

Installation Manual
ZON-0500
Version 2.30

The HBX logo is centered within a wide horizontal band. The band has a background of fine, wavy lines that create a sense of depth and movement. The logo itself consists of the letters 'HBX' in a bold, black, sans-serif font, positioned between two thick, horizontal red bars.

- Zone Control

ZON-0500

HBX Control Systems Inc.

TABLE OF CONTENTS

Introduction	1-3
Safety Symbols & Warnings	1
Receipt & Inspection	1
Description	2
Technical Data and Dimensions	3
Wiring & Installation	4-10
Wiring	4
Installation	5
Priority Selection	6-10
Application Drawing	11-16
Warranty Information	17

HBX ZON-0500 ZONE MODULE

INTRODUCTION

This manual will help with the installation, Dip Switch setting, troubleshooting and general maintenance requirements for the controller. To guarantee the safe and reliable operation of this control, you must first read this manual in detail and take particular note to any and all warnings or caution directives prior to connecting to AC power.



Only suitably qualified individuals with formal training in electrical and hydronic controls should attempt the installation of this equipment. Incorrect wiring and installation will affect the warranty provided with this unit. Wiring must be completed in accordance with the codes and practices applicable to the jurisdiction for the actual installation.

SAFETY SYMBOLS & WARNINGS



Extreme Hazard

This action poses a serious threat that could result in personal injury or death, as well as permanent damage to the equipment. Proceed with caution.



Moderate Hazard

This action may cause personal injury or have adverse effects on the installation process if handled incorrectly.



Disconnect Power Source

The presence of low voltage(24VAC) or high voltage(120VAC) could result in personal injury or permanent damage to components or equipment.



Point of Interest

This point clarifies pertinent information, or brings your attention to an action that may have adverse effects on the installation process.



Drawing Reference

Refer to the specified electrical or mechanical drawing at the back of the manual.



The HBX ZON-0500 is a microprocessor based controller and as such is not to be regarded as a safety (limit) control. Please consult and install the heating or cooling appliance in accordance with the manufacturer's recommendations.



Use only copper conductor supply wire suitable for at least 105 °C



All circuits must have a common disconnect and be connected to the same pole of the disconnect

RECEIPT & INSPECTION

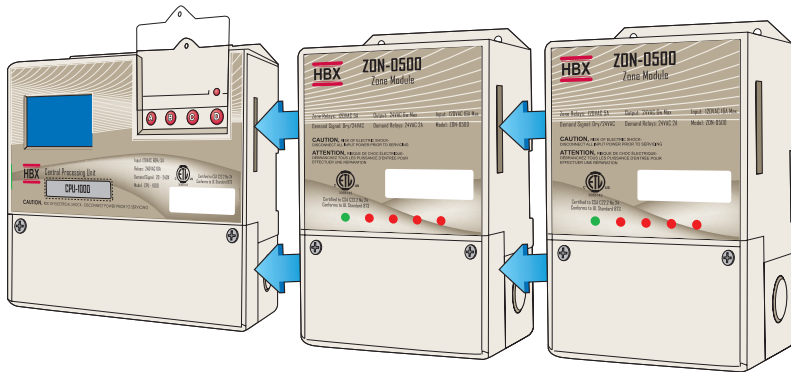
After receiving, inspect the unit for any possible physical damage that may have occurred during transportation.

After unpacking the unit make sure the box contains:

- 1 x 32 Pin Connector
- 1 x Terminal Screwdriver (2.5 mm)
- 1 x Manual

HBX ZON-0500 ZONE MODULE DESCRIPTION

The ZON-0500 is an intelligent, microprocessor based, expansion module zone control for the 1000 series controls, or stand alone zone control. The ZON-0500 is capable of controlling up to 4 zones per control, and can handle multiple priority selections. The controller can be daisy-chained to provide unlimited coverage and flexibility for virtually any number of zones. The ZON-0500 allows for pump or valve control, and is capable of enabling 2 demands on a boiler. The layout of the control makes for easy wiring and simple setup, allowing for quick installation and minimal on-site time.



Expansion Module Zone Control



Stand alone Zone Control

FEATURES

- Up to 4 independent zones per control
- Attaches to CPU-1000 or ECO-1000 controls, or stand alone unit
- Expandable to 36 zones
- Provides pump or valve control
- Boiler enable/ TT contacts
- 2 demand outputs (Heat/Cool) or (TT/DHW)
- Multiple priority selections (see page 7)
- Heating zones will not open or turn on when the CPU-1000 is in Warm Weather Shut Down (WWSD)
- Fully protected by resettable fuses
- Zone protection technology - ECO-1000:

-When there is a switch between a cooling and heating call, this feature protects the zone from getting the wrong temperature from the tank when the zone starts. The tank temperature must be within 15°F of the setpoint for the zone to open.

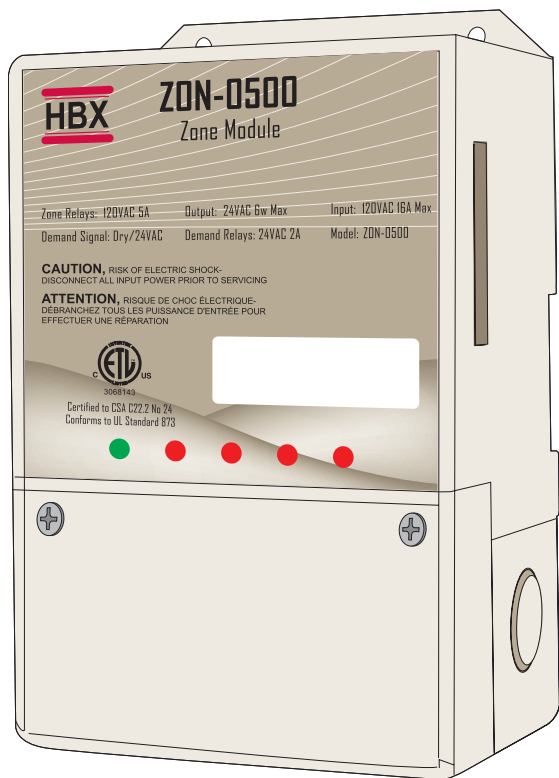
-If there is a call for heat, then the heat call goes away and the tank is still hot, the zone control will keep the zone open to utilize all of the heat in the tank. Likewise in a cooling situation.

