

INSTALLATION INSTRUCTIONS



Energy Manager **PLUS II**

Keep these instructions with the boiler at all times.

BOYERTOWN FURNACE CO.

PO Box 100

BOYERTOWN, PA 19512

1-610-369-1450

www.boyertownfurnace.com

Be Aware of Hazard Definitions

Danger	Denotes presence of a hazard which, if ignored, will result in severe personal injury, death or property damage
Warning	Denotes presence of a hazard which, if ignored could result in severe personal injury, death or substantial property damage.
Caution	Denotes the presence of a hazard, which if ignored, could result in minor personal injury or property damage
Notice	Intended to bring attention to information, but not related to personal injury or property damage.

Danger

This equipment must be installed, adjusted, serviced and started only by a qualified service agency – an individual or agency, licensed and experienced with all codes and ordinances, and who is responsible for the installation and adjustment of the equipment. The installation must comply with all local codes and ordinances and with the latest revision of the National Fire Protection Standard for Oil Burning Equipment, NFPA 31.

Read all instructions before proceeding. Follow all instructions completely. Failure to follow these instructions could result in equipment malfunction causing severe personal injury, death or substantial property damage.

Do not alter this kit or the boiler in any way. The manufacturer will not be liable for any damage resulting from changes made in the field to the boiler or its components or from improper installation. Failure to comply could result in severe personal injury, death, or substantial property damage.

Your oil fired boiler is designed to burn No. 1 and No. 2 heating oil only. Never use gasoline or a mixture of gasoline and oil.

Do not store gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

The area around the boiler should be kept free and clear of combustible materials.

Never burn garbage or refuse in your boiler.

Never try to ignite oil by tossing burning papers or other material into your boiler.

Do not attempt to start the burner when excess oil has accumulated or the boiler is full of vapors.

Do not operate boiler if the heat exchanger is damaged.

Do not jumper, attempt to bypass or override any of the safety limit controls.

Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and replace any part of the boiler, control system or burner that has been under water.

All installations must conform to the requirements of the authority having jurisdiction. Such applicable requirements take precedence over the general instructions of this manual.

Where required by the authority having jurisdiction, the installation must conform to the American Society of Mechanical Engineers Safety Code for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.

Notice

Concealed Damage- If you discover damage to the burner, boiler or controls during unpacking, notify the carrier at once and file the appropriate claim. When calling or writing about the boiler please have the following information available: The boiler model number and serial number.

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Specifications

Input Voltage:	120VAC
Maximum Burner Amps:	5.8 FLA
Available 24VAC Power Zone Valves:	75VA
Maximum Individual Zone Amps:	5 Amps@ 120VAC
Maximum Total Zone Amps:	15Amps@ 120VAC

Internal Components

System Connectors

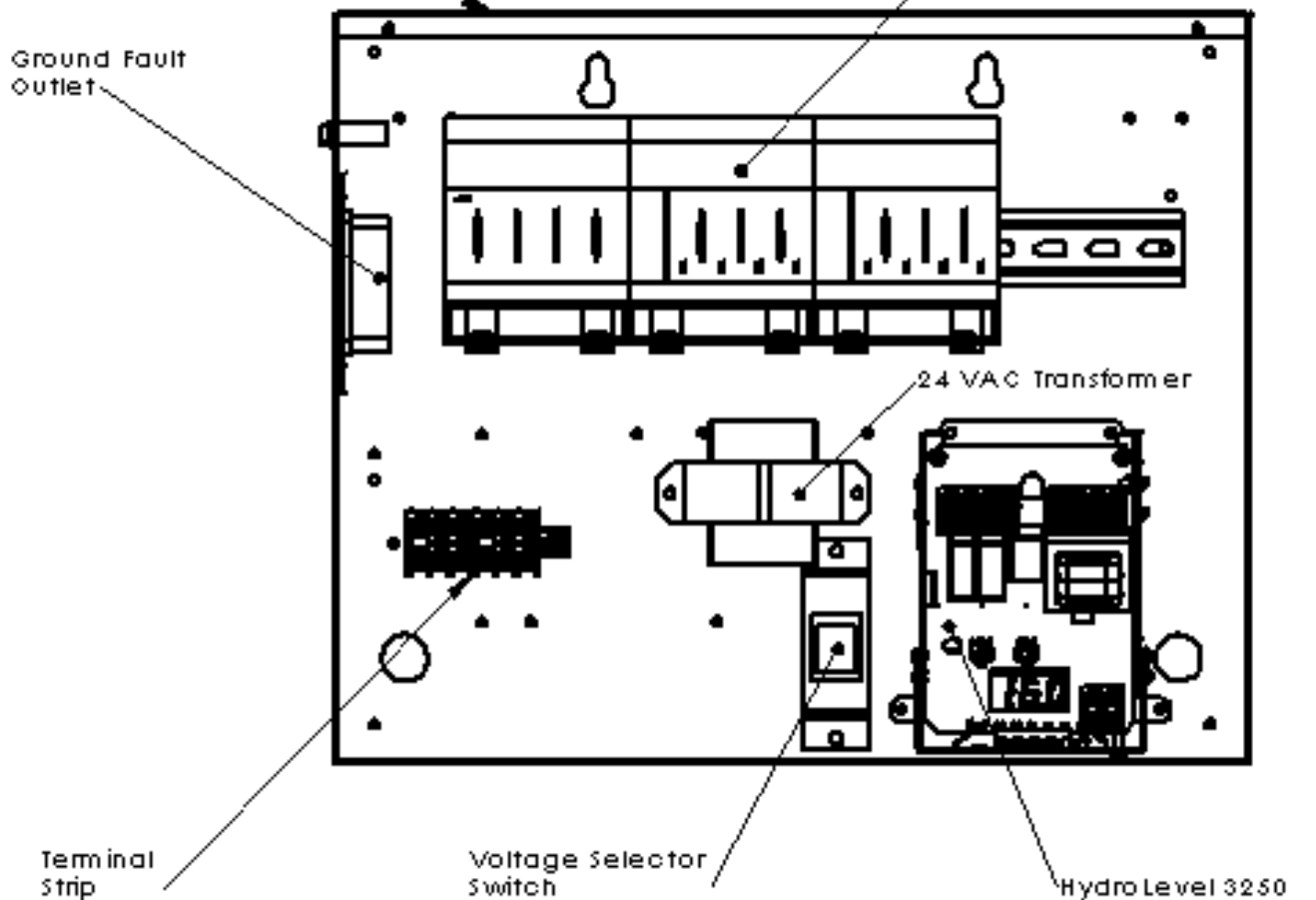
Plug N Go

System Circulator

Auxiliary Domestic Water

Ground Fault
Outlet

Honeywell AQ25042B



Terminal
Strip

Voltage Selector
Switch

Hydro Level 3250

Operational Theory Zone Control Board

The Energy Manager Plus integrates a Honeywell AQ25042B control along with a Hydrolevel Fuel Smart 3250 HydroStat to provide superior energy savings, enhanced zone control and plug and play technologies for easy installation.

