ACCESSORY

# Versatronik®10.WB1

Part Number:

KWE 704 057

Vi 7416 058

Application:

Viessmann Vitodens 100-W, WB1A

Viessmann Vitodens 100-W, WB1B

## Installation and Operating Manual

Accessory device for control
of space heating pump
and DHW pump

## Cautionary Statement

Please observe the safety instructions and read through this manual carefully before commissioning the equipment.


C US LR 102874

**IMPORTANT**

Read and save these instructions for future reference

# Table of Contents

# Caution, Warning and Trademark Information

## About these instructions

Take note of all symbols and notations intended to draw attention to potential hazards or important product information. These include “WARNING”, “CAUTION” and “IMPORTANT”. See below.

**WARNING**

Indicates an imminently hazardous situation which, if not avoided, could result in death, serious injury or substantial product/property damage.

→ *Warnings draw your attention to the presence of potential hazards or important product information.*

**CAUTION**

Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or product/property damage.

→ *Cautions draw your attention to the presence of potential hazards or important product information.*

**CAUTION**

Static sensitive components may be damaged by improper handling or work within the control. Ensure all possible measures are taken to eliminate build-up of static electricity.

**IMPORTANT**

→ *Helpful hints for installation, operation or maintenance which pertains to the product.*

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# Caution, Warning and Trademark Information

## Important Regulatory and Installation Requirements

### Codes

The installation of this unit must be in accordance with local codes.

All electrical wiring is to be done in accordance with the latest edition of CSA C22,1 Part 1 and/ or local codes. In the U.S. use the National Electrical Code ANSI/NFPA 70.

The installing contractor must comply with the Standard of Controls and Safety Devices for Automatically fired Boilers, ANSI/ ASME CSD-1 where required by the authority having jurisdiction.

### Working on the equipment

The installation, adjustment, service and maintenance of this unit must be done by a licensed professional heating contractor or persons who are qualified and experienced in the installation, service and maintenance of similar products. There are no user serviceable parts on this control.

### Power supply

Install power supply in accordance with the regulations of the authorities having jurisdiction or in absence of such requirements, in accordance with National Codes.

It is recommended to install a disconnect switch to the 120VAC power supply outside of the boiler room. The installer must provide maximum 15A over-current protection for the 120VAC power supply (fuse or circuit breaker).

→ *Please carefully read this manual prior to attempting installation. Any warranty is null and void if these instructions are not followed.*

→ *The completeness and functionality of field-supplied electrical controls and components must be verified by those installing the device.*

**WARNING**

More than one live circuit. See wiring diagram in this manual. Turn off power supply to control and damper/blower before servicing. Contact with live electrical components can result in serious injury or death.

**CAUTION**

This control in not a temperature limit safety control.
Where required, a separate mechanical and/or electrical safety device has to be installed. The DHW tank aquastat setting must not exceed 55°C/131°F.

**This is not a safety device**

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# Caution, Warning and Trademark Information

## Information

## Warranty Conditions

If the system is not installed, commissioned, serviced and repaired properly, it will render the manufacturer's warranty null and void.



## Important Text

***!*** Important information is highlighted with an exclamation mark.

⚠ This attention symbol indicates dangerous situations.

## Installation

Information regarding the installation and commissioning of this equipment is found in following sections.

## Trademark Information

®Versatronik is a registered trademark of K-W Electronic Service Inc.

† All other products listed are trademarks of their respective companies.

®Viessmann and Vitodens are trademarks of Viessmann Werke GmbH & Co KG registered in the United States and other countries.
Please visit: **www.viessmann.ca**
**www.viessmann.us**

## Power Connection Regulations

Please note the connection conditions specified by your local electrical power supply company and authorities having jurisdiction.
Your heating control system may be installed and serviced only by appropriately authorized specialists.

⚠ If the system is not installed properly, there is a risk of fatal or severe personal injury.

