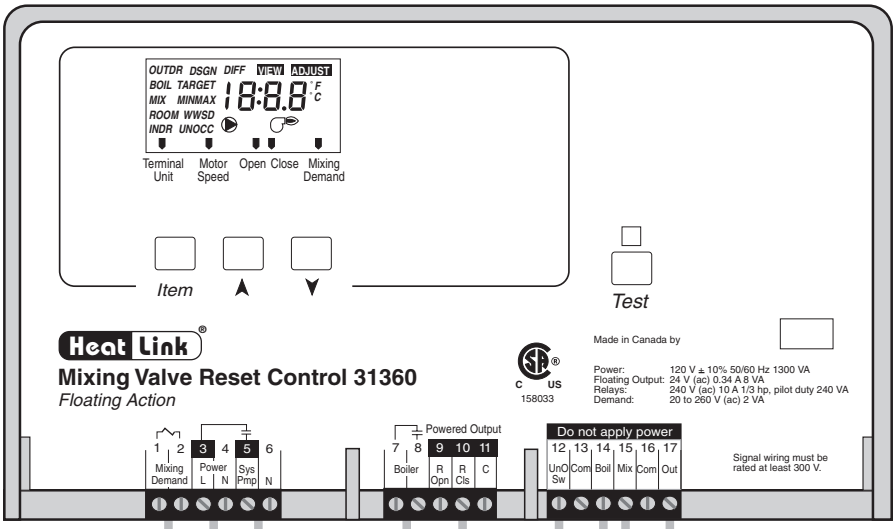
Heat Link®

The Floor Heat System

Mixing Valve Reset Control
Stk# 31360

North American version shown



Input
Mix Demand signal

Input
120 V (ac) Power Supply

Output
Mixing System Pump

Output
Boiler

Output
Mixing Valve & Actuating Motor

Input
Timer
Optional

Input
Indoor Sensor
Optional
(European version only)

Input
Outdoor Sensor
(included)

Input
Universal Sensor
(included)

Input
Universal Sensor
(included)

L631360
May 16, 2008

Table of Contents:

Introduction

The HeatLink® Mixing Valve Reset Control Stk# 31360 is designed to control the supply water temperature to a hydronic system in order to provide outdoor reset or setpoint operation. The control uses a floating action mixing valve to regulate the supply water temperature, while protecting the boiler against flue gas condensation. The control has a Liquid Crystal Display (LCD) to view system status and operating information.

Additional functions include:

- User comfort adjustment to increase or decrease building space temperature
- Powered mixing system pump output
- Test sequence to ensure proper component operation
- Setback input for energy savings
- North American version
  - 120 V (ac) power supply
  - CSA C US certified (approved to applicable UL standards)
- European version
  - 230 V (ac) power supply
  - Advanced settings to fine-tune building requirements
  - Boiler Control for improved energy savings
  - Quick Setup for easy installation and programming of control
  - Optional indoor sensor for room air temperature control
  - CE approved

User Interface

North American & European Versions

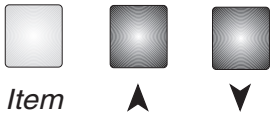
The HeatLink® Mixing Valve Reset Control Stk# 31360 uses a Liquid Crystal Display (LCD) as the method of supplying information. You use the LCD in order to set up and monitor the operation of your system. The Stk# 31360 has three push buttons (Item, "Up", "Down") for selecting, viewing, and adjusting settings. As you program your control, record your settings in the ADJUST menu table which is found in the second half of this brochure.

Item

- The abbreviated name of the selected item will be displayed in the item field of the display. To view the next available item, press and release the Item button. Once you have reached the last available item, pressing and releasing the Item button will return the display to the first item.

Adjust

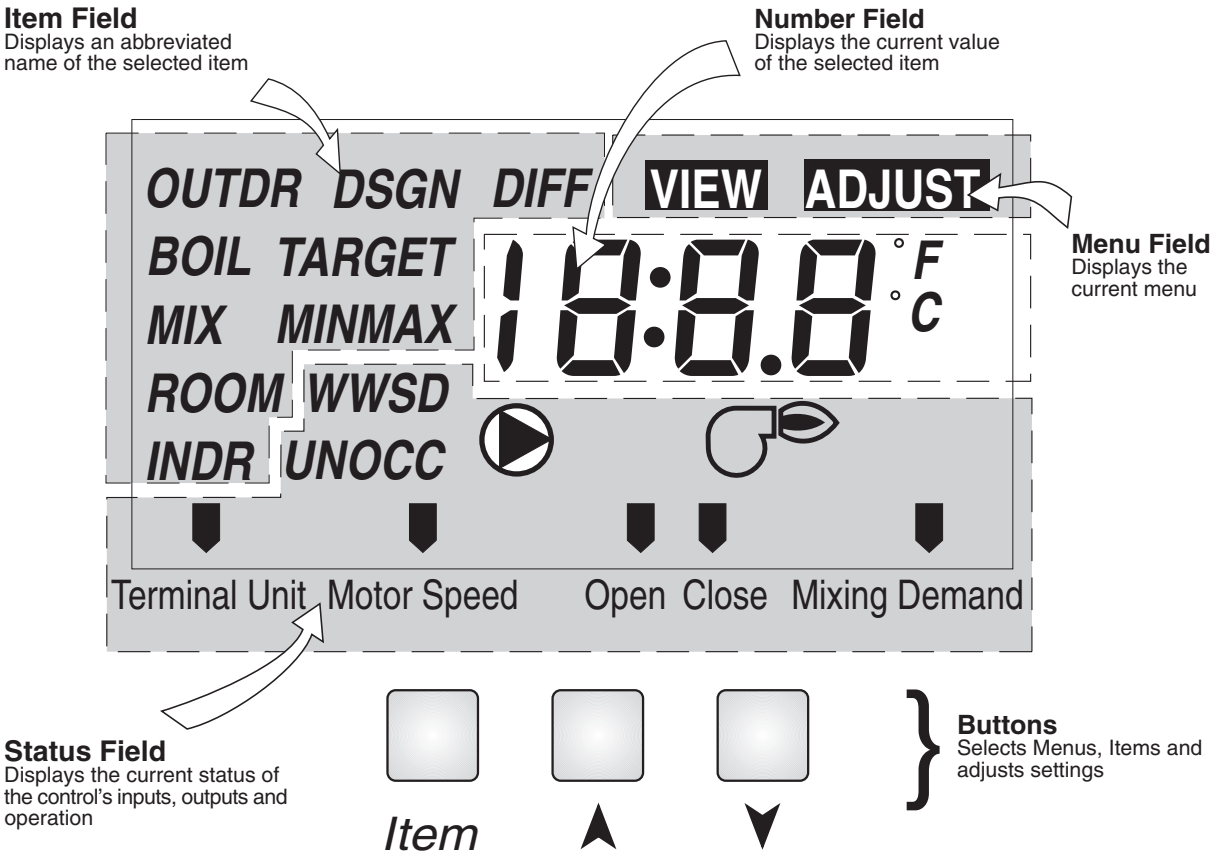
- To make an adjustment to a setting in the control, press and hold simultaneously for 1 second, the Item, "Up" and "Down" buttons. The display will then show the word ADJUST in the top right corner. Then select the desired item using the Item button. Finally, use the "Up" and / or "Down" button to make the adjustment.



- To exit the ADJUST menu, either select the ESC item and press the "Up" or "Down" button, or leave the adjustment buttons alone for 20 seconds.

- When the Item button is pressed and held in the VIEW menu, the display scrolls through all the adjust items in both access levels.

- Additional information can be gained by observing the status field and pointers of the LCD. The status field will indicate which of the control's outputs are currently active. Most symbols in the status field are only visible when the VIEW menu is selected.



HeatLink

Symbol Description

	**Pump** Displays when the mixing system pump is in operation.	***UNOCC***	**Unoccupied Schedule** Displays when the control is in unoccupied (Night) mode.
	**Burner** Displays when the boiler relay is turned on.	***˚F, ˚C***	**˚F, ˚C** Displays the unit of measure that all of the temperatures are to be displayed in the control.
OCC	**Occupied Schedule** Displays when the control is in occupied (Day) mode.		**Pointer** Displays the control operation as indicated by the text.

General Operation

North American & European Versions (differences where noted)

Powering Up The Control

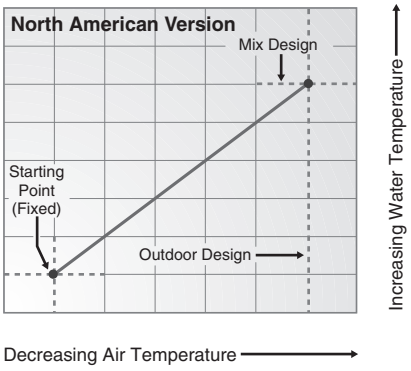
When the HeatLink® Mixing Valve Reset Control Stk# 31360 is powered up, the control displays the control type number in the LCD for 2 seconds. Next, the software version is displayed for 2 seconds. Finally, the control enters into the normal operating mode.

Operation

The Stk# 31360 uses a floating action mixing valve to vary the supply water temperature to a hydronic system. The supply water temperature is based on either the current outdoor temperature, or a fixed setpoint.

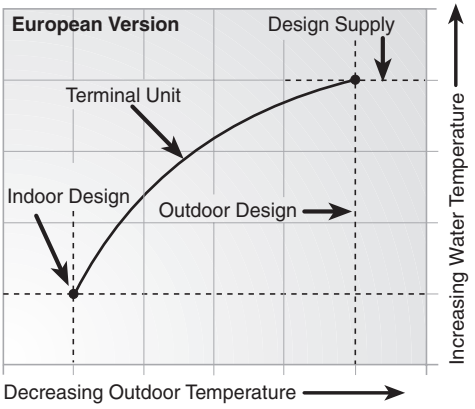
Outdoor Reset (North American version)

The amount of heat lost by a building changes depending on the outdoor air temperature. The amount of heat supplied by the heating system must be equal to the amount of heat being lost in the building. If the amount of heat supplied is not equal, the building will either overheat or cool off.
When the Outdoor Design setting is set to a temperature, the control calculates a mix supply temperature based on the outdoor air temperature and the programmed reset ratio.



Outdoor Reset (European version)

When the outdoor design (OUTDR DSGN) setting is not set to OFF, the Stk# 31360 calculates a mixing supply water temperature based on the outdoor air temperature. The Stk# 31360 uses a Characterized Heating Curve and optionally indoor temperature feedback from an indoor sensor in this calculation.



Setpoint Control

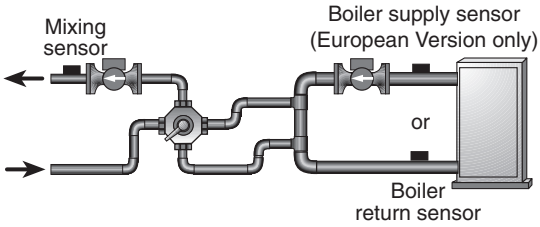
When the outdoor design (OUTDR DSGN) setting is set to OFF, the Stk# 31360 supplies a fixed mixing supply temperature equal to the MIX TARGET setting. An outdoor sensor is not required during this mode of operation.

Floating Action

A 24 V (ac) floating action actuator motor is connected directly to the Stk# 31360 on the R Opn, R Cls and C terminals (9, 10 and 11). The Stk# 31360 pulses the actuator motor open or close to maintain the correct mixed supply water temperature at the mix sensor when there is a mixing demand. The mixing valve that the actuator is connected to can be either a 2-way, 3-way, or 4-way valve. A visual indication as to whether the control is currently opening or closing the mixing valve is displayed in the LCD.

Boiler Protection (Boil Min)

The Stk# 31360 is capable of providing boiler protection from cold mixing system return water temperatures. If the boiler sensor temperature is cooler than the BOIL MIN setting while the boiler is firing, the Stk# 31360 reduces the output to the mixing valve. This limits the amount of cool return water to the boiler and allows the boiler temperature to recover. This feature can only be used if a boiler sensor is installed.



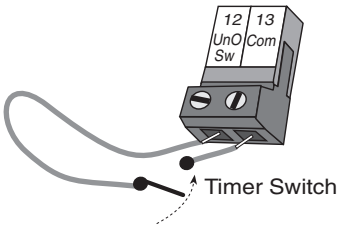
Exercising

The Stk# 31360 has a built-in exercising function. If the system pump or valve has not been operated at least once every 3 days, the control turns on the output for a minimum of 10 seconds. This minimizes the possibility of a pump or valve seizing during a long period of inactivity. The Stk# 31360 ensures that the mixing valve operates over its entire range at least once each exercising period. While the control is exercising, the Test LED flashes.

Note: The exercising function does not work if power to the control, pump, or valve is disconnected.

Setback (OCC and UNOCC)

To provide greater energy savings, the Stk# 31360 has a setback capability. With setback, the supply water temperature in the system is reduced when the building is unoccupied. By reducing the supply water temperature, air temperature in the space may be reduced even when thermostat(s) are not turned down. Any time the UnO Sw (12) and the Com (13) terminals are shorted together, the control operates in the unoccupied (Night) mode. When in the unoccupied (Night) mode, the UNOCC segment is displayed in the LCD. The Stk# 31360 adjusts the supply water temperature based on the UNOCC settings made in the control. This feature has no effect when the control is used as a setpoint control.



Warm Weather Shut Down (WWSD) OCC & UNOCC

When the outdoor air temperature rises above the Warm Weather Shut Down (WWSD) setting, the control turns on the WWSD segment in the display. When the control is in WWSD, the Mix Demand pointer is displayed if there is a demand. However, the control does not operate the heating system to satisfy this demand. If the control is in setpoint mode, the WWSD feature is not functional.

Factory Defaults

The control comes preset with several factory defaults. To fine-tune building requirements, these defaults may be changed. If a factory default value for a terminal unit is changed, the terminal unit number will flash when selected in the ADJUST menu. For the European version, these defaults are based on the terminal unit selection page 9.

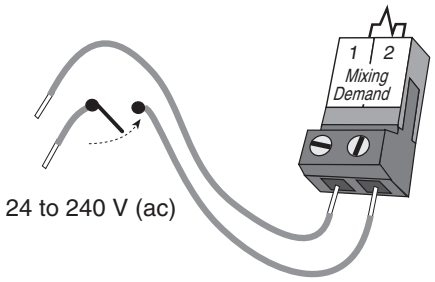
To reload the factory defaults power down the control and wait for 10 seconds. Power up the control while simultaneously holding the Item and buttons. The terminal unit number should now be displayed constantly in the LCD rather than flashing.

Mixing Operation

North American Version

Mixing Demand

A mixing demand is required in order for the Stk# 31360 to provide heat. A mixing demand is generated by applying a voltage between 24 and 240 V (ac) across the Mixing Demand terminals (1 and 2). Once voltage is applied, the Mixing Demand pointer is displayed in the LCD. If the Stk# 31360 is not in WWSD, the Stk# 31360 closes the Sys Pmp contact. The Stk# 31360 calculates a MIX TARGET supply temperature based on the outdoor air temperature and settings. If required, the Stk# 31360 operates the boiler in order to provide heat to the mixing valve.

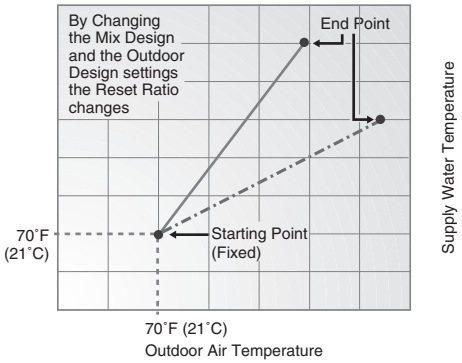


System Pump Operation (Sys Pmp)

The system pump contact (Sys Pmp, terminal 5) closes whenever there is a mixing demand and the Stk# 31360 is not in WWSD. The system pump segment is displayed in the LCD. After the mixing demand has been satisfied, the Stk# 31360 continues to operate the system pump for 20 seconds. This allows some residual heat to be purged out to the heating system. During WWSD, the system pump is operated based on the exercise function.

Reset Ratio

The reset ratio requires two points to establish the rate at which the mix supply water temperature is to be increased for every degree that the outdoor air temperature falls. The starting point of the reset ratio is fixed at 70˚F (21˚C). The end point can be changed using the OUTDOOR DESIGN and the MIX DESIGN settings.



Outdoor Design (OUTDR DSGN)

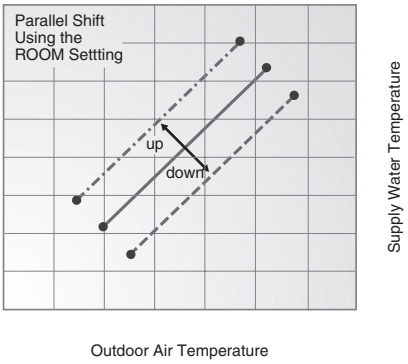
The OUTDR DSGN is the outdoor air temperature that is the typical coldest temperature of the year where the building is located. This temperature is used when doing heat loss calculations for the building. If a cold outdoor design temperature is selected, the mix supply temperature rises gradually as the outdoor temperature drops. If a warm outdoor design temperature is selected, the mix supply temperature rise rapidly as the outdoor temperature drops.

Mix Design (MIX DSGN)

The MIX DSGN temperature is the supply water temperature required to heat the mixing zones when the outdoor air is as cold as the OUTDR DSGN temperature.

Room Occ & Unocc (ROOM)

The Room setting is the desired room temperature for the mixing zones, and it provides a parallel shift of the Reset Ratio. If the room temperature is not correct, adjusting the Room setting increases or decreases the amount of heat available to the building. A Room setting is available for both the occupied and unoccupied modes.



Mix Maximum (MIX MAX)

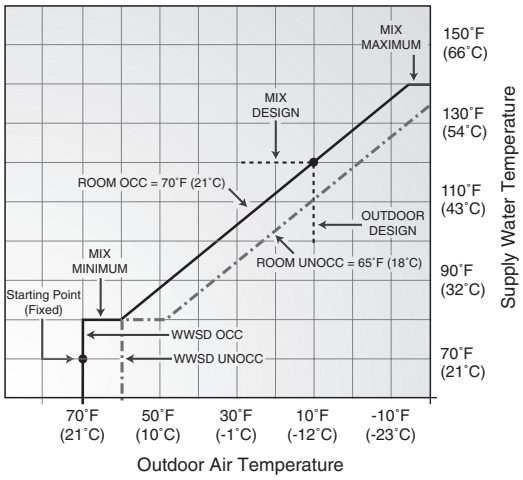
The MIX MAX sets the highest water temperature that the control is allowed to calculate as the MIX TARGET temperature. If the control does target the MIX MAX setting, and the MIX temperature is near the MIX MAX, the MAX segment will be displayed in the LCD while either the MIX TARGET temperature or the MIX temperature is being viewed.