The Honeywell AQ15000B Control Module, and an AQ15540B Zone Module which is field selectable as to the input voltage which enables it to be used with either zone valves or circulators.

External indicator lights showing individual zone call for heat, domestic hot water call, system circulator, and auxiliary output contacts allow for easy diagnostics

Use with digital non-communicating thermostats or AQ1000 2-wire polarity insensitive communicating thermostats. Do not use power stealing thermostats.

The Honeywell AQ25042B incorporates boiler short cycling protection, post purge, and shock prevention from cold water returning to boiler.

Automated test feature for quick start-up and simplified troubleshooting.

Voltage selection for the zone 1 – 4 is achieved through the voltage selector switch located inside the Energy Manager Plus II.

When using a circulator for your indirect water heater the AQ25042B can then operate up to 4 additional zones of heating. When using a zone valve for your indirect water heater 3 additional zones of heating can be operated.

An additional AQ15540B module can be easily added to provide an additional 4 zones. The DIN rail for the additional module is already installed. These zones can be powered independently from the first 4 zones so that mixed systems of zone valves and circulators can easily be done. If more than 8 zones of heating are required additional AQ15540B modules can be added for a maximum of 16 zones.

Integrated 24 volt transformer is supplied of sufficient capacity 75 VA total to power zone valves.

The domestic hot water options are set using the dip switches on the AQ15000B control module. The selections for domestic hot water include system type Pump/Valve, priority ON/OFF, priority over ride ON/OFF, purge ON/OFF.

The Hydrolevel Fuel Smart HydroStat 3250 control combines the functions of low water cutoff with Thermal Targeting technology. Thermal Targeting technology analyzes thermostat activity and continually evaluates how much heat the house requires. When the heat demand is high the Fuel Smart HydroStat will raise the boiler's target temperature to provide the needed heat to the home. When the heat demand is lower the HydroStat will lower the boiler's operating temperature saving fuel while continuing to provide comfort to the home. Refer to the provided Hydrolevel literature for a complete description of features.

Remote Mounting The Energy Manager Plus II

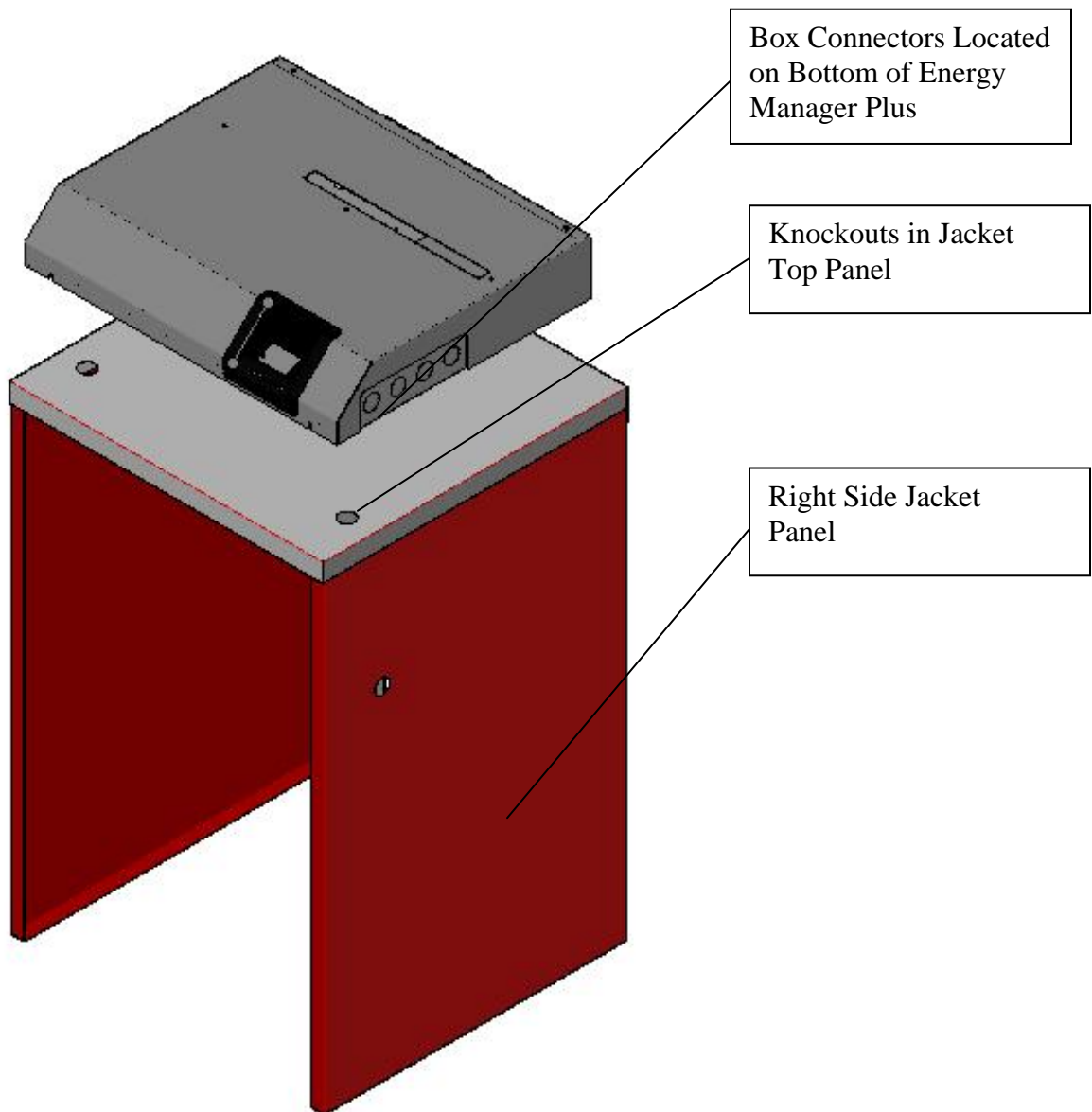
The Energy Manager Plus II can be mounted remotely to operate any boiler.