-Cooling zones will not open or turn on when the ECO-1000 is in Cold Weather Shut Down (CWSD)

-Heating zones will not open or turn on when the ECO-1000 is in Warm Weather Shut Down (WWSD)

TECHNICAL DATA AND DIMENSIONS

TECHNICAL DATA



Specifications:

- 4 x Thermostat Input Dry or 24VAC
- 2 x 24VAC output power 6VA Max
- 2 x Demand output relays 24VAC 2A
- 4 x Zone Relay 120VAC 5A
- Input 120VAC 16A Max**
- 1 x Pump Relay 120VAC 5A

Combined relay power should not exceed 20A

Weight:

0.408Kg

Dimensions:

100mm W x 168mm H x 70mm D

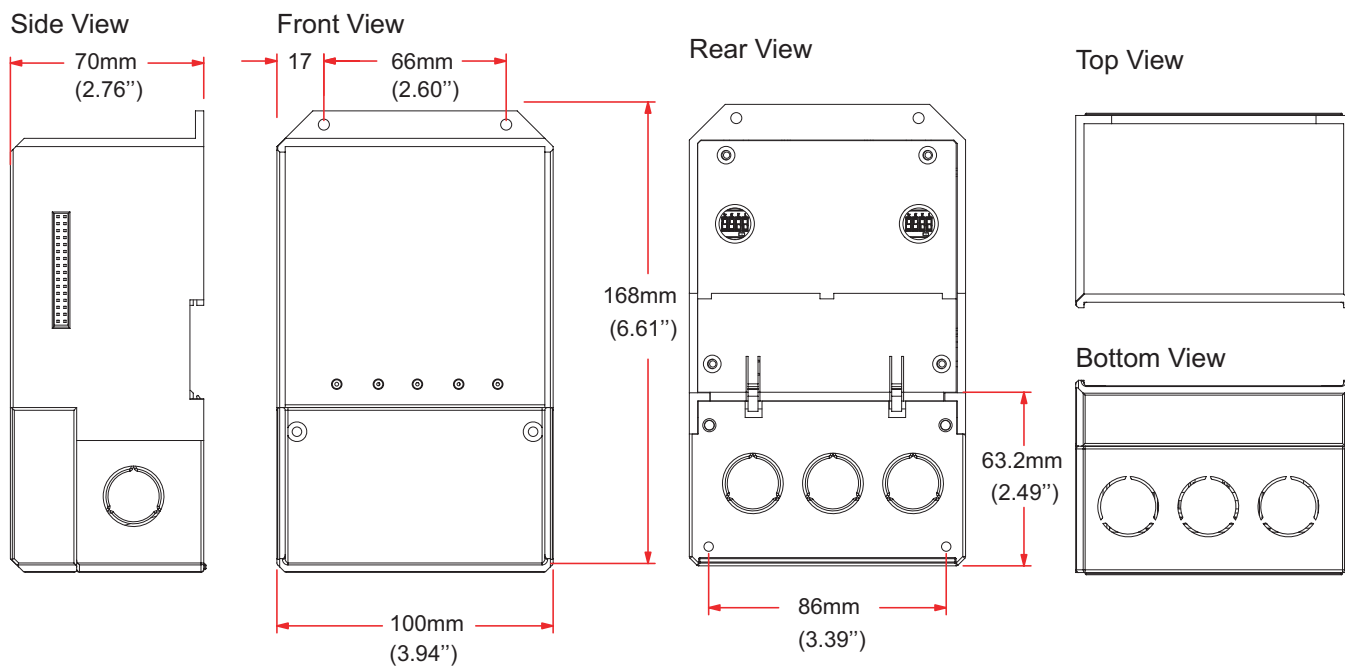
ETL Listings:

- Meets CSA C22.2 No. 24
- Meets UL Standard 873
- ETL Control No. 3068143

Storage:

10°C to 40°C

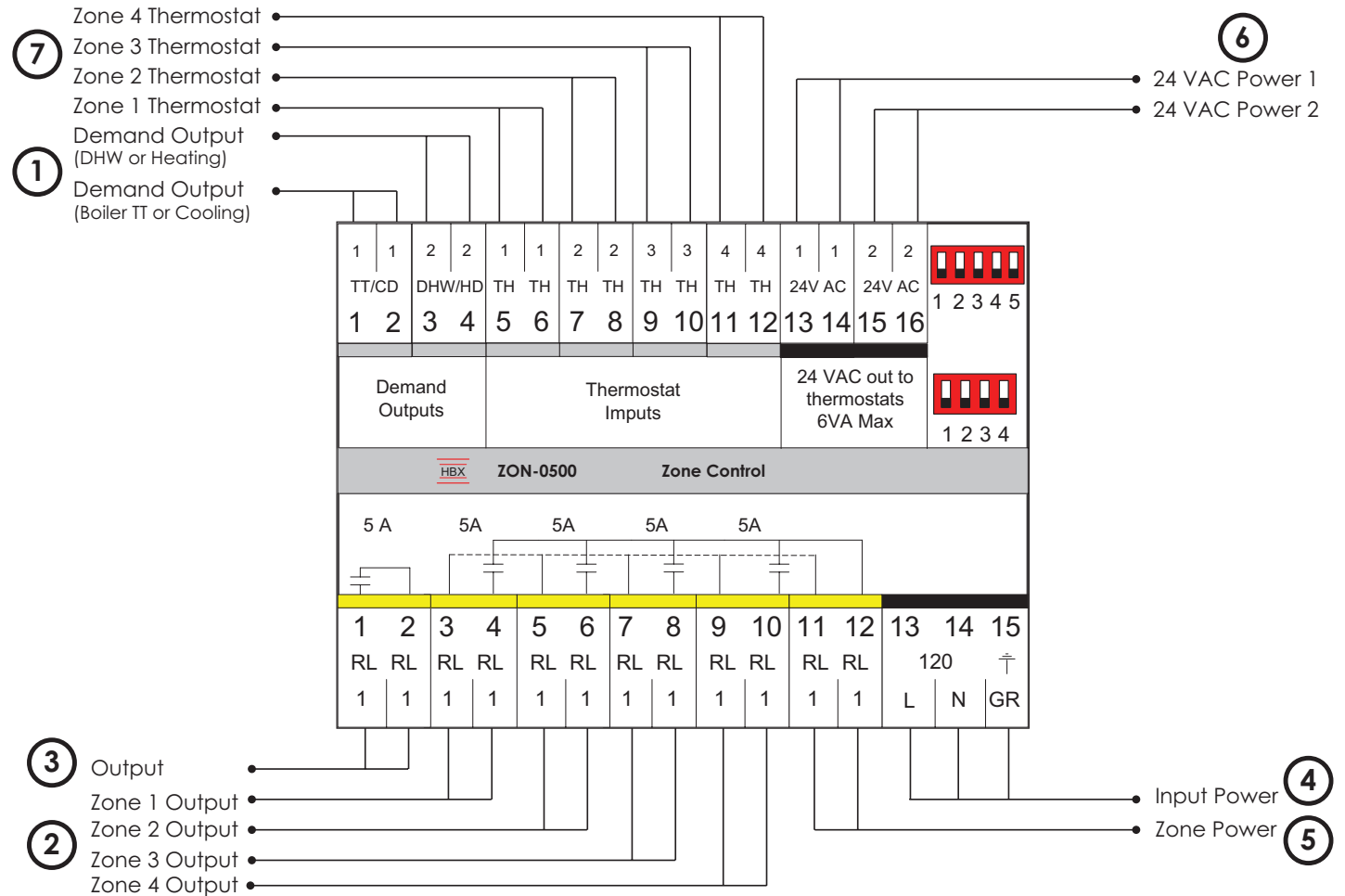
DIMENSIONS



WIRING AND INSTALLATION

WIRING

All signal wiring must be a minimum of 18AWG wire at a maximum of 500ft



1. DEMAND OUTPUTS

These are the outputs for the demands. These can be a Heating and Cooling demand, 24VAC contact, dry contact TT for a boiler, or DHW demand.