Mix Minimum (MIX MIN)

The MIX MIN is the lowest temperature that the control is allowed to use as a MIX TARGET temperature. During mild conditions, if the Stk# 31360 calculates a MIX TARGET temperature that is below the MIX MIN setting, the MIX TARGET temperature is adjusted to match the MIX MIN setting. During this condition, the MIN segment will be displayed in the LCD when either the MIX TARGET or MIX temperature is being viewed.

Mix Target Temperature (MIX TARGET)

When used as a mixing reset control, the MIX TARGET temperature is calculated from the Reset Ratio settings and the outdoor air temperature. When used as a setpoint control, the installer sets the MIX TARGET temperature. The control displays the temperature that it is currently trying to maintain as the mix supply temperature. If the control does not have a mix demand, "- - -" is displayed as the MIX TARGET in the VIEW menu.



Setpoint Operation (MIX TARGET)

For setpoint operation, set the OUTDR DSGN to OFF. The MIX TARGET becomes the setpoint supply temperature that the control is to maintain. The MIX TARGET temperature is set by the installer in the ADJUST menu. An outdoor sensor is not required during this mode of operation.

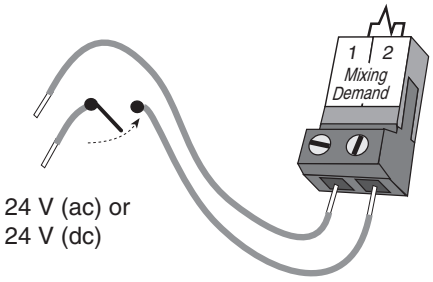
Mixing Operation

European Version

General

Mixing Demand

A mixing demand is required in order for the Stk# 31360 to provide heat. A mixing demand is generated by applying a voltage of 24 V (ac) or 24 V (dc) across the Mixing Demand terminals (1 and 2). Once voltage is applied, the Mixing Demand pointer is displayed in the LCD. If the Stk# 31360 is not in WWSD, the Stk# 31360 closes the Sys Pmp contact. The Stk# 31360 calculates a MIX TARGET supply temperature based on the outdoor air temperature and settings. If required, the Stk# 31360 operates the boiler in order to provide heat to the mixing valve.



System Pump Operation (Sys Pmp)

The system pump contact (Sys Pmp, terminal 5) closes whenever there is a mixing demand and the Stk# 31360 is not in WWSD. The system pump segment is displayed in the LCD. After the mixing demand has been satisfied, the Stk# 31360 continues to operate the system pump for 20 seconds. This allows some residual heat to be purged out to the heating system. During WWSD, the system pump is operated based on the exercise function.

Indoor Sensor

An indoor sensor may be used in order to provide indoor temperature feedback. The indoor sensor is connected to the Com and Indr terminals (16 and 18). In addition, power must be applied to the *Mixing Demand* terminals (1 and 2) as described in the MIXING DEMAND section. With the indoor sensor connected, the Stk# 31360 is able to sense the actual room temperature. Indoor temperature feedback fine-tunes the supply water temperature in the mixing system to maintain room temperature. To adjust the room temperature, use the ROOM OCC or ROOM UNOCC setting in the ADJUST menu at the control. Feedback fine-tunes the supply water temperature in the mixing system to maintain room temperature. To adjust the room temperature, use the ROOM OCC or ROOM UNOCC setting in the ADJUST menu at the control.

If a multiple zone system is used with an indoor sensor, proper placement of the indoor sensor is essential. The indoor sensor should be located in an area which best represents the average air temperature of the zones.

Characterized Heating Curve

The characterized Heating Curve takes into account the type of terminal unit that the system is using. Since different types of terminal units transfer heat to a space using different proportions of radiation, convection and conduction, the supply water temperature must be controlled differently. Once the control is told what type of terminal unit is used, the control varies the supply water temperature according to the type of terminal unit. This improves the control of the air temperature in the building.

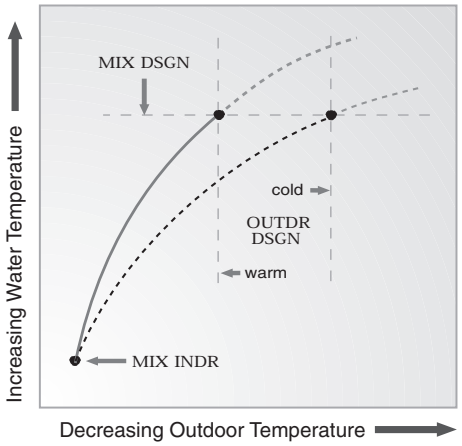
Mixing Target Temperature (MIX TARGET)

When used as a mixing reset control, The MIX TARGET temperature is calculated from the Characterized Heating Curve settings, outdoor air temperature and optionally, indoor air temperature. When used as a setpoint control, the installer sets the MIX TARGET temperature. The control displays the temperature that it is currently trying to maintain as the mixing supply temperature. If the control does not have a mixing demand, "- - -" is displayed as the MIX TARGET.

Installer

Outdoor Design (OUTDR DSGN)

The OUTDR DSGN is the outdoor air temperature that is the typical coldest temperature of the year where the building is located. This temperature is used when doing the heat loss calculations for the building. If a cold outdoor design temperature is selected, the mixing supply temperature rises gradually as the outdoor temperature drops. If a warm outdoor design temperature is selected, the mixing supply temperature rises rapidly as the outdoor temperature drops.



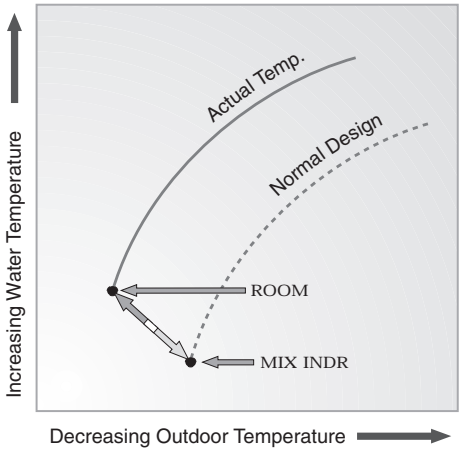
Mixing Operation (European Version)
HeatLink® Mixing Valve Reset Control Stk# 31360

Setpoint Operation (MIX TARGET)

For setpoint control, set the OUTDR DSGN to OFF. The MIX TARGET becomes the setpoint supply temperature that the control is to maintain. The MIX TARGET temperature is set by the installer in the ADJUST menu. An outdoor sensor is not required during this mode of operation.

Room OCC & UNOCC (ROOM)

The ROOM is the desired room temperature for the mixing zones, and it provides a parallel shift of the Characterized Heating Curve. The room temperature desired by the occupants is often different from the design indoor temperature (MIX INDR). If the room temperature is not correct, adjusting the ROOM setting increases or decreases the amount of heat available to the building. A ROOM setting is available for both the occupied (Day) and unoccupied (Night) modes.



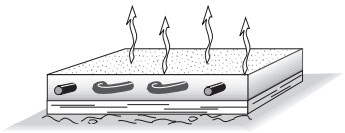
Terminal Units

When using a Characterized Heating Curve, the control requires the selection of a terminal unit. The terminal unit determines the shape of the Characterized Heating Curve according to how the terminal unit delivers heat into the building space. The Stk# 31360 provides for selection between six different terminal unit types: two types of radiant floor heat, fancoil, fin-tube convector, radiator and baseboard. When a terminal unit is selected, the control automatically loads the design supply temperature (MIX DSGN), maximum supply temperature (MIX MAX) and minimum supply temperature (MIX MIN). The factory defaults are listed below. To change defaults, refer to Advanced Mixing Pg. 10; If a default has been changed, refer to Pg. 5 to reload the factory defaults.

TERMINAL UNIT	High Mass Radiant (1)	Low Mass Radiant (2)	Fancoil (3)	Fin-Tube Convector (4)	Radiator (5)	Baseboard (6)
MIX DSGN	120˚F (49˚C)	140˚F (60˚C)	190˚F (88˚C)	180˚F (82˚C)	160˚F (71˚C)	150˚F (66˚C)
MIX MAX	140˚F (60˚C)	160˚F (71˚C)	210˚F (99˚C)	200˚F (93˚C)	180˚F (82˚C)	170˚F (77˚C)
MIX MIN	OFF	OFF	100˚F (38˚C)	OFF	OFF	OFF

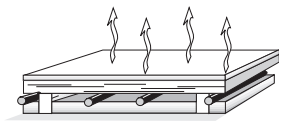
High Mass Radiant (1)

This type of a hydronic radiant floor is embedded in either a thick concrete or gypsum pour. This heating system has a large thermal mass and is slow acting.
Default values: MIX DSGN = 120 °F (49°C), MIX MAX = 140 °F (60°C), MIX MIN = OFF



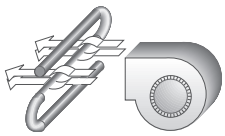
Low Mass Radiant (2)

This type of radiant heating system is either attached to the bottom of a wood sub-floor, suspended in the joist space, or sandwiched between the sub-floor and the surface. This type of radiant system has a relatively low thermal mass and responds faster than a high mass system.
Default values: MIX DSGN = 140 °F (60°C), MIX MAX = 160 °F (71°C), MIX MIN = OFF



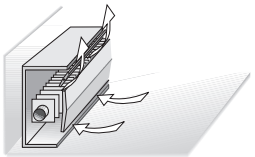
Fancoil (3)

A fancoil terminal unit or air handling unit (AHU) consists of a hydronic heating coil and either a fan or blower. Air is forced across the coil at a constant velocity by the fan or either a fan or blower. Air is forced across the coil at a constant velocity by the fan or blower, and is then delivered into the building space.
Default values: MIX DSGN = 190°F (88 °C), MIX MAX = 210°F (99°C), MIX MIN = 100°F (38°C)



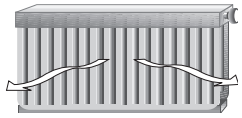
Fin–tube Convector (4)

A convector terminal unit is made up of a heating element with fins on it. This type of terminal unit relies on the natural convection of air across the heating element to deliver heated air into the space. The amount of natural convection to the space is dependant on the supply water temperature to the heating element and the room air temperature.
Default values: MIX DSGN = 180 °F (82°C), MIX MAX = 200 °F (93°C), MIX MIN = OFF



Radiator (5)

A radiator terminal unit has a large heated surface that is exposed to the room. A radiator provides heat to the room through radiant heat transfer and natural convection.
Default values: MIX DSGN = 160 °F (71°C), MIX MAX = 180 °F (82°C), MIX MIN = OFF



Baseboard (6)

A baseboard terminal unit is similar to a radiator, but has a low profile and is installed at the base of the wall. The proportion of heat transferred by radiation from a baseboard is greater than that from a fin-tube convector.
Default values: MIX DSGN = 150 °F (66°C), MIX MAX = 170 °F (77°C), MIX MIN = OFF

Advanced

Mixing Indoor (MIX INDR)

The MIX INDR is the room temperature used in the original heat loss calculations for the building. This setting establishes the beginning of the Characterized Heating Curve for the mixing zones.

Mixing Design (MIX DSGN)

The MIX DSGN temperature is the supply water temperature required to heat the mixing zones when the outdoor air is as cold as the OUTDR DSGN temperature.

Mixing Maximum (MIX MAX)

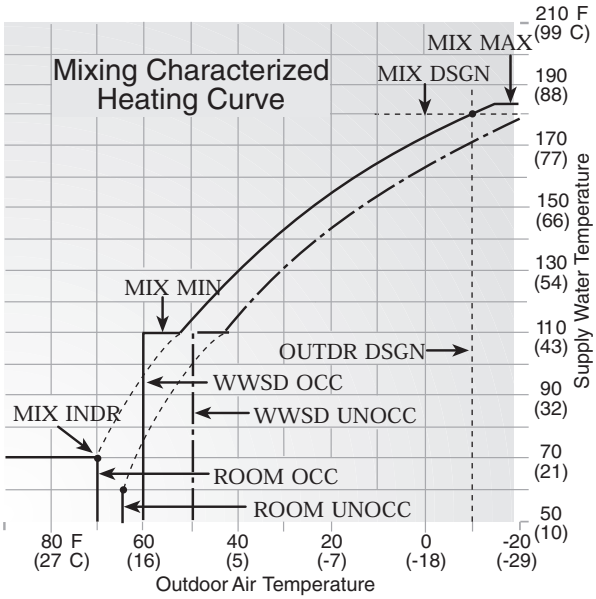
The MIX MAX sets the highest water temperature that the control is allowed to calculate as the MIX TARGET temperature. If the control does target the MIX MAX setting, and the MIX temperature is near the MIX MAX, the MAX segment will be displayed in the LCD while either the MIX TARGET temperature or the MIX temperature is being viewed.

Mixing Minimum (MIX MIN)

The MIX MIN is the lowest temperature that the control is allowed to use as a MIX TARGET temperature. During mild conditions, if the Stk# 31360 calculates a MIX TARGET temperature that is below the MIX MIN setting, the MIX TARGET temperature is adjusted to match the MIX MIN setting. During this condition, the MIN segment will be displayed in the LCD when either the MIX TARGET or MIX temperature is being viewed. If an indoor sensor is used, and the Stk# 31360 is operating at the MIX MIN temperature, the system pump is cycled using Pulse Width Modulation (PWM) with a 15 minute cycle length. By cycling the system pump and controlling the flow of supply water, the control provides an average supply water temperature to the system. This average temperature is equal to the original MIX TARGET. This minimizes overheating of the zone while the control is operating at the MIX MIN temperature.

Warm Weather Shut Down (WWSD) OCC & UNOCC

When the outdoor air temperature rises above the WWSD setting, the When the outdoor air temperature rises above the WWSD setting, the Stk# 31360 turns on the WWSD segment in the display. When the control is in Warm Weather Shut Down, the Mixing Demand pointer is displayed, if there is a demand. However, the control does not operate the heating system to satisfy this demand. If the control is in setpoint mode, the WWSD feature is not functional.



Boiler Operation

North American Version

Boiler Enable

The Boiler Enable contact allows the boiler to ignite and operate at the boiler's operator setting.

The control closes the Boiler Enable contact when the position of the mixing valve exceeds 30%. The Boiler Enable contact remains closed until the position of the mixing valve reduces below 15%.

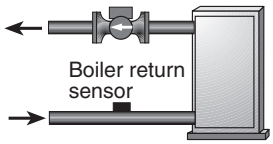
In order to prevent short cycling, the Boiler Enable contact has a minimum on time, and a minimum off time.

Boiler Minimum (BOIL MIN)

Most boilers require a minimum water temperature in order to prevent flue gas condensation. Check the boiler data brochure's minimum recommended operating temperature and set the BOIL MIN. Only when a boiler return sensor measures the boiler temperature can the control provide boiler protection. In this case, when the boiler is firing and the boiler return temperature is below the Boil Min setting, the control turns on the MIN segment and reduces the heating load on the boiler by limiting the output of the mixing valve. If the installed boiler is designed for low temperature operation, set the BOIL MIN adjustment to OFF.

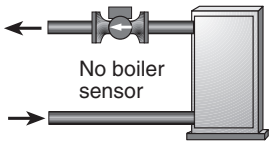
Boiler Return Sensor

The boiler return sensor, if used, should be located on the boiler return and enables the boiler to operate at the operating aquastat setting as described in the BOILER ENABLE section.



No Boiler Sensor

The 31360 is capable of operating without a boiler return sensor if desired. Without a boiler return sensor, the 31360 provides a boiler enable as described in the BOILER ENABLE section, but is unable to provide boiler protection. This type of application is typical if the 31360 is drawing heat from a heat source that already incorporates some form of boiler protection.



Boiler Operation

European Version

When the Stk# 31360 determines that boiler operation is required, the Boiler contact terminals (7 and 8) close. While the Boiler contact is closed, the burner segment in the LCD is displayed.

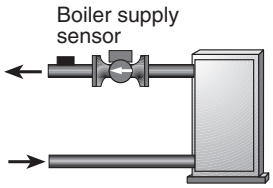
Boiler Minimum (BOIL MIN)

Most boilers require a minimum water temperature in order to prevent flue gas condensation. The BOIL MIN adjustment is set to the boiler manufacturer's minimum recommended operating temperature. Only when the boiler temperature is measured by a boiler sensor can the Stk# 31360 provide boiler protection. In this case, when the boiler is firing and the boiler temperature is below the BOIL MIN setting, the Stk# 31360 turns on the MIN segment and reduces the heating load on the boiler by limiting the output of the mixing valve. If the installed boiler is designed for low temperature operation, set the BOIL MIN adjustment to OFF.

Refer to Page 4 for a description of boiler protection.

Boiler Sensor on the Supply (Boiler Sensor DIP switch = Supply)

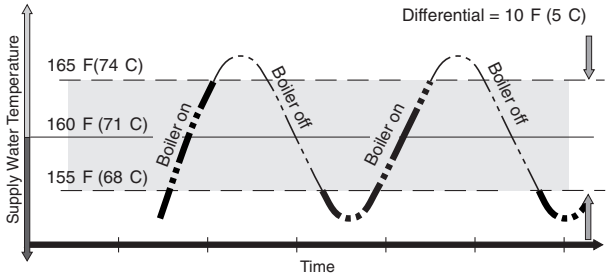
The boiler sensor can be located on the boiler supply if the Stk# 31360 is the only control that is operating the boiler. When in the supply mode, the Stk# 31360 determines the required operating temperature of the boiler using Boiler Load Reset. With Boiler Load Reset, the Stk# 31360 operates the boiler at the lowest possible supply temperature that is sufficient to satisfy the requirements of the mixing valve. If this mode of operation is selected, the boiler pump should either operate continuously, or be operated in parallel with the system pump contact (Sys Pmp).



Note: The boiler pump should not be operated by the boiler's aquastat, as this may lead to improper cycling of the boiler because of inconsistent flow past the boiler supply sensor.

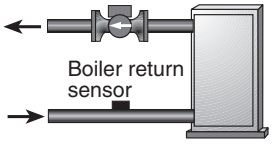
Boiler Differential (BOIL DIFF)

An on / off heat source such as a boiler must be operated with a differential in order to prevent short cycling. When the boiler supply temperature drops below the bottom rail of the differential, the Stk# 31360 closes the Boiler contact to fire the boiler. When the boiler supply temperature rises above the top rail of the differential, the Stk# 31360 opens the Boiler contact to turn off the boiler. With the Stk# 31360, either a fixed or automatic differential setting is selected. If automatic differential (Ad) is selected, the Stk# 31360 automatically adjusts the boiler differential under the current load conditions to avoid short cycling.



Boiler Sensor on the Return (Boiler Sensor DIP switch = Return)

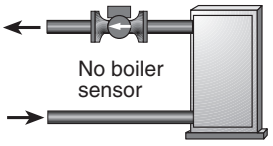
The boiler sensor should be located on the boiler return if the Stk# 31360 is one of many controls that can call for boiler operation. When in the return mode, the Stk# 31360 provides a boiler enable as described in the BOILER ENABLE section. The Stk# 31360 no longer tries to control the boiler supply water temperature directly but allows the boiler to operate at its operating aquastat setting when required. If this mode of operation is selected, the boiler pump should either operate continuously, or be operated in parallel with the system pump contact (Sys Pmp).



