Combiners

Combiners are used to combine two or more transmitters so that a single feed and antenna can be used for the radiating the signals. Based on the frequency and frequency separation between the transmitters a choice of cavity or hybrid combining may be made.

Combiners reduce the number of antennas and feeders at a small additional insertion loss.

WIJD862 Series

These extremely compact combiners use a “shared wall” waveguide cavity assembly with an integrated antenna port junction, in combination with a dual isolators for each channel. The isolators have integrated loads. Each isolator has a built-in sampling port to allow measurements of reflected power, particularly useful when retuning the combiner. A patented temperature compensation scheme gives these combiners excellent frequency stability over the complete operating temperature and power ranges. The WIJD862-02S model is recommended for field expansion only.

- **Low loss - Maximizes system performance.**
- **High isolation - Minimizes possibility of intermodulation.**
- **Modular - Compact design minimizes rack-mounting footprint.**
- **Fully temperature compensated - Ensures consistent performance across temperature and power range.**
- **Expandable - Up to 20 channels.**

WIJD862 Series

SJD* Series

The SJD Series coaxial cavity-ferrite combiners operate in the 380-512 MHz band. These combiners use low-loss, low IM dual stage isolators with integrated coaxial cavities. They are capable of handling 150 Watts forward and reflected power. No interconnecting cables are used. The 4-channel unit requires 10 vertical rack spaces (17.5”). Optional offset mounting brackets are available. The 8-channel combiner consists of two 4-channel units and a harness kit occupying 20 vertical rack spaces (35”).These combiners offer a solution to your 450 MHz land mobile needs. Their low-loss characteristic maximizes system performance while their high isolation minimizes the possibility of intermodulation.

- **Low loss - Maximizes system performance.**
- **High isolation - Minimizes possibility of intermodulation.**
- **Modular - Easily expandable in the field.**
- **Fully temperature compensated - Ensures consistent performance across temperature and power range.**
- **Field Expansion - To combine multiple cavities requires additional modules and frequency dependent cable harness. Both new and old frequencies must be specified.**

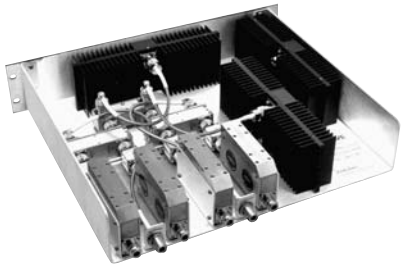
SJD* Series

Combiners

Hybrid Combiners

The TCD860-6D combiner is an extremely compact and versatile unit. The hybrid/isolator shelf occupies only one vertical rack space (1-3/4" of vertical rack space), while the load tray, which is remoteable for efficient thermal management, is two rack spaces high. This load panel may be located up to 4 feet from the hybrid/isolator shelf and may be mounted at the top rear of the rack or on any other vertical surface such as a wall where the heat can be dissipated through unconstrained air flow. This unit may be configured as a dual 2-channel, dual 3-channel, single 4-channel, or single 6-channel combiner through changing the configuration of a few cables. However, insertion loss is not compromised. In the 2-channel case, the insertion loss per channel is slightly less than 4 dB, while the 3-channel configuration has less than 6 dB loss per channel. The 4-channel configuration has about 7 dB insertion loss per channel, and the fully expanded 6-channel variant is less than 9 dB per channel.

Rugged isolators capable of 200 Watt operation – Maximize combiner reliability.Two-channel compact combiners with loads built into the unit are the other variations of the hybrid combiner that are shown below.



TCD860 Series

- **High isolation – Minimizes possibility of intermodulation.**
- **Low profile integrated hybrid (TCD860-6D) – Minimizes rack-mounting footprint, only one vertical rack space.**
- **Remotable load tray (TCD860-6D) – Minimizes rack-mounting footprint, enchances thermal management.**
- **Easily reconfigurable (TCD860-6D) – Allows dual 2-channel, dual 3-channel, 4-channel, or 6-channel operation.**

ATC860R-6

The ATC860R-6 is a six channel SMR auto tuned cavity combiner which tracks changes in base radio transmitters and continuously optimizes itself. It has integral alarm and RS232 status reporting and fits into 3 rack unit spaces.