2. ZONE 1 - 4 OUTPUT

These are the outputs for the zone device. This can be a pump or a valve depending on what power is supplied to terminals 11-12.

3. SYSTEM PUMP OUTPUT

This is a dry contact output that can be used for a system pump. This contact will activate any time a zone comes on.

4. INPUT POWER

This input is to power the ZON-0500. 0.5 Amps at 120 VAC is required to power this device.

5. ZONE POWER

This input is used to power the zone outputs and is rated for 240VAC, 120VAC or 24VAC.

6. THERMOSTAT POWER

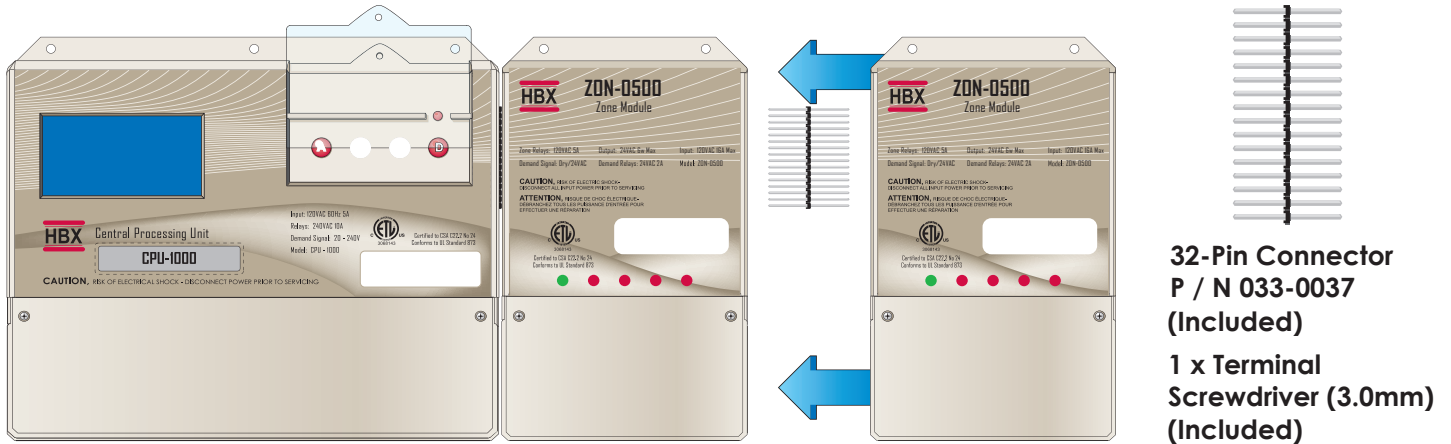
These outputs are used to power the thermostats and are rated for 24VAC at 6VA.

7. THERMOSTAT INPUT 1 - 4

These terminals are used for connecting thermostat inputs, and can be dry contact inputs or 24VAC

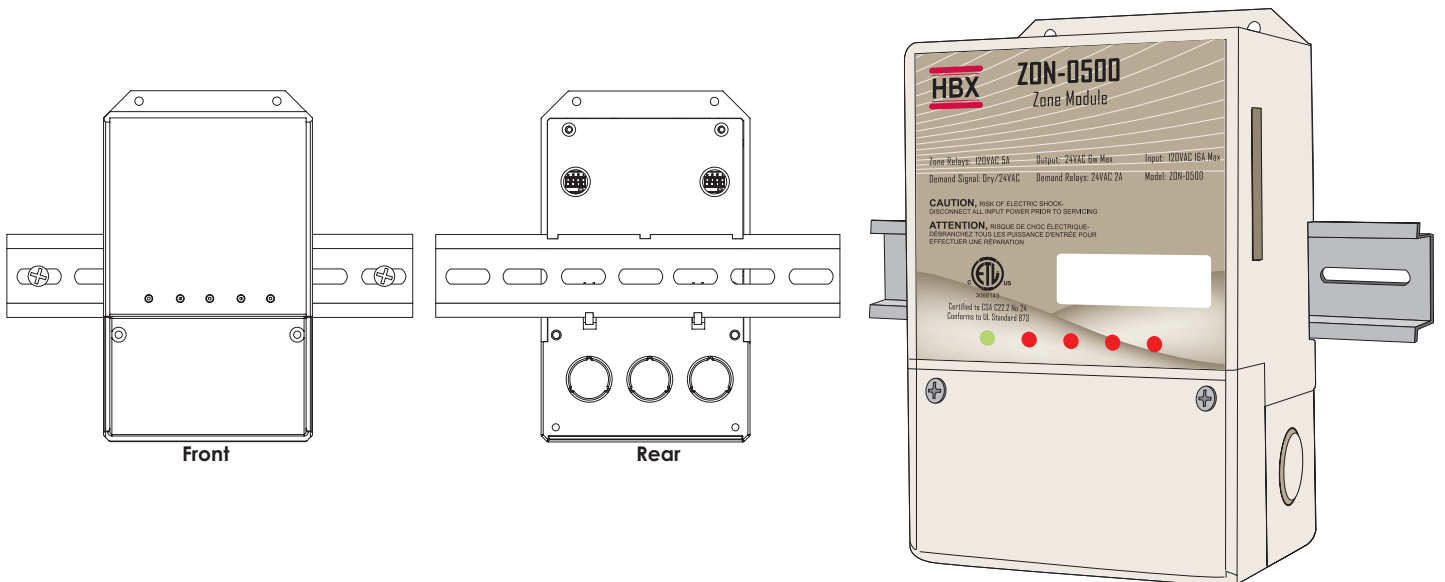
INSTALLATION PROCEDURE

Place the CPU-1000 (or ECO-1000) and desired Expansion Modules on a flat surface. Align the 32-Pin connector into the holes on the Expansion Module and gently push into place. Next slide the CPU-1000 onto the 32-Pin connection by carefully matching up the holes and pins. When installed correctly there is virtually no gap between units. With power applied to the assembly, the first (green) LED should be illuminated on each Expansion Module. This lit, green LED serves as confirmation of both electrical and communications continuity. When used as an expansion module, the ZON-0500 must be enabled in the 'Control Options' menu.



