6±1.0	15	20	1.35:1	SMA	35.5 x 16.7 x 10
CDC04201015K	4000-20000	1.0	10±1.0	15	20	1.35:1	SMA	35.5 x 16.7 x 10
CDC04202015K	4000-20000	0.6	20±1.0	15	20	1.35:1	SMA	35.5 x 16.7 x 10
CDC06180615T	6000-18000	1.0	6±1.0	15	10	1.5:1	SMA	44 x 24 x 10
CDC06181014T	6000-18000	1.0	10±1.0	14	30	1.5:1	SMA	44 x 24 x 10
CDC06181512T	6000-18000	1.0	15±1.0	12	50	1.5:1	SMA	44 x 24 x 10
CDC06182012T	6000-18000	1.0	20±1.0	12	50	1.5:1	SMA	44 x 24 x 10
CDC10401010K	10000-40000	1.7	10±0.7	10	20	1.7:1	2.4mm-F	28 x 15 x 10
CDC10402010K	10000-40000	1.3	20±1.0	10	20	1.7:1	2.4mm-F	28 x 15 x 10
CDC10461010K	10000-46000	1.9	10±0.7	10	20	1.8:1	2.4mm-F	28 x 15 x 10
CDC10462010K	10000-46000	1.5	20±1.0	10	20	1.8:1	2.4mm-F	28 x 15 x 10
CDC10501010K	10000-50000	1.9	10±0.7	10	20	1.8:1	2.4mm-F	28 x 15 x 10
CDC10502010K	10000-50000	1.5	20±1.0	10	20	1.8:1	2.4mm-F	28 x 15 x 10
CDC18261014K	18000-26500	1.3	10±0.5	14	*	1.4:1	3.5mm-F	*
DCD18262014K	18000-26500	0.8	20±1.0	14	*	1.4:1	3.5mm-F	*
CDC18401012K	18000-40000	1.7	10±0.7	12	*	1.7:1	*	*
CDC18402012K	18000-40000	1.3	20±1.0	12	*	1.7:1	*	*
CDC18501010K	18000-50000	1.9	10±0.7	10	*	1.8:1	2.4mm-F	*
CDC18502010K	18000-50000	1.5	20±1.0	10	*	1.8:1	2.4mm-F	*
CDC26401012K	26500-40000	1.7	10±0.7	12	*	1.7:1	2.4mm-F	*
CDC26402012K	26500-40000	1.3	20±1.0	12	*	1.7:1	2.4mm-F	*
CDC26501010K	26500-50000	1.9	10±0.7	10	*	1.8:1	2.4mm-F	*
CDC26502010K	26500-50000	1.5	20±1.0	10	*	1.8:1	2.4mm-F	*

OTHER FREQUENCIES ARE ALSO AVAILABLE.

\*CONSULT THE FACTORY

### CAVITY:

Model Number	Frequency Range (MHz)	Insertion Loss (dB) Max.	Coupling (dB)	Directivity (dB)	Power Avg (W) Max.	VSWR Max.	Connector Type	Case Type (mm)
CDCU8020520H	800-2500	0.2	5±0.6	20	200	1.2:1	N-F	*
CDCU8020620H	800-2500	0.2	6±0.6	20	200	1.2:1	N-F	*



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CDCU8020620S	800-2500	0.2	6±0.7	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8020720H	800-2500	0.2	7±0.6	20	200	1.2:1	N-F	*
CDCU8020720S	800-2500	0.2	7±0.7	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8021020H	800-2500	0.2	10±0.6	20	200	1.2:1	N-F	*
CDCU8021020S	800-2500	0.2	10±0.7	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8021220S	800-2500	0.2	12±0.7	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8021520S	800-2500	0.2	15±0.7	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8021520H	800-2500	0.2	15±0.8	20	200	1.2:1	N-F	*
CDCU8022020S	800-2500	0.2	20±0.7	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8022020H	800-2500	0.2	20±1.0	20	200	1.2:1	N-F	*
CDCU8022520H	800-2500	0.2	25±1.0	20	200	1.2:1	N-F	*
CDCU8022520S	800-2500	0.2	25±1.0	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8023020S	800-2500	0.2	30±1.0	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8023020H	800-2500	0.2	30±1.5	20	200	1.2:1	N-F	*
CDCU8023520S	800-2500	0.2	35±1.0	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8023520H	800-2500	0.2	35±1.5	20	200	1.2:1	N-F	*
CDCU8024020S	800-2500	0.2	40±1.0	20	200	1.3:1	N-F	120 x 40 x 17
CDCU8024020H	800-2500	0.2	40±1.5	20	200	1.2:1	N-F	*
CDCU8024520H	800-2500	0.2	45±2.0	20	200	1.2:1	N-F	*
CDCU8025020H	800-2500	0.2	50±2.0	20	200	1.2:1	N-F	*
CDC01020520S	1700-2500	0.2	5±0.5	20	200	1.3:1	N-F	58 x 19 x 21
CDC01020520H	1700-2500	0.2	5±0.6	20	200	1.2:1	N-F	*
CDC01020620S	1700-2500	0.2	6±0.5	20	200	1.3:1	N-F	58 x 19 x 21
CDC01020620H	1700-2500	0.2	6±0.6	20	200	1.2:1	N-F	*
CDC01020720S	1700-2500	0.2	7±0.5	20	200	1.3:1	N-F	58 x 19 x 21
CDC01020720H	1700-2500	0.2	7±0.6	20	200	1.2:1	N-F	*
CDC01021020S	1700-2500	0.2	10±0.5	20	200	1.3:1	N-F	58 x 20 x 21
CDC01021020H	1700-2500	0.2	10±0.8	20	200	1.2:1	N-F	*
CDC01021220S	1700-2500	0.2	12±0.5	20	200	1.3:1	N-F	58 x 25 x 21
CDC01021220H	1700-2500	0.2	12±0.8	20	200	1.2:1	N-F	*
CDC01021520S	1700-2500	0.2	15±0.5	20	200	1.3:1	N-F	58 x 25 x 21
CDC01021520H	1700-2500	0.2	15±0.8	20	200	1.2:1	N-F	*
CDC01022020S	1700-2500	0.2	20±0.5	20	200	1.3:1	N-F	58 x 29 x 21
CDC01022020H	1700-2500	0.2	20±1.0	20	200	1.2:1	N-F	*
CDC01022520S	1700-2500	0.2	25±0.5	20	200	1.3:1	N-F	58 x 29 x 21
CDC01022520H	1700-2500	0.2	25±1.0	20	200	1.2:1	N-F	*
CDC01023020S	1700-2500	0.2	30±0.5	20	200	1.3:1	N-F	58 x 29 x 21
CDC01023020H	1700-2500	0.2	30±1.0	20	200	1.2:1	N-F	*