- **Continuously monitors and self-tunes to transmitter frequencies**
- **Reports status and alarm conditions**
- **Designed for any SMR base radio including iDEN**

ATC860R-6

CPR Series

The CPR range of parallel Tx combiners couple up to 12 transmitters into a common antenna to maximize the use of expensive tower space and reduce the otherwise direct cost of multiple antennas, dedicated cable and installation expense. The parallel configuration allows all channels to be tuned to any frequency within a limited bandwidth. Additional channels may be fitted on-site as required, provided they fall within the bandwidth limitation. While the summary specifications are shown here for up to 6 channels, these combiners are available in up to 12 channels.

CXR Series

The CXR range of parallel Tx combiners couple up to 12 transmitters into a common antenna to maximize the use of expensive tower space and reduce the otherwise direct cost of multiple antennas, dedicated cable and installation expense. The cascaded architecture is used where channels may be allocated from a wider frequency range. Additional channels may be fitted onsite, however if retuning of existing channels is required alteration of existing intercavity cables may be necessary. While the summary specificatins are shown here for up to 6 channels, these combiners are available in up to 12 channels.

SMR Waveguide 800 MHz

	WIJD862-02S	WIJD862-04S	WIJD862-06S	WIJD862-08S
Frequency range, MHz	851-869	851-869	851-869	851-869
Number of Channels	2	4	6	8
Minimum Channel Spacing, KHz	150	150	150	150
Tx-Tx isolation, dB	60	60	60	60
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	4	4.3	4.6	4.7
Continuous Power, W (max)	150	150	150	150
Connectors	7/16 Female	7/16 Female	7/16 Female	7/16 Female
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50
	WIJD862-10S	WIJD862-12S	WIJD862-16S	WIJD862-20S
Frequency range, MHz	851-869	851-869	851-869	851-869
Number of Channels	10	12	16	20
Minimum Channel Spacing, KHz	150	150	150	150
Tx-Tx isolation, dB	60	60	60	60
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	4.9	5	5.5	5.6
Continuous Power, W (max)	150	150	150	150
Connectors	7/16 Female	7/16 Female	7/16 Female	7/16 Female
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50

SMR UHF Cavity

	SJD390-4T-716	SJD390-4T-716	SJD420-4T-716	SJD420-8T
Frequency range, MHz	380-403	380-403	403-433	403-433
Number of Channels	4	8	4	8
Minimum Channel Spacing, KHz	125	125	150	150
Tx-Tx isolation, dB	60	60	60	60
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	3.7	4.4	3.5	4.4
Continuous Power, W (max)	150	150	150	150
Connectors	7/16 Female	7/16 Female	7/16 Female	7/16 Female
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50
	SJD455-4T-716	SJD455-8T	SJD480-4T-716	SJD480-8T
Frequency range, MHz	438-470	438-470	470-494	470-494
Number of Channels	4	8	4	8
Minimum Channel Spacing, KHz	150	150	150	150
Tx-Tx isolation, dB	60	60	60	60
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	3.5	4.4	3.5	4.4
Continuous Power, W (max)	150	150	150	150
Connectors	7/16 Female	7/16 Female	7/16 Female	7/16 Female
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50
	SJD500-4T-716	SJD500-8T		
Frequency range, MHz	494-512	494-512		
Number of Channels	4	8		
Minimum Channel Spacing, KHz	150	150		
Tx-Tx isolation, dB	60	60		
Tx-Antenna isolation, dB	50	50		
Insertion loss per channel, dB	3.5	4.4		
Continuous Power, W (max)	150	150		
Connectors	7/16 Female	7/16 Female		
Temperature Range, Deg C	0 to +50	0 to +50		

CPR145 Series of Highband VHF Parallel Tx Combiners

	CPR145-2	CPR150B-3	CPR150B-4	CPR150B-5
Frequency range, MHz	145-174	145-174	145-174	145-174
Bandwidth, MHz	20	20	20	20
Number of Channels	2	3	4	5
Minimum Channel Spacing, KHz	75	75	75	75
Tx-Tx isolation, dB	70	70	70	70
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	3.9	5.5	6.4	7.1
Continuous Power, W (max)	100	100	100	100
Connectors	N Skt	N Skt	N Skt	N Skt
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50

	CPR150B-6
Frequency range, MHz	145-174
Bandwidth, MHz	20
Number of Channels	6
Minimum Channel Spacing, KHz	75
Tx-Tx isolation, dB	70
Tx-Antenna isolation, dB	50
Insertion loss per channel, dB	7.5
Continuous Power, W (max)	100
Connectors	N Skt
Temperature Range, Deg C	0 to +50

