

Specifications

8-way Combiner

Frequency range	40 - 960 MHz
Ins Loss – ANT to T/R ports	30.5 ± 0.5 dB at 380 MHz 32.5 dB max at 960 MHz
Isolation between T/R ports	> 60 dB typical
Maximum power levels	T/R ports - 50 W (47 dBm) - see Table 1 ANT port - 0.5 W (27 dBm)
Temperature range	-30 to +50 °C (for 80 W dissipation) - see Derating Curves for > 50 °C

8-way Combiner with EXP Port

As above except:	
Ins Loss – ANT to T/R ports	34 ± 0.5 dB at 380 MHz 36.5 dB max at 960 MHz
Ins Loss – ANT to EXP port	3.5 ± 0.5 dB at 380 MHz 4.5 dB max at 960MHz

Power Handling

The 8-way Control Station Combiner can dissipate a total of 80 Watts of power at an operating ambient temperature of 50 °C. This could be 8 inputs of 10 W continuous power or 8 inputs of 50 W power at 20% duty cycle. Other combinations of duty cycle, number of inputs and power are shown in Table 1 and can be calculated from the formulas following the table. For operation above 50 °C refer to the Derating Curves.

Table 1 - For operation up to an ambient temperature of 50 °C.

Number of Inputs (N)	Power per Input (P)	Duty Cycle (D)
4	20W	100%
4	25W	80%
4	50W	40%
6	25W	53%
8	10W	100%
8	25W	40%
8	50W	20%

Formulas for calculating operating parameters for combiner operation at an ambient temperature of 50 °C:

$$D = 8000 \div (N \times P)$$

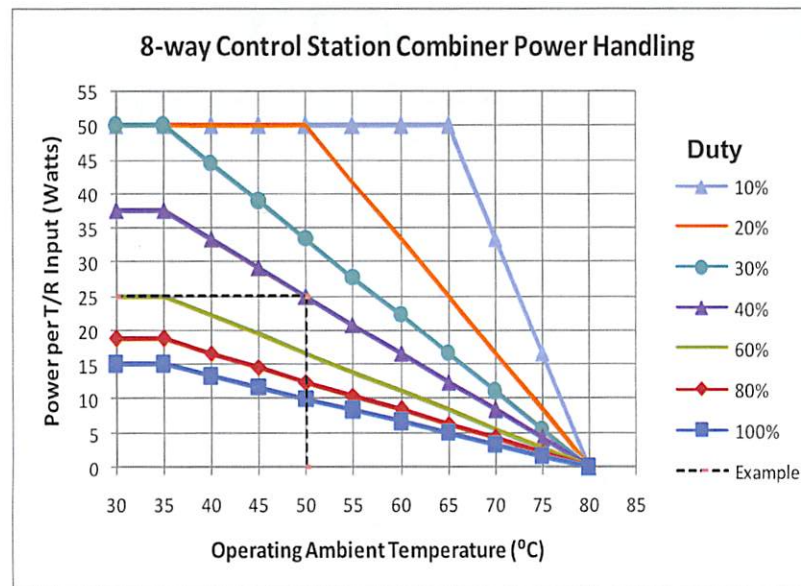
$$P = 8000 \div (N \times D)$$

$$N = 8000 \div (P \times D)$$

Where: D = Duty Cycle – in percentage (0 to 100)
N = Number of inputs (1 to 8)
P = Power per input - in Watts (1 to 50)

Derating Curves

The following derating curves specify the power that can be applied to each T/R input of the Control Station Combiner for various duty cycles and various operating ambient temperatures.



Example: If eight 25 W transmitters are operating at a duty cycle of 40% then the recommended maximum operating ambient temperature of the Control Station Combiner is 50°C.

Rack Mounting Considerations

For the Control Station Combiner to achieve specified performance it should be mounted in a rack with a vacant 1RU space above and below the unit.

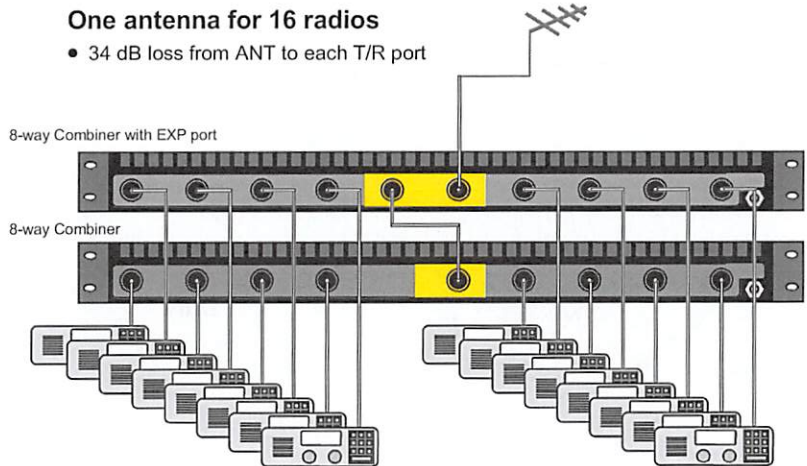
If only one 1RU space can be left vacant, either above or below the unit, then the combiners operating temperature will rise by an additional 5 °C.

