



Electrical Power Design Guide

Innovation Water Heaters

With Edge [i] Controller



Applies to models:

- INN 600N
- INN 800N
- INN 1060N
- INN 1350N

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1 General Information

Innovation-Edge (INN) Water Heaters are fully factory wired and packaged units which require simple power wiring as part of the installation. This technical guide is intended to help designers provide electrical power wiring (line voltage) to Innovation-Edge units. Control wiring details are provided in other publications depending on the intended application. This document is intended as a guide only, and cannot include all alternatives, situations, or be totally inclusive. To comply with all codes and authorities having jurisdiction, designers and installers must plan the electrical wiring carefully and execute the installation completely. Emergency shutoffs, fusible fire switches, break glass stations, and other electrical requirements should be considered and installed whenever necessary.

2 Electrical Requirements

Innovation-Edge water heaters require one of the following input power:

- **120 volts, single phase, 50/60 Hz, 20 Amps**
- **220 volts, single phase, 50/60 Hz, 10 Amps**

Refer to Figure 1 for typical Service Disconnect Switch location.

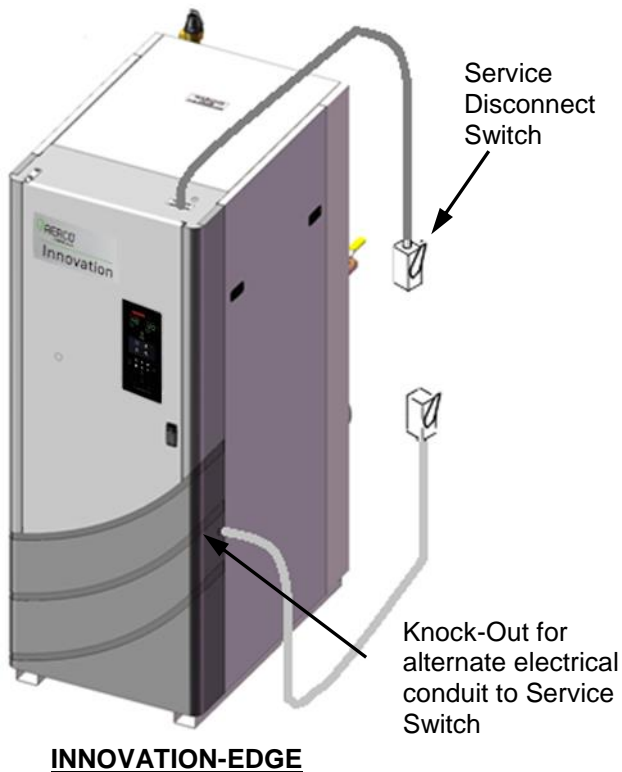


Figure 1. Service Switch Typical Location

The distribution block for field connection is located in the upper right of the control box (see Figure 2). All copper wire must be connected to the terminal distribution block. 110 VAC is the minimum allowable supply voltages to the unit. Lower voltages will result in increased wear and premature failure of the blower motor. Wire size and type should be made per the National Electrical Code based on length and load.

Figure 2 shows the location of the Power Box containing the terminal block connections. The Power Box is accessed by removing the front panel door of the unit.

