

Recommend WattNode Models

The following table shows the WattNode models that should be used, depending on the line to neutral voltage.

Line to Neutral Voltage	Meter Service Type
120 Vac	3Y-208
230 Vac	3Y-400
277 Vac	3Y-480

Single-Phase Three-Wire (Mid-Point Neutral)

This configuration is seen in North American residential and commercial service with 240 Vac for large appliances. The three conductors are a mid-point neutral and two line voltage wires with AC waveforms 180° out of phase; this results in 120 Vac between either line conductors (phase) and neutral, and 240 Vac (or sometimes 208 Vac) between the two line conductors (phases).

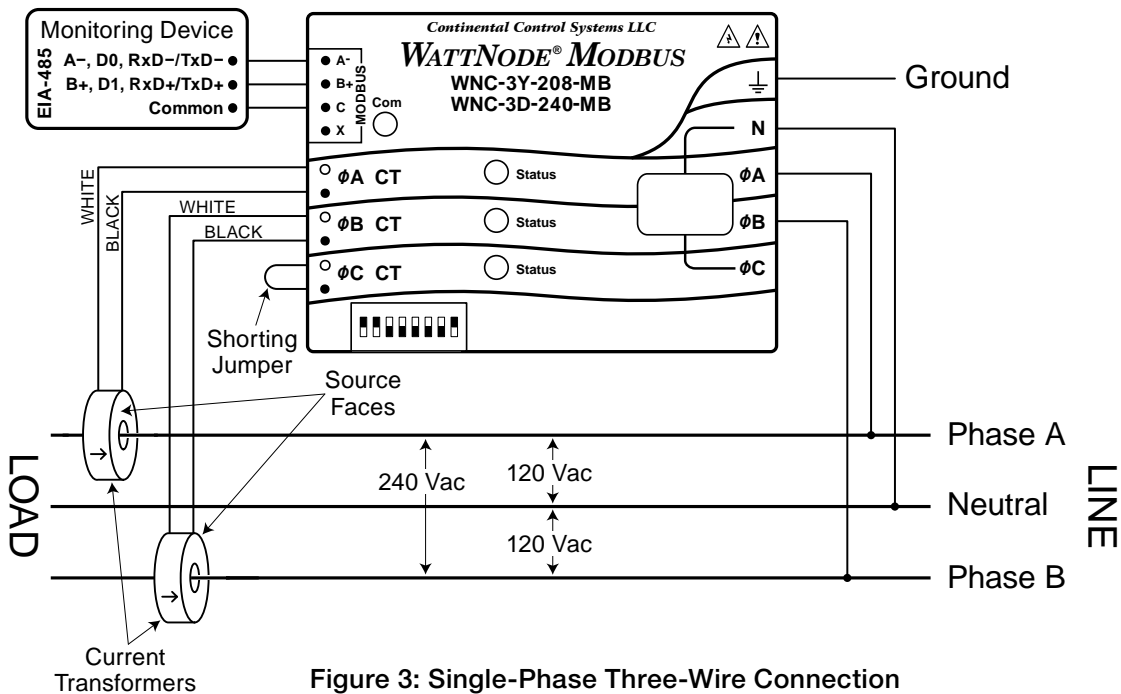


Figure 3: Single-Phase Three-Wire Connection

Recommended WattNode Models

The following table shows the WattNode models that can be used. If neutral may or may not be present, you should use the WNC-3D-240-MB (see **Single-Phase Two-Wire without Neutral** below). If neutral is present, it must be connected for accurate measurements. If phase B may not be present, you should use the WNC-3Y-208-MB (see **Single-Phase Two-Wire with Neutral** above).

Meter Power Source	Meter Service Type
N and φA (Neutral and Phase A)	3Y-208
φA and φB (Phase A and Phase B)	3D-240

Single-Phase Two-Wire without Neutral

This is seen in residential and commercial service with 208 to 240 Vac for large appliances. The two conductors have AC waveforms 120° or 180° out of phase. Neutral is not used. For this configuration, the meter is powered from the ϕA and ϕB (phase A and phase B) terminals.

For best accuracy, we recommend connecting the **N** (neutral) terminal to the ground terminal. This will not cause ground current to flow because the neutral terminal does not power the meter.