The ZON-0500 is designed to be wall mounted, DIN rail mounted, or installed inside a separate electrical enclosure. The unit should be mounted inside and be protected from falling water and high humidity conditions. With all the covers in place it is designed to protect any individual from accidental electrical shock.

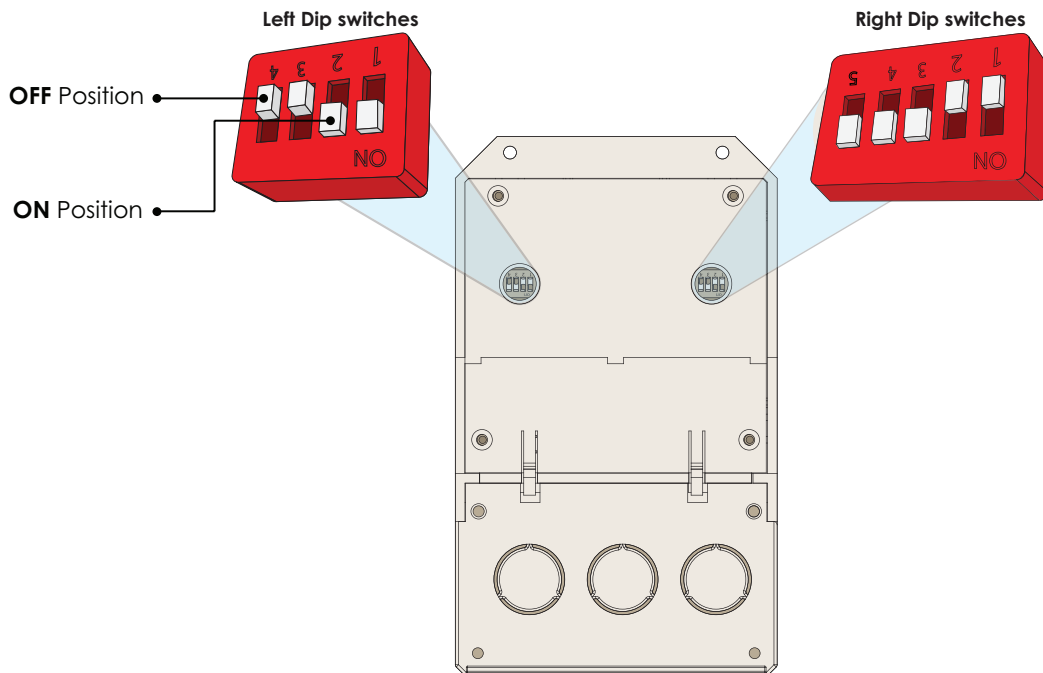
DIN RAIL INSTALLATION



DIP SWITCHES

The ZON-0500 has two sets of dip switches that allow the user to better match the output of the control with the installation. The dip switch settings have different functions, depending on if the ZON-0500 is used as an expansion module with an ECO-1000, a CPU-1000, or as a standalone zone control.

Dip switches 1-4 on the left set of dip switches are used for setting up zone priorities and zone post purge time. Dip switches 2-5 on the right set of dip switches correspond to zones 1-4, and dipswitch 1 is used to modify the type of demand signal sent to the main controller when used as an expansion module with the HBX CPU-1000.



LEFT DIP SWITCHES

The left Dip Switches are used for setting up zone priorities and the zone device (pump or Valve) the control will use.

RIGHT DIP SWITCHES

The right Dip Switches are used for setting up DHW priority and heat demands, heating or cooling demands and high temp or low temp demands.



Dip switches 2-5 can be set in any combination for a mixture of different zone demands.

LEFT DIP SWITCH PRIORITY SELECTIONS



Dip Switch 1: Zone Valve or Zone Pump

OFF: Zone Pumps. The zone control will post purge the zones for 60 seconds. The control will also exercise the pumps every 72 hours.

ON: Zone Valves. If this is selected, there will be no post purge time, and the system pump output will be on after a period of 60 seconds.



Dip Switch 2: Sequential Priority

OFF: No sequential priority

ON: Sequential priority on. This dip switch position allows the user to prioritize zone 1 over 2 over 3 over 4.



Dip Switch 3: Dual Zone Priority

OFF: No dual zone priority.

ON: Dual Zone Priority. This dip switch position allows the user to set dual zone priority for zones 1 and 2 over zones 3 and 4.



NOTE: Dip switches 2 and 3 cannot be selected together. Select only one or the other.



Dip Switch 4: Module Priority

OFF: No Module priority

ON: Module priority on. This dip switch position allows the user to prioritize one module over the next one. This feature will shut off the zone controls to the right of the one with this dip switch selected.



NOTE: Module priority can be used in conjunction with other priorities.

STAND ALONE UNIT

RIGHT DIP SWITCH SETUP

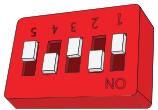
The right Dip Switches are used for setting up DHW priority and heat demands



Dip Switch 1: Domestic Hot Water (DHW) Priority

OFF: No DHW priority

ON: DHW Priority. This dip switch position allows the user to set up a temporary DHW priority on zone 1 over the rest of the zones. The priority time will be 60 minutes, or until the DHW demand is satisfied. When using more than one ZON-0500, use the first dip switch on the first zone module connected. This setting will give onboard DHW priority over the ZON-0500 modules.



Dip Switch 2-5: Use As Heating OR Cooling Demands (Use this configuration with ECO units)

OFF: This position will allow the user to set up each zone for heating. This dip switch position will turn on demand output 3 and 4 (DHW/HD)

ON: This position will allow the user to set up each zone for cooling. This dip switch position will turn on demand output 1 and 2 (TT/CD)



Dip Switch 2-5: Use As Low Temp OR High Temp Demands (Use this configuration with CPU units)

OFF: This position will allow the user to set up each zone for high temperature demand. This dip switch position will turn on demand output 3 and 4 (DHW/HD)

ON: This position will allow the user to set up each zone for low temperature demand. This dip switch position will turn on demand output 1 and 2 (TT/CD)

CPU-1000

RIGHT DIP SWITCH SETUP

The right Dip Switches are used for setting up DHW priority and heat demands

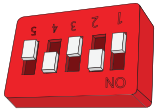


Dip Switch 1: Domestic Hot Water (DHW) Priority

OFF: No DHW priority

ON: This Dip Switch allows the zone controls to receive a DHW priority from the CPU-1000. If DHW is on the CPU-1000 it will shut off all the zones on the ZON-0500's.

STAGING MODE



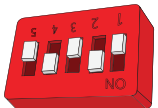
Dip Switch 2-5: Heat Demand Zone

The dip switches must be set to **OFF** position for this configuration.