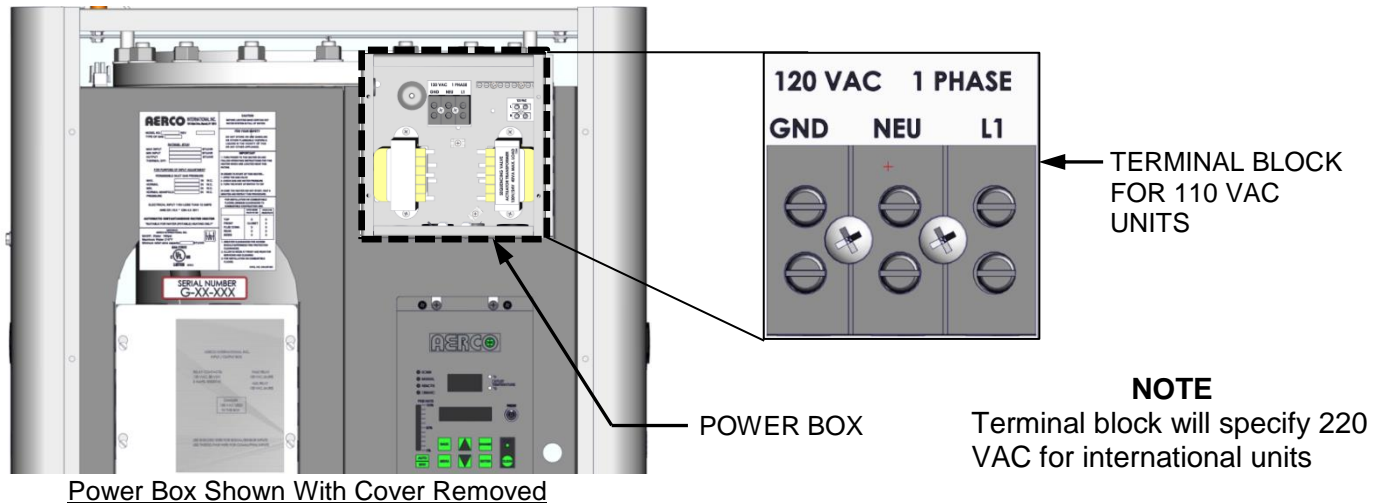


Figure 2. Terminal Block Location

2.1 220V Input Power

Innovation-Edge units operate internally on 120 VAC power. All Innovation-Edge units that will connect to a 220 VAC power source must be ordered with a 220 VAC to 120 VAC transformer. This transformer is installed inside the unit, as shown in Figure 3. The 220 VAC electrical connection is made in the Power Box to the same terminals as 120 VAC connections are made (see Figure 2). The transformer is pre-wired to convert the power to 120 VAC. No further steps are needed.

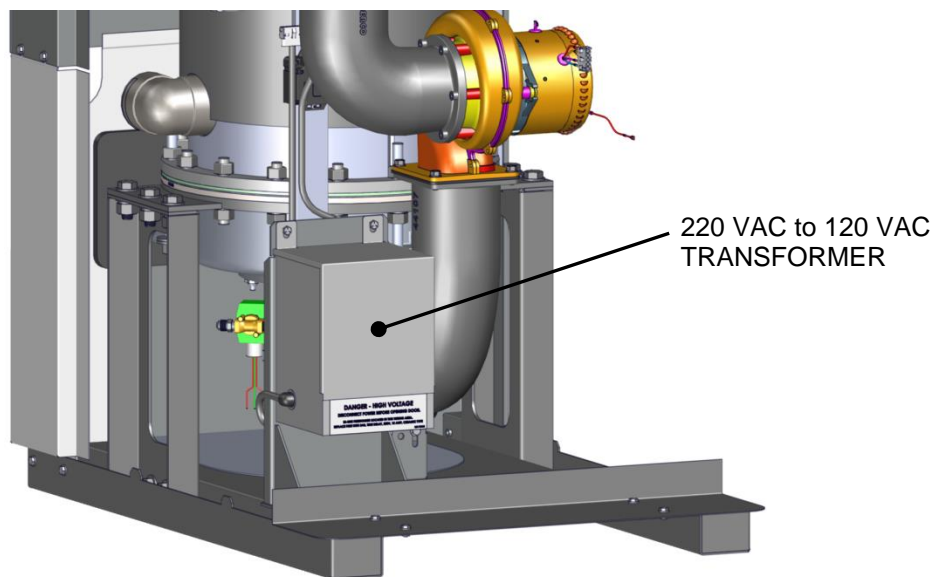


Figure 3. 220V Transformer – Front Frame & Panel and Side Panels Removed

3 Provisions for Service

Designers must provide emergency shutoffs and other devices to satisfy electrical codes. It is also recommended to provide an electrical shutoff disconnect switch of suitable load carrying characteristics on or near each water heater. No electrical boxes or field components should be mounted to the surface of the unit or where they would interfere with the removal of the side or top

panels for maintenance. The disconnect switch should be mounted near the unit as illustrated in Figure 1. Wiring conduit, EMT, or other wiring paths should not be secured to the unit, but supported externally. Electricians should be instructed as to where the wiring conduit should be located, such as away from the relief valve discharge, drains, etc. All electrical conduit and hardware should be installed so that it does not interfere with the removal of any cover, inhibit service or maintenance, or prevent access between the unit and walls or another unit.

4 Unit Wiring

A dedicated protected circuit should be provided from the power source to the unit. No other electrical devices should be permanently wired on the same circuit. An emergency switch (electrical shutoff) must be in series with the power to the unit. Refer to Figure 4 (120 VAC units) and Figure 5 (220 VAC units) for the wiring connections to the terminal block contained in the unit’s Power Box.

