

# Converting Rectangular to Polar (Impedance)

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$$X + Yj\Omega$$

$$Ze^{\theta^\circ j}\Omega \text{ or } Z\angle\theta$$

Rectangular Representation of  
Impedance (Typical)

Polar Representation of Impedance

Step One: Find Real and Imaginary Component of the Rectangular Parts

$$Real(X + Yj) = a$$

$$Imag(X + Yj) = b$$

$$Z_{Magn.} = \sqrt{a^2 + b^2}$$

Step Two: Find  $\theta$

$$\theta = \arctan\left(\frac{b}{a}\right)$$