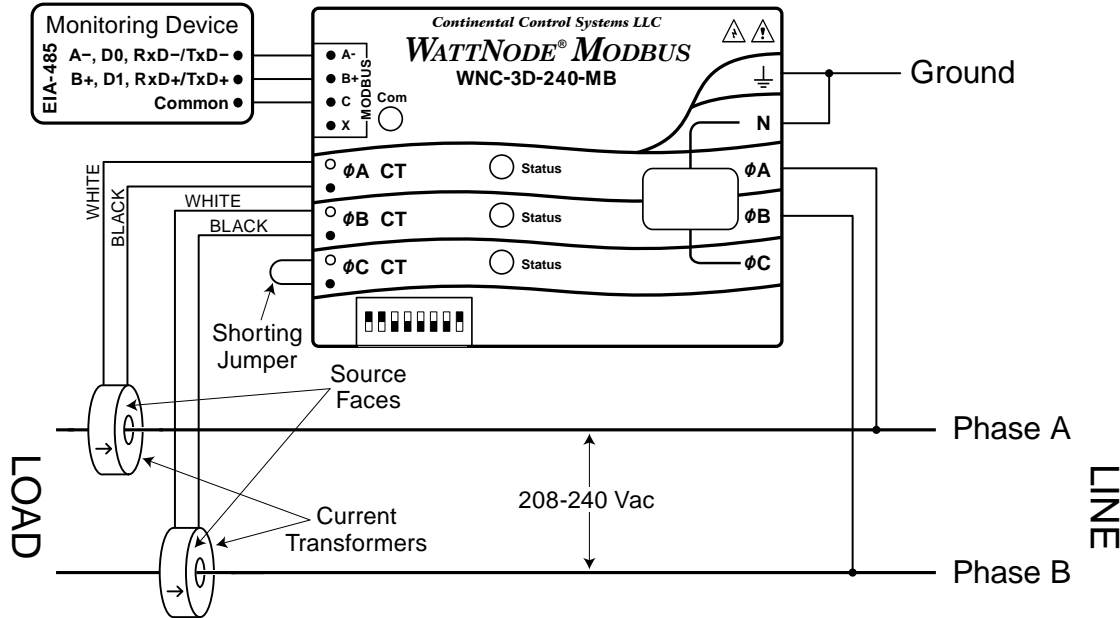


Figure 4: Single-Phase Two-Wire without Neutral Connection

Recommended WattNode Model

This configuration is normally measured with the following WattNode model.

Line-to-Line Voltage	Meter Service Type
208 - 240 Vac	3D-240

If neutral is available, you may also use the WNC-3Y-208-MB model. If you use the WNC-3Y-208-MB, you will need to hook up the meter as shown in section **Single-Phase Three-Wire (Mid-Point Neutral)** and connect neutral. You will need two CTs.

If one of the conductors (phase A or phase B) is grounded, see **Grounded Leg Service** below for recommendations.

Three-Phase Four-Wire Wye

This is typically seen in commercial and industrial environments. The conductors are neutral and three power lines with AC waveforms shifted 120° between phases. The line voltage conductors may be connected to the ϕA , ϕB , and ϕC terminals in any order, **so long as the CTs are connected to matching phases**. It is important that you connect **N** (neutral) for accurate measurements. For wye “-3Y” models, the meter is powered from the **N** and ϕA terminals.

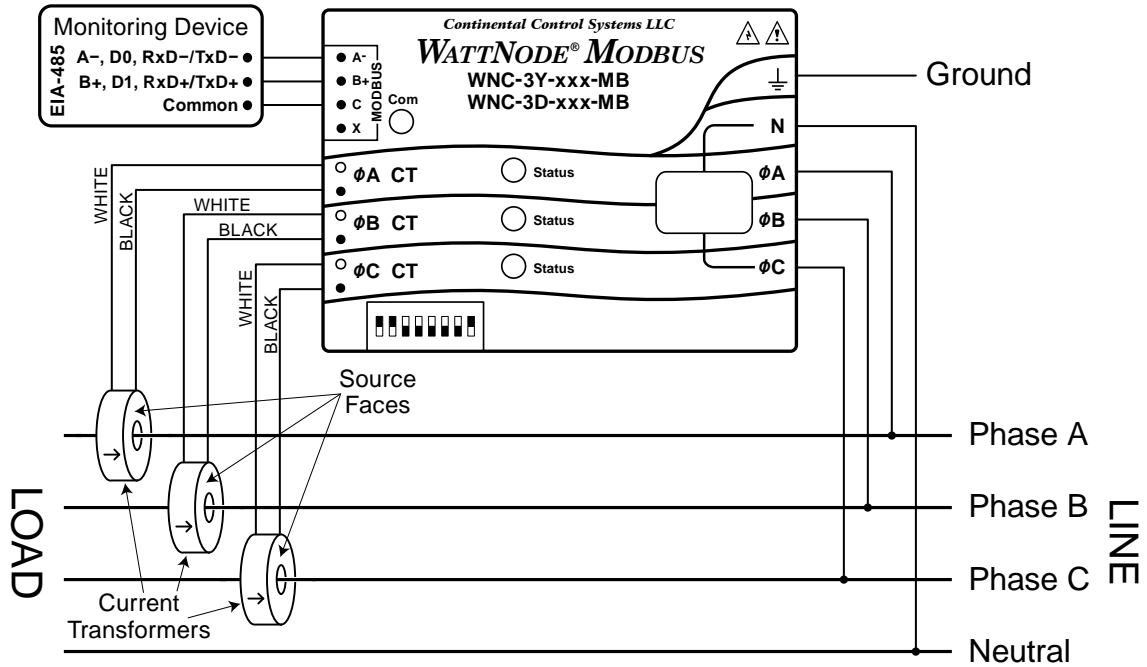


Figure 5: Three-Phase Four-Wire Wye Connection

Recommended WattNode Models

The following table shows the WattNode models that should be used, depending on the line-to-neutral voltage and line-to-line voltage (also called phase-to-phase voltage).