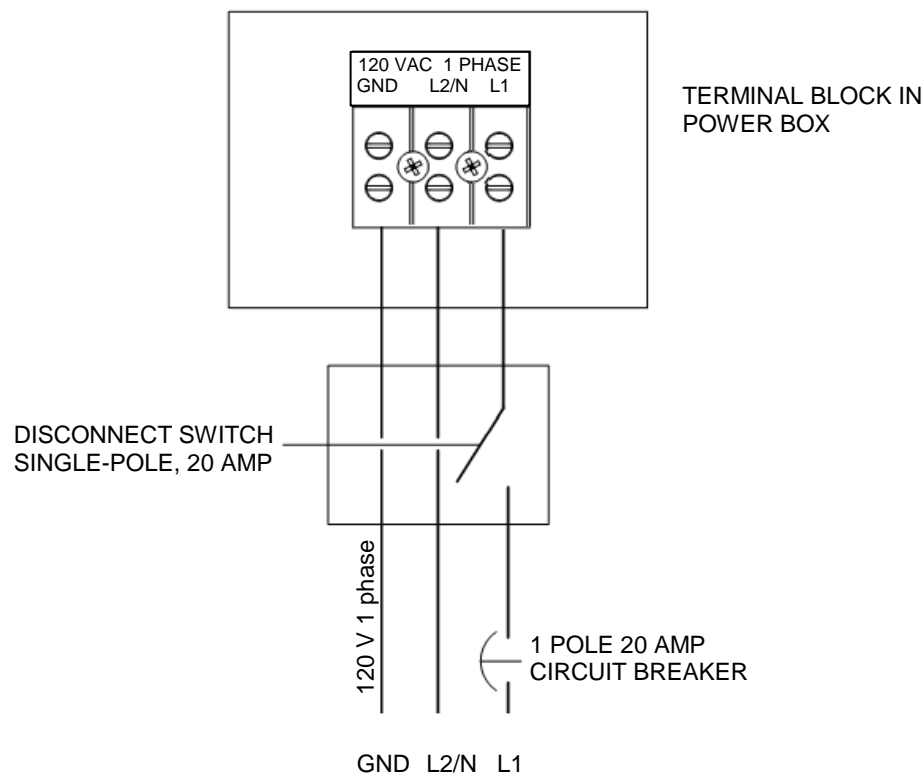


Figure 4. 120 volt, Single Phase Wiring Schematic

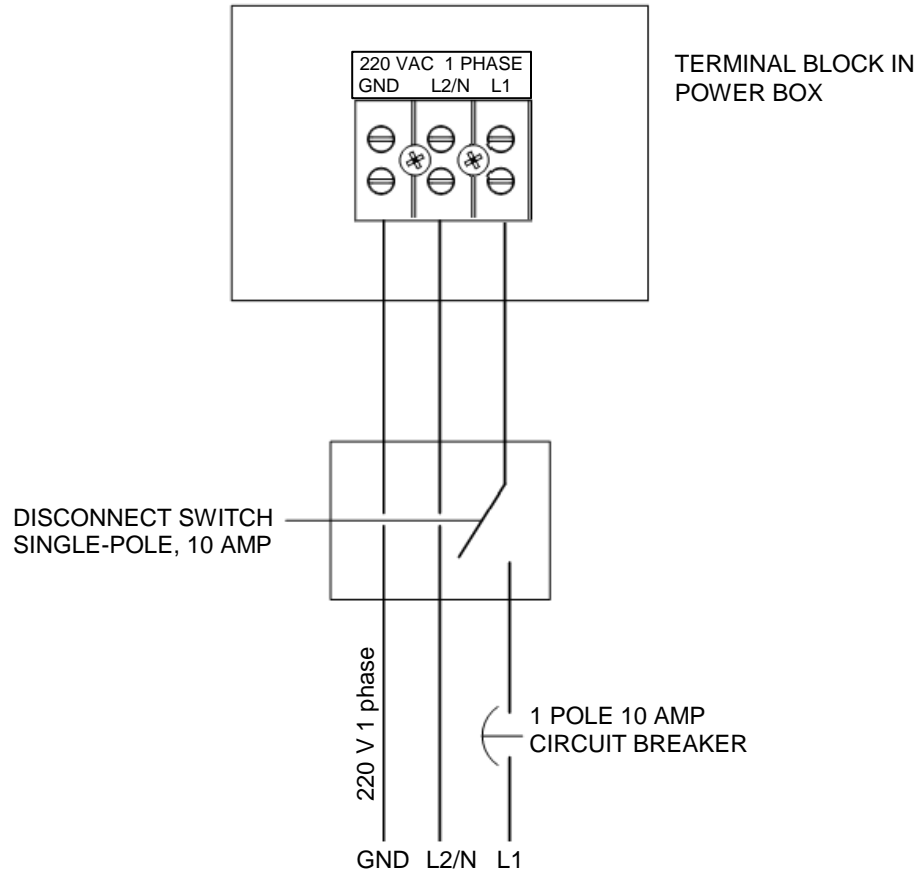


Figure 5. 220, Single Phase Wiring Schematic

5 Multiple Unit Wiring

Whenever multiple units are installed within the same mechanical spaces, electrical code requirements call for a single electrical shutoff for emergency use. It is the responsibility of the electrical designer to comply with local codes and regulations affecting an individual installation.

Change Log:

Date	Description	Changed by
9/6/2019	Rev A: Initial release	