1. Using the keyhole slots in the base the Energy Manager Plus may be mounted to hang from an existing boiler or wall. The fasteners required to mount the control on a wall must be able to support the pound weight load of the control
2. Install the proper Hydrolevel Electro-Well into the boiler for proper operation of the low water cut off features of the control.
3. Install the Hydrolevel sensor into the Electro-Well following the instructions supplied with the sensor kit. Remote sensor kits are available in lengths up to 20 feet.

Installing The Energy Manager Plus II To A Trio Boiler

1. Lift and remove the jacket front panel.
2. Remove the two 7/8" knockouts in the jacket top panel. Note these are double tabbed knockouts which must be removed by bending opposite the tabs.
3. Install the supplied box connectors into the 7/8" holes in the front of on the Energy Manager Plus II.
4. Insert the box connectors through the 7/8" hole in the jacket top panel. Thread on the lock nuts to the box connector and tighten.
5. Anchor the rear right hand corner of the box to the jacket through the keyhole slot using a self drilling screw.

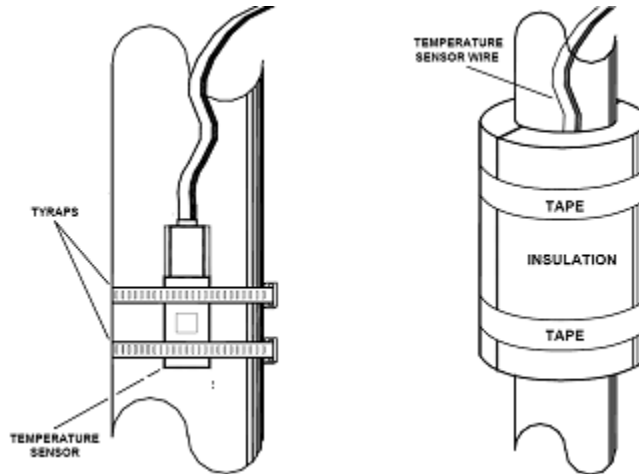
6. Remove the Hydrolevel 3250 from the burner box and return as it is not required.
7. Remove the aquastat sensor wire and ground wire which is running through the side of the jacket rerouting it through the box connector of the Energy Manager Plus II. Plug the sensor wire into the aquastat and attach the ground wire to a grounding screw.



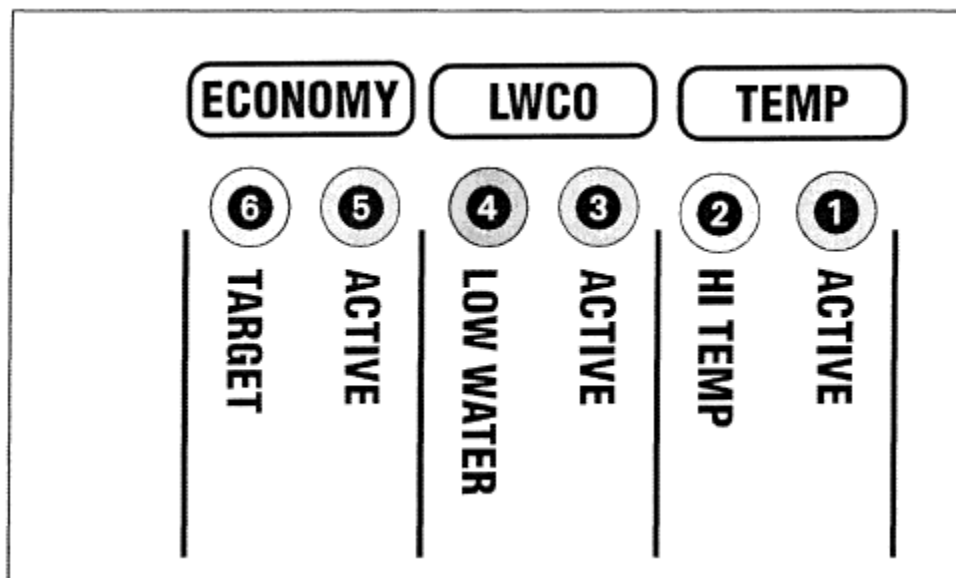
Supply and Return Water Sensor Installation

The supply and return water sensors screw into the Honeywell AQ15000B Control Module.

1. Route the sensor wire through one of the Heyco bushings which are inserted in the back of the Energy Manager Plus II.
2. Attach the sensors to the boiler supply and return pipe as close to the boiler as possible. Make sure that the sensor makes good thermal contact with the pipe. See Figures Below.
3. Cover the sensor with a piece of insulation and tape in place.



Front Bezel Indicating Lights



1. Temp Active – HydroStat is powered and temperature function is active
2. Temp High – Illuminated when the boiler reaches the high limit temperature
3. LWCO Active – Indicates the low water cut off is active
4. Low Water – Indicates that the boiler is shut off due to a low water condition
5. Economy Active – Indicates the Thermal Targeting function is Active
6. Economy Target – Illuminates when the boiler reaches the Thermal Target.

Electrical Wiring

Danger Electrical Wiring Must Conform to The National Electrical Code, ANSI/NFPA and Local Codes.

The boiler must be electrically grounded and on a separate fused disconnect switch.

