

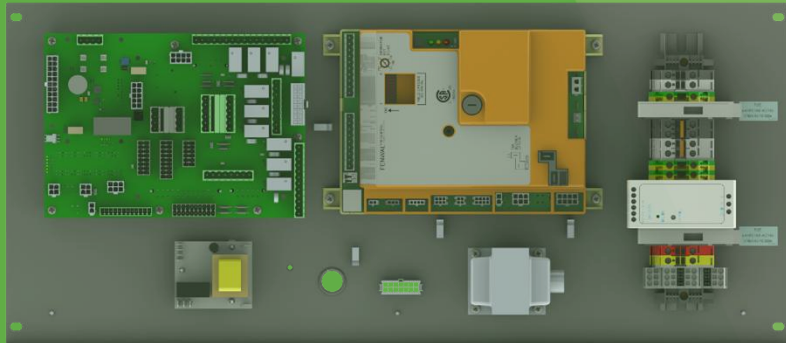
Electrical Power Design Guide

Benchmark[®] NX Boilers

Models 399 and 500

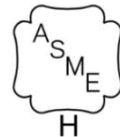
Other documents for this product include:

- OMM-0139, Edge Controller Manual
- OMM-0183 BMK NX 399-500 Installation and Operation Manual
- OMM-0184 BMK NX 399-500 Edge Reference Manual
- TAG-0119 Benchmark NX Gas Guide
- TAG-0121 Benchmark NX Piping Guide
- TAG-0122 Benchmark NX Venting and Combustion Air Design Guide
- TAG-0123 BMK NX Boiler Application Guide



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1. GENERAL

Benchmark NX (BMK NX) Gas Fired Boilers are fully factory wired packaged units which require simple external power wiring as part of the installation (Figure 1). This technical guide is intended to help designers provide electrical power wiring (line voltage) to Benchmark NX units. Control wiring details are provided in other publications, depending upon unit application. This document is intended only as a guide and therefore cannot include all possible alternatives or unit applications. In order 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.

Installation and electrical wiring must be performed only by qualified personnel familiar with applicable electrical codes and boiler equipment.

Improper installation, wiring, grounding, or service may result in electrical shock, fire, equipment damage, serious injury, or death.

2. BOILER ELECTRICAL REQUIREMENTS

Benchmark boilers are available with the following power options:

BMK Model	Voltage	Phase	Full Load Amp (FLA)	Minimum Circuit Ampacity (MCA)
BMK NX 399	120 V	1Ø / 60 Hz	4.5	5.6
BMK NX 500	120 V	1Ø / 60 Hz	4.5	5.6

Voltages lower than those specified in the table above 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.

For all Benchmark NX models, the power box for field wiring connections is located in the upper right corner behind the unit front panel. All copper wire must be connected to the power box.



Figure 1: Service Disconnect Switch Typical Location



Figure 2: BMK NX Power Panel

3. PROVISIONS FOR SERVICE

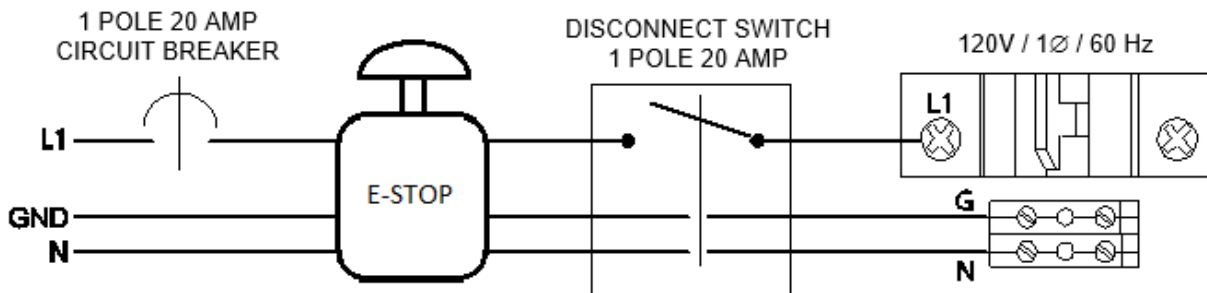
Designers must provide emergency shutoffs and other devices to satisfy electrical codes. It is also recommended to provide an electrical shutoff disconnect switch of suitable load carrying characteristics near each BMK NX boiler. No electrical boxes or field components should be mounted to the surface of the boiler or where they would interfere with the removal of the side or top panels for maintenance. The service disconnect switch should be mounted near the unit, as illustrated in Diagram 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 covers, inhibit service or maintenance, or prevent access between the unit and walls or another unit.

4. BOILER WIRING

A dedicated protected circuit, sized for the amperage values below, should be provided to the boiler. No other electrical devices should be permanently wired on the same circuit.

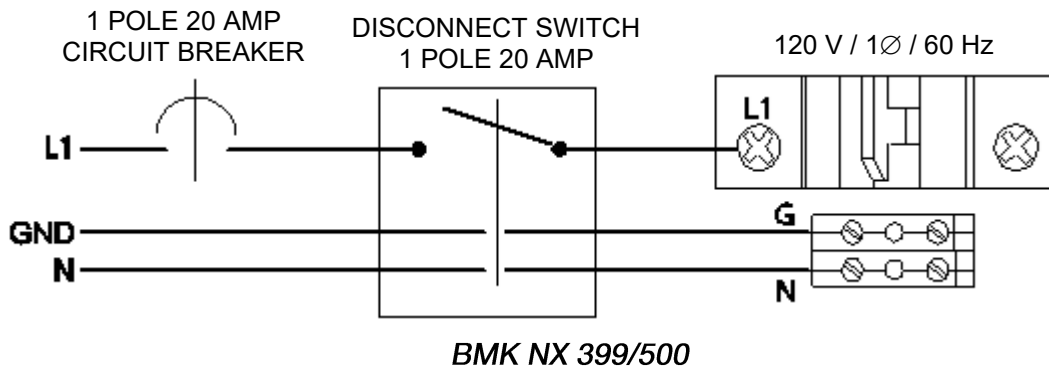
An emergency switch (electrical shutoff) must be wired in series with power to the unit. Connecting an emergency shutoff switch (E-stop) to the main power terminals of the boiler is the safest way to disable and un-power the unit. Use of the remote interlock, located on the I/O board, is not recommended since it does **not** cutoff power within the unit, it only disables it. Under no circumstance should the remote interlock of the Manager boiler unit be used as an emergency switch for the plant.

Multiple Unit Wiring: When 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.



The following table lists the input power requirements for all Benchmark boilers, including the diagram number of each model's corresponding schematic diagram:

For applicable wiring connections, refer to the schematic diagrams below.





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