

## OPERATIONAL DESCRIPTION

Although the term “power divider” has been applied to various devices meant to distribute power to a number of outputs, the term here is used in a more restricted sense. A power divider has a single designated input port and more than one output port. All ports are theoretically matched and output ports are isolated from one another. It is usual, but not mandatory, for the transmission from the input port to be identical to all output ports. TRM applies stripline, coaxial, microstrip, Airstrip™ and lumped element circuit topographies to realize its designs.

Historically, power dividers have most often been 1:2N devices; that is to say that a single input was divided into 2, 4, 8, 16, etc. outputs. Such a device was structurally the interconnection of 0/180° hybrids whose difference ports were terminated, often internally. Three hybrids were required for a 1:4 device, seven for a 1:8 device and in general, 2N outputs required (2N-1) individual two-way divisions. It was early recognized that for large values of 2N, one or more outputs could be terminated without a large loss. For example, an 8-way power divider could be made to serve as a 7-way with something less than a 1 dB loss penalty over the theoretical 7-way splitting loss.

## PARAMETER DEFINITIONS

**Isolation:** The difference in dB of the signal level measured between output ports with the input port properly terminated.

**VSWR:** Voltage Standing Wave Ratio is a measure of the deviation of impedance from the characteristic impedance of the power divider.

**Amplitude Balance:** The maximum peak-to-peak difference in amplitude (dB) between the output ports of the power divider over the specified frequency range.

**Phase Balance:** The maximum peak-to-peak difference in phase (in degrees) between the outputs of the power divider over the specified frequency range.

**Input Power:** The maximum power that may be supplied to the input port with all outputs properly terminated.

**Insertion Loss:** The net unrecoverable power loss in dB based on one way transmission through the power divider.

**Power Rating:** All ratings are as a divider. The power rating of devices used as a combiner are dependent on the coherence of the inputs.