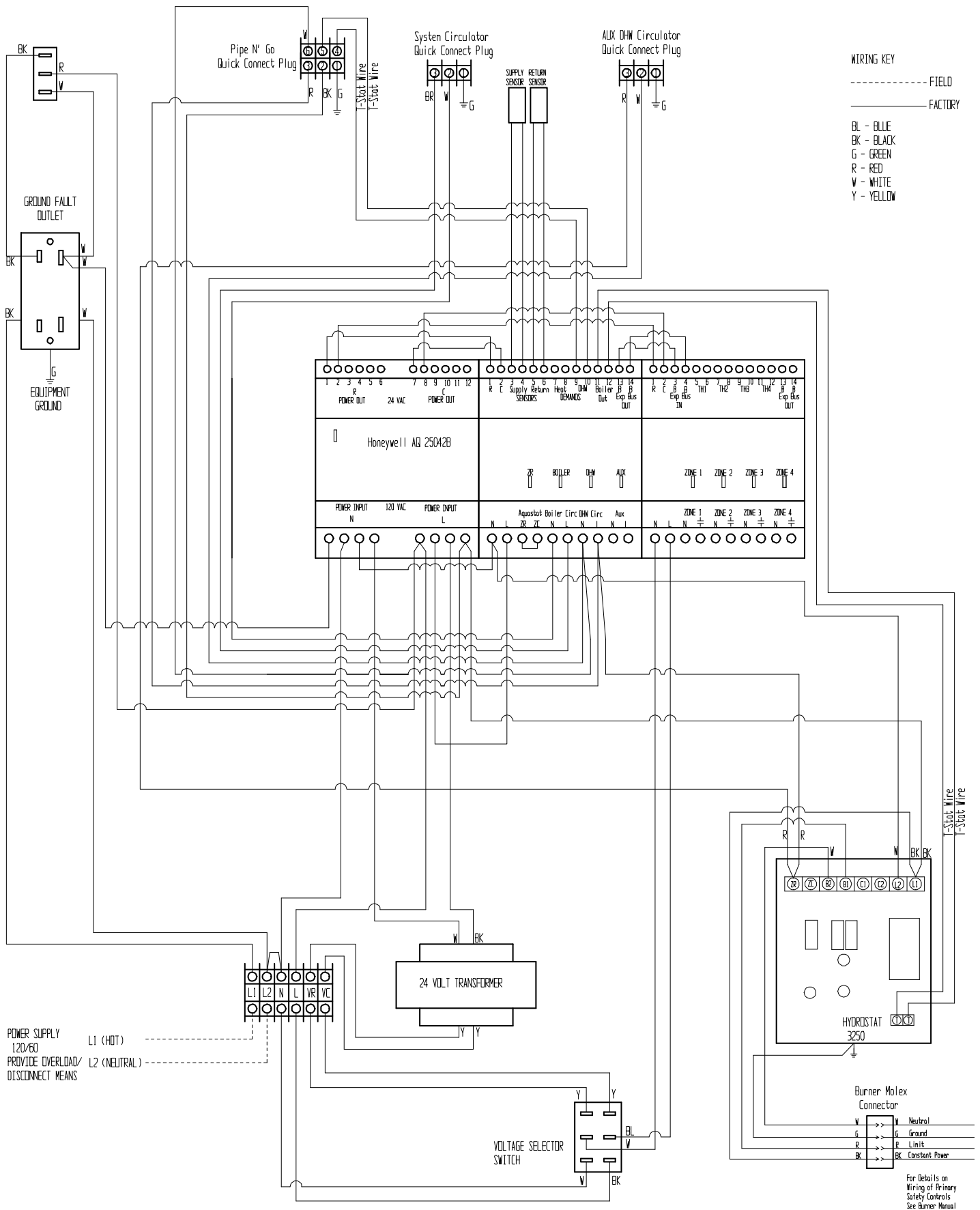
Electrical shock is hazardous. Turn off all power supplies before starting to make any wiring connections or repairs.

Refer to wiring diagrams in this manual for electrical connections. The boiler should be connected to a separate, electrical supply circuit with a minimum 15 amp fused rating. Use No. 14 AWG wires rated for at least 90° C. Install a separate fused disconnect or safety switch near the boiler so all power can be shut off for servicing.

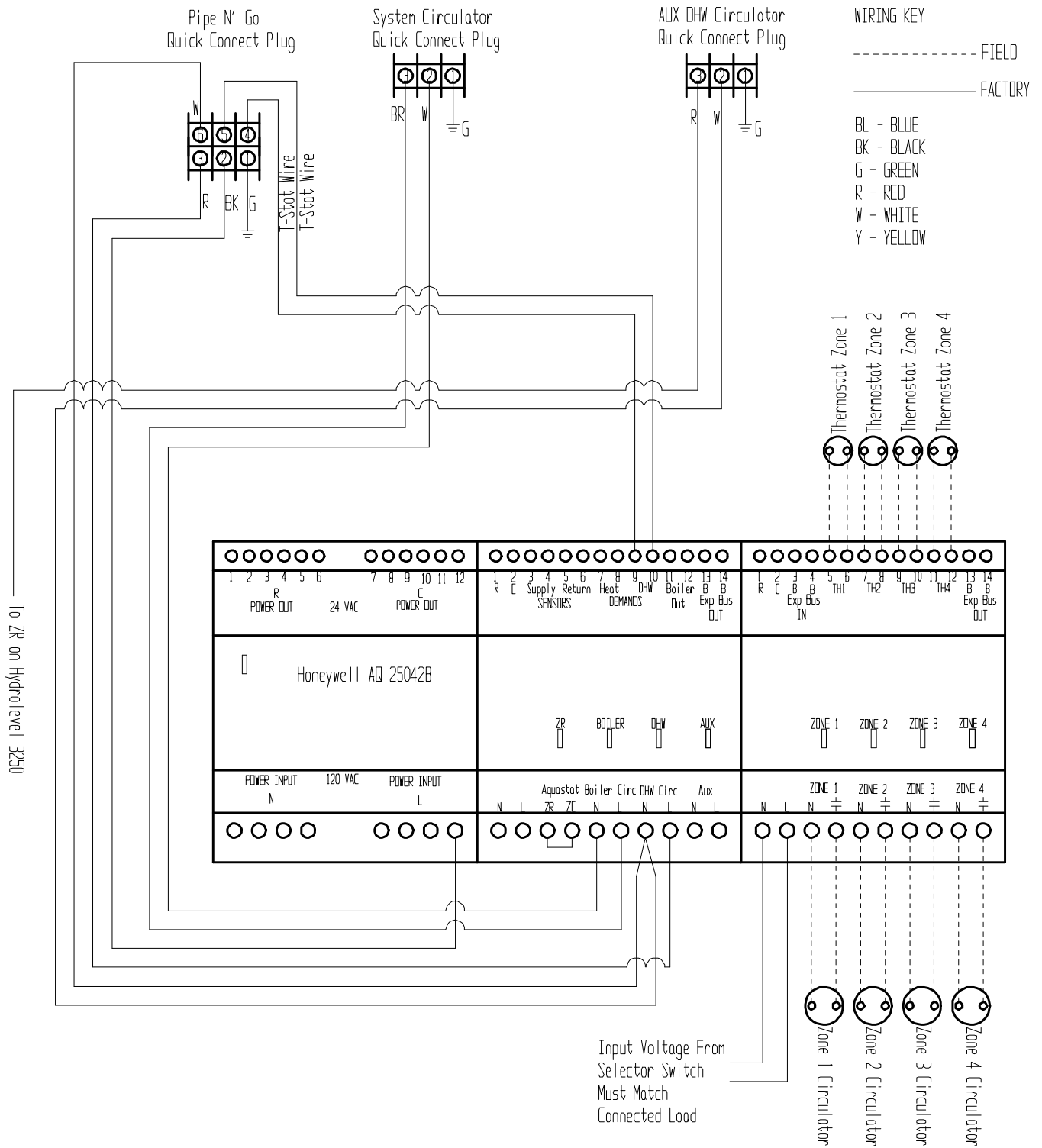
Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

