

$$\text{Distance}_{1\text{way}} := 70 \cdot \text{m}$$

$$\text{BusVoltage} := 48 \cdot \text{V}$$

$$\text{Resistance}_{20\text{awg}} := 10 \cdot \frac{\Omega}{1000 \cdot \text{ft}}$$

$$\text{NumConductors}_{1\text{way}} := 4$$

$$\text{Current} := 2 \cdot \text{amp}$$

$$\text{VoltageDrop} := 2 \cdot \text{Distance}_{1\text{way}} \cdot \frac{\text{Resistance}_{20\text{awg}}}{\text{NumConductors}_{1\text{way}}} \cdot \text{Current}$$

$$\text{VoltageDropPercentage} := \frac{\text{VoltageDrop}}{\text{BusVoltage}} \cdot 100$$

$$\text{VoltageDrop} = 2.297 \text{ V} \quad \text{VoltageDropPercentage} = 4.785$$

$$\text{Current} := 5 \cdot \text{amp}$$

$$\text{VoltageDrop} := 2 \cdot \text{Distance}_{1\text{way}} \cdot \frac{\text{Resistance}_{20\text{awg}}}{\text{NumConductors}_{1\text{way}}} \cdot \text{Current}$$

$$\text{VoltageDropPercentage} := \frac{\text{VoltageDrop}}{\text{BusVoltage}} \cdot 100$$

$$\text{VoltageDrop} = 5.741 \text{ V} \quad \text{VoltageDropPercentage} = 11.961$$

$$\text{Current} := 8 \cdot \text{amp}$$

$$\text{VoltageDrop} := 2 \cdot \text{Distance}_{1\text{way}} \cdot \frac{\text{Resistance}_{20\text{awg}}}{\text{NumConductors}_{1\text{way}}} \cdot \text{Current}$$

$$\text{VoltageDropPercentage} := \frac{\text{VoltageDrop}}{\text{BusVoltage}} \cdot 100$$

$$\text{VoltageDrop} = 9.186 \text{ V} \quad \text{VoltageDropPercentage} = 19.138$$

$$\text{Current} := 10 \cdot \text{amp}$$

$$\text{VoltageDrop} := 2 \cdot \text{Distance}_{1\text{way}} \cdot \frac{\text{Resistance}_{20\text{awg}}}{\text{NumConductors}_{1\text{way}}} \cdot \text{Current}$$

$$\text{VoltageDropPercentage} := \frac{\text{VoltageDrop}}{\text{BusVoltage}} \cdot 100$$

$$\text{VoltageDrop} = 11.483 \text{ V} \quad \text{VoltageDropPercentage} = 23.923$$