NOTE: all heating zones will shut down when the control is in WWSD.

MIXING MODE



Dip Switch 2-5: Low/High Temperature Zone

OFF: Low Temperature Demand Zone. This dip switch set up allows the user to program Low Temperature Zones.

ON: High Temperature Demand Zone. This dip switch set up allows the user to program High Temperature Zones.



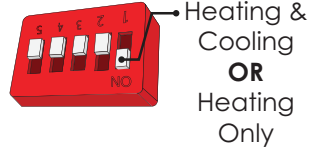
NOTE: all heating zones will shut down when the control is in WWSD.

ECO-1000

RIGHT DIP SWITCH SETUP

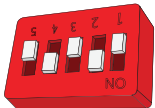
The right Dip Switches are used for setting up Heating or Cooling zones.

Dip Switch 1: Heating or Cooling Zone



OFF: With this set up, the zones can be set to either Heating or Cooling

ON: This setting allows the zones to be set to either Heating or Heating and Cooling.



Dip Switch 2-5: Heating OR Cooling Zone (DIP 1 SET TO OFF)

OFF: This setting will allow the user to set up the zone for heating.

ON: This setting will allow the user to set up the zone for cooling.



WWSD will shut off heating zones



CWSD will shut off cooling zones



Dip Switch 2-5: Heating and Cooling OR Heating Only Zone (DIP 1 SET TO ON)

OFF: This setting will allow the user to set up the zone for heating only.

ON: This setting will allow the user to set up the zone for heating and cooling (used in 2 pipe systems).



