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## Typical 3-Phase Wiring Diagrams and Equations

### Definitions

For Both Wye and Delta (Balanced Loads)	Wye and Delta Equivalent
<p><math>V_P</math> = Phase Voltage  <math>V_L</math> = Line Voltage  <math>I_P</math> = Phase Current  <math>I_L</math> = Line Current  <math>R = R_1 = R_2 = R_3</math> = Resistance of each branch  <math>W</math> = Wattage</p>	<p><math>W_{DELTA} = 3 W_{WYE}</math>  <math>W_{ODELTA} = \frac{3}{4} W_{DELTA}</math>  <math>W_{OWYE} = \frac{1}{2} W_{WYE}</math></p>

Equations

3-Phase Wye (Balanced Load)	3-Phase Open Wye (No Neutral)
<p><b>Equations For Wye Only</b></p> $I_p = I_L$ $V_p = V_L / 1.73$ $W_{WYE} = V_L^2 / R = 3(V_p^2) / R$ $W_{WYE} = 1.73 V_L I_L$	<p><b>Equations For Open Wye Only (No Neutral)</b></p> $I_{PO} = I_{LO}$ $V_{PO} = V_L / 2$ $W_{OWYE} = 1/2 (V_L^2 / R)$ $W_{OWYE} = 2 (V_{PO}^2 / R)$ $W_{OWYE} = V_L I_{LO}$

3-Phase Delta (Balanced Load)	3-Phase Open Delta
<p><b>Equations For Delta Only</b></p> $I_p = I_L / 1.73$ $V_p = V_L$ $W_{DELTA} = 3(V_L^2) / R$ $W_{DELTA} = 1.73 V_L I_L$	<p><b>Equations For Open Delta Only</b></p> $V_p = V_L$ $I_{PO1} = I_{PO2} = I_{LO2}$ $I_{LO3} = 1.73 I_{PO1}$ $W_{ODELTA} = 2 (V_L^2 / R)$



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