If no 1RU spaces can be left vacant then the combiners operating temperature will rise by an additional 10 °C.

Systems Configurations

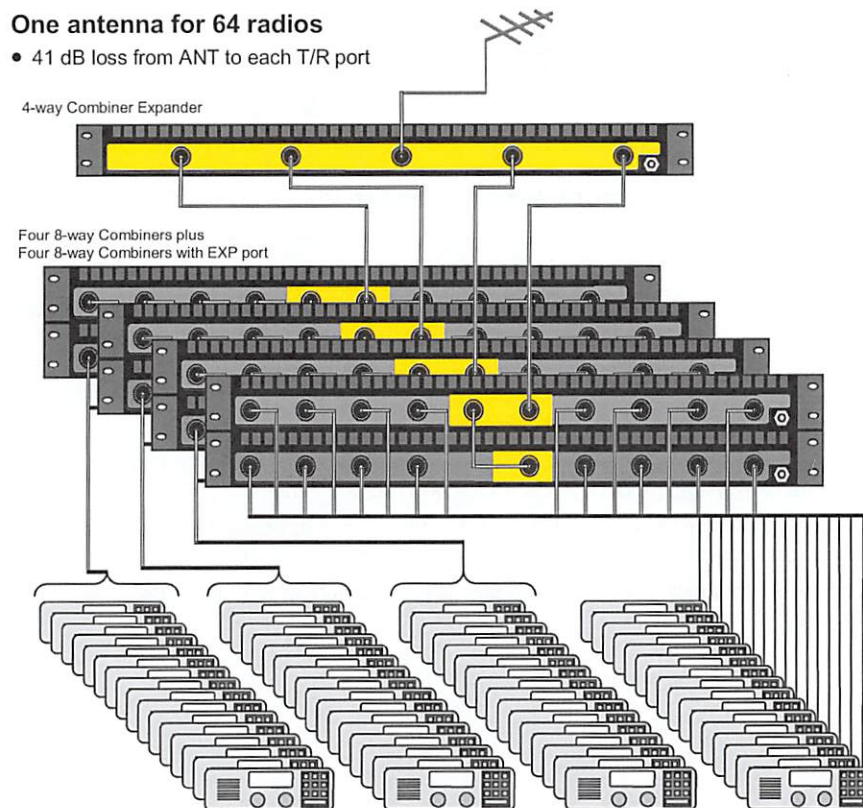
One antenna for 16 radios

- 34 dB loss from ANT to each T/R port



One antenna for 64 radios

- 41 dB loss from ANT to each T/R port



8-WAY SHORT HAUL CONTROL STATION COMBINERS

Quick Start Guide

INTRODUCTION

The 8-way Short Haul Control Station Combiners are broadband combiners which are used to reduce the number of antennas required on a communications site by enabling several radios to use just one antenna. Because the Control Station Combiners provide a high level of isolation between T/R ports, radio-to-radio isolation is maintained irrespective of antenna isolation characteristics. Also, radios operating on various bands, in either Tx or Rx mode, can be combined without risk of interference. Up to 64 radios can be combined by interconnecting various models of 4-way and 8-way Control Station Combiners.

Mounting

The Control Station Combiner is designed for indoor mounting only. It is dimensioned to fit a 1U rack space and should be mounted clear of any equipment that generates excess heat. Do not mount the unit inside small unventilated enclosures. Continuous operation with high power levels, exceeding the recommended power ratings and duty cycle ratings, will elevate the Combiner's operating temperature above the recommended maximum level which may lead to premature failure of the combiner.

Earthing

Connect an earthing strap from the chassis earth stud to an appropriate earth point to protect the Control Station Combiner from being exposed to high transient voltages.

ANT Port

The maximum signal level at this port should not exceed 0.5 W or 27 dBm. Please ensure that the antenna cable is properly grounded to prevent lightning transients causing damage to the unit.

T/R Ports

The maximum signal level at these ports should not exceed 50 W or 47 dBm. If a 50 W radio is connected to a T/R port then its duty cycle must be restricted so that the total power handling of the Control Station Combiner is not exceeded. Table 1 and the Derating Curves should be used to make sure that the Combiner will operate within its specified limits. Unused T/R ports on the Combiner can be left unterminated without affecting performance.

EXP Port

The Expansion Port is provided so that the user can easily build up a 16-way combiner. Connecting the ANT port of a second 8-way combiner (without Expansion Port) to the Expansion Port results in a 16-way combiner with equal loss to all T/R ports. If the Exp Port is not used it should be terminated to ensure good performance on the ANT port.