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## Control Installation





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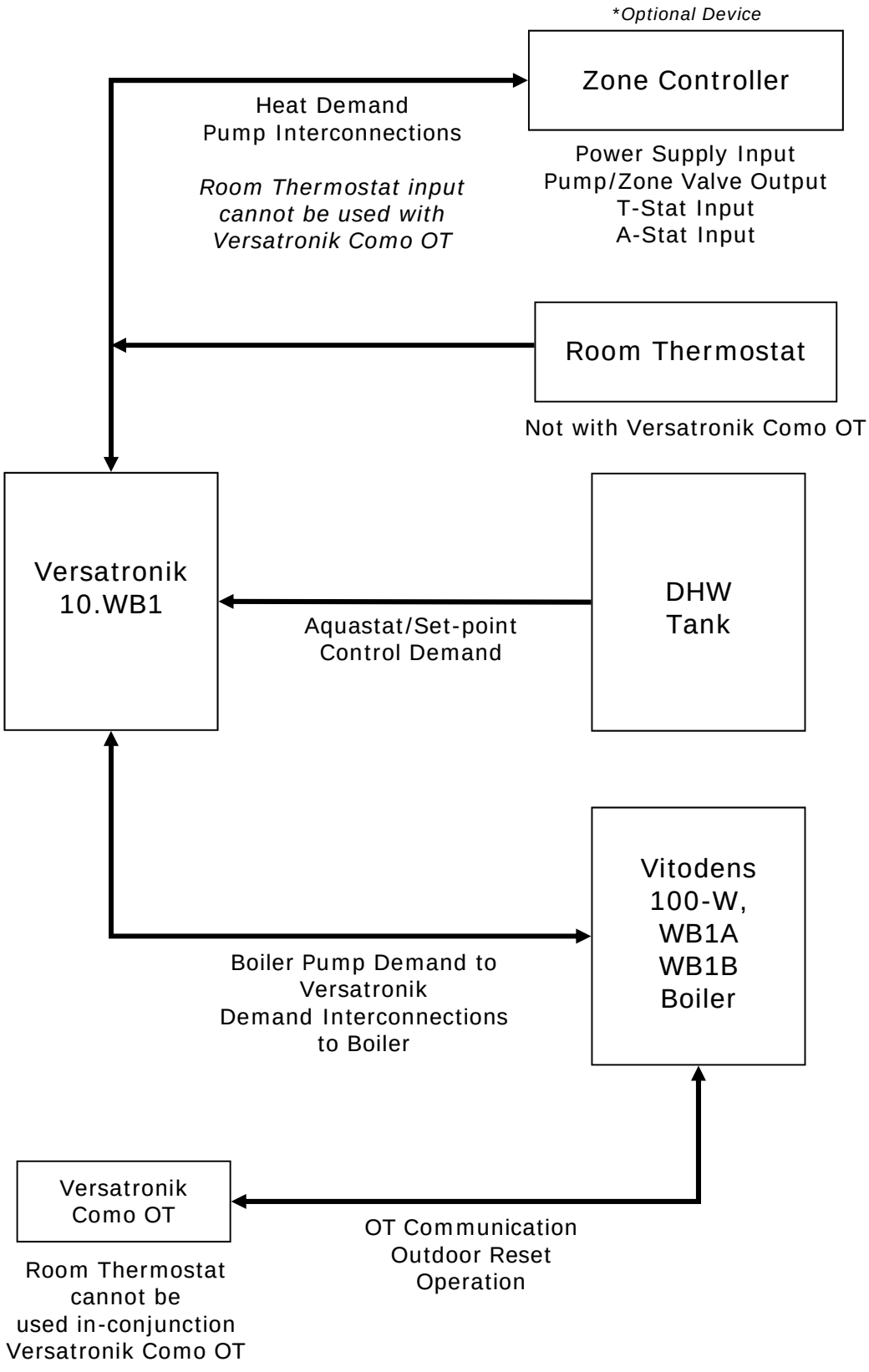
# Control Installation