Note: The boiler pump should not be operated by the boiler's aquastat, as this may lead to improper cycling of the boiler because of inconsistent flow past the boiler return sensor.

No Boiler Sensor

The Stk# 31360 is capable of operating without a boiler sensor if desired. Without a boiler sensor, the Stk# 31360 provides a boiler enable as described in the BOILER ENABLE section, but is unable to provide boiler protection. This type of application is typical if the Stk# 31360 is drawing heat from a heat source that already incorporates some form of boiler protection.



Boiler Enable (30% Enable / 10% Enable)

The Stk# 31360 has a DIP switch that allows for the selection between a 30% boiler enable and a 10% boiler enable. This switch is only functional when the Boiler Sensor DIP switch is set to Return.

In the 30% position, the Stk# 31360 closes the Boiler contact when the position of the mixing valve exceeds 30%. The Boiler contact remains closed until the position of the mixing valve reduces below 15%. This setting would normally be chosen for low mass boilers (copper fin-tube, etc.), or systems with low thermal mass in the loop between the boiler and the mixing valve.

In the 10% position, the Stk# 31360 closes the Boiler contact when the position of the mixing valve exceeds 10%. The Boiler contact remains closed until the position of the mixing valve reduces below 5%. This setting is normally chosen for high mass boilers (cast iron, steel fire-tube, etc.), or systems with large thermal mass in the loop between the boiler and the mixing valve. In order to prevent short cycling, the Boiler contact has a minimum on time, and a minimum off time.

Installation

North American & European Versions (differences where noted)

Important: Improper installation and operation of this control could result in damage to the equipment and possibly even personal injury. It is your responsibility to ensure that this control is safely installed according to all applicable codes and standards. This electronic control is not intended for use as a primary limit control. Other controls that are intended and certified as safety limits must be placed into the control circuit.

Step One - Materials

Check the contents of this package. If any of the contents listed are missing or damaged, please contact your wholesaler or HeatLink® sales representative for assistance.

Type Stk# 31360 includes: One Mixing Valve Reset Control Stk# 31360, One HeatLink® Outdoor Sensor Stk# 30070, Two HeatLink® Universal Sensors Stk# 30071; Literature: L631360, L630070, L631000, TN13.

Note: Carefully read the details of the Sequence of Operation to ensure that you have chosen the proper control for your application.

Step Two - Mounting the Base

Remove the control from its base by pressing down on the release clip in the wiring chamber and sliding the control away from it. The base is then mounted in accordance with the instructions in the 10K Sensors L630070.

Step Three - Rough-in Wiring

All electrical wiring terminates in the control base wiring chamber. The base has standard 7/8" (22 mm) knockouts which accept common wiring hardware and conduit fittings. Before removing the knockouts, check the wiring diagram and select those sections of the chamber with common voltages. Do not allow the wiring to cross between sections, as the wires will interfere with safety dividers which should be installed at a later time.

Important: Power must not be applied to any of the wires during the rough-in wiring stage.

- Install the HeatLink® Outdoor Sensor Stk# 30070, HeatLink® Boiler (Universal) Sensor Stk# 30071, and HeatLink® Mixing (Universal) Sensor Stk# 30071 according to the instructions in the 10K Sensors L630070, and run the wiring back to the control.
- If an HeatLink® Indoor Sensor Stk# 30076 or Stk# 30077 is used, install the indoor sensor according to the instructions in the 10K Sensors L630070 , and run the wiring back to the control.
- Run wire from other system components (pump, boiler, actuating motor, etc.) to the control.
- Run wires from the 120 V (ac) power (North American version) or 230 V (ac) power (European version) to the control. Use a clean power source to ensure proper operation. Multi-strand 16 AWG wire is recommended for all 120 V (ac) or 230 V (ac) wiring due to its superior flexibility and ease of installation into the terminals.

Step Four - Electrical Connections to the Control

The installer should test to confirm that no voltage is present at any of the wires. Push the control into the base and slide it down until it snaps firmly into place.

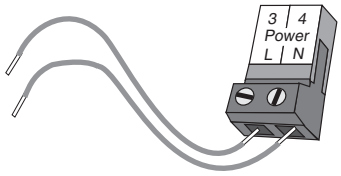
Powered Input Connections

120 V (ac) Power (North American version)

Connect the 120 V (ac) power supply to the Power L and Power N terminals (3 and 4). This connection provides power to the microprocessor and display of the control. As well, this connection provides power to the Sys Pmp terminal (5) from the Power L terminal (3).

230 V (ac) Power (European version)

Connect the 230 V (ac) power supply to the Power L and Power N terminals (3 and 4).This connection provides power to the microprocessor and display of the control. As well, this connection provides power to the Sys Pmp terminal (5) from the Power L terminal (3).



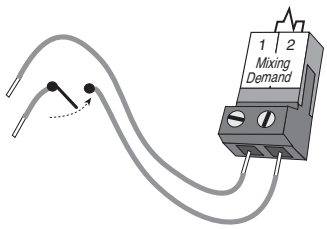
120 V (ac) North America
230 V (ac) Europe

Mixing Demand (North American version)

To generate a mixing demand, a voltage between 24 V (ac) and 240 V (ac) must be applied across the Mixing Demand terminals (1 and 2).

Mixing Demand (European version)

To generate a mixing demand, a voltage of 24 V (ac)or 24 V (dc) must be applied across the Mixing Demand terminals (1 and 2).

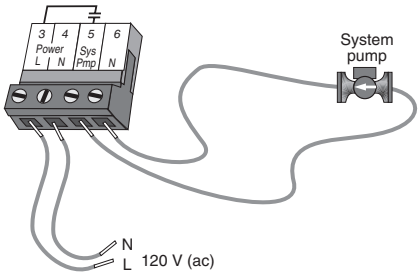


24 to 240 V (ac) North America
24 V (ac) or 24 V (dc) Europe

Output Connections

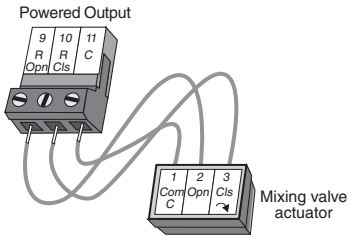
System Pump Contact (Sys Pmp)

The Sys Pmp output terminal (5) on the Stk# 31360 is a powered output. When the relay in the Stk# 31360 closes, a120 V (ac) is provided to the SysPmp terminal (5) from the Power L terminal (3). To operate the system pump, connect one side of the system pump circuit to terminal (5), and the second side of the pump circuit to the neutral (N) terminal 6 from the Power L terminal (3).



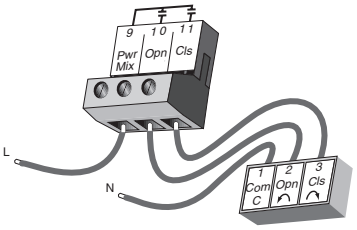
Mixing Valve Actuator (North American version)

Terminals 9, 10 and 11 are powered with 24 V (ac) from the control. There is no need to provide a separate 24 V (ac) power source for the mixing valve actuator. R Opn (9) is connected to the open terminal of the actuating motor and R Cls (10) is connected to the close terminal of the actuating motor. C (11) is then connected to the common terminal of the actuating motor.



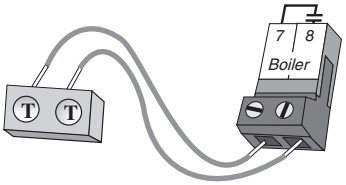
Mixing Valve Actuator (European version)

Terminals 9, 10 and 11 are isolated outputs from the control. Connect one side of the actuator power to the Pwr Mix terminal (9) on the control. The output relay Opn (10) is then connected to the open terminal of the actuator and the output relay Cls (11) is connected to the close terminal of the actuator. Connect the second side of the actuator power to ther common terminal of the actuator.



Boiler Contact

The Boiler terminals (7 and 8) are an isolated output in the Stk# 31360. There is no power available on these terminals from the control. These terminals are to be used as a switch to either make or break the boiler circuit. When the Stk# 31360 requires the boiler to fire, it closes the contact between terminals 7 and 8.

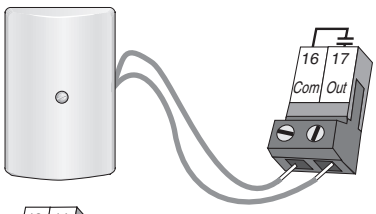


Sensor and Unpowered Input Connections

Important: Do not apply power to these terminals as this will damage the control.

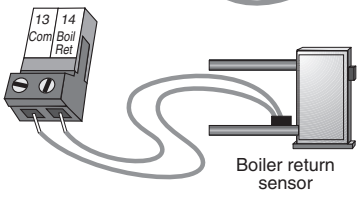
Outdoor Sensor

Connect the two wires from the HeatLink® Outdoor Sensor Stk# 30070 to the Com and Out terminals (16 and 17). The outdoor sensor is used by the Stk# 31360 to measure the outdoor air temperature.



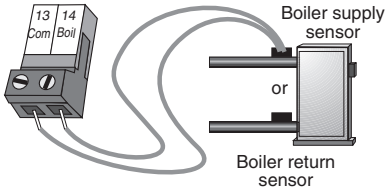
Boiler Return Sensor (North American version)

If a Boiler Return Sensor (Universal) Stk# 30071 is used, connect the two wires from te sensor to the Com and Boil Ret terminals (13 and 14). The boiler return sensor is used by te control to measure the boiler return temperature.



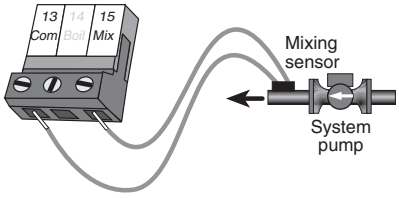
Boiler Sensor (European version)

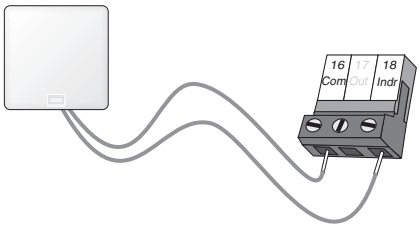
Connect the two wires from the HeatLink® Boiler (Universal) Sensor Stk# 30071 to the Com and Boil terminals (13 and 14). The boiler sensor is used by the Stk# 31360 to measure boiler temperature.



Mixing Sensor

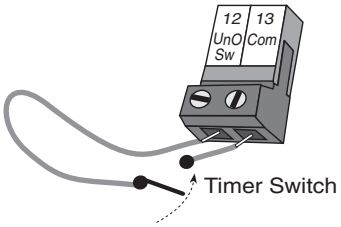
Connect the two wires from the HeatLink® Mix (Universal) Sensor Stk# 30071 to the Com and Mix terminals (13 and 15). The mix sensor is used by the Stk# 31360 to measure the mixed supply water temperature after the system pump.





Indoor Sensor (European version only)

If an indoor sensor is used, connect the two wires from the sensor to the Com and Indr terminals (16 and 18). The indoor sensor is used by the Stk# 31360 to measure the room air temperature.



Unoccupied Switch

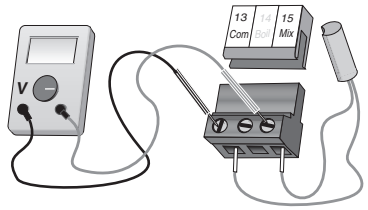
If an external timer or switch is used to provide an unoccupied period, connect the two wires from the external switch to the UnO Sw and Com terminals (12 and 13). When these two terminals are shorted together, the control registers an unoccupied signal.

Step Five - Testing the Wiring

- Each terminal block must be unplugged from its header on the control before power is applied for testing. To remove a terminal block, pull it straight down from the control.
- The following tests are to be performed using standard testing practices and procedures, and should only be carried out by properly trained and experienced proffesionals.
- A good quality electrical test meter, capable of reading from at least 0 - 300 V (ac) and at least 0 - 2,000,000 Ohms, is essential to properly test the wiring and sensors.

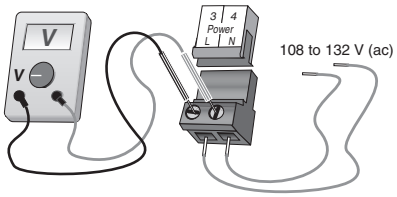
Test The Sensors

In order to test the sensors, the actual temperature at each sensor location must be measured. A good quality digital thermometer with a surface temperature probe is recommended for ease of use and accuracy. Where a digital thermometer is not available, a spare sensor can be strapped alongside the one to be tested, and the readings compared. Test the sensors according to the instructions in the 10K Sensors L630070.



Test The Power Supply

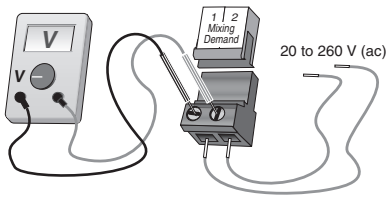
Make sure exposed wires and bare terminals are not in contact with other wires or grounded surfaces. Turn on the power and measure the voltage between the *Power L* and *Power N* terminals (3 and 4) using an AC voltmeter. The reading should be between 108 and 132 V (ac) for the North American version and between 207 and 253 V (ac) for the European version.



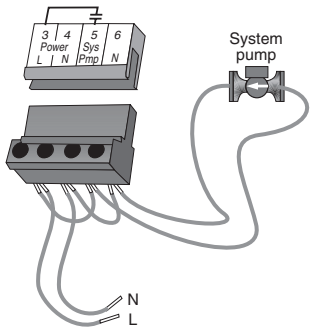
Test The Powered Inputs

Mixing Demand

Measure the voltage between the Mixing Demand terminals (1 and 2). When the mixing demand device calls for heat, you should measure between 20 and 260 V (ac) for the North American version. When the mixing demand device is off, you should measure less than 5 V(ac).



Test The Outputs



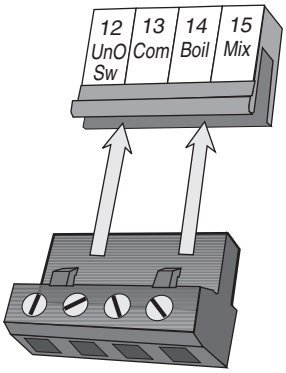
System Pump (Sys Pmp)

If a system pump is connected to the Sys Pmp terminal (5) and N terminal (6), make sure that power to the terminal block is off, and install a jumper between the Power L and the Sys Pmp terminals (3 and 5). Install a second jumper between the Power N and N terminals (4 and 6). When power is applied to the Power L and Power N terminals (3 and 4), the system pump should start. If the pump does not turn on, check the wiring between the terminal block and pump, and refer to any installation or troubleshooting information supplied with the pump. If the pump operates properly, disconnect the power and remove the jumpers.

Boiler

If the boiler circuit is connected to the Boiler terminals (7 and 8), make sure power to the boiler circuit is off, and install a jumper between the terminals. When the boiler circuit is powered up, the boiler should fire. If the boiler does not turn on, refer to any installation or troubleshooting information supplied with the boiler. (The boiler may have a flow switch that prevents firing until the boiler loop pump is running). If the boiler operates properly, disconnect the power and remove the jumper.

Connecting The Control



Important: Make sure all power to the devices and terminal blocks is off, and remove any remaining jumpers from the terminals.

Reconnect the terminal blocks to the control by carefully aligning them with their respective headers on the control, and then pushing the terminal blocks into the headers. The terminal blocks should snap firmly into place.

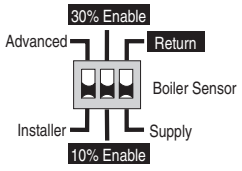
Install the supplied safety dividers between the unpowered sensor inputs and the powered 120 V (ac) or 24 V (ac) wiring chambers.

Apply power to the control. The operation of the control on power up is described in the Sequence of Operation section of this brochure.

If a floating action actuating motor circuit is connected to the R Opn, R Cls and C terminals (9, 10 and 11), the control's Test Sequence can be used to check the motor circuit. Once the Test button is pressed, the valve should move to the fully open position. If the motor closes instead of opening, the wiring of the actuating motor must be reversed. Next, the valve should move to the fully closed position. If it does not, check the wiring between the terminals and the actuating motor. Refer to any installation or troubleshooting information supplied with the motor.

DIP Switch Settings (European version only)

For systems where the Stk# 31360 provides a heat demand to an external boiler control, the boiler sensor should be installed on the return side of the boiler loop. When the boiler sensor is installed on the return side of the boiler loop, the DIP switch must be set to Return. The Stk# 31360 enables the boiler when the position of the mixing valve exceeds the boiler enable DIP switch setting. The Boiler contact is controlled as described in section C. The boiler's operating temperature is controlled by its aquastat, or an external boiler reset control.



Advanced / Installer

The Advanced / Installer DIP switch is used to select which items are available to be viewed and / or adjusted in the user interface.

30% Enable / 10% Enable

The position of the 30% Enable / 10% Enable DIP switch determines at which valve position the control will close the Boiler contact under normal conditions. This switch is only operational if the Boiler Sensor DIP switch is set to Return.

Boiler Sensor (Return / Supply)

The Boiler Sensor DIP switch selects the installation location for the boiler sensor. When the boiler sensor is installed on the supply side of the boiler loop, the DIP switch must be set to Supply. The boiler aquastat should be set at least 20°F (11°C) higher than the required design boiler water temperature. The boiler is controlled as described in Boiler Sensor Placement Page 12.

For systems where the Stk# 31360 provides a heat demand to an external boiler control, the boiler sensor should be installed on the return side of the boiler loop. When the boiler sensor is installed on the return side of the boiler loop, the DIP switch must be set to Return. The Stk# 31360 enables the boiler when the position of the mixing valve exceeds the boiler enable DIP switch setting. The Boiler contact is controlled as described in Boiler Operation Pg. 12. The boiler's operating temperature is controlled by its aquastat, or an external boiler reset control.

Quick Setup

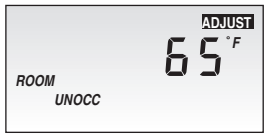
European Version Only

The quick setup can be used for both outdoor reset and setpoint operation. To enter the installer programming mode, set the Advanced / Installer DIP switch to Installer.

Outdoor Reset

Access the ADJUST menu by pressing and holding simultaneously for 1 second, the Item, and buttons. The display will now show the word ADJUST in the top right corner.

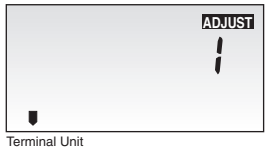
The ROOM OCC adjustment is the first item displayed. Use the "Up" or "Down" button to set the ROOM temperature. The ROOM OCC setting is set to the desired room air temperature during the occupied (Day) mode. Note: To increase or decrease space temperature during the occupied (Day) mode, only adjust the ROOM OCC setting.



