

## I&Q Networks

### Modulators

Bi-Phase, 1-12000 MHz  
 Quadrapole Networks, 10-600 MHz  
 Quadra-Phase, 10.2-1880 MHz  
 Single Sideband, 10.2-16000 MHz

### Image Reject Mixers

Image Reject Mixers, 10-16000 MHz

### I&Q Networks

**Pulsar Microwave Corporation** offers a full line of Modulators & Demodulators covering select frequency bands up to 8 GHz. These complex designs incorporate several of our lower level products to achieve optimum performance for use in communications systems. By employing miniaturization techniques and precise matching for component selection, Pulsar is able to offer these high performance units in very small packages, including surface mount.

#### Bi-Phase Modulators

##### (Bi-Phase Shift Key Modulators)

BPSK Modulators modulate an input signal by 0° and 180° phase shifts by injecting a  $\pm 20$  mA control signal at port D1.

#### Quadrapole Networks

Quadrapole Networks provide four equal amplitude, sequential quadrature 0°, 90°, 180°, and 270° outputs. Clockwise and counterclockwise rotations are possible. The principle application of quadrapole networks are to drive circular polarization antenna feeds.

#### Quadra-Phase Modulators

##### (Quadra-Phase Shift Key Modulators)

QPSK Modulators incorporate a 90° hybrid, 2-way 0° divider and two BPSK Modulators to phase shift an input signal by 0°, 90°, 180°, and 270° by injecting  $\pm 20$  mA control signals at ports D1 and D2.



### Demodulators

Quadrature I.F. Mixers, 10.2-8000 MHz

#### Single Sideband Modulators

##### (I & Q Modulators)

Single Sideband Modulators incorporate a 90° hybrid, 2-way 0° divider and two mixers to produce either an upper (RF + IF) or lower (RF - IF) sideband when driven by a carrier signal and modulation input signal. Depending on the phase relationship of the signals injected into the MOD.I and MOD.Q ports, the modulator will pass either the upper or lower sideband through to the output while rejecting the other.

#### Demodulators

##### (Quadrature IF Mixers)

Quadrature IF Mixers incorporate a 90° hybrid, 2-way 0° divider and two mixers to produce two output signals in phase quadrature (I & Q) when driven by a LO and RF signal.

#### Image Reject Mixers

Image Reject Mixers incorporate a 2-way 0° divider, two 90° hybrids and two mixers to produce an IF signal when driven by a LO and RF signal while rejecting unwanted sidebands which are very close in frequency.

