

## High-Power 3dB COUPLER 1296, 2320, 3400 MHz

(Pictures of the couplers may be different)



This 3 dB Couplers ( $0^\circ/180^\circ$ ), also called a **"rat-race coupler"**, is a high-power capable, four-port device optimized to sum two in-phase combined signals **with essentially no loss** or to equally split an input signal with no resultant phase difference between out and inputs. The fourth port is terminated.

### Combine RF Power Amplifier:

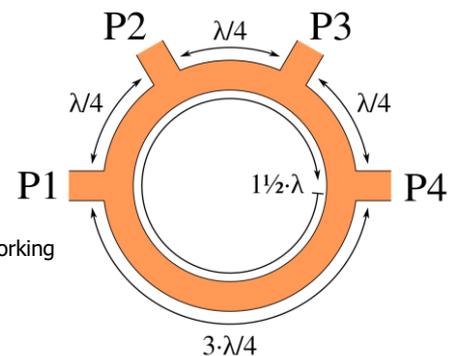
This is the right solution to combine power amplifiers up to 1000 Watts.

To combine 2 Power amplifiers you will need 2 couplers which can handle  $180^\circ$  phase shift.

### Port Configuration

| PORT | 180 degree phase shift                                |
|------|---|
| 1    | Input or Output                                       |
| 2    | -3dB Split Port port                                  |
| 4    | -3dB Split Port port                                  |
| 3    | Isolate by 50 Ohm load *<br>(Place dummy load 50ohms) |

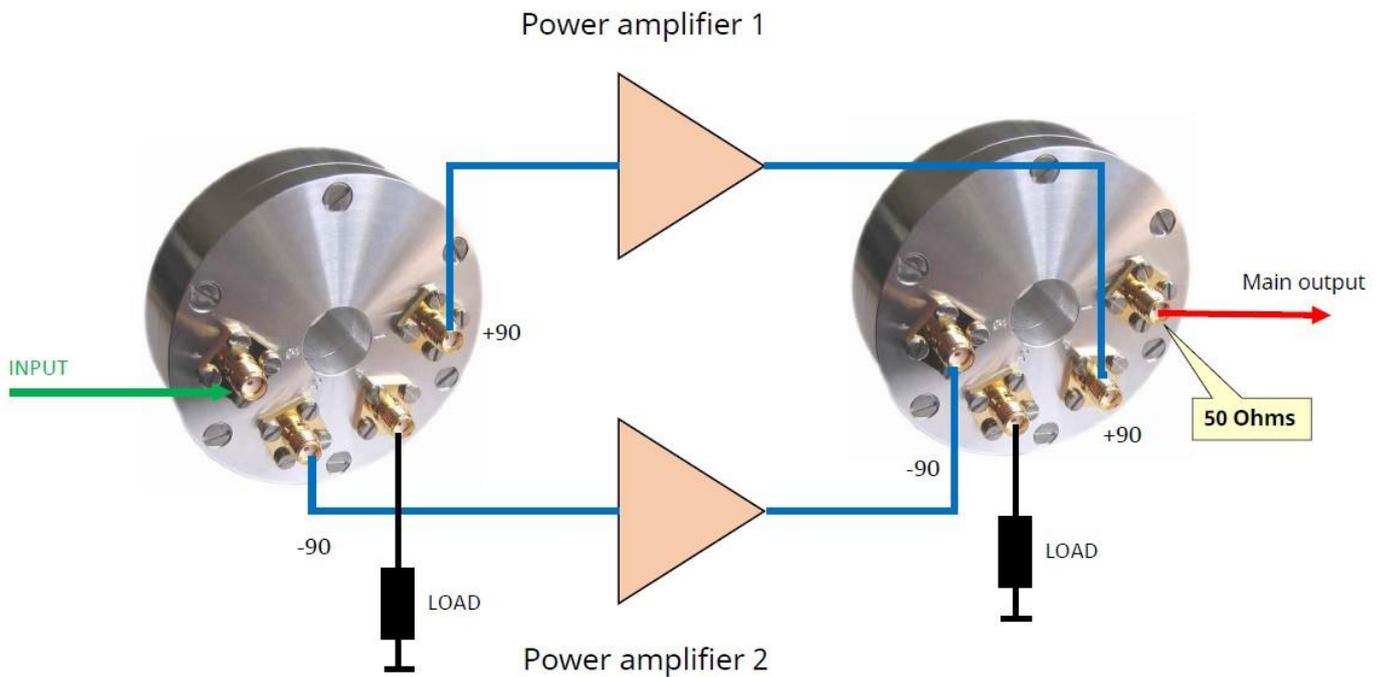
\*Dummy load must be able to take at least 1/100 of the total power under during normal working conditions.



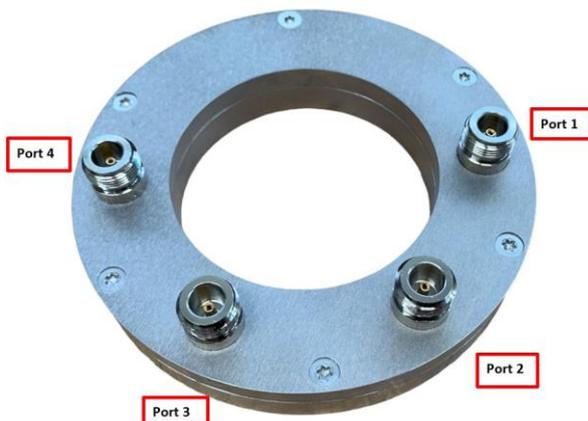
### Specifications Couplers:

| Description / Model      | FPQ-RING-23  | FPQ-RING-13  | FPQ-RING-9   |
|--------------------------|--|--|--|
| Frequency range          | 1100-1600MHz   | 2100-2600MHz   | 3350-3500MHz                                       |
| Impedance                | 50 ohm   | 50 ohm   | 50 ohm   |
| Return Loss              | 26dB   | 18dB   | 19dB   |
| Insertion Loss (typical) | 0.1dB  | 0.1dB  | 0.1dB  |
| Phase balance            | +/- 2 degree   | +/- 2 degree   | +/- 2 degree                                       |
| Isolation ports          | 45dB   | 43dB   | 42dB   |
| Port symmetry            | <0.1dB   | <0.1dB   | <0.2dB   |
| RF Power                 | AVG 1000W / CW 800W  | AVG 800W / CW 600W   | AVG 300W / CW 175W                                 |
| Connectors               | Nickel plated N-Female connector with gold plated contact pins | Nickel plated N-Female connector with gold plated contact pins | SMA-Female connector with gold plated contact pins |
| Material                 | CNC Machined Aluminum  | CNC Machined Aluminum  | CNC Machined Aluminum                              |
| Dimensions               | Round: 138mm<br>Hight: ~40mm                                   | Round: 92mm<br>Hight: ~40mm                                    | Round: 69mm<br>Hight: ~40mm                        |

## RF HAMDESIGN High Power 3dB coupler Setup example combine 2 RF Power Amplifiers



To combine 2 amplifiers you need to use 2 couplers which do have the same phase shift. RF HAMDESIGN 3dB couplers do have 90 degree phase shift.



Port Layout 3dB RF HAMDESIGN coupler