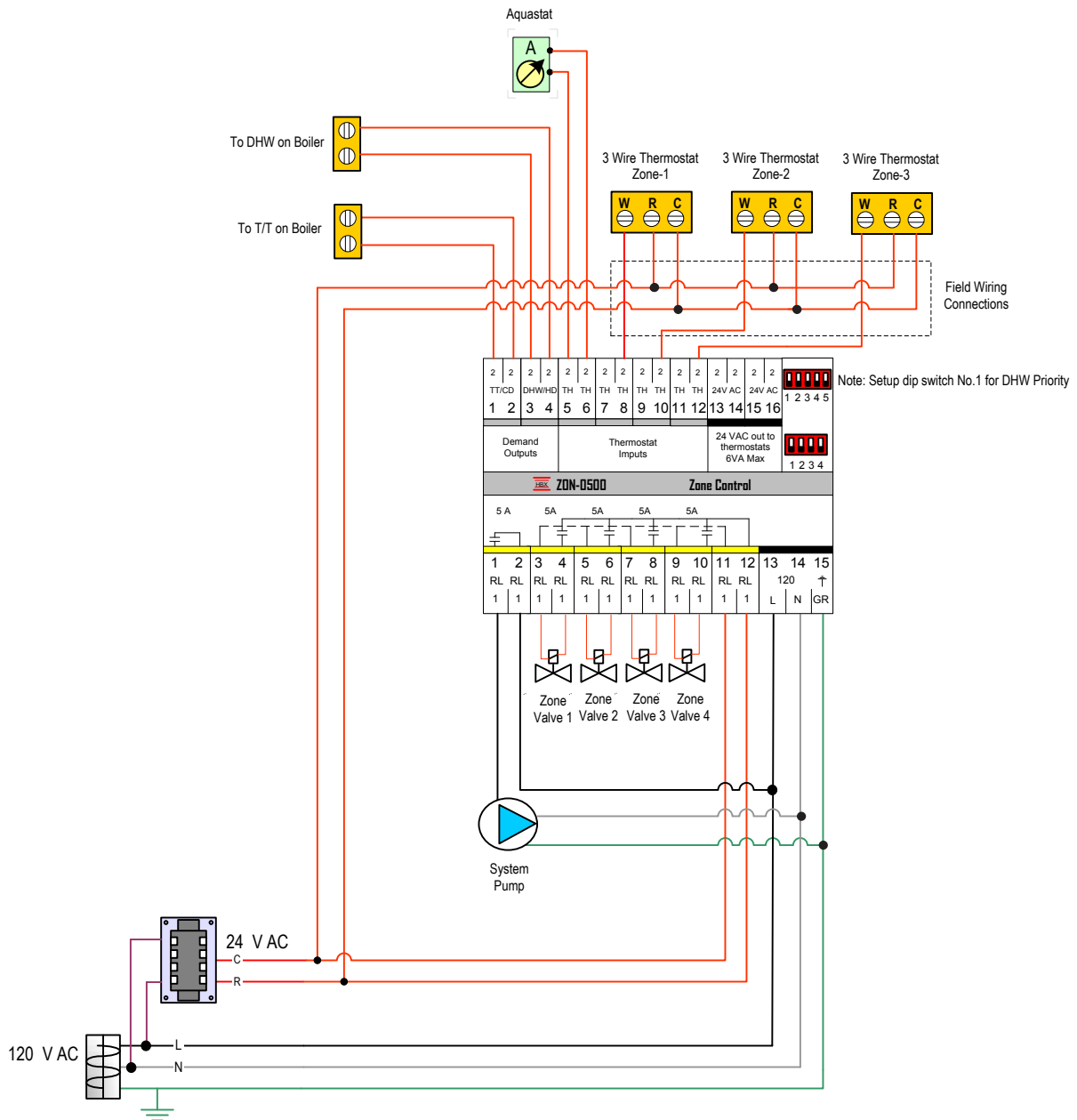
WWSD will shut off heating only zones



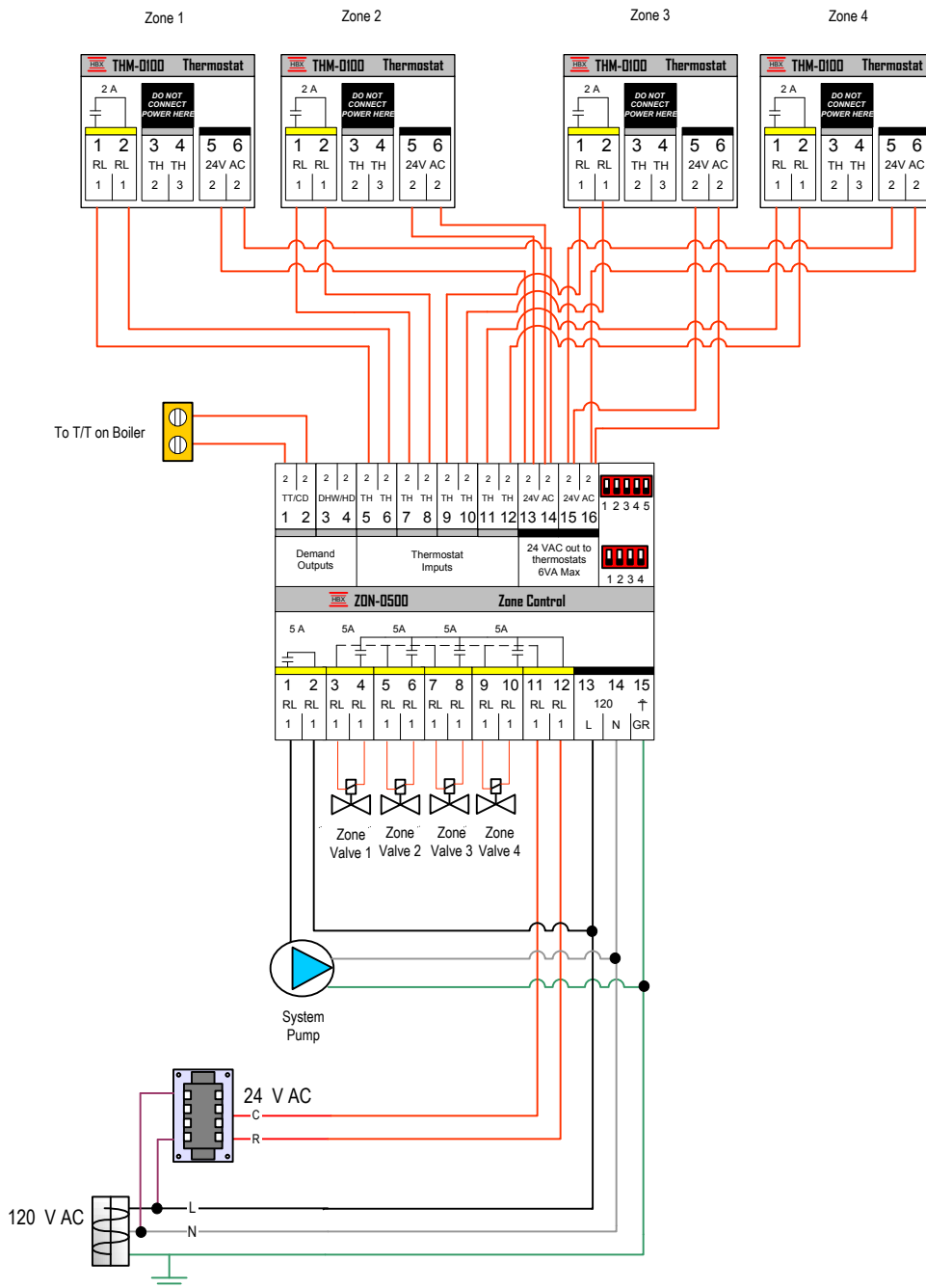
CWSD or WWSD will shut off their respective parts of the Heating and Cooling zones