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CDC01023520S	1700-2500	0.2	35±0.5	20	200	1.3:1	N-F	58 x 29 x 21
CDC01023520H	1700-2500	0.2	35±1.5	20	200	1.2:1	N-F	*
CDC01024020H	1700-2500	0.2	40±1.5	20	200	1.2:1	N-F	*
CDC01025020H	1700-2500	0.2	50±1.5	20	200	1.2:1	N-F	*

OTHER FREQUENCIES ARE ALSO AVAILABLE.

\*CONSULT THE FACTORY

### HIGH POWER BI-DIRECTIONAL:

Model Number	Frequency Range (MHz)	Insertion Loss (dB) Max.	Coupling (dB)	Directivity (dB)	Power Avg (W) Max.	VSWR Max.	Connector Type	Case Type (mm)
CDCU7012020T	700-1100	0.4	20±1.0	20	100	1.2:1	N-F	*
CDCU7013020T	700-1100	0.4	30±1.0	20	150	1.2:1	N-F	*
CDCU7014020T	700-1100	0.4	40±1.0	20	150	1.2:1	N-F	*
CDCU7015020T	700-1100	0.4	50±1.0	20	150	1.2:1	N-F	*
CDC01022020T	1700-2500	0.4	20±1.0	20	100	1.2:1	N-F	*
CDC01023020T	1700-2500	0.4	30±1.0	20	150	1.2:1	N-F	*
CDC01024020T	1700-2500	0.4	40±1.0	20	150	1.2:1	N-F	*
CDC01025020T	1700-2500	0.4	50±1.0	20	150	1.2:1	N-F	*

OTHER FREQUENCIES ARE ALSO AVAILABLE.

\*CONSULT THE FACTORY

### WAVEGUIDE:

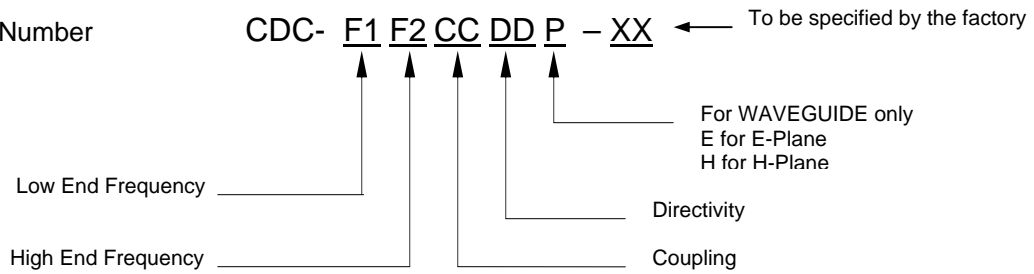
Waveguide Band	K	Kb	Ka	Q	U	V	E	W
Frequency Range (GHz)	18 to 26.5	22 to 33.0	26.5 to 40	33 to 50	40 to 60	50 to 75	60 to 90	75 to 110
Waveguide Size	WR-42	WR34	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10
Coupling Level (dB, Typical)	3, 6, 10, 20, 30 and 40							
Coupling Flatness (dB, Maximum)	± 0.4	± 0.4	± 0.4	± 0.4	± 0.4	± 0.4	± 0.4	± 0.5
Insertion Loss (dB, Typical)*	0.7	0.7	0.7	0.7	0.8	1.0	1.2	1.5
Directivity (dB, Typical)	20, 25, 30, 35, 40							
Main Line VSWR (Maximum)	1.1:1	1.1:1	1.1:1	1.1:1	1.2:1	1.2:1	1.2:1	1.2:1
Secondary Line VSWR (Maximum)	1.1:1	1.1:1	1.1:1	1.2:1	1.2:1	1.2:1	1.25:1	1.25:1

Contact factory for other waveguide size or coupling level needs.

\* Insertion loss is defined as the power loss in addition to the coupling loss.

### HOW TO ORDER:

Specify Model Number



**Example:** To order a coupler with F1 at 20GHz and F2 at 21 GHz with coupler level of 20dB and a 15dB Minimum directivity, specify CDC-20212015-XX.

CERNEX RESERVE THE RIGHT TO CHANGE THE SPECIFICATIONS WITHOUT NOTICE