Line-to-Neutral Voltage	Line-to-Line Voltage	Meter Service Type
120 Vac	208 Vac	3Y-208
230 Vac	400 Vac	3Y-400
277 Vac	480 Vac	3Y-480
347 Vac	600 Vac	3Y-600

Note: you may also use the following delta WattNode models to measure three-phase four-wire wye circuits. The only difference is that delta WattNode models are powered from ϕA and ϕB , rather than **N** and ϕA . If neutral is present, it must be connected for accurate measurements.

Line-to-Neutral Voltage	Line-to-Line Voltage	Meter Service Type
120 - 140 Vac	208 - 240 Vac	3D-240
230 Vac	400 Vac	3D-400
277 Vac	480 Vac	3D-480

Three-Phase Three-Wire Delta Without Neutral

This is typically seen in manufacturing and industrial environments. There is no neutral wire, just three power lines with AC waveforms shifted 120° between the successive phases. With this configuration, the line voltage wires may be connected to the ϕA , ϕB , and ϕC terminals in any order, **so long as the CTs are connected to matching phases**. For these models, the meter is powered from the ϕA and ϕB (phase A and phase B) terminals. Note: all delta WattNode models provide a neutral connection **N**, which allows delta WattNode models to measure both wye and delta configurations.

For best accuracy, we recommend connecting the **N** (neutral) terminal to earth ground. This will not cause ground current to flow because the neutral terminal is not used to power the meter.

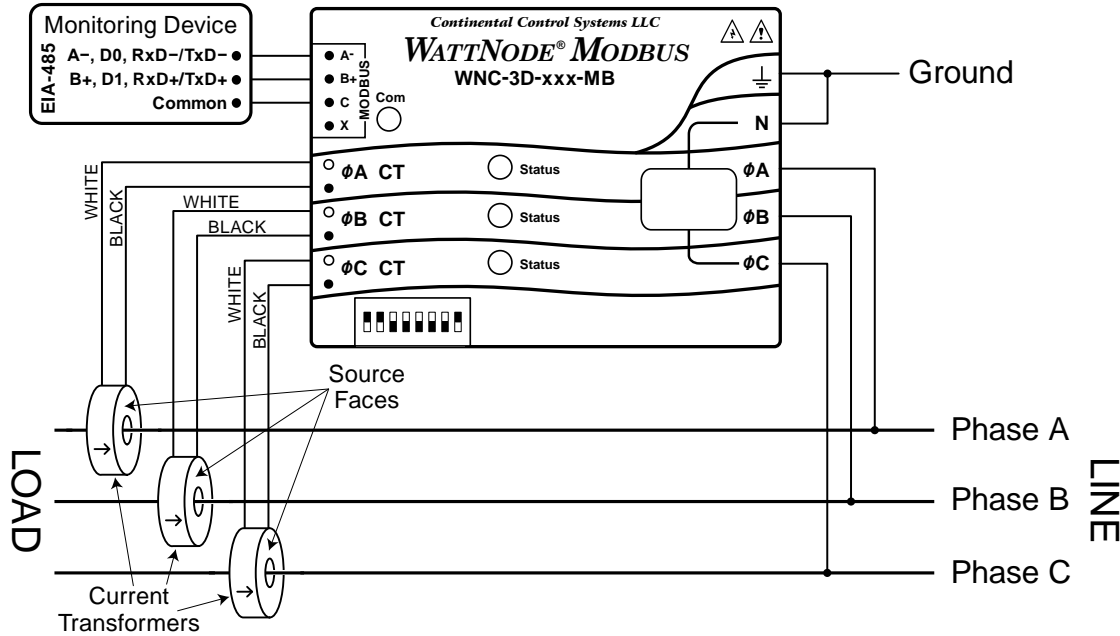


Figure 6: Three-Phase Three-Wire Delta Connection

Recommended WattNode Models

The following table shows the WattNode models that should be used, depending on the line-to-line voltage (also called phase-to-phase voltage).

Line-to-Line Voltage	Meter Service Type
208 - 240 Vac	3D-240
400 Vac	3D-400
480 Vac	3D-480

Three-Phase Four-Wire Delta (Wild Leg)

The uncommon four-wire delta electrical service is a three-phase delta service with a center-tap on one of the transformer windings to create a neutral for single-phase loads.

See http://www.ccontrols.com/w/Four_Wire_Delta_Circuits for details.

Grounded Leg Service

In rare cases with delta services or single-phase two-wire services without neutral, one of the phases may be grounded. You can check for this by using a multimeter (DMM) to measure the voltage between each phase and ground. If you see a reading between 0 and 5 Vac, that leg is probably grounded (sometimes called a “grounded delta”).