CXR145 Series of Highband VHF Cascaded Tx Combiners

	CXR145-2	CXR145-3	CXR145-4	CXR145-5
Frequency range, MHz	145-174	145-174	145-174	145-174
Bandwidth MHz	29	29	29	29
Number of Channels	2	3	4	5
Minimum Channel Spacing, KHz	75	75	75	75
Tx-Tx isolation, dB	70	70	70	70
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	4.4	5.7	6.2	6.7
Continuous Power, W (max)	100	100	100	100
Connectors	N Skt	N Skt	N Skt	N Skt
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50

	CXR145-6
Frequency range, MHz	145-174
Bandwidth MHz	29
Number of Channels	6
Minimum Channel Spacing, KHz	75
Tx-Tx isolation, dB	70
Tx-Antenna isolation, dB	50
Insertion loss per channel, dB	7.1
Continuous Power, W (max)	100
Connectors	N Skt
Temperature Range, Deg C	0 to +50

CPR400C Series of UHF Parallel Tx Combiners

	CPR400C-2	CPR400C-3	CPR400C-4	CPR400C-5
Frequency range, MHz	400-520	400-520	400-520	400-520
Bandwidth MHz	20	20	20	20
Number of Channels	2	3	4	5
Minimum Channel Spacing, KHz	75	75	75	75
Tx-Tx isolation, dB	70	70	70	70
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	4.0	6.0	7.3	8.2
Continuous Power, W (max)	100	100	100	100
Connectors	N Skt	N Skt	N Skt	N Skt
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50

	CPR400C-6
Frequency range, MHz	400-520
Bandwidth MHz	20
Number of Channels	6
Minimum Channel Spacing, KHz	75
Tx-Tx isolation, dB	70
Tx-Antenna isolation, dB	50
Insertion loss per channel, dB	9.0
Continuous Power, W (max)	100
Connectors	N Skt
Temperature Range, Deg C	0 to +50

CXR400C Series of UHF Cascaded Tx Combiners

	CXR400C-2	CXR400C-3	CXR400C-4	CXR400C-5
Frequency range, MHz	400-520	400-520	400-520	400-520
Bandwidth MHz	30	30	30	30
Number of Channels	2	3	4	5
Minimum Channel Spacing, KHz	75	75	75	75
Tx-Tx isolation, dB	70	70	70	70
Tx-Antenna isolation, dB	50	50	50	50
Insertion loss per channel, dB	4.4	6.2	7.1	7.9
Continuous Power, W (max)	100	100	100	100
Connectors	N Skt	N Skt	N Skt	N Skt
Temperature Range, Deg C	0 to +50	0 to +50	0 to +50	0 to +50

	CXR400C-6
Frequency range, MHz	400-520
Bandwidth MHz	30
Number of Channels	6
Minimum Channel Spacing, KHz	75
Tx-Tx isolation, dB	70
Tx-Antenna isolation, dB	50
Insertion loss per channel, dB	8.3
Continuous Power, W (max)	100
Connectors	N Skt
Temperature Range, Deg C	0 to +50

Hybrid Combiners

	TCD860-6D	TCD860-(2+2)T	TCD860(2X3)T
Frequency range, MHz	851-869	851-869	851-869
Number of Channels	6	2	2
Minimum Channel Spacing, KHz	25	25	25
Tx-Tx isolation, dB	70	70	70
Tx-Antenna isolation, dB	50	50	50
Insertion loss per channel, dB	3.8, 5.8, 7.0	3.9	3.9
Continuous Power, W (max)	100	100	100
Connectors	N Female	N Female	N Female
Temperature Range, Deg C	-30 to +60	-30 to +60	-30 to +60
Special Features	Can be configured as dual 2-channel, dual 3-channel, single 4-channel or single 6-channel unit	Dual 2-channel	Triple 2-channel

Autotune Combiners

	ATC860R-6	ATC860R-DUAL-4
Frequency range, MHz	851-869	851-869
Number of Channels	6	Dual 4
Minimum Channel Spacing, KHz	150	150
Tx-Tx isolation, dB	63	35
Tx-Antenna isolation, dB	52	25
Insertion loss per channel, dB	3.6	.3.0
Continuous Power , Max W	75	75
Connectors-input	N Female	N Female
Connectors-Output	7/16 Female	7/16 Female (Two)
Temperature Range, Deg C	-10 to + 60	-10 to + 60
Harness for Expansion	HRN-ATC860R-12	HRN-ATC860R-8