## Interconnection Overview

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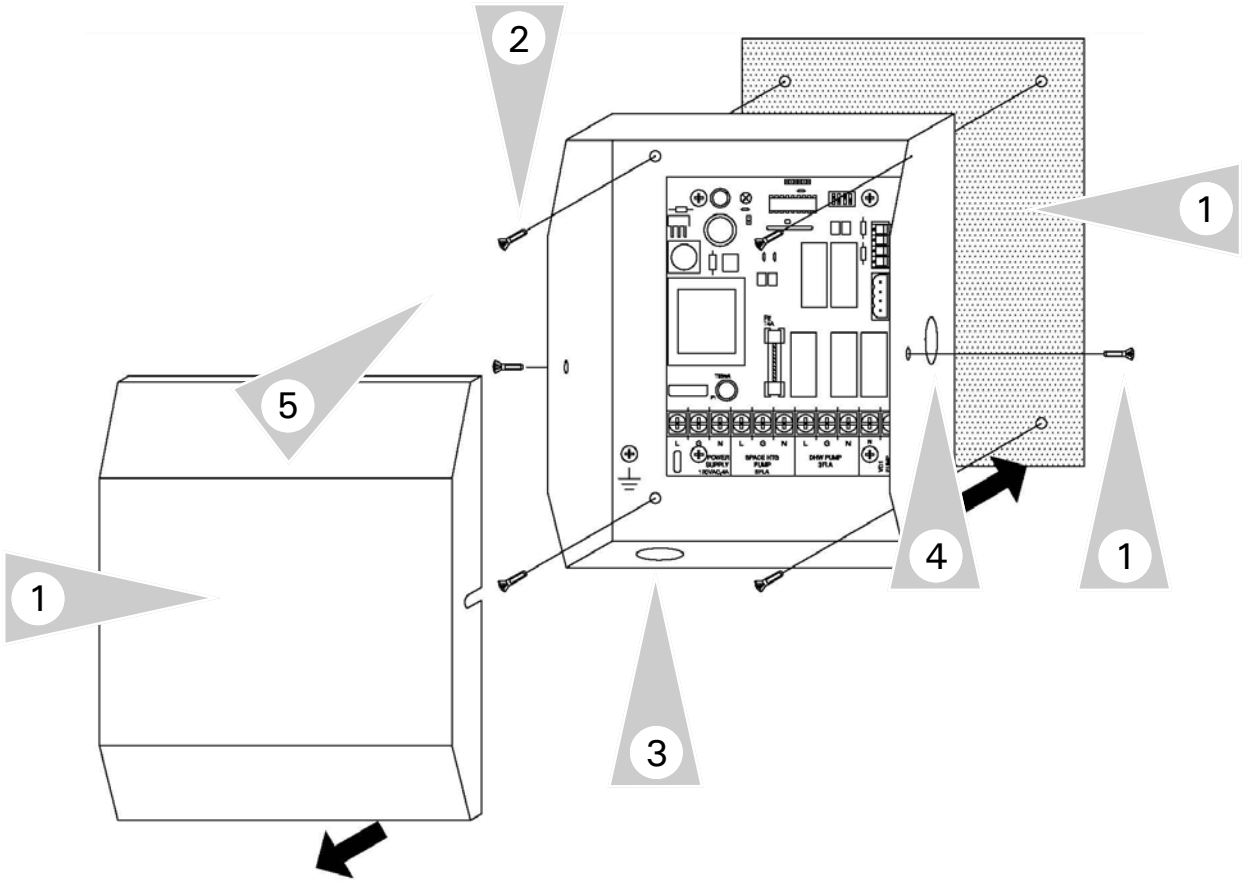
## Mounting Versatronik 10.WB1 Device






### Wiring Steps

1. Mount Versatronik 10.WB1 device on an adjacent wall. Remove cover by loosening the two screws on either side of base to release the cover.
2. Fasten base to wall using field-supplied screws/fasteners.
3. Remove knockout and installed wire strain relief or box connector. Removal of remaining knockouts is required to make further connections.
4. Remove knockout on right side for low voltage connections to right side of PCB. Plug-in style connectors are supplied to make connections.
5. Once all of the 120VAC and low voltage connections are complete and verified, reinstall the cover from Step 1.

**IMPORTANT**

Ensure that all applicable electrical codes are followed during the installation of the Versatronik product.

