



International Electrical Distribution Systems

Description	L-N Vac	L-L Vac	Countries	WattNode Models (Wye or Delta-Voltage)	
1-Phase, 2-Wire 120 V with neutral	120	-	US	3Y-208	✓
1-Phase, 2-Wire 230 V with neutral	230	-	EU, Others	3Y-400	✓
1-Phase, 2-Wire 208 V (No neutral)	-	208	US	3D-240	✗
1-Phase, 2-Wire 240 V (No neutral)	-	240	US	3D-240	✗
1-Phase, 3-Wire 120/240 V	120	240	US	3Y-208	✓
3-Phase, 3-Wire 208 V Delta (No neutral)	-	208	US	3D-240	✗
3-Phase, 3-Wire 230 V Delta (No neutral)	-	230	Norway	3D-240	✗
3-Phase, 3-Wire 400 V Delta (No neutral)	-	400	EU, Others	3D-400	✗
3-Phase, 3-Wire 480 V Delta (No neutral)	-	480	US	3D-480	✗
3-Phase, 3-Wire 600 V Delta (No neutral)	-	600	US, Canada	none ¹	✗
3-Phase, 4-Wire 208Y/120 V	120	208	US	3Y-208, 3D-240	✓
3-Phase, 4-Wire 400Y/230 V	230	400	EU, Others	3Y-400, 3D-400	✓
3-Phase, 4-Wire 415Y/240 V	240	415	Australia	3Y-400, 3D-400	✓
3-Phase, 4-Wire 480Y/277 V	277	480	US	3Y-480, 3D-480	✓
3-Phase, 4-Wire 600Y/347 V	347	600	US, Canada	3Y-600	✗
3-Phase 4-Wire Delta 120/208/240 Wild Phase	120, 208	240	US	3D-240	✗
3-Phase 4-Wire Delta 240/415/480 Wild Phase	240, 415	480	US	3D-480	✗
3-Phase Corner-Grounded Delta 208/240	-	240	US	3D-240	✗
3-Phase Corner-Grounded Delta 415/480	-	480	US	3D-480	✗

Installation overview:

This is an overview of the site setup and not meant to be a detailed installation guide. Please refer to the individual installation guides for detailed instructions.

KEY POINTS:

Neutral connection required

All equipment suitable for use on 80 - 305Vac Phase to Neutral voltages (480 3Y, 208 3Y, 240 1P, 120 1P)

DO NOT USE ON 480V Delta or 480V corner grounded Delta phase legs that do not have a neutral

1. Mount the primary gateway (1) next to any 480V breaker/ fused switch box and connect all 4 wires (3 phases and 1 neutral using 14AWG NM cable) to the downstream side of the box. Position this gateway so that either (a) a local area ethernet cable can be plugged in OR (b) the gateway can connect to the building WiFi OR (c) the gateway can connect via the cellular network. This gateway can monitor power line traffic on any of the three phases
2. NCx/IBx nodes/boards can connect to one of the phases on the 480Y bus as long as the phase to neutral voltage is less than 305VAC. These can control/monitor any of the large loads in Zone A.
3. For each transformer in the building that has NCx controlled loads (or attached SCADA) on the downstream side install an additional gateway (3) next to the transformer. Use one 4 wire, 14AWG NM cable to connect to all three (or two) 120V phases + neutral on the downstream side of the transformer (after the fused disconnect if available).
4. The SCADA terminal/kiosk can be installed anywhere on site. Connectivity depends on which connection option has been used for the primary and secondary gateways (Ethernet/WIFI/Cellular)

Reference:

P = phase, N= neutral, P-P = phase to phase, P-N = phase to neutral
 Y = WYE connected transformer (with center neutral), D = delta (no center)
 (All voltages are rms.)

3 phase P-N voltage = $P-P(v) / \tan(60) = P-P / 1.732$
 Peak V = $V_{rms} * 1.414$

Small industry, Large buildings US:

Primary distribution: 3 phase 4 wire 480 Y = 480V P-P, 277V P-N
 Load - light industrial & motors: 3 phase 4 wire 208Y = 208V P-P, 120V P-N
 Load - lighting: 1P, 277 OR 120V P-N

Residential US:

Primary to Mains Panel: 1 phase 2 wire 240 P-P
 Secondary: split phase 120V P-N (N derived using earth bar local to building)

PLAN SITE INSTALLATION OVERVIEW
US Industrial & large buildings with 3P-408Y primary feed

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