1. The 26" long burner harness supplied is for the Riello Burner. When using with a Beckett burner harness length needs to be reduced to approximately 9" by removing the 90° connector and cutting only the BX to length. Reinstall the 90° connector. When properly installed the burner swing door should not be able to be opened beyond a safe distance without separating the Molex plug connection.
2. Wire the incoming power to the Energy Manager Plus II as indicated in the wiring diagrams providing overload and disconnect means as required by code.
3. Install the optional system circulator kit into the green three pin connector marked for the system circulator.
4. The Plug n' Go Plus by PurePro is the most complete indirect water heater packages available. It takes installation to a new level of simplicity with all accessories factory installed and ready to run. The tank is pre piped and pre wired with a white 6 pin connector which plugs directly into the white six pin connector located in the back of the Energy Manager Plus II marked for the Plug n' Go. Prioritization of the domestic water is accomplished by selecting the appropriate setting on the AQ15000B control module.
5. Turn power on the Energy Manager Plus II and turn the power switch on the side to the on position. Place the voltage selector switch into the proper position to correspond to the voltage requirements for those devices attached to Zone 1 through Zone 4. Check for proper voltage on input terminals "L" and "N" before attaching output devices.
FAILURE TO CHECK FOR PROPER VOLTAGE COULD RESULT IN SYSTEM COMPONENT FAILURES.
6. Install digital non power stealing or Honeywell AQ communicating thermostats to the Honeywell AQ25042 zone board as shown in the wiring diagrams.
7. Install the zone valves or circulators to the system zone board as shown in the wiring diagrams. **DO NOT WIRE THE END SWITCHES OF ZONE VALVES TO THE CONTROL.**