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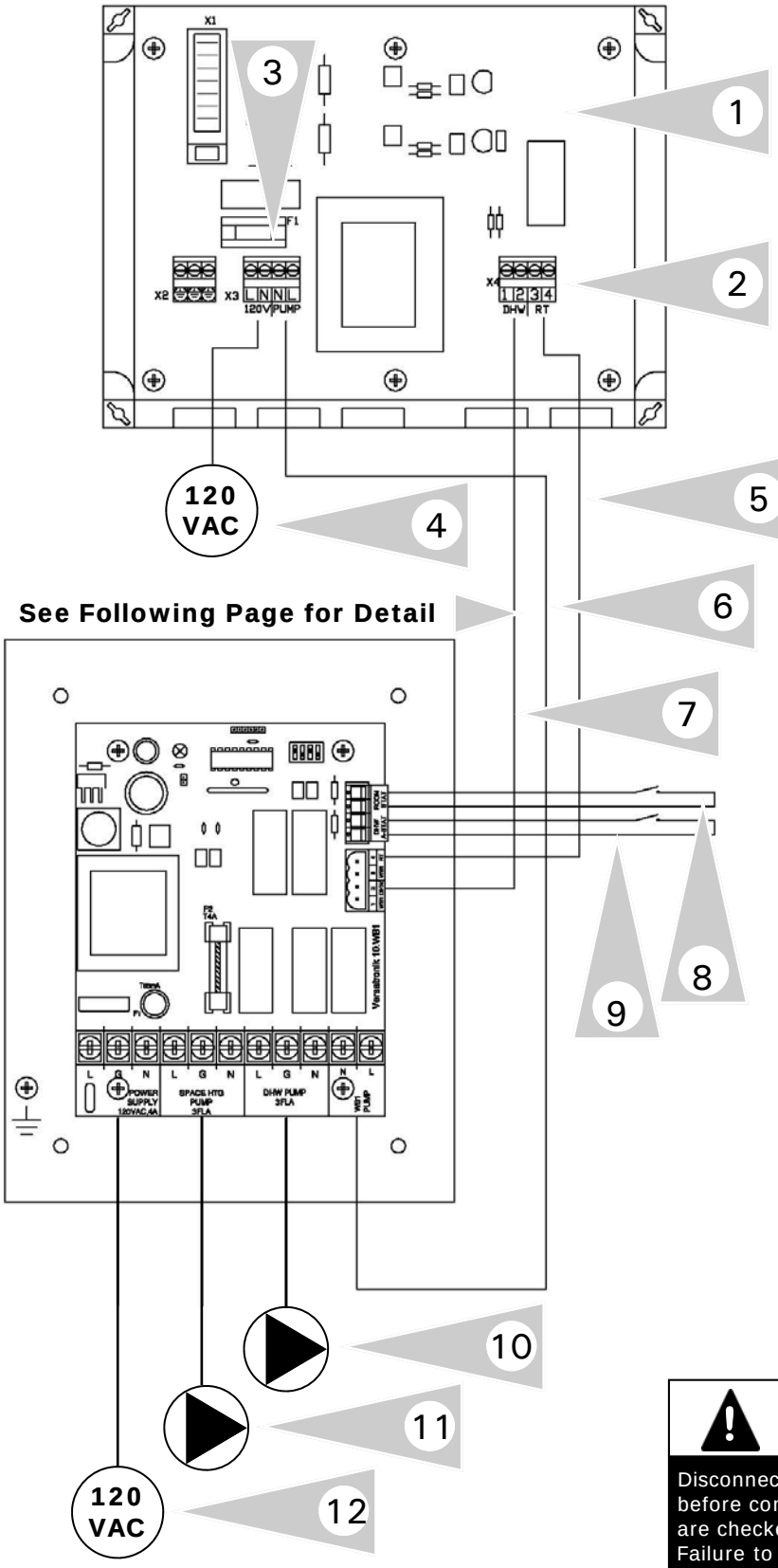
# Control Installation

## Generic Wiring Overview Versatronik 10.WB1 to Vitodens 100-W, WB1A and B




1. Vitodens Pump Module inside of boiler.
2. Terminal strip in in pump module to connect boiler to Versatronik 10.WB1.
3. Terminals used to connect 120VAC power supply to boiler and 120VAC space heating pump output to Versatronik 10.WB1.
4. Refer to boiler manual for 120VAC power supply input.
5. Interconnection wires from X4.3 and X4.4 of the Vitodens power pump module to terminals 3 and 4 of the “WB1 RT” connection in the Versatronik 10.WB1 (low voltage).
6. Interconnection wires from N and L terminals (line voltage) of the Vitodens pump module boiler pump output to the input connection on the Versatronik PCB marked WB1 pump N and L.
7. Interconnection wires from X4.1 and X4.2 of the Vitodens pump module to “WB1 DHW” connection in the Versatronik 10.WB1 (low voltage).
8. Room thermostat connection for call for heat. Must be a potential free contact. No voltage to be applied. Not used in conjunction with Versatronik Como OT.
9. DHW call for heat. Must be a potential-free contact. No voltage to be applied. Call can be from a set-point control or a DHW tank aquastat.
10. DHW pump connection 120VAC, 3FLA output.
11. Space heating pump connection 120VAC, 3FLA output
12. Incoming 120VAC power supply to Versatronik 10.WB1.

**IMPORTANT**

Disconnect boiler and Versatronik from 120VAC power supply before commencing any work. Ensure all wiring connections are checked before applying power to the Versatronik. Failure to do so may cause premature failure of the pump module. Please also note the pump output from the Vitodens boiler to the Versatronik shall not be live.