APPLICATION DRAWINGS

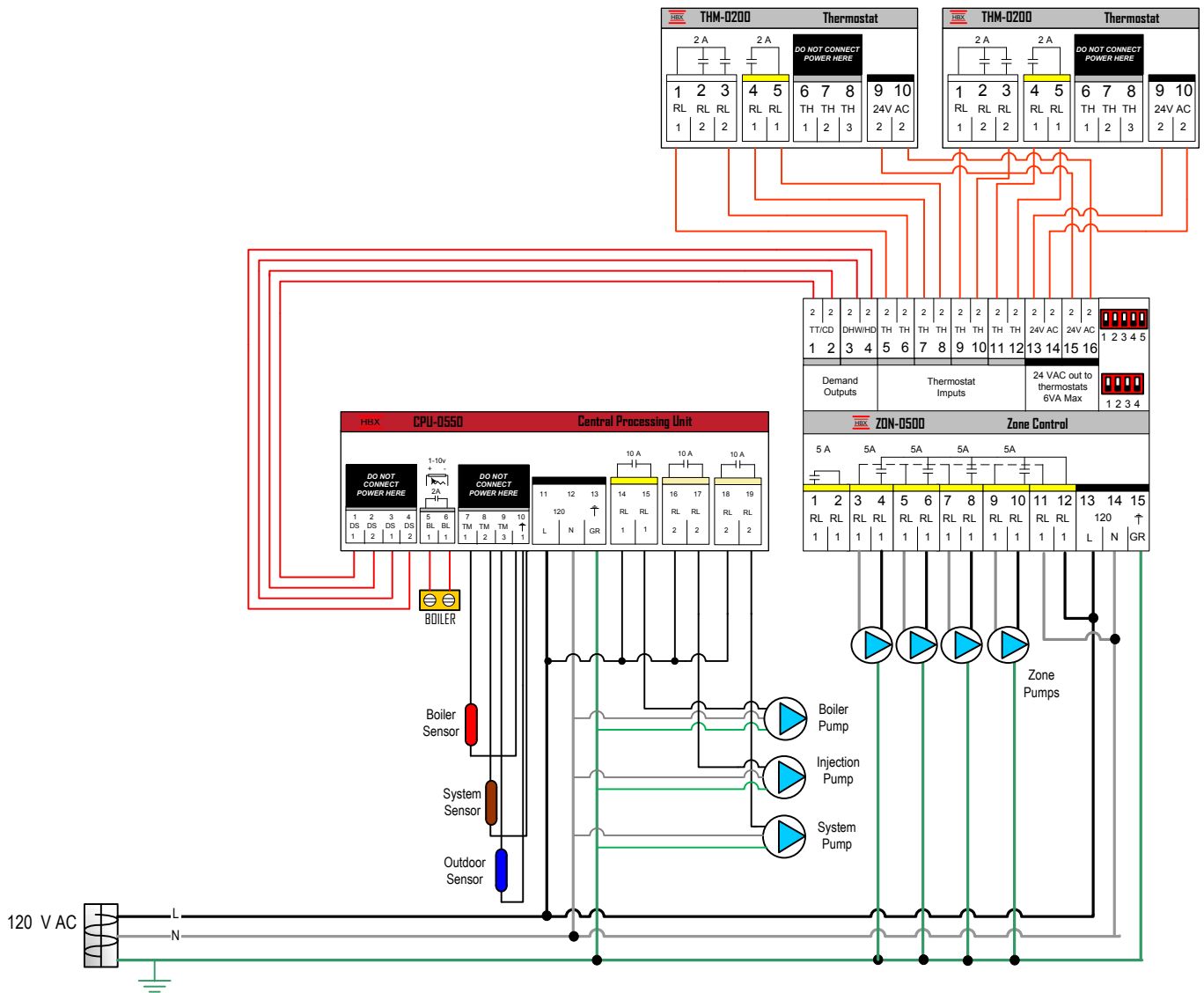
1. STANDALONE WITH 3 WIRE THERMOSTAT



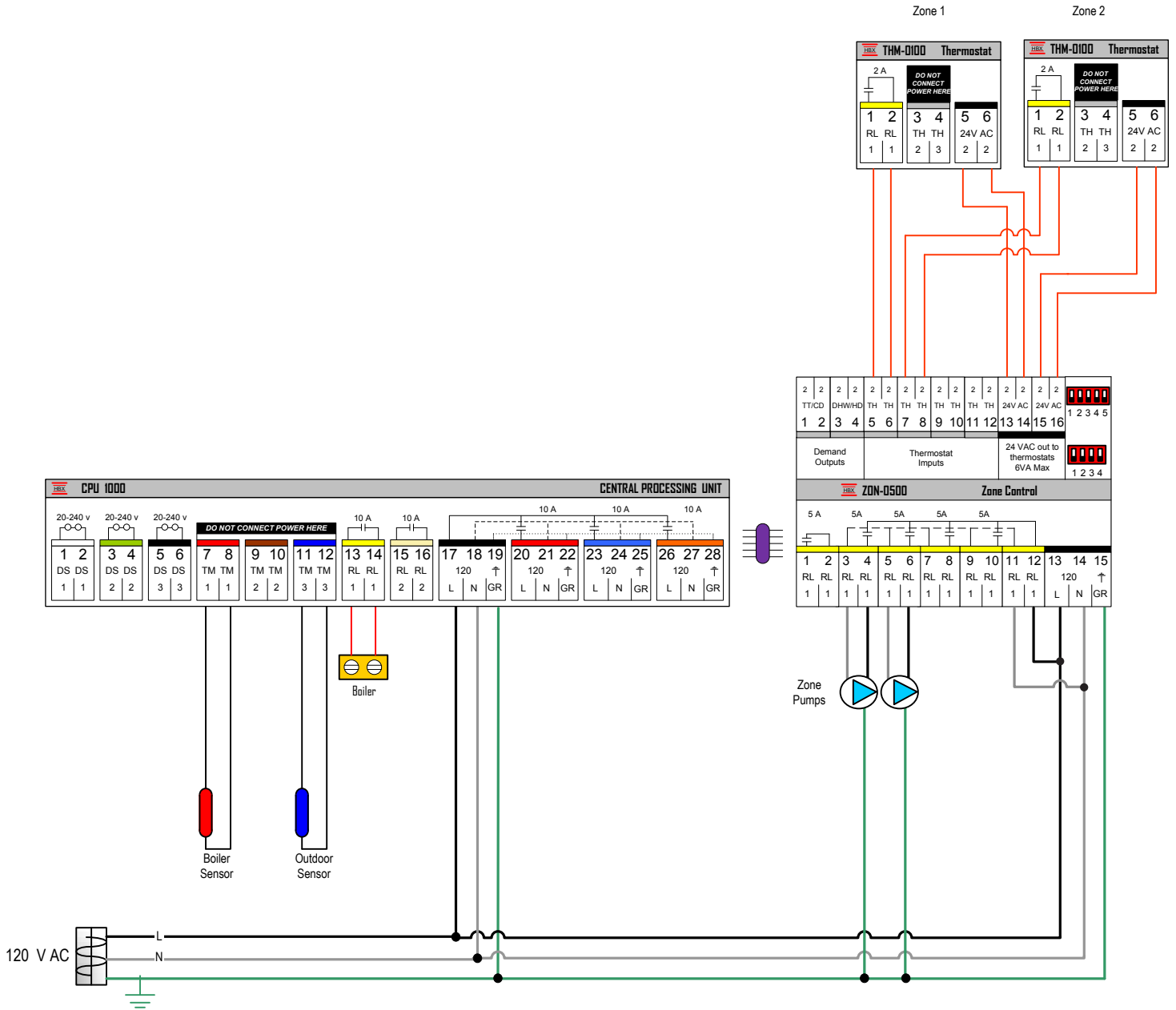
2. STANDALONE WITH THM-0100



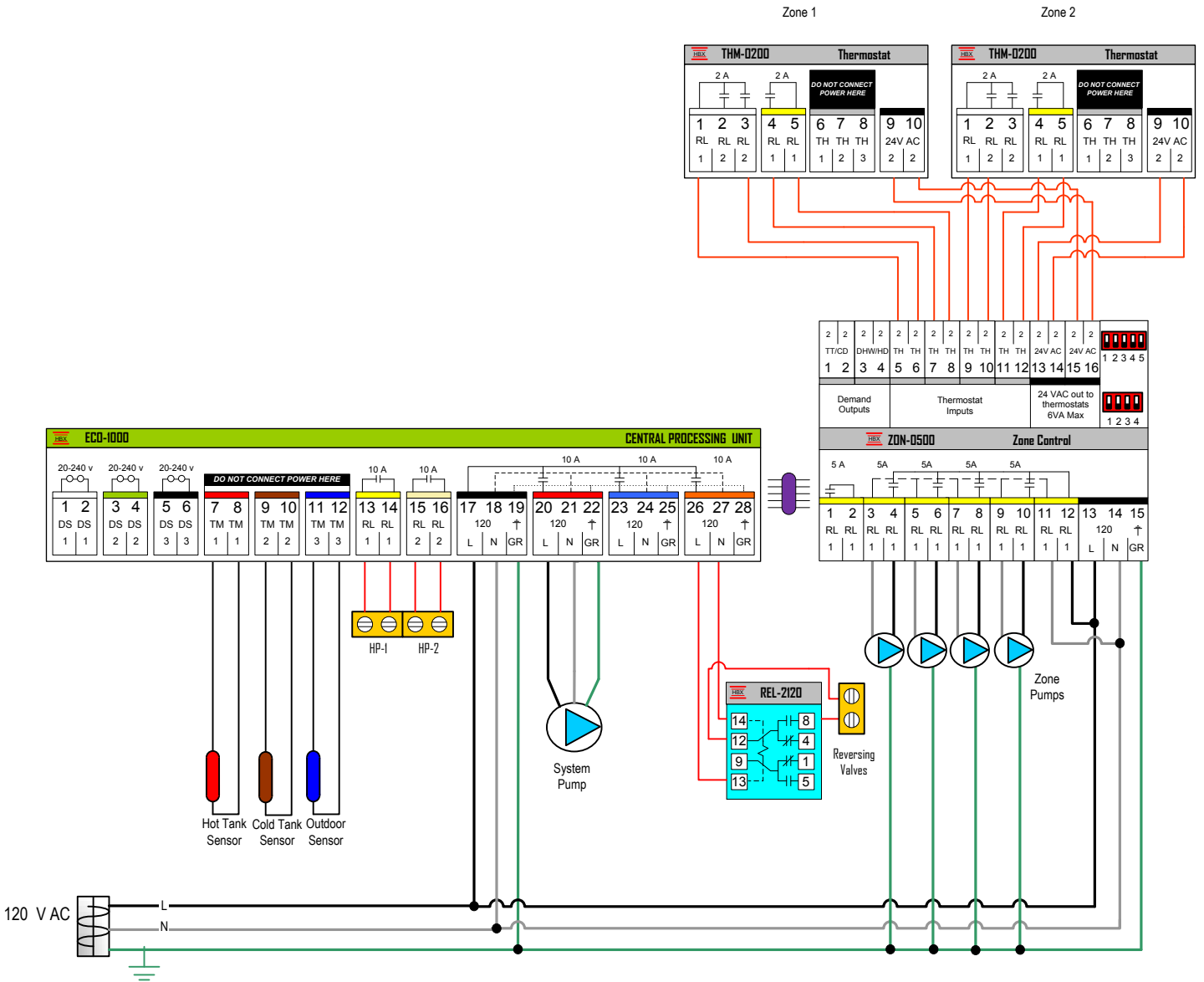
3. CPU-0550 WITH ZON-0500



5. CPU-1000 WITH ZON-0500



6. ECO-1000 WITH ZON-0500



Limited Warranty

HBX Controls warrants each of its products to be free from defects in workmanship and materials under normal use and service for a period of 24 months from date of manufacture or 12 months from date of purchase from an HBX Authorized Dealer, if within the above documented period after date of manufacture.

If the product proves to be defective within the applicable warranty period, HBX on its sole discretion will repair or replace said product. Replacement product may be new or refurbished of equivalent or better specifications, relative to the defective product. Replacement product need not be of identical design or model. Any repair or replacement product pursuant to this warranty shall be warranted for not less than 90 days from date of such repair, irrespective of any earlier expiration of original warranty period. When HBX provides replacement, the defective product becomes the property of HBX Controls.

Warranty Service, within the applicable warranty period, may be obtained by contacting your nearest HBX Controls office via the original Authorized Agent and requesting a Return Material Authorization Number (RMA #). Proof of purchase in the form a dated invoice/receipt must be provided to expedite the issuance of a Factory RMA.

After an RMA number has been issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit. The RMA number must be visible on the outside of the package and a copy included inside the package. The package must be mailed or otherwise shipped back to HBX with all costs of mailing/shipping/insurance prepaid by the warranty claimant.

Any package/s returned to HBX without an approved and visible RMA number will be rejected and shipped back to purchaser at purchaser's expense. HBX reserves the right, if deemed necessary, to charge a reasonable levy for costs incurred, additional to mailing or shipping costs.

Limitation of Warranties