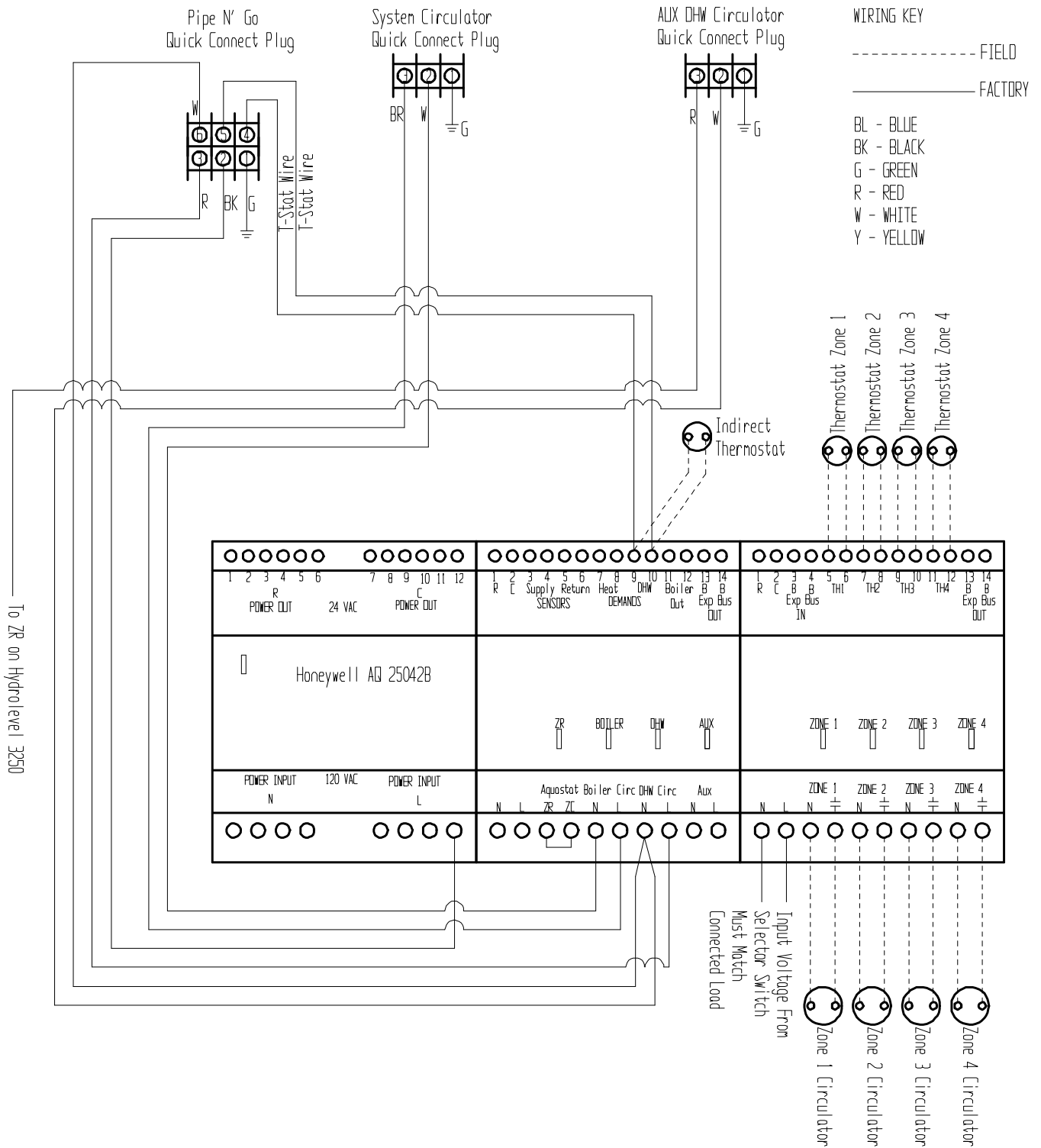
Internal Wiring



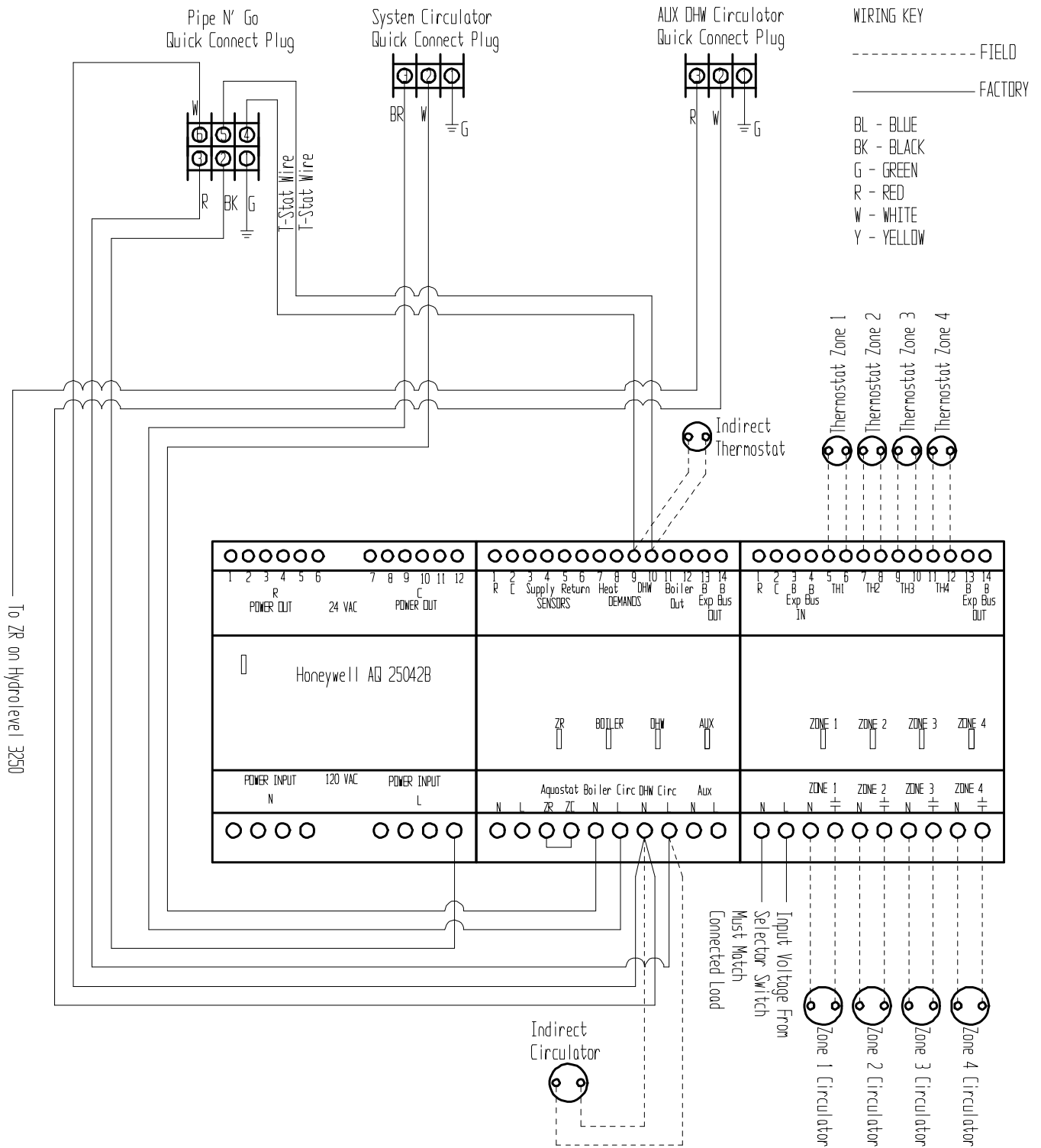
Field Connection - Circulators Using Plug'n Go Plus Indirect



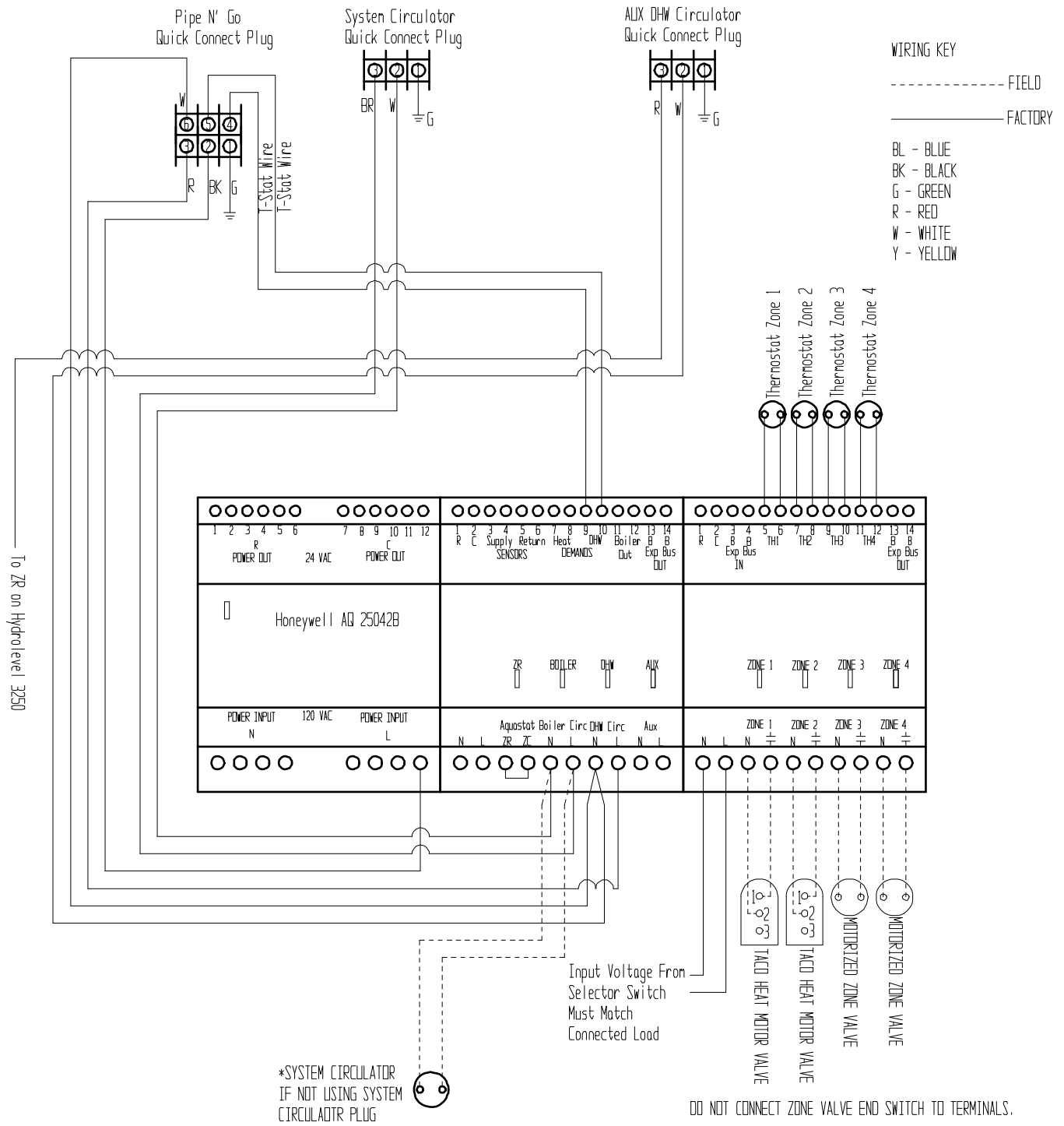
Field Connection - Circulators Using AUX Domestic Hot Water Plug