Press and release the Item button to advance to the ROOM UNOCC adjustment. Use the "Up" or "Down" button to set the desired temperature. The ROOM UNOCC setting is set to the desired room air temperature during the unoccupied (Night) mode.

Note: To increase or decrease space temperature during the unoccupied (Night) mode, only adjust the ROOM UNOCC setting.

Press and release the Item button to advance to the OUTDR DSGN adjustment. Use the "Up" or "Down" button to set the outdoor design temperature. The OUTDR DSGN setting is set to the typical coldest temperature of the year.



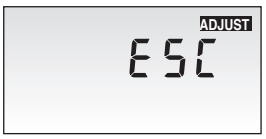
Terminal Unit

Press and release the Item button to advance to the Terminal Unit adjustment. Use the "Up" or "Down" button to select the desired terminal unit. The terminal unit number corresponds to the type of terminal that is being used. The table below lists the terminal units and their default values.

TERMINAL UNIT	High Mass Radiant (1)	Low Mass Radiant (2)	Fancoil (3)	Fin-Tube Convector (4)	Radiator (5)	Baseboard (6)
MIX DSGN	120˚F (49˚C)	140˚F (60˚C)	190˚F (88˚C)	180˚F (82˚C)	160˚F (71˚C)	150˚F (66˚C)
MIX MAX	140˚F (60˚C)	160˚F (71˚C)	210˚F (99˚C)	200˚F (93˚C)	180˚F (82˚C)	170˚F (77˚C)
MIX MIN	OFF	OFF	100˚F (38˚C)	OFF	OFF	OFF

European Version Only

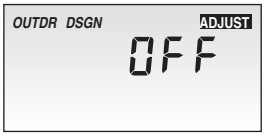
Press and release the Item button to advance to the units adjustment. Use the “Up” or “Down” button to set the scale to °F or °C.



To exit the ADJUST menu, press and release the Item button to advance to the ESC item. Then either press the “Up” or “Down” button, or leave the buttons alone for 20 seconds.

Setpoint Control

Access the ADJUST menu by pressing and holding simultaneously for 1 second, the Item, and buttons. The display will now show the word ADJUST in the top right corner.



Press and release the Item button to advance to the OUTDR DSGN adjustment. Press and hold the button until OFF is displayed.

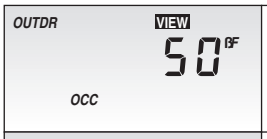
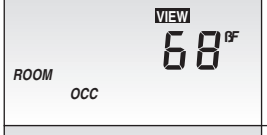
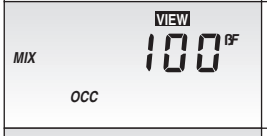
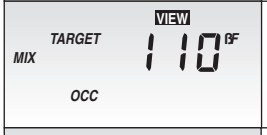
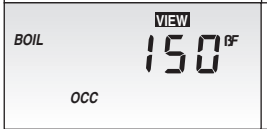
Press and release the Item button to advance to the MIX TARGET adjustment. Use the “Up” or “Down” button to select the desired temperature. The MIX TARGET setting is set to the desired setpoint supply temperature.

Press and release the Item button to advance to the units adjustment. Use the “Up” or “Down” button to set the scale to °F or °C.

To exit the ADJUST menu, press and release the Item button to advance to the ESC item. Then either press the “Up” or “Down” button, or leave the buttons alone for 20 seconds.

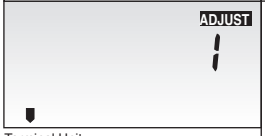
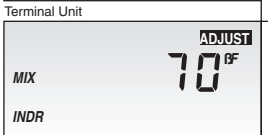
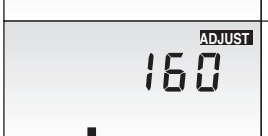
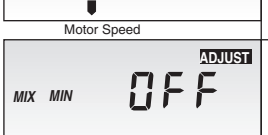
View Menu

North American and European Versions (differences where noted)
"Installer" and "Advanced" levels on European version only.

Display	Page #	Installer	Advanced	Description	Range
	6, 8	✓	✓	**Outdoor** Current outdoor air temperature as measured by the outdoor sensor. This is also the default display for the control. **(OUTDR DSGN › OFF)**	-67ß to 149ßF (-55ß to 65ßC)
	8	✓	✓	**Indoor** Current room air temperature as measured by the indoor sensor. **(Indoor sensor is present, European version only)**	23ß to 113ßF (-5ß to 45ßC)
	6, 10	✓	✓	**Mix** Current mixed supply water temperature as measured by the mixing sensor.	14ß to 266ßF (-10ß to 130ßC)
	7, 8	✓	✓	**Mix Target** Target mixed supply is the temperature the control is currently trying to maintain at the mixing sensor.	---, 14ß to 266ßF (---, -10ß to 130ßC)
	11, 12	✓	✓	**Boil** Current boiler temperature as measured by the boiler sensor. **(Boiler sensor is present)**	14ß to 266ßF (-10ß to 130ßC)

Adjust Menu

North American and European Versions (differences where noted)
"Installer" and "Advanced" levels on European version only.

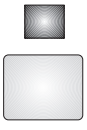
Display	Page #	Installer	Advanced	Description	Range	Actual Setting
	6, 9		✓	**Room Occupied** The desired room air temperature during an occupied (Day) period. **(OUTDR DSGN › OFF)**	35ß to 100ßF (2ß to 38ßC)	
	6, 9		✓	**Room Unoccupied** The desired room air temperature during an unoccupied (Night) period. **(OUTDR DSGN › OFF)**	35ß to 100ßF (2ß to 38ßC)	
	7, 8		✓	**Mix Target** Mixing setpoint temperature. **(OUTDR DSGN = OFF)**	60ß to 200ßF (16ß to 93ßC)	
	6, 8		✓	**Outdoor Design** The design outdoor air temperature used in the heatloss calculation for the heating system. For setpoint operation, set the OUTDR DSGN to OFF.	-60ß to 32ßF, OFF (-51ß to 0ßC, OFF)	
	9		✓	**Terminal Unit** The type of terminal units that are being used in the heating system. **(OUTDR DSGN › OFF, European version only)**	1 (High Mass Radiant), 2 (Low MassRadiant), 3 (Fancoil), 4 (Fin-tube Convector), 5 (Radiator), 6 (Baseboard)	
	10		✓	**Indoor Design** The design indoor air temperature used in the heatloss calculation for the heating system. **(OUTDR DSGN › OFF, European version only)**	35ß to 100ßF (2ß to 38ßC)	
	6, 10		✓	**Mix Design** The design supply water temperature used in the heatloss calculation for the heating system. **(OUTDR DSGN › OFF)**	70ßF to 220ßF (21ß to 104ßC)	
	6, 10		✓	**Mix Maximum** The maximum supply temperature for the mixing system. **(OUTDR DSGN › OFF)**	80ß to 210ßF (27ß to 99ßC)	
	5		✓	**Motor Speed** The time that the actuating motor requires to operate from fully closed to fully open.	30 to 230 seconds (1 sec. increments)	
	7, 10		✓	**Mix Minimum** The minimum supply temperature for the mixing system. **(OUTDR DSGN › OFF)**	OFF, 35ß to 150ßF (OFF, 2ß to 65ßC)	
	11, 12		✓	**Boil Minimum** The minimum temperature allowed for the boiler target temperature. **(Boiler sensor is present)**	OFF, 80ß to 180ßF (OFF, 27ß to 82ßC)	
	12		✓	**Boil Differential** The differential that the control is to use when it is operating the boiler. **(Boiler Sensor DIP switch = Supply AND Boiler sensor is present, European version only)**	Ad, 2ß to 42ßF (Ad, -17ß to 6ßC)	

Display	Page #	Installer	Advanced	Description	Range	Actual Setting
ADJUST 70 ßF WWSD OCC	5, 10		✓	**WWSD Occupied** The system s warm weather shut down during the occupied (Day) period.	35ß to 100ßF, OFF (2ß to 38ßC, OFF)	
ADJUST 60 ßF WWSD UNOCC	5, 10		✓	**WWSD Unoccupied** The system s warm weather shut down during the unoccupied (Night) period.	35ß to 100ßF, OFF (2ß to 38ßC, OFF)	
ADJUST ßF			✓	**Units** The units of measure that all of the temperatures are to be displayed in the control.	ßF, ßC	
ADJUST ESC			✓	**Exit** This item exits the ADJUST menu by pressing either the Up or Down button. **(European version only)**		

Testing the Main Control

North American & European Versions

The HeatLink® Mixing Valve Reset Control Stk# 31360 has a built-in test routine which is used to test the main control functions. The Stk# 31360 continually monitors the sensors, and displays an error message whenever a fault is found. See the following pages for a list of the Stk# 31360's error messages and possible causes. When the Test button is pressed, the test light is turned on. The individual outputs and relays are tested in the following test sequence.



off not testing
red testing
red testing paused

Test Sequence

Each step in the test sequence lasts 10 seconds.

During the test routine, the test sequence may be paused by pressing the Test button. Only if there is a mixing demand can the control be paused in a step. If the Test button is not pressed again for 5 minutes while the test sequence is paused, the control exits the entire test routine. If the test sequence is paused, the Test button can be pressed again to advance to the next step. This can also be used to rapidly advance through the test sequence. To reach the desired step, repeatedly press and release the Test button until the appropriate device and segment in the display turn on.

Step 1 - The mixing valve is run fully open.

Step 2 - The mixing valve is run fully closed, and then the system pump (Sys Pmp) is turned on.

Step 3 - The Boiler contact is turned on for 10 seconds. After 10 seconds, the Boiler and Sys Pmp contacts are shut off.

Step 4 - After the test sequence is completed, the control resumes its normal operation.

Troubleshooting

North American & European Versions

When troubleshooting any heating system, it is always a good idea to establish a set routine to follow. By following a consistent routine, many hours of potential headaches can be avoided. Below is an example of a sequence that can be used when diagnosing or troubleshooting problems in a hydronic heating system.

Establish the problem.
Get as much information from the customer as possible about the problem. Is there too much heat, not enough heat, or no heat? Is the problem only in one particular zone or area of the building, or does the problem affect the entire system? Is this a consistent problem or only intermittent? How long has the problem existed for? This information is critical in correctly diagnosing the problem.

Understand the sequence of operation of the system.
If a particular zone is not receiving enough heat, which pumps or valves in the system must operate in order to deliver heat to the affected zone? If the zone is receiving too much heat, which pumps, valves, or check valves must operate in order to stop the delivery of heat?

Use the Test Routine
Press the Test button on the control and follow the control through the test sequence as described in the Testing section. Pause the control as necessary to ensure that the correct device is operating as it should.

Sketch the piping of the system.
This is a relatively simple step that tends to be overlooked, however, it can often save hours of time in troubleshooting a system. Note flow directions in the system paying close attention to the location of pumps, check valves, pressure bypass valves, and mixing valves. Ensure correct flow direction on all pumps. This is also a very useful step if additional assistance is required.

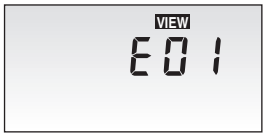
Document the control for future reference.
Before making any adjustments to the control, note down all of the items that the control is currently displaying. This includes items such as error messages, current temperatures and settings, and which devices should be operating as indicated by the LCD. This information is an essential step if additional assistance is required to diagnose the problem.

Isolate the problem between the control and the system.
Now that the sequence of operation is known and the system is sketched, is the control operating the proper pumps and valves at the correct times? Is the control receiving the correct signals from the system as to when it should be operating? Are the proper items selected in the menus of the control for the device that is to be operated?

Test the contacts, voltages and sensors.
Using a multimeter, ensure that the control is receiving adequate voltage to the power terminals and the demand terminals as noted in the technical data. Use the multimeter to determine if the internal contacts on the control are opening and closing correctly. Follow the instructions in the Testing the Wiring section to simulate closed contacts on the terminal blocks as required. Test the sensors and their wiring as described in the 10K Sensors L630070.

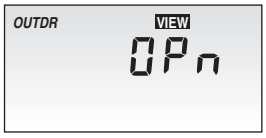
Error Messages

North American & European Versions



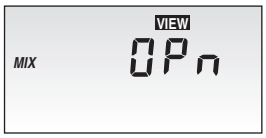
The control was unable to read a piece of information from its EEPROM. This error can be caused by a noisy power source. The control will load the factory defaults and stop operation until all the settings are verified.

The control is no longer able to read the outdoor sensor due to a short circuit. In this case the control assumes an outdoor temperature of 32°F (0 °C) and continues operation. Locate and repair the problem as described in 10K Sensors L630070. To clear the error message from the control after the sensor has been repaired, press the Item button.



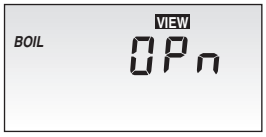
The control is no longer able to read the outdoor sensor due to an open circuit. In this case the control assumes an outdoor temperature of 32°F (0 °C) and continues operation. Locate and repair the problem as described in 10K Sensors L630070. To clear the error message from the control after the sensor has been repaired, press the Item button.

The control is no longer able to read the mixing supply sensor due to a short circuit. In this case the control will operate the mixing valve at a fixed output as long as there is a mixing demand. Locate and repair the problem as described in 10K Sensors L630070. To clear the error message from the control after the sensor has been repaired, press the Item button.



The control is no longer able to read the mixing supply sensor due to a short circuit. In this case the control will operate the mixing valve at a fixed output as long as there is a mixing demand. Locate and repair the problem as described in 10K Sensors L630070. To clear the error message from the control after the sensor has been repaired, press the Item button.

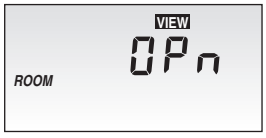
The control is no longer able to read the boiler sensor due to a short circuit. If the BOIL MIN adjustment is higher than 100°F (38°C), the control closes the Boiler contact when the mixing valve starts to operate. The boiler temperature is then limited by the operating aquastat. If the BOIL MIN adjustment is lower than 100°F (38°C), the control does not operate the Boiler contact. Locate and repair the problem as described in 10K Sensors L630070. To clear the error message from the control after the sensor has been repaired, press the Item button.



The control is no longer able to read the boiler sensor due to an open circuit. If the BOIL MIN adjustment is higher than 100°F (38°C), the control closes the Boiler contact when the mixing valve starts to operate. The boiler temperature is then limited by the operating aquastat. If the BOIL MIN adjustment is lower than 100°F (38°C), the control does not operate the Boiler contact. Locate and repair the problem as described in 10K Sensors L630070. If the boiler sensor is deliberately removed, the control must be powered down, and then powered back up. To clear the error message from the control after the sensor has been repaired, press the Item button.

European Version Only

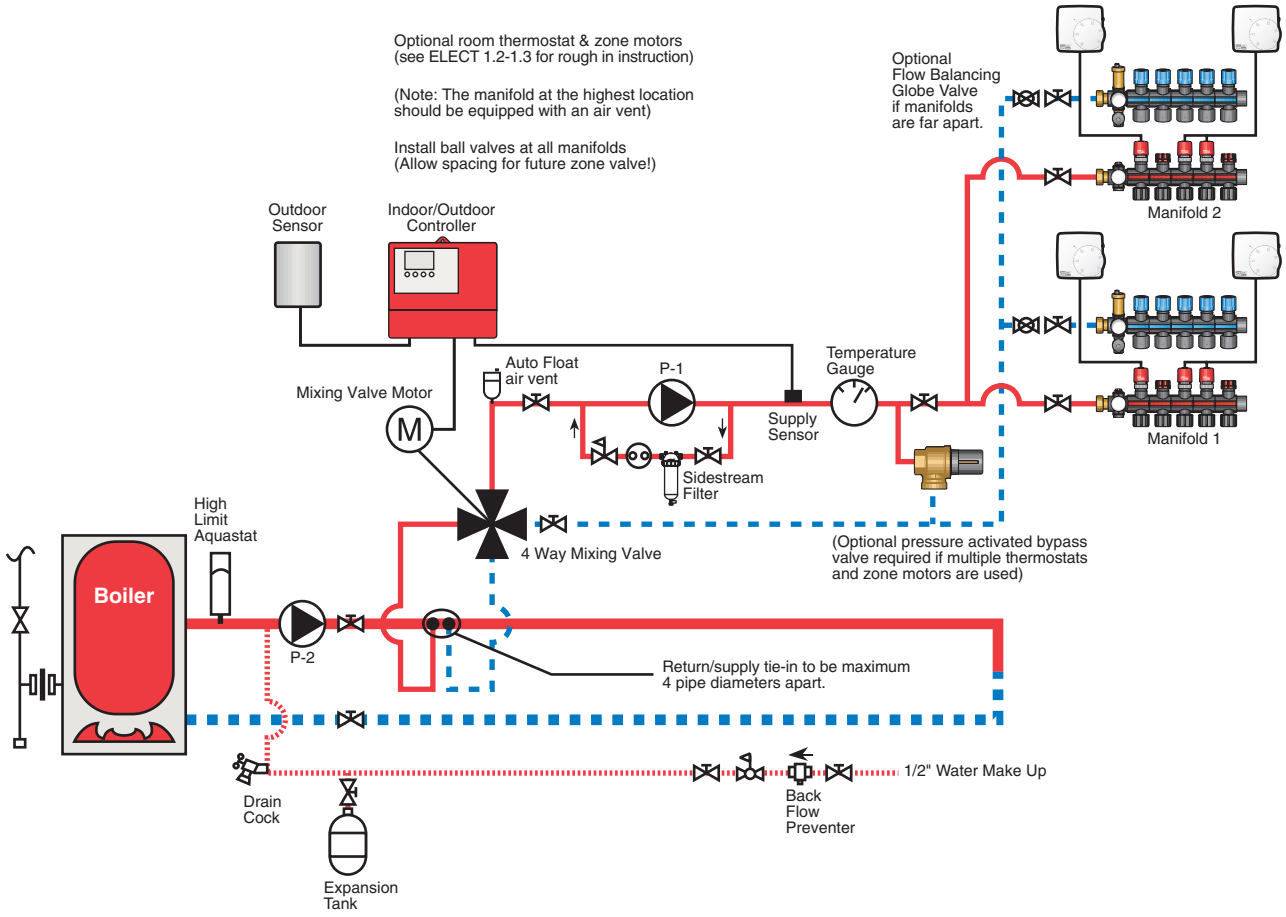
The control is no longer able to read the indoor sensor due to a short circuit. The control will continue to operate as if there was nothing connected to the indoor sensor input. Locate and repair the problem as described in 10K Sensors L630070. To clear the error message from the control after the sensor has been repaired, press the Item button.



The control is no longer able to read the indoor sensor due to an open circuit. The control will continue to operate as if there was nothing connected to the indoor sensor input. Locate and repair the problem as described in 10K Sensors L630070. If the indoor sensor is deliberately removed, the control must be powered down, and then powered back up. To clear the error message from the control after the sensor has been repaired, press the Item button.

