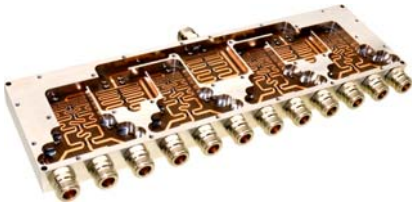
12-WAY POWER DIVIDER/COMBINER

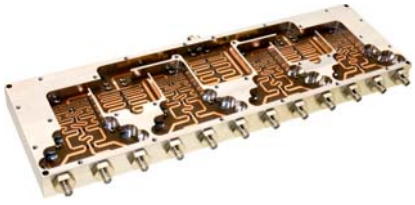
0.7-2.7 GHz, 40 Watts, N-Type & SMA-Jack Connectors, RoHS

12 Way, N Type Jack Connectors



wilkinson microstrip circuit

12 Way, SMA-Jack Connectors



fully-shielded CNC-housing

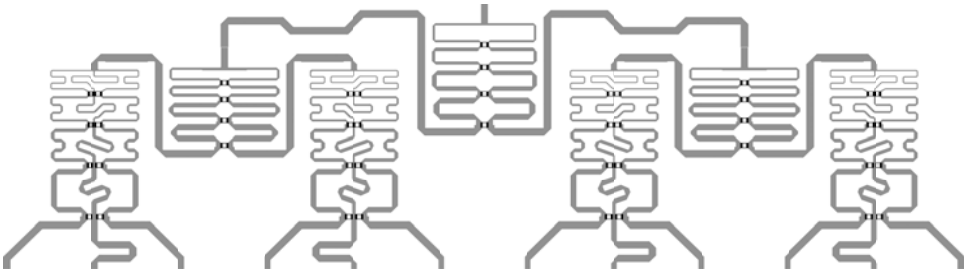
Application Note

STOCK 12 Way Power Divider, Power Combiners are now available with two connector styles, 50 ohm N type female and SMA female. Both models are optimized for broadband operation covering the frequency range from 700 to 2700 MHz with outstanding electrical performance. These Wilkinson hybrid type, 12 way, power splitter, power combiners are bi-directional units that can be used to divide or combine signals with equal facility.

In power divider applications, the input signal is equally split into twelve (12) output signals, each down 10.79 dB from the incident due to the 12 x 1/12th power division (0.083 power ratio). No power is actually lost from this power split; the power is just allocated into twelve amplitude & phase matched signals, thus a so-called 10.79 dB insertion loss. True insertion loss of less than 1.5 dB max @ 2.7 GHz will be found at the output ports resulting from the dissipation of small amounts of RF and microwave energy within the connectors and microstrip circuit. The output signals are isolated from each other by 18 dB minimum through the use of resistors that dissipate any power reflected back to the circuit caused by unequal or unbalanced output loads. The 40 watt maximum power rating of these power splitters is applicable when all output ports are connected to matched load VSWR of 1.2:1 or better. This maximum power rating must be reduced when load VSWR's increase or are unbalanced or out-of-phase with respect to one another. See **Power Divider Input Rating Tables** for additional guidelines.

Model Number	Connectors
PD2012	N Type Jack
PD2112	SMA Female

The case with power combining is a bit more complex. While possible to sum twelve input signals with no loss, this can be accomplished only if the input signals are coherent and identical in phase and amplitude. Such a case would be the twelve way splitting of a signal which is then recombined after amplification, provided the amplified signals are phase locked together. But outside this case, or cases of pure sine signals, or CW signals without any transmitted info, the combining of twelve non-coherent signals will result in a minimum 10.79 dB loss (1/12th power ratio) plus the true insertion loss of the power combiner (1.5 dB max @ 2.7 GHz). Worst-case combining loss occurs with coherent signals 180° out-of-phase, where all power is dissipated. Because the combining loss is dissipated through the isolation resistors, the power handling capability of these resistors ultimately determines the combiner power rating. See **Power Combiner Input Rating Tables** for additional information.



12 Way Wilkinson RF Microwave Power Divider, Combiner, Splitter Circuit

50 Intervale Road
Boonton, NJ 07005 USA
ph: 973.335.6550
fx: 973.335.6770
email: sales@instockwireless.com
web: **www.instockwireless.com**