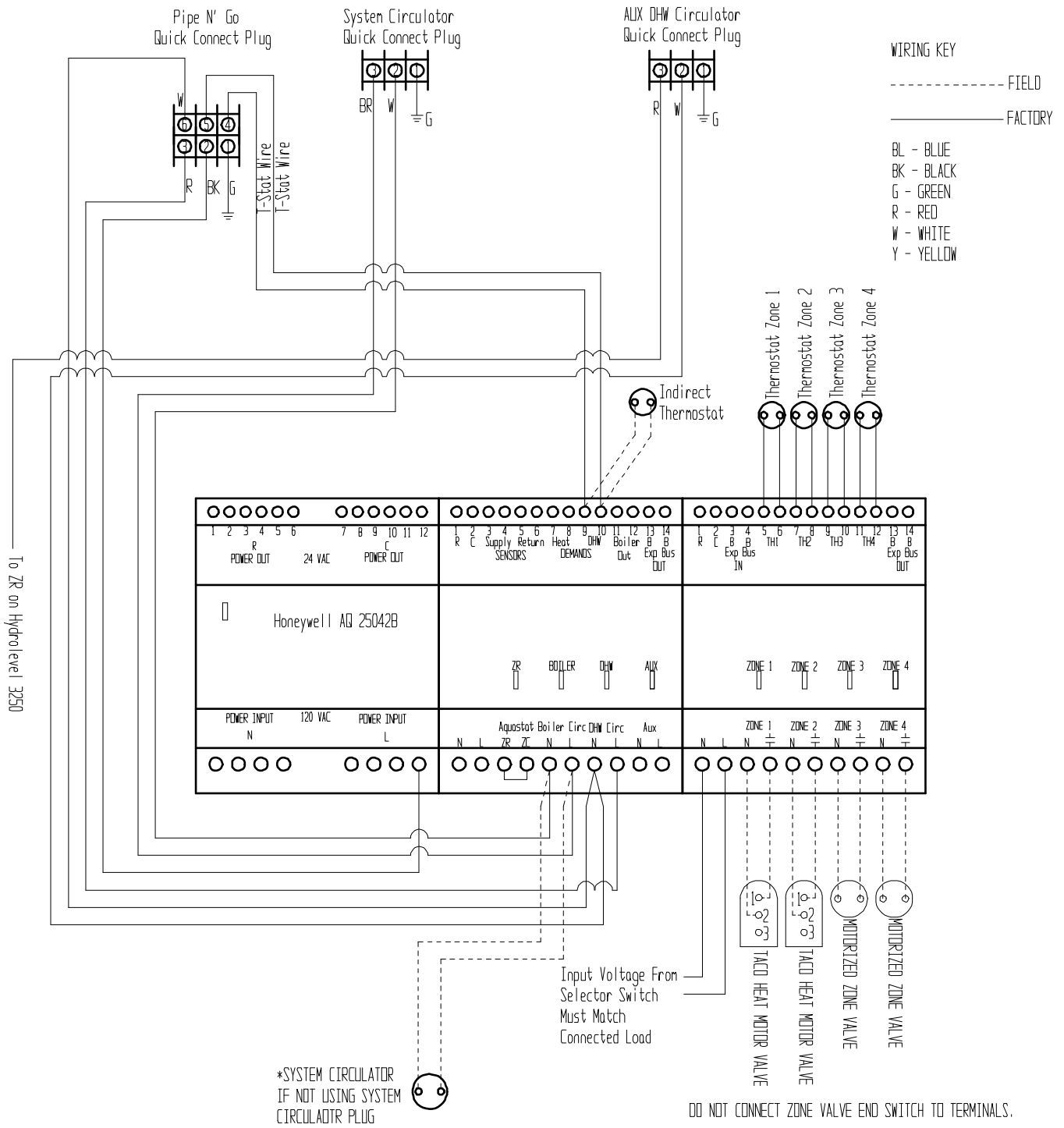
Field Connection - Circulators Using Customer Supplied Indirect Circulator