1 Circuit (Fully Modulating Floor Heating)

Application: **4-Way Mixing**
Cast iron high mass boiler c/w 3 circuits
(one low temp. circuit - fully automatic modulating water temp for floor heating.)

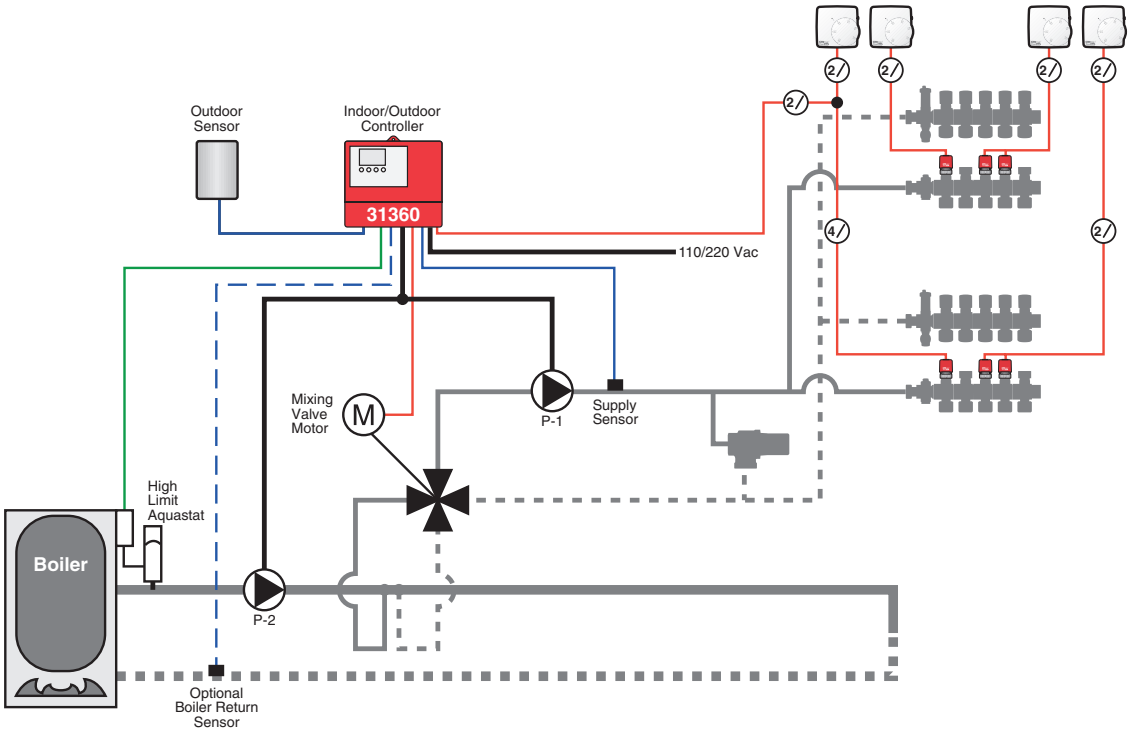


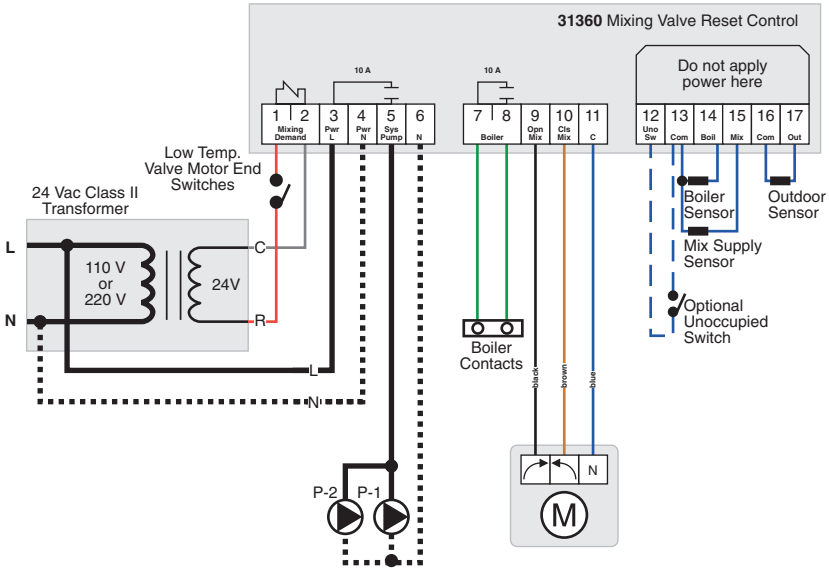
Note:
- Air vents, expansion tanks, pressure relief valves etc. For boiler as per local codes.
- Drawings are for HeatLink® suggested system layout only. User must determine if system layout will work for their particular application!
- Use isolation ball valves for all circuits and components.

Control Sequence:
- Indoor/outdoor control unit provides primary control for the HeatLink® radiant floor system. By correlating outside air temperature, supply water temp. & (optional) room temperature the control unit then activates the 4-way mixing valve motor which in turn modulates the supply water temperature to the floor. Secondary floor heating control is provided by individual room thermostats operating zone drive motors. For the forced air system the zone thermostats will open their respective zone valve and in turn activate the fan coil. (See ELECT 1.2 & 1.3) (For rough-in wiring instructions using StatLink® controls see ELECT 1.8 & 1.9)
- Boiler to fire either: 1) Independently on its own operating controls or 2) By activation through a relay of the indoor/outdoor controls. APPLICATION TO USE OPTION (____).
- Primary pump (P-2) to be wired through a relay in series with the thermostats of the fan coil as well as the indoor/outdoor controller. (Some boilers may have an internal relay which can be used to bring on primary pump on call for heat.) (see ELECT 5.3a & ELECT 5.3b)
- Pumps (P-1, P-2, P-3) to be wired directly with their own disconnect switches. System pumps P-1 & P-3 to operate either:
  1) Continually or 2) By activation through a relay of the indoor/outdoor plus StatLink® controls (see ELECT 5.3a & ELECT 5.3b).
  FOR THIS PARTICULAR APPLICATION P-1 AND P-3 TO OPERATE AS PER OPTION (_____).

1 Circuit (Fully Modulating Floor Heating)

Application: **Automatic indoor/outdoor controller activating a 4-way mixing valve motor, boiler, plus primary (P-2) and system (P-1) pumps. (Optional secondary zone control can be provided with individual room thermostats)**





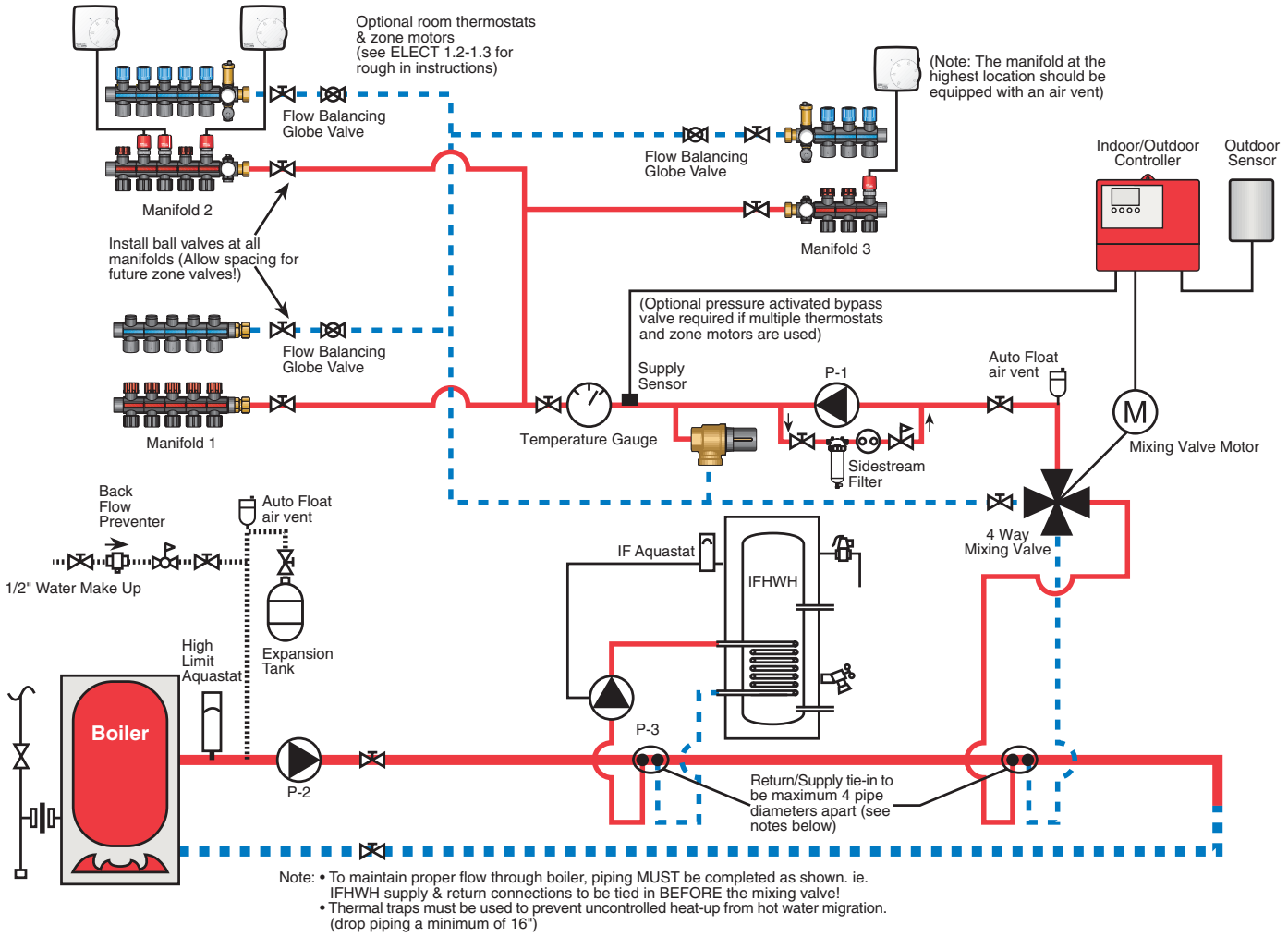
Note:

- Drawings are for HeatLink® suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink® schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink® electrical schematics.
- All wiring as per applicable electrical codes!

2 Circuit (Fully Modulating Fl. Ht. plus indirect Fired Storage Tank)

Application: **4-Way Mixing**

Cast iron high mass boiler c/w 2 circuits
(one low temp. circuit - fully automatic modulating water temp.)
(one high temp. circuit for domestic indirect fired hot water heater)



Note:

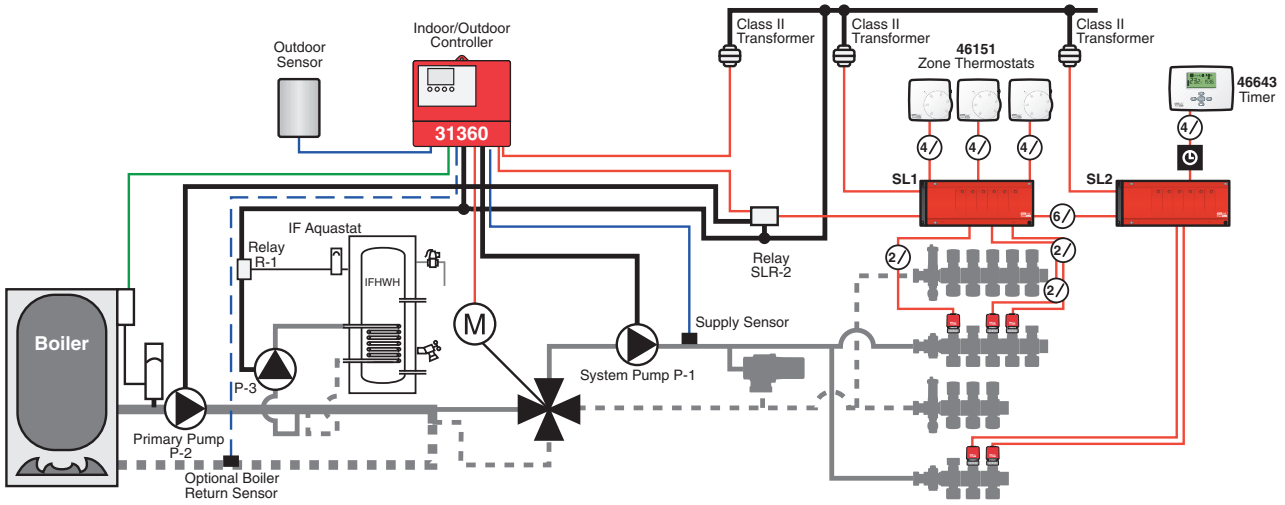
- Air vents, expansion tanks, pressure relief valves etc. For boiler as per local codes.
- Drawings are for HeatLink® suggested system layout only. User must determine if system layout will work for their particular application!
- Use isolation ball valves for all circuits and components.

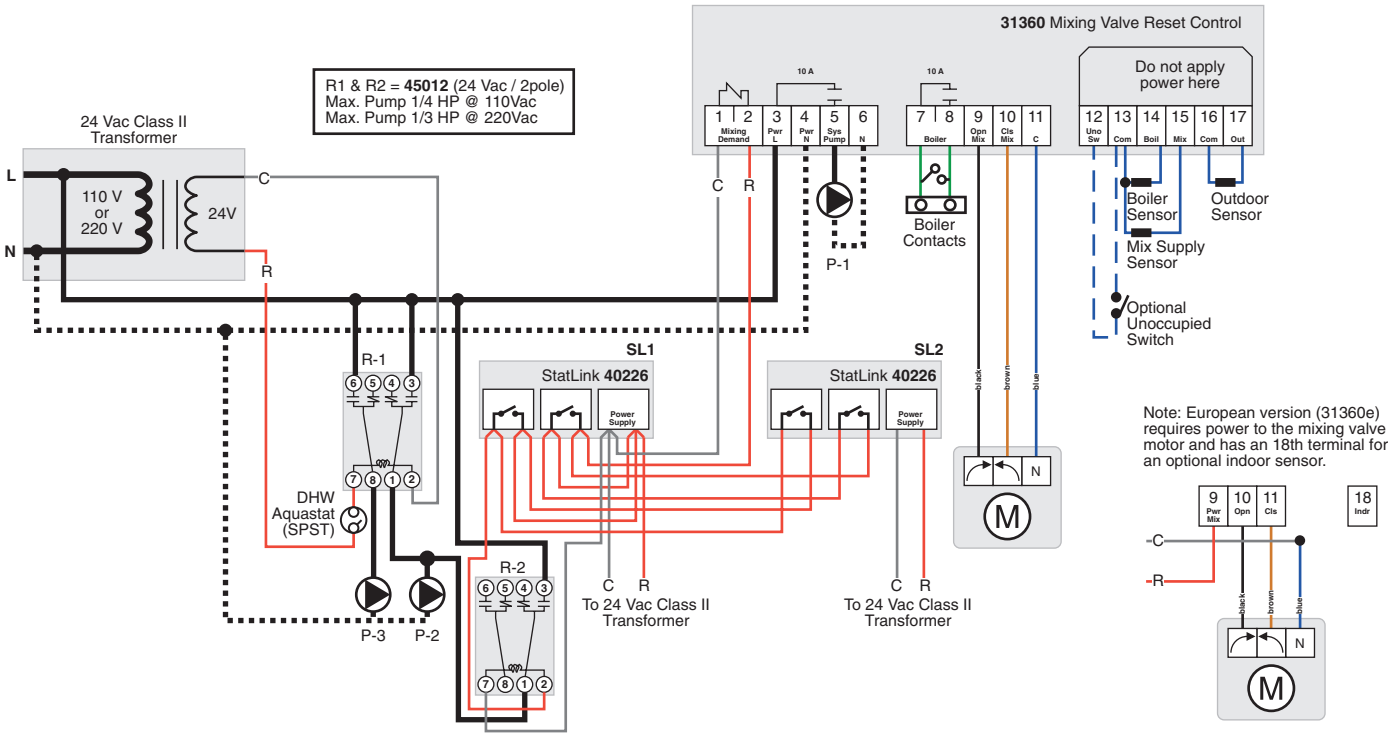
Control Sequence:

- Indoor/outdoor control unit provides primary control for the HeatLink® radiant floor system. By correlating outside air temperature, supply water temp. & (Optional) room temperature the control unit then activates the 4-way mixing valve motor which in turn modulates the supply water temperature to the floor. Secondary control is provided by individual room thermostats operating zone drive motors.
  (See elect 1.2 & 1.3) (For rough-in wiring instructions using StatLink® controls see elect 1.8 & 1.9)
- Boiler to fire either: 1) independently on its own operating controls or 2) by activation through a relay of the indoor/outdoor controls. Application to use option (____).
- Primary pump (P-2) to be wired in series with water heater aquastat (24v wiring) and zone valve (see elect 5.2 For schematic). Aquastat to be set at a maximum of 130°f to prevent scalding.
- Pumps (P-1, P-2) to be wired directly with their own disconnect switches. System pump P-1 to operate either: 1) continually or 2) by activation through a relay of the indoor/outdoor controller (see elect 5.2)
  For this particular application P-1 & P-2 to operate as per option (_____).