If the HBX product does not operate as warranted above the purchasers sole remedy shall be, at HBX's option, repair or replacement. The foregoing warranties and remedies are exclusive and in lieu of all other warranties, expressed or implied, either in fact or by operation of law, statutory or otherwise, including warranties of merchantability and fitness for a particular purpose/application. HBX neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale, installation maintenance or use of HBX Controls products.

HBX shall not be liable under this warranty; if its testing and examination discloses that the alleged defect in the product does not exist or was caused by the purchasers or third persons misuse, neglect, improper installation or testing, unauthorized attempts to repair or any other cause beyond the range of intended use, or by accident, fire, lightning or other hazard.

Limitation of Liability

In no event will HBX be liable for any damages, including loss of data, loss of profits, costs of cover or other incidental, consequential or indirect damages arising out of the installation, maintenance, commissioning, performance, failure or interruption of an HBX product, however caused and on any theory of liability. This limitation will apply even if HBX has been advised of the possibility of such damage.

Local Law

This limited warranty statement gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state in the United States, from Province to Province in Canada and from Country to Country elsewhere in the world.

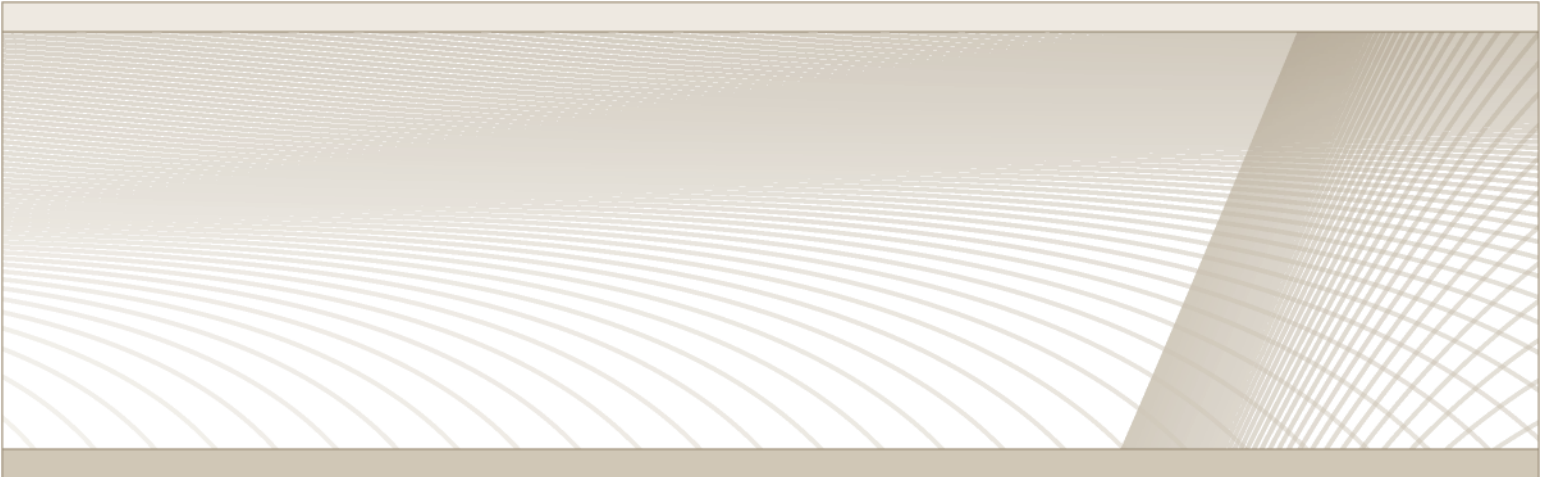
To the extent this Limited Warranty Statement is inconsistent with local law, this statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this statement may not apply to the purchaser. For example, some states in the United States, as well as some governments outside the United States (including Canadian Provinces), may:

Preclude the disclaimers and limitations in this statement from limiting the statutory rights of a consumer (e.g. United Kingdom);

Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations; or

Grant the purchaser additional warranty rights which the manufacturer cannot disclaim, or not allow limitations on the duration of implied warranties.

Phone: +1 (403) 720-0029 Fax: +1 (403) 720-0054
Email: info@hbxcontrols.com Web: www.hbxcontrols.com



HBX Control Systems Inc.
4516 - 112th Avenue SE
Calgary, AB Canada T2C 2K2

© HBX Control Systems Inc. 2016