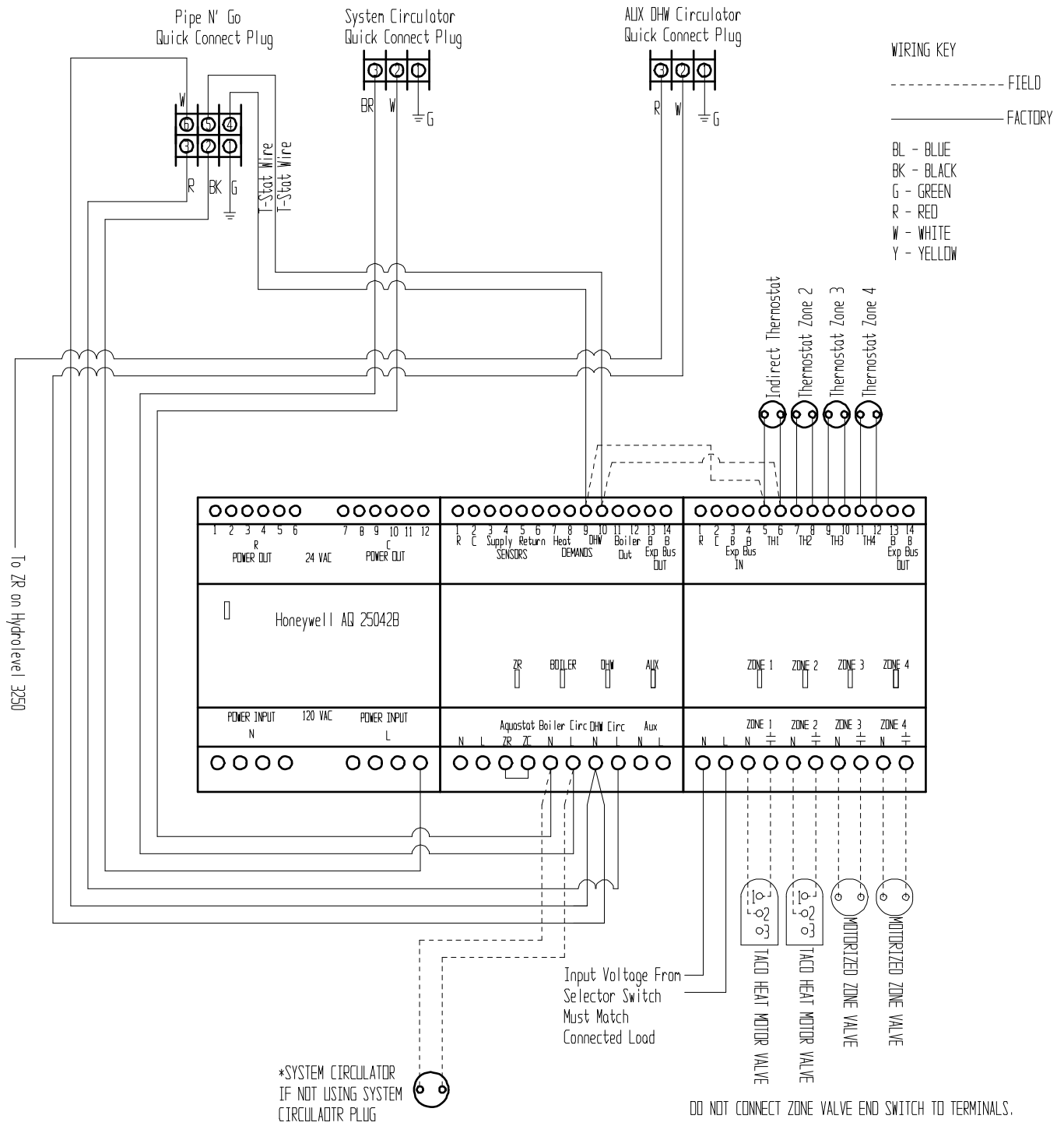
Field Connection – Zone Valves Using Plug’n Go Plus Indirect



Field Connection – Zone Valves Using AUX Domestic Hot Water Plug



Field Connection – Zone Valves Including Indirect Tank



Optional Circulator Kit

The optional circulator kit consists of a Taco 007 prewired with a green Molex connector. This plugs directly into the green circulator plug in the rear of the Energy Manager Plus II if using it as a system circulator or into the blue Molex connector if using it as a domestic hot water circulator.

Optional Indirect Water Heaters

The optional Plug'n Go Plus indirect water heaters are designed to work specifically with the Energy Manager Plus II. These prewired indirect water heaters are equipped with a 6 pin Molex connector which is plugs directly into the Energy Manager Plus II eliminating the need for any additional wiring.

System Checkout

1. Recheck all wiring connections.
2. Verify the proper installation of the supply and return water sensor to the boiler supply and return piping.
3. Restore power to the Energy Manager Plus II and turn the "Power Switch" to the on position.
4. Adjust the aquastat high limit set point temperature to a minimum of 150°F.

Control Circuit Safety Checks

Check the safety controls on the boiler after completing the oil burner adjustments. A safety control check for satisfactory performance must be performed.

1. High limit control - With the burner running reduce the high limit setting until the burner shuts off. Return the high limit to its original setting.
2. With the oil burner running verify proper operation of the low water cut off. Refer to the instructions provided by Hydrolevel for testing of the low water cut off. The oil burner should shut off when the low water cut off is functioning properly.
3. To check the primary control and flame sensor shut off oil supply with hand valve while burner is running, fifteen seconds after flameout, the safety switch locks out, ignition stops and the oil valve should close. To restart, open oil supply valve and reset safety switch.

Boiler System Installation and Service Check List

Boiler Model: _____ Serial No.: _____

Energy Manager Plus II Serial No.: _____

Installation Date: _____

Installer Name: _____ Phone No.: _____

Boiler Installation

- Boiler level and in solid contact with floor?
- Boiler and burner wired per wiring diagram and National Electric Code? 120VAC wiring
Type _____ Size _____ AWG
- Burner sealed to boiler? Mounting nuts tight?
- Space is large enough to provide required clearances?
- NFPA 31 Installation of Oil Burning Equipment followed?
- Local, state and national codes, laws, regulations and ordinances followed?

Vent System

- Existing chimney and vent system inspected to NFPA 211 and in good condition?
- New vent pipe installed and properly sealed?
- Vent size checked against boiler manual and codes?

Burner Operation

- Burner Model: _____ Nozzle: _____ GPH _____ Deg. _____ Type _____
- Burner Pump Pressure: _____
- Fuel filter and fuel lines installed and inspected as per burner manual?
- Air bled from oil piping? Piping checked for leaks?
- Burner started, adjusted and tested per burner manual?

Boiler Operation

- Thermostat heat anticipator set per burner manual instructions?
- Limit control tested for proper operation?
- Low Water Cut Off tested?
- Boiler observed going through several operational cycles for proper operation?

Post Installation

- Reviewed owners' information in this manual with owner or maintenance personnel and instructed to keep for future reference?
- Properly filled in and returned warranty registration card to Boyertown Furnace Co. Inserted burner manual instructions with furnace manual for future use

Limited Manufacturers Warranty

The Energy Manager Plus II is warranted by Boyertown Furnace Company to be free from defects in material and workmanship for a period of two years from the date of manufacture or one year from the date of installation, which ever occurs first.

In the event of any claim under this warranty or otherwise with respect to this product is made within such period, we will repair or replace such products. In no event shall Boyertown Furnace Company be liable for any other loss or damage, whether direct, indirect, incidental or consequential.

This warranty is your exclusive remedy and shall be in place of any other warranty or guarantee, express or implied, including, without limitation, any warranty of merchantability or fitness for a particular purpose.

This warranty may not be assigned or transferred and any unauthorized transfer or assignment thereof shall be void and of no force or effect.

-----Cut and Return This Form or Register Online at www.boyertownfurnace.com-----

Warranty Registration
Boyertown Furnace Co.
P.O. Box 100
Boyertown, PA 19512

Date Installed: _____

Model Number: _____ Serial Number: _____

Name of Purchaser: _____

Purchaser's Address: _____

Dealer's Name: _____

Dealer's Address: _____