Indoor/Outdoor controller c/w Optional Standard Thermostats

Application: **StatLink® controls activating individual manifold module zone motors and automatic mixing valve reset controller which in turn activates boiler plus primary (P-2) and system (P-1) pumps. DHW tank aquastat opens DHW valve and activates boiler plus primary (P-2) and system (P-3) pumps.**





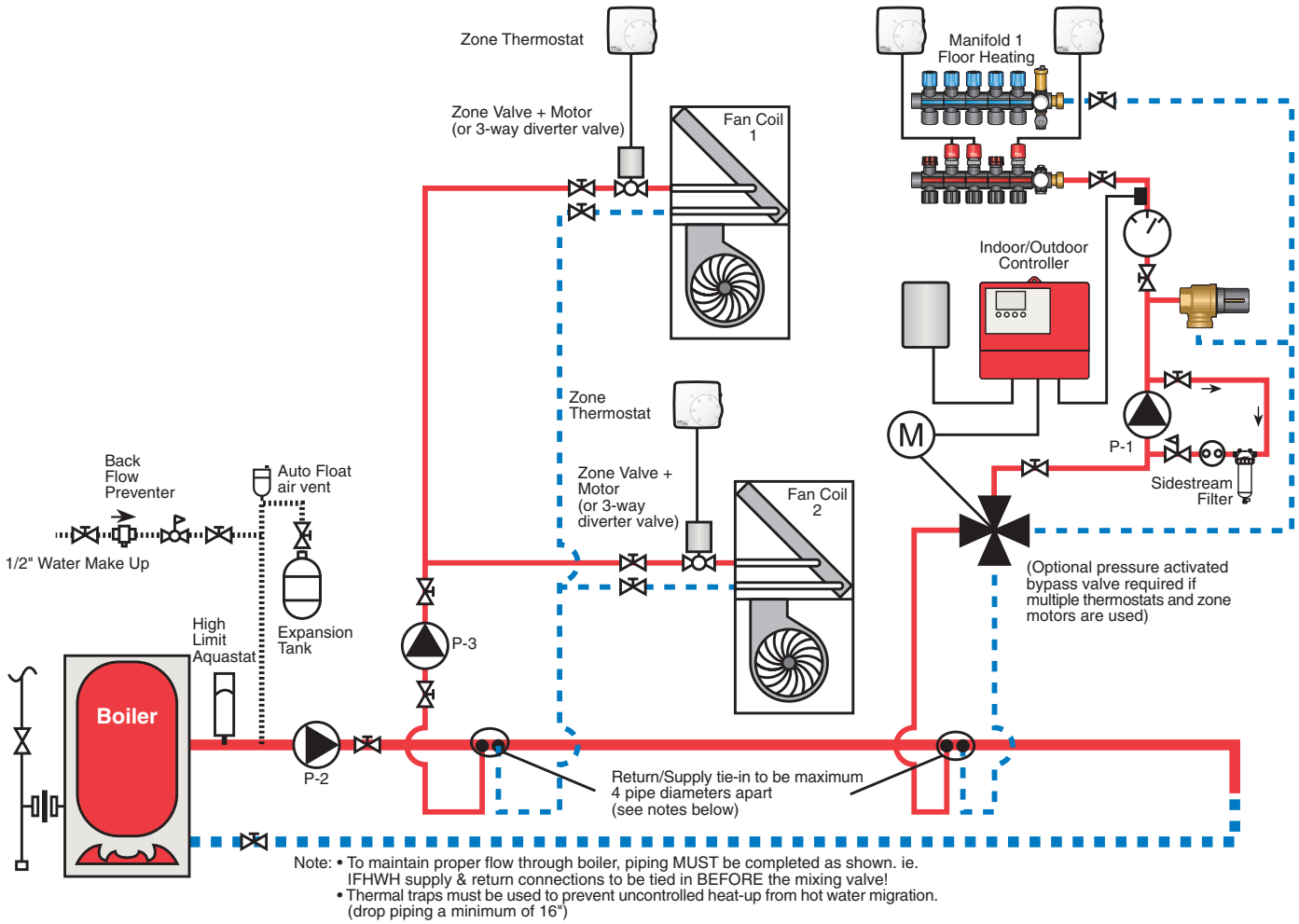
Note:

- Drawings are for HeatLink® suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink® schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink® electrical schematics.
- All wiring as per applicable electrical codes!

3 Circuit (Modulating Floor Heating plus High Temp. Circuits)

Application: **4-Way Mixing**

Cast iron high mass boiler c/w 3 circuits
(one low temp. circuit - fully automatic modulating water temp for floor heating.)



Note:

- Air vents, expansion tanks, pressure relief valves etc. For boiler as per local codes.
- Drawings are for HeatLink® suggested system layout only. User must determine if system layout will work for their particular application!
- Use isolation ball valves for all circuits and components.

Control Sequence:

- Indoor/outdoor control unit provides primary control for the HeatLink® radiant floor system. By correlating outside air temperature, supply water temp. & (optional) room temperature the control unit then activates the 4-way mixing valve motor which in turn modulates the supply water temperature to the floor. Secondary floor heating control is provided by individual room thermostats operating zone drive motors. For the forced air system the zone thermostats will open their respective zone valve and in turn activate the fan coil. (See ELECT 1.2 & 1.3) (For rough-in wiring instructions using StatLink® controls see ELECT 1.8 & 1.9)
- Boiler to fire either: 1) Independently on its own operating controls or 2) By activation through a relay of the indoor/outdoor controls. APPLICATION TO USE OPTION (____).
- Primary pump (P-2) to be wired through a relay in series with the thermostats of the fan coil as well as the indoor/outdoor controller. (Some boilers may have an internal relay which can be used to bring on primary pump on call for heat.) (see ELECT 5.3a & ELECT 5.3b)
- Pumps (P-1, P-2, P-3) to be wired directly with their own disconnect switches. System pumps P-1 & P-3 to operate either:
  1) Continually or 2) By activation through a relay of the indoor/outdoor plus StatLink® controls (see ELECT 5.3a & ELECT 5.3b).
  FOR THIS PARTICULAR APPLICATION P-1 AND P-3 TO OPERATE AS PER OPTION (_____).

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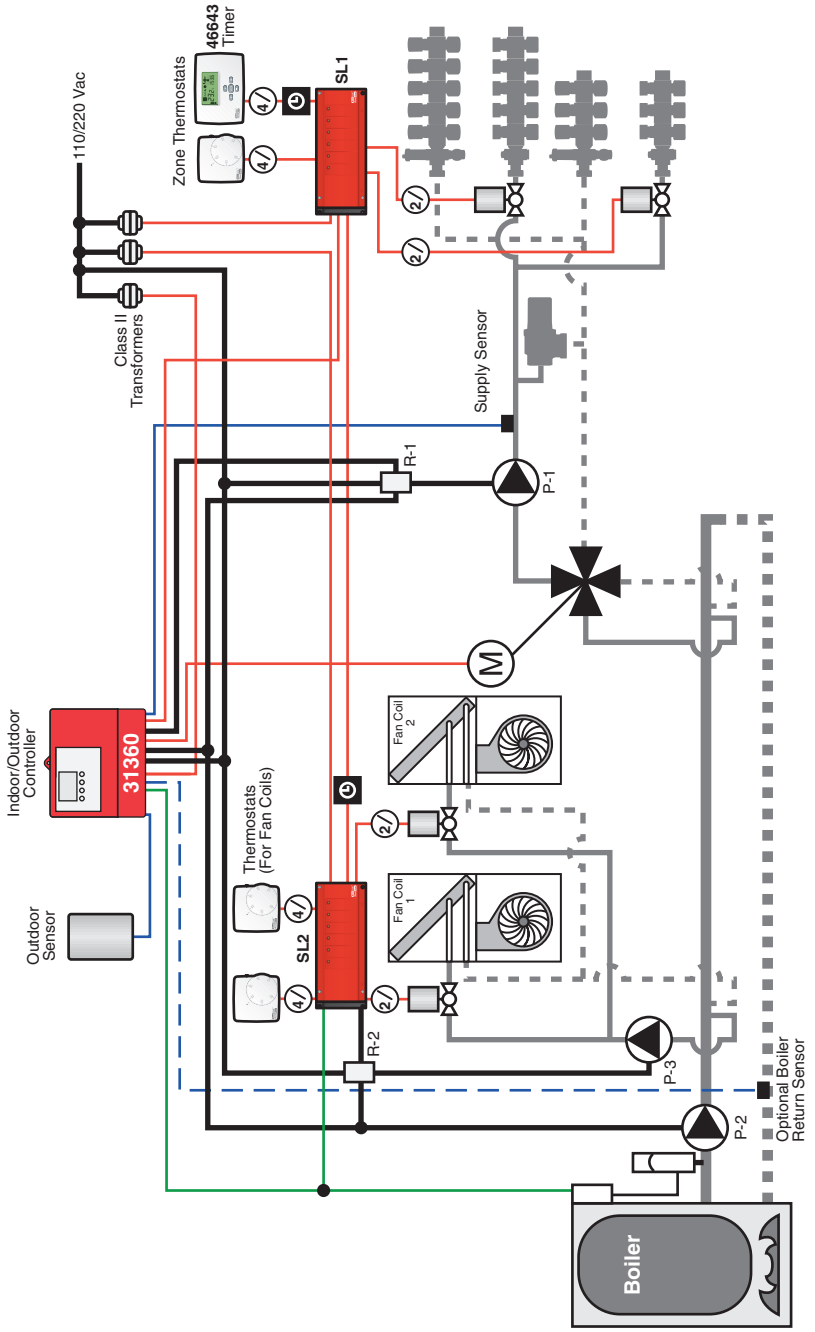
StatLink® Controls Activating Low & High Temp. Circuits

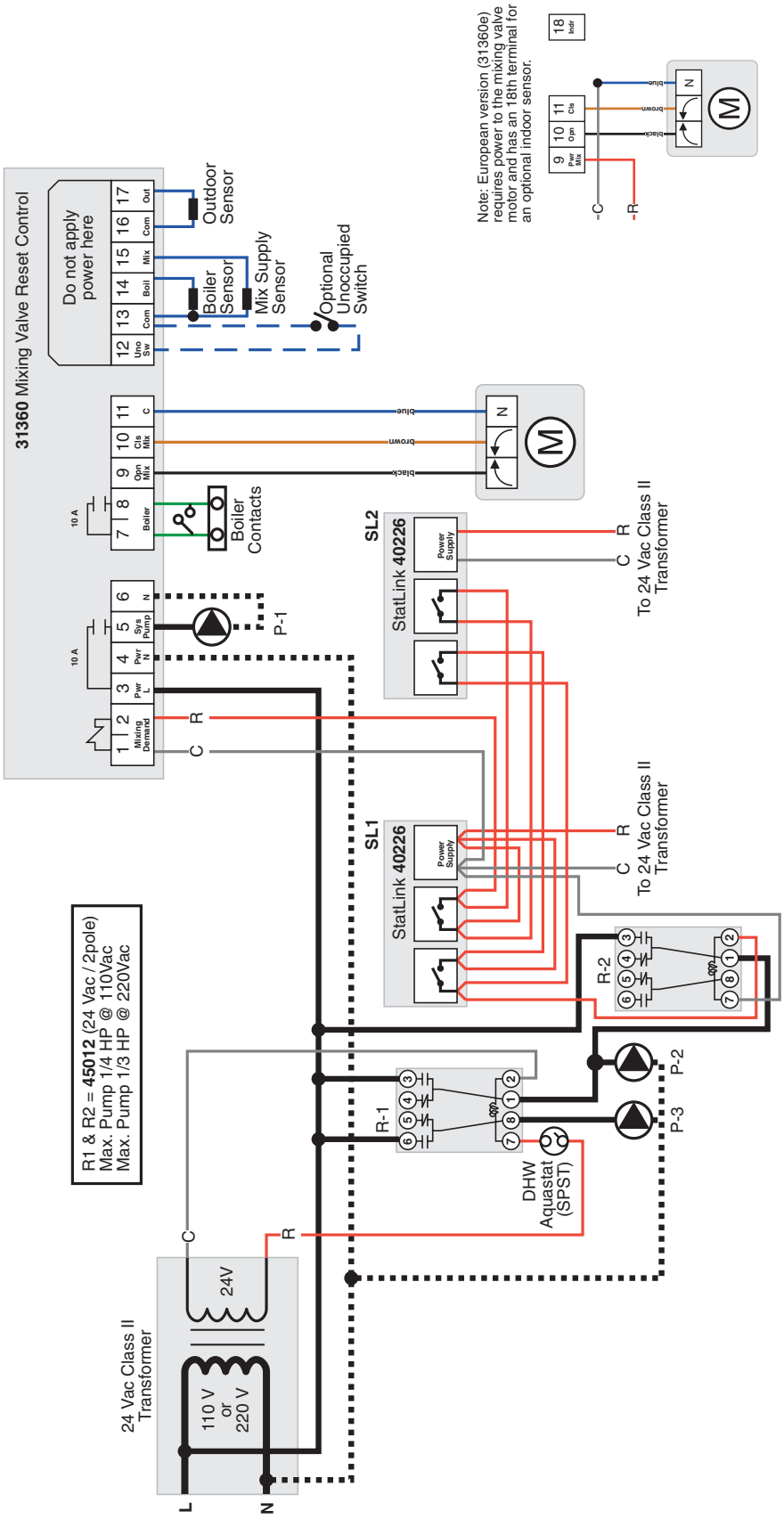
Application: **StatLink® controls activating individual zone motors for both primary and secondary circuit loops. For the secondary low temp. circuit, StatLink® activates the indoor/outdoor control, which in turn activates the boiler plus the primary (P-2) and system (P-1) pump. For the high temp. primary circuit StatLink® controls activate the boiler and the primary (P-2) and system (P-3) pump.**



Note:

- Drawings are for HeatLink® suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink® schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink® electrical schematics.
- All wiring as per applicable electrical codes!

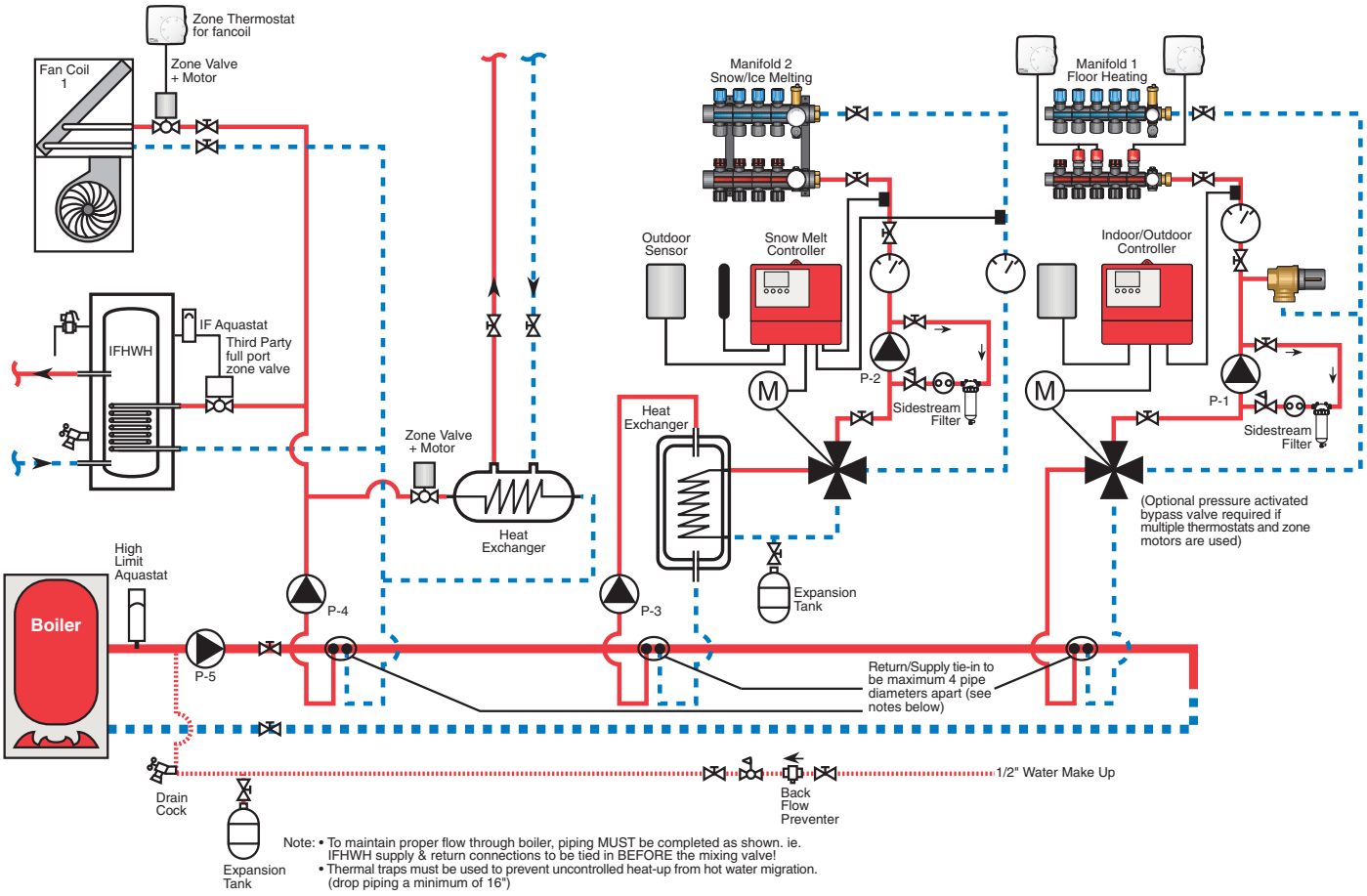
StatLink® Controls Activating Low & High Temp. Circuits



6 Circuit (Mod. Fl. Ht. & Snowmelt. plus Additional Htg. Components)

Application: **4-Way Mixing**

Cast iron high mass boiler and 6 circuits
(two low temp. circuit - fully automatic modulating water temp. for floor heating and snow melting)
(four high temp. circuits; snowmelt & pool/hot tub heat exchangers, fan coil, and indirect fired hot water heater)



Note:

- Air vents, expansion tanks, pressure relief valves etc. For boiler as per local codes.
- Drawings are for HeatLink® suggested system layout only. User must determine if system layout will work for their particular application!
- Use isolation ball valves for all circuits and components.

Control Sequence:

- Indoor/outdoor plus snowmelt control units provide the correct water temperature for the HeatLink® radiant floor heating and snowmelting systems. By correlating outside air temperature, secondary supply & return water temp., primary return water temp. & room temp. the control units then activate their respective 4-way mixing valve motors which in turn modulates the supply water temperature to the floors/slabs. (See ELECT 1.8 - 1.9 & 1.12-1.13 for wiring specifications). Secondary floor heating control is provided by individual room thermostats operating zone drive motors. For the forced air system the zone thermostat will open the zone valve and in turn activate the fan coil.
- Boiler to fire either: 1) Independently on its own operating controls or 2) By activation through a relay of the controllers. APPLICATION TO USE OPTION (____).
- Primary pumps (P-4 & P-5) to be wired through a relay in series with the thermostats or aquastats of the fan coil, heat exchanger or indirect fired hot water heater and their respective zone valves. Zone valves to be controlled by an aquastat or zone thermostat. Snowmelt heat exchanger primary pump (P-2) to be controlled by a relay of the snowmelt controller. (See ELECT 5.4a & ELECT 5.4b)
- All Pumps to be wired with their own disconnect switches. System pumps P-1 and P-2 to operate either: 1) Continually or 2) By activation through a relay of their respective controllers (See ELECT 5.4a and ELECT 5.4b)
  FOR THIS PARTICULAR APPLICATION P-1 & P-2 TO OPERATE AS PER OPTION (_____).

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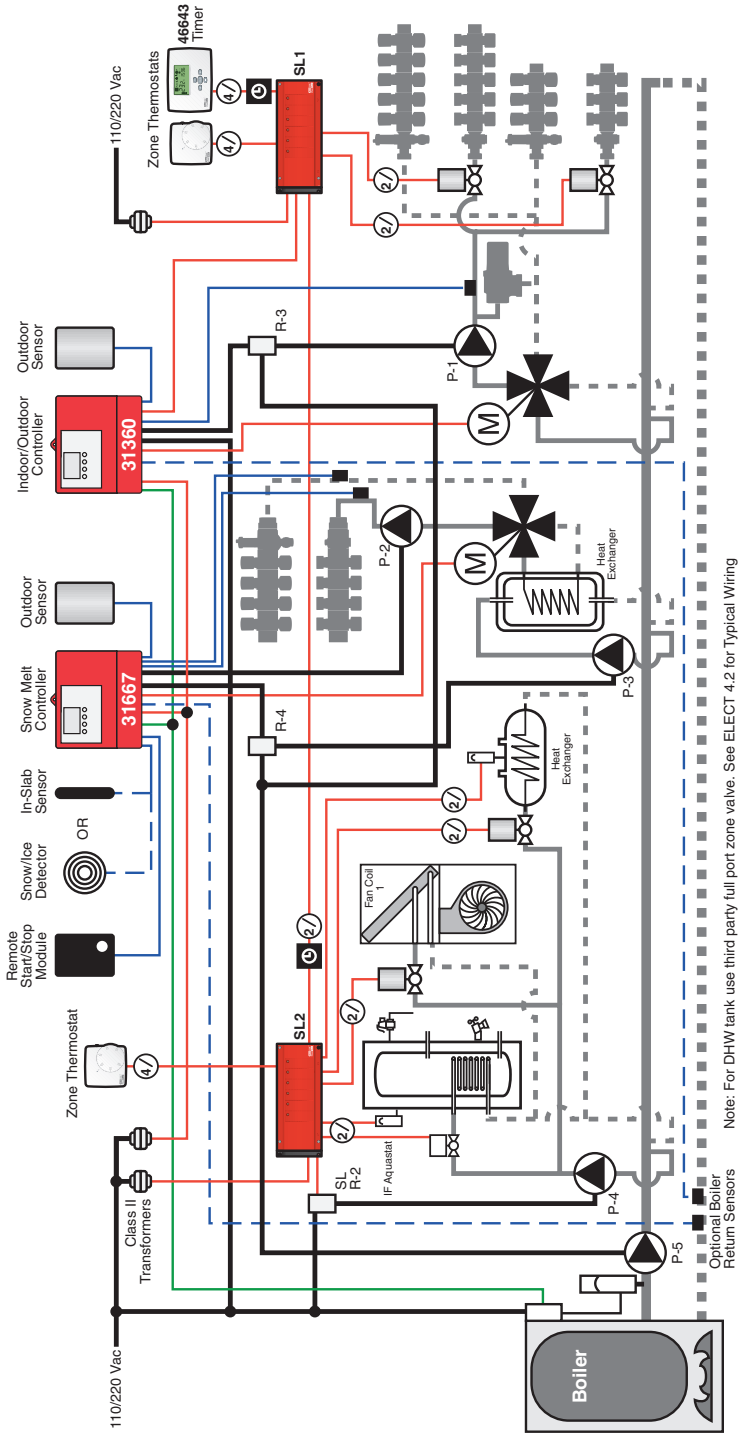
HeatLink

StatLink® Controls Activating Circuits plus Snowmelt. Controller

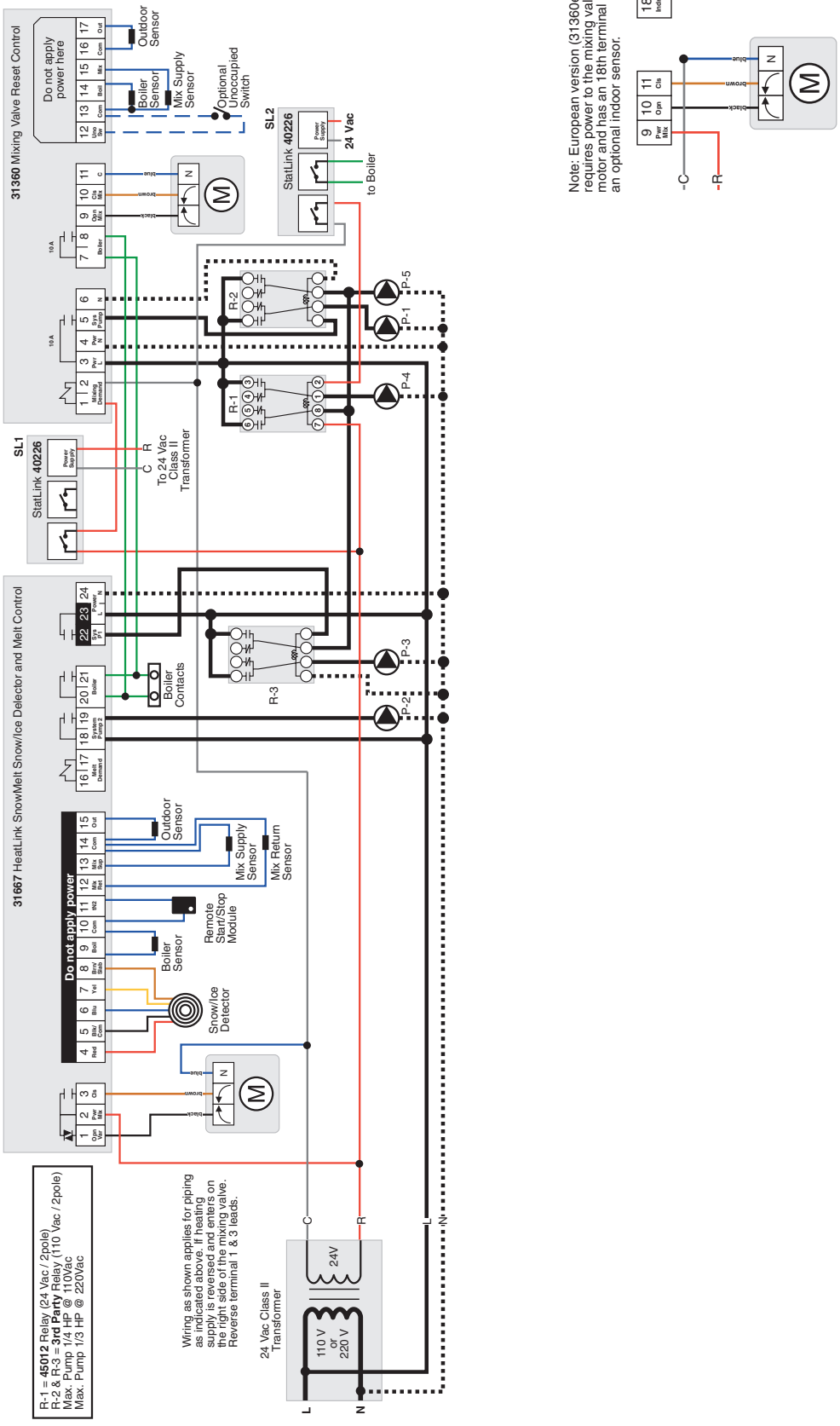
Application: **StatLink® controls activate the mixing valve control for the low temp. circuit which in turn activates the boiler and primary (P-5) and system (P-1) pumps. Snowmelt controller activates the boiler and primary (P-5), heat exchanger (P-2) and system (P-3) pumps. For high temp. fan coil/DHW/pool circuit StatLink® controls activate the boiler, primary (P-5) and system (P-4) pumps.**



Note:

- Drawings are for HeatLink® suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink® schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink® electrical schematics.
- All wiring as per applicable electrical codes!

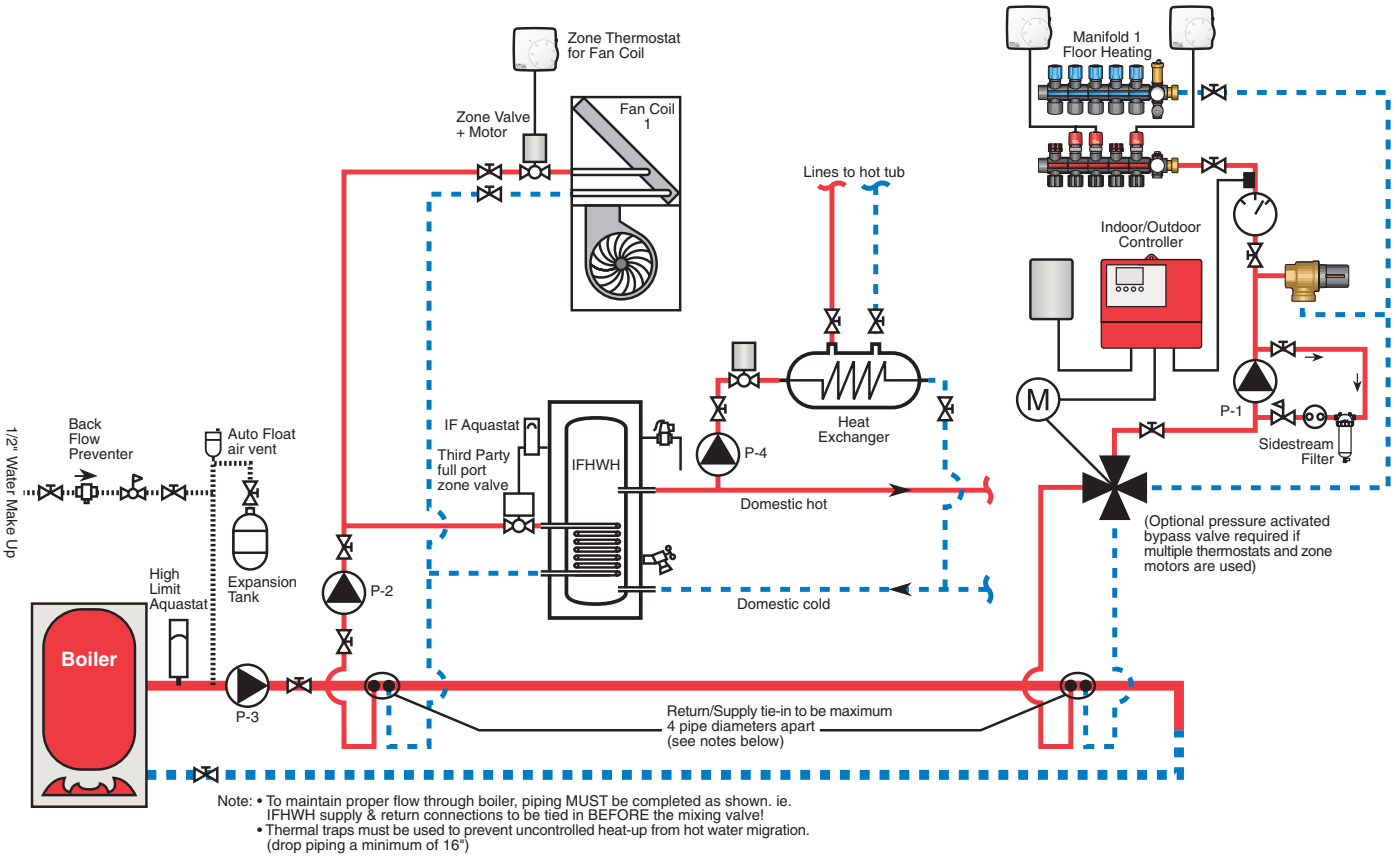
StatLink® Controls Activating Circuits plus SnowMelt. Controller



4 Circuit (Mod. Fl. Ht. plus Fan Coil, IFHWH & Secondary Ht. Exchanger)

Application: **4-Way Mixing**

Cast iron high mass boiler and 4 circuits
(one low temp. circuit - fully automatic modulating water temp. for floor heating)
(two high temp. circuits off boiler primary loop; fan coil, indirect fired hot water heater)
(one high temp. circuit off indirect fired hot water heater domestic loop for hot tub heat exchanger)



Note:

- Air vents, expansion tanks, pressure relief valves etc. For boiler as per local codes.
- Drawings are for HeatLink® suggested system layout only. User must determine if system layout will work for their particular application!
- Use isolation ball valves for all circuits and components.

Control Sequence:

- Indoor/outdoor control unit provides primary control for the HeatLink® radiant floor system. By correlating outside air temperature, supply water temp. & (optional) room temperature the control unit then activates the 4-way mixing valve motor which in turn modulates the supply water temperature to the floor. Secondary floor heating control is provided by individual room thermostats operating zone drive motors. For the forced air system the zone thermostat will open the zone valve and in turn activate the fan coil. (See ELECT 1.2 & 1.3) (For rough-in wiring instructions using StatLink® controls see ELECT 1.6 & 1.7)
- Boiler to fire either: 1) Independently on its own operating controls or 2) By activation through a relay of the indoor/outdoor controls. APPLICATION TO USE OPTION (____).
- Primary pump (P-3) to be wired through a relay in series with the thermostats of the fan coil as well as the indoor/outdoor controller. (Some boilers may have an internal relay which can be used to bring on primary pump on call for heat.) (see ELECT 5.5a & ELECT 5.5b)
- Pumps (P-1 to P-4) to be wired directly with their own disconnect switches. System pumps P-1 & P-2 to operate either: 1) Continually or 2) By activation through a relay of the indoor/outdoor plus StatLink® controls (see ELECT 5.5a & ELECT 5.5b). FOR THIS PARTICULAR APPLICATION P-1 & P-2 TO OPERATE AS PER OPTION (_____).
- Room Temperature unit (R.T.U. unit placed in one floor heating zone/area only) compensates for average internal heat gains or losses in the building due to solar radiation, many occupants, additional heat sources (i.e. fireplace etc.) or air infiltration.
- Hot tub heat exchanger (P-4; bronze or stainless steel pump required) to be wired through a relay in series with the aquastat of the hot tub zone valve (see ELECT 5.5a & ELECT 5.5b).

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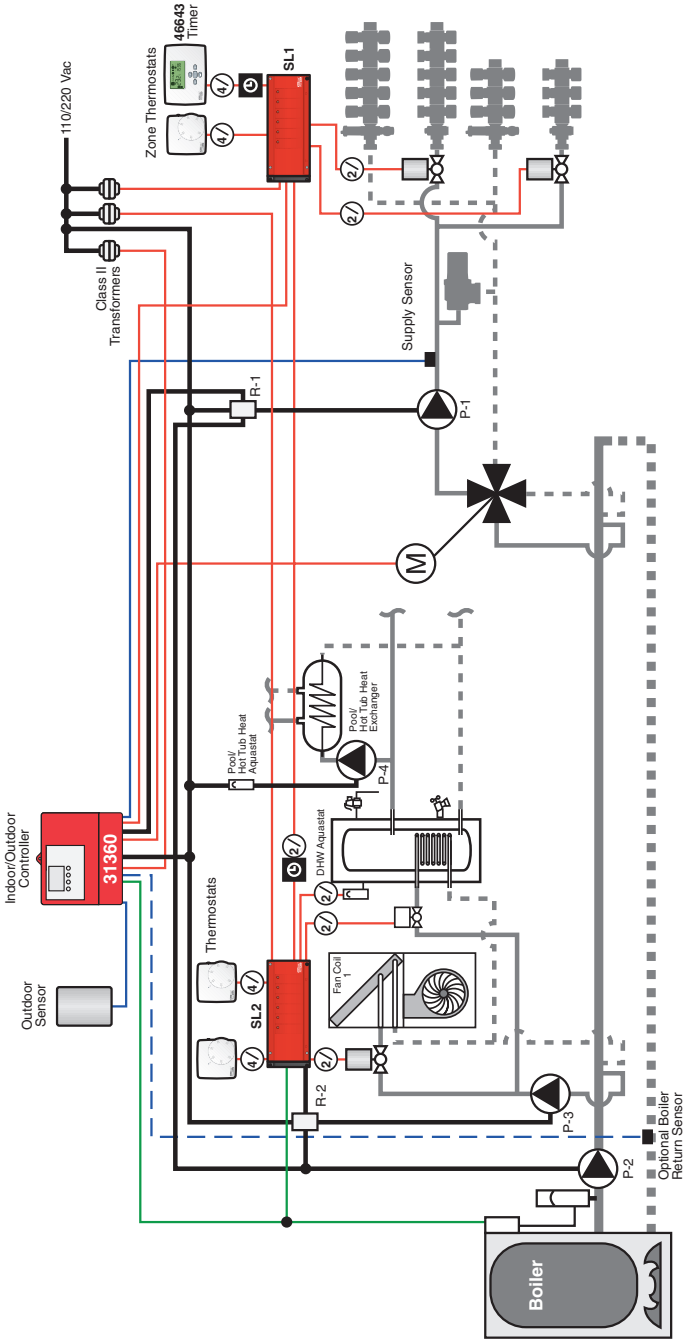
StatLink® Activating Low Temp. plus Independent High Temp. Circuits

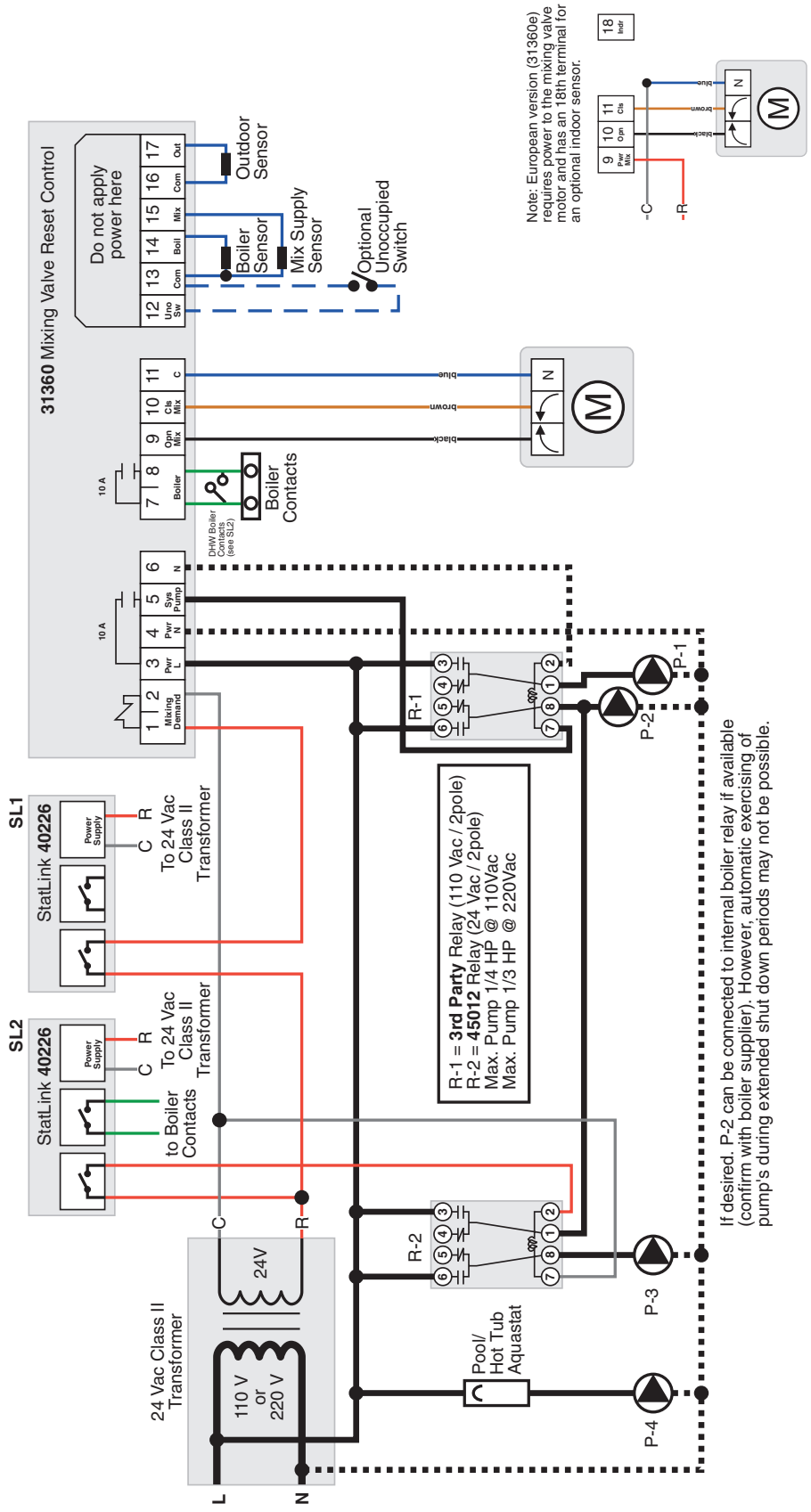
Application: **StatLink® controls activating individual zone motors for both primary and secondary circuit loops. For the secondary low temp. circuit, StatLink® activates the indoor/outdoor control, which in turn activates the boiler plus the primary (P-3) and system (P-1, P-2) pumps. For the high temp. primary circuit StatLink® controls activate the boiler and the primary (P-3) and system (P-2) pump. Medium temperature secondary circuit off heat exchanger from DHW tank is controlled by StatLink® which activates system pump (P-4) (no tie-in to boiler required).**



Note:

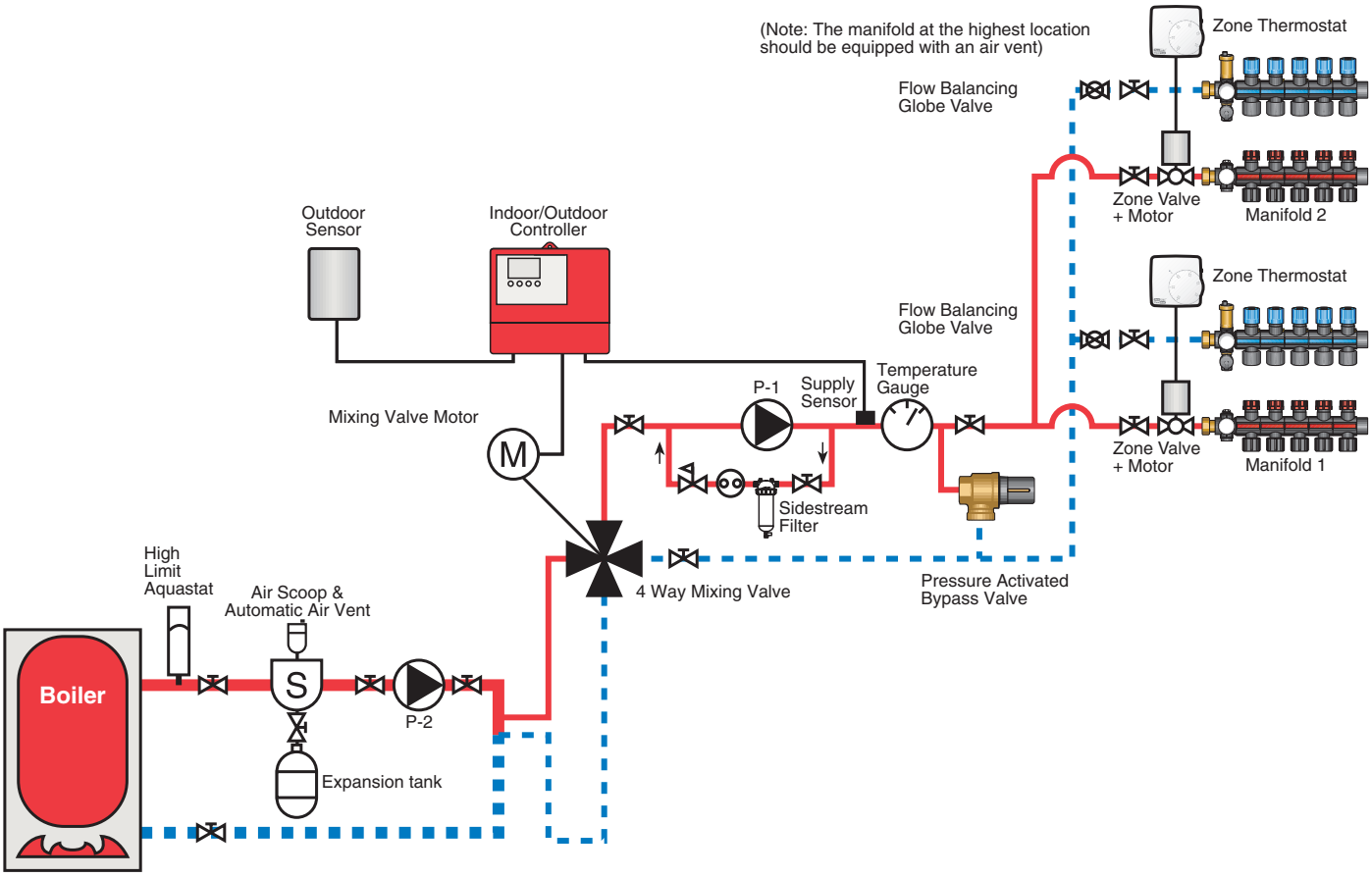
- Drawings are for HeatLink® suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink® schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink® electrical schematics.
- All wiring as per applicable electrical codes!

StatLink® Activating Low Temp. plus Independent High Temp. Circuits



Multiple Low Temperature Circuits

Application: **4-Way Mixing**
Cast iron high mass boiler c/w multiple low temperature circuits
(Commercial application for multiple low temp. circuits - fully automatic modulating water temp. for floor heating)

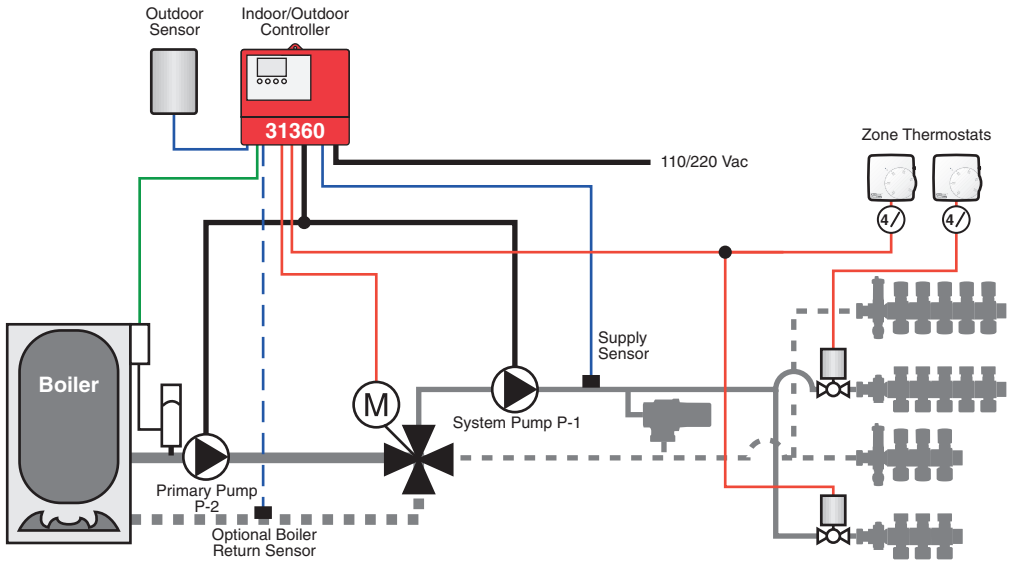


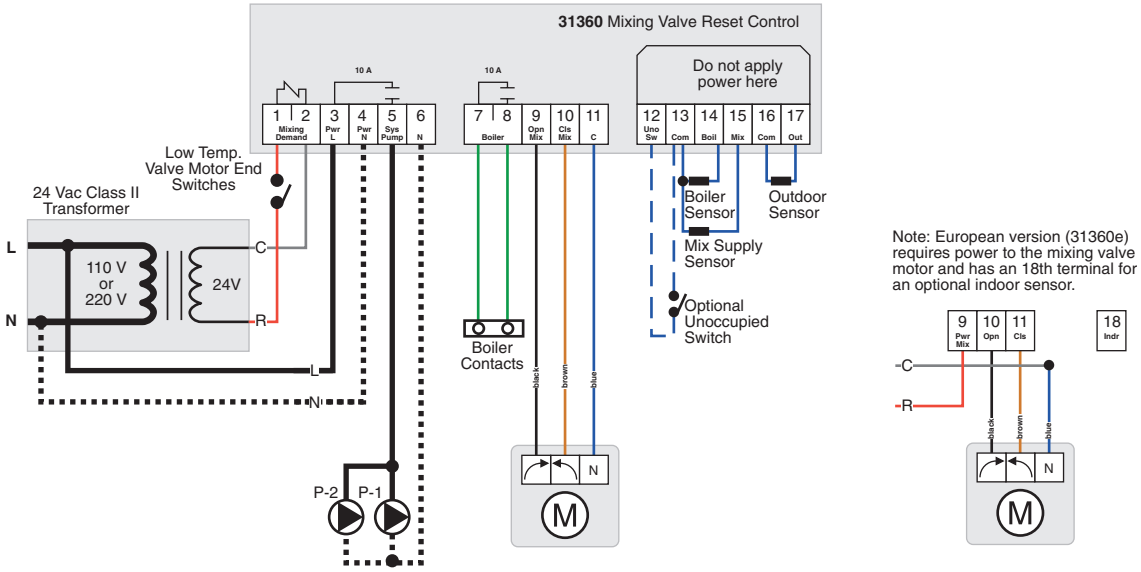
Note:
- Air vents, expansion tanks, pressure relief valves etc. For boiler as per local codes.
- Drawings are for HeatLink® suggested system layout only. User must determine if system layout will work for their particular application!
- Use isolation ball valves for all circuits and components.

Control Sequence:
- Indoor/outdoor control unit provides the correct water temperature for the HeatLink® radiant floor system. By correlating outside air temperature, supply water temp. & room temperature the control unit then activates the 4-way mixing valve motor which in turn modulates the supply water temperature to the floor. Zone thermostats wired in series through their respective zone valves and motors to provide secondary zone control. Primary control is provided by the indoor/outdoor control unit.
  (See ELECT 1.2 & 1.3) (For rough-in wiring instructions using StatLink® controls see ELECT 1.8 & 1.9)
- Boiler to fire either: 1) Independently on its own operating controls or 2) By activation through a relay of the indoor/outdoor controls. APPLICATION TO USE OPTION (____).
- Primary pump (P-2) to be wired through a relay which will be activated by the indoor/outdoor control (see ELECT 5.6).
- Pumps (P-1, P-2) to be wired directly with their own disconnect switches. System pump P-1 to operate either: 1) Continually or 2) By activation through a relay of the indoor/outdoor controller (see ELECT 5.6)
  FOR THIS PARTICULAR APPLICATION P-1 TO OPERATE AS PER OPTION (_____).
- Optional piping bypass or a pressure activated bypass valve for P-1 is required if StatLink® controls or 3-way divertor valves are not used!

Indoor/Outdoor Controller c/w Multiple Standard Room Thermostats

Application: **Automatic indoor/outdoor controller activating a 4-way mixing valve motor, boiler, plus primary (P-2) and system (P-1) pumps. Secondary zone control provided by individual room/zone thermostats.**
(eg. typical multi-unit apartment application)





Note:
- Drawings are for HeatLink® suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink® schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink® electrical schematics.
- All wiring as per applicable electrical codes!

Technical Data (North American version)

HeatLink® Mixing Valve Reset Control Stk# 31360 Floating Action

Literature :	L631360 (this booklet), L630070, TN13
Control:	Microprocessor PID control; This is not a safety (limit) control.
Packaged weight:	3.1 lb. (1400 g), Enclosure A, red PVC plastic
Dimensions:	6-5/8" H x 7-9/16" W x 2-13/16" D (170 x 193 x 72 mm)
Approvals:	CSA C US, meets ICES & FCC regulations for EMI/RFI.
Ambient conditions:	Indoor use only, 32 to 102°F (0 to 39°C), < 90% RH noncondensing.
Power supply:	120 V ±10% 50/60 Hz 1300 VA
Floating Output:	24 V (ac) 0.34 A 8 VA
Relays:	240 V (ac) 10 A 1/3 hp, pilot duty 240 VA
Demand:	20 to 260 V (ac) 2VA
Sensors:	NTC thermistor, 10 kΩ @ 77 °F (25°C ±0.2°C) ß=3892
Included:	HeatLink® Outdoor Sensor Stk# 30070 and 2 of HeatLink® Universal Sensor Stk# 30071.
Optional:	Stk#'s: 30031, 30076, 30077.

The installer must ensure that this control and its wiring are isolated and/or shielded from strong sources of electromagnetic noise. Conversely, this Class B digital apparatus complies with Part 15 of the FCC Rules and meets all requirements of the Canadian Interference-Causing Equipment Regulations. However, if this control does cause harmful interference to radio or television reception, which is determined by turning the control off and on, the user is encouraged to try to correct the interference by reorienting or relocating the receiving antenna, relocating the receiver with respect to this control, and/or connecting the control to a different circuit from that to which the receiver is connected.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Caution The nonmetallic enclosure does not provide grounding between conduit connections. Use grounding type bushings and jumper wires.

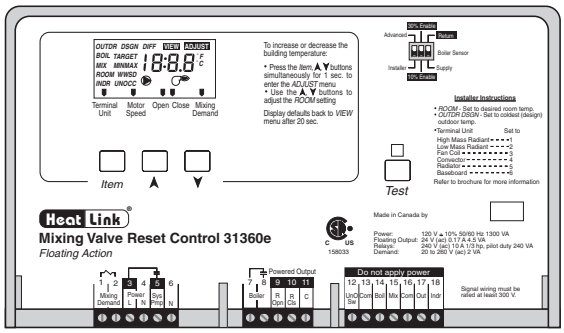
Attention Un boîtier nonmétallique n'assure pas la continuité électrique des conduits. Utiliser des manchons ou des fils de accord spécialement conçus pour la mise á la terre.

Technical Data (European version)

HeatLink® Mixing Valve Reset Control Stk# 31360 Floating Action

Literature :	L631360 (this booklet), L630070, TN13
Control:	Microprocessor PID control; This is not a safety (limit) control.
Packaged weight:	2.8 lb. (1250 g), Enclosure A, red PVC plastic
Dimensions:	6-5/8" H x 7-9/16" W x 2-13/16" D (170 x 193 x 72 mm)
Approvals:	CE approved, meets ICES & FCC regulations for EMI/FI
Ambient conditions:	Indoor use only, 32 to 102°F (0 to 39°C), < 90% RH noncondensing. Altitude <2000 m, Installation Category II, Pollution Category II.
Power supply:	230 V ±10% 50 Hz 2300 VA
Relays:	230 V (ac) 10 A 1/3 hp, pilot duty 240 VA
Mix Demand:	20 to 260 V (ac) 2 VA
Sensors:	NTC thermistor, 10 kΩ @ 77 °F (25°C ±0.2°C) ß=3892
Included:	HeatLink® Outdoor Sensor Stk# 30070 and 2 of HeatLink® Universal Sensor Stk# 30071.
Optional:	Stk#'s: 30031, 30076, 30077.

Caution The nonmetallic enclosure does not provide grounding between conduit connections. Use grounding type bushings and jumper wires.



European version

Limited Warranty and Product Return Procedure

HeatLink® warrants to the original purchaser each HeatLink® product against defects in workmanship and materials when the product is installed and used in compliance with HeatLink's instructions. This limited warranty covers the cost of parts and labor provided by HeatLink® to correct defects in the materials and/or workmanship. Returned products that are fully operational are not considered warranty cases. HeatLink® also does not cover parts and labor to remove, transport or reinstall a defective product. HeatLink® will not be liable for any damage other than repair or replacement of the defective part or parts and such repairs or replacement shall be deemed to be the sole remedy from HeatLink®. This warranty shall not apply to any defects caused or repairs required as a result of unreasonable or negligent use, neglect, accident, improper installation, or unauthorized repair or alterations. In case of defect, malfunction or failure to conform to warranty, HeatLink® will for a warranty period of 18 months from the date of invoice to the original purchaser or 12 months from the date of installation of the product, whichever occurs first, repair, exchange or give credit for the defective product. Any express or implied warranty which the purchaser may have, including merchantability and fitness for a particular purpose, shall not extend beyond 18 months from date of invoice or 12 months from the date of installation of the product, which ever occurs first.

Replacements: HeatLink® can send replacement product if requested. All replacements are invoiced. Any possible credit for the replacement will only be issued once the replaced product has been returned to HeatLink®.

Product Return Procedure: Product that are believed to have failed must be returned to HeatLink®. When agreed to by HeatLink®. The installer or other qualified service person must, at the owners expense, determine which component has failed. The product must be returned complete with all of its components (sensors, base, etc.) Products must be returned together with the proof of purchase to the original purchaser who then returns the product to HeatLink® After receiving a returned goods authorization (RGA) number from HeatLink®.

Please include the following information with the product: The full address of the original purchaser, the RGA number and description of the problem.

For returns in Canada and the U.S.A., please have product returned to HeatLink Group Inc., 4603E 13th Street N.E., Calgary, Alberta, Canada, T2E 6M3, Ph. 1-800-661-5332.

For returns in Ireland, please have product returned to HeatLink Ireland, Cappincur, Tullamore, Co. Offaly., Ph. (0506) 4062.

- If returned during the warranty period and the product is defective, HeatLink® will issue full credit for the returned product less cost of missing parts.
- If returned during the warranty period and the product is fully operational, HeatLink® will return the product to the original purchaser for a testing cost of $40.00 plus shipping.
- If returned during the warranty period and the product is not damaged and is fully operational, HeatLink® can take back the product for a return charge of 50% of the product's net value. This request has to be specified otherwise the product will be returned with a testing cost of $40.00 plus shipping.
- If returned after the warranty period and the product needs repair, HeatLink® will repair and return the product. Repair and shipping costs will be invoiced. HeatLink's repair costs are calculated at $40.00 / hour plus the cost of parts. If the repair costs will be more than $60.00 a repair estimate will be sent to the original purchaser.

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Manufactured & Distributed by HeatLink Group Inc.
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Fax: 1-866-450-1155

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Fax: 852-25359271

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Free Phone: 1800-311338

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Fax: (52) 3300-4406

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Toll Free: 1-800-661-5332
Fax: 1-800-869-6098

www.heatlinkgroup.com