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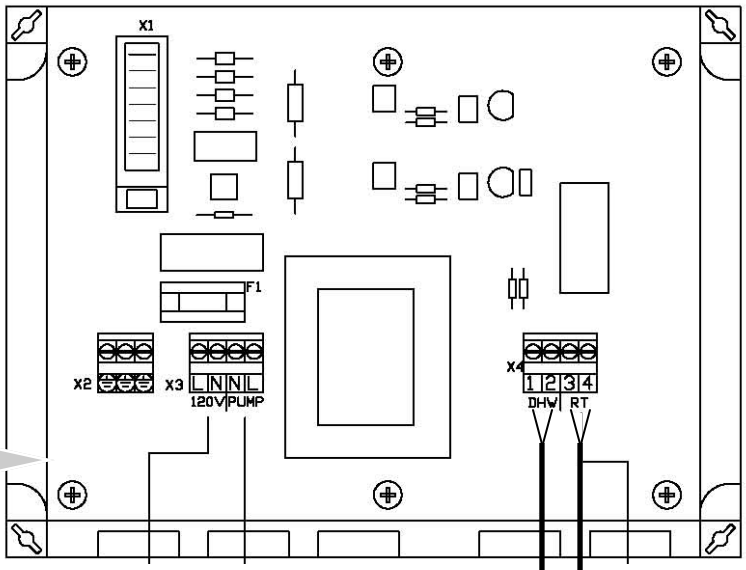
# Control Installation

## Detail Wiring Versatronik 10.WB1 to Vitodens 100-W, WB1A and B

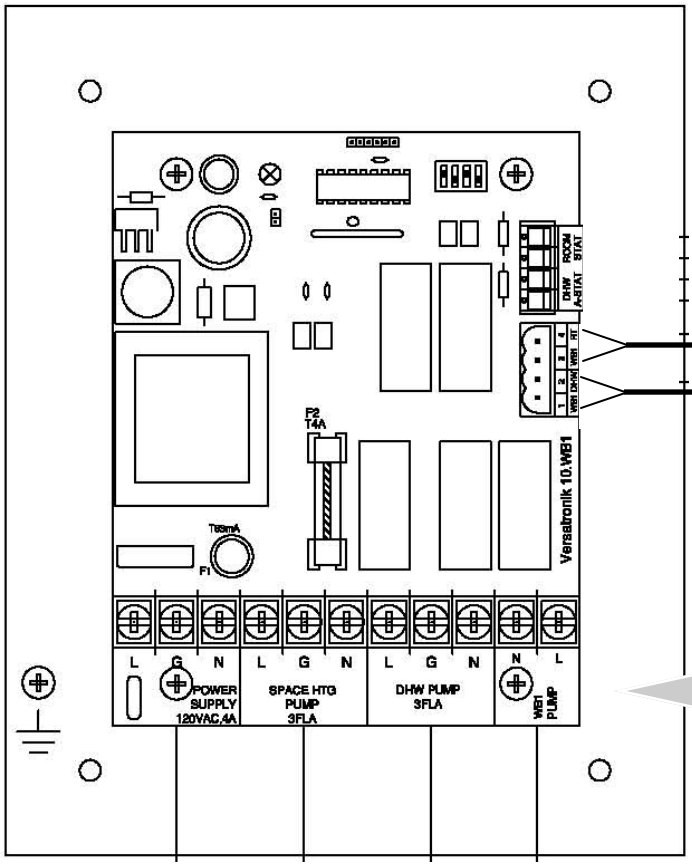
**Wiring Detail:**
From Vitodens to Versatronik:

X4.1 to WB1 DHW.1 (X7.1)
X4.2 to WB1 DHW.2 (X7.2)

X4.3 to WB1 RT.3 (X8.3)
X4.4 to WB1 RT.4 (X8.4)



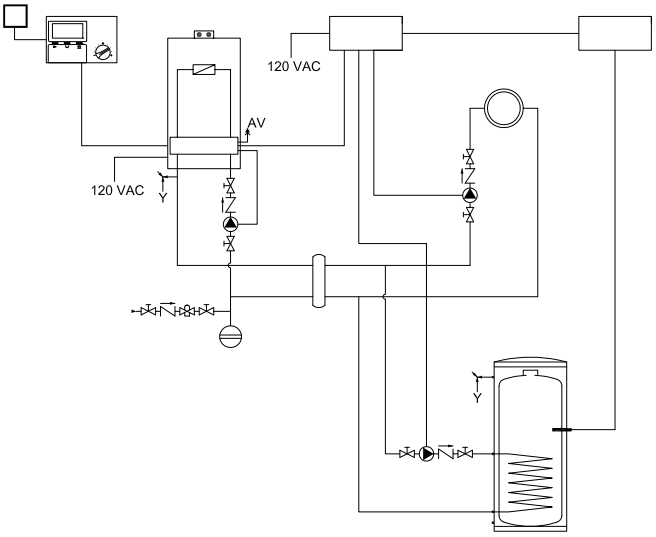

**Vitodens Pump Junction Box**




**Versatronik 10.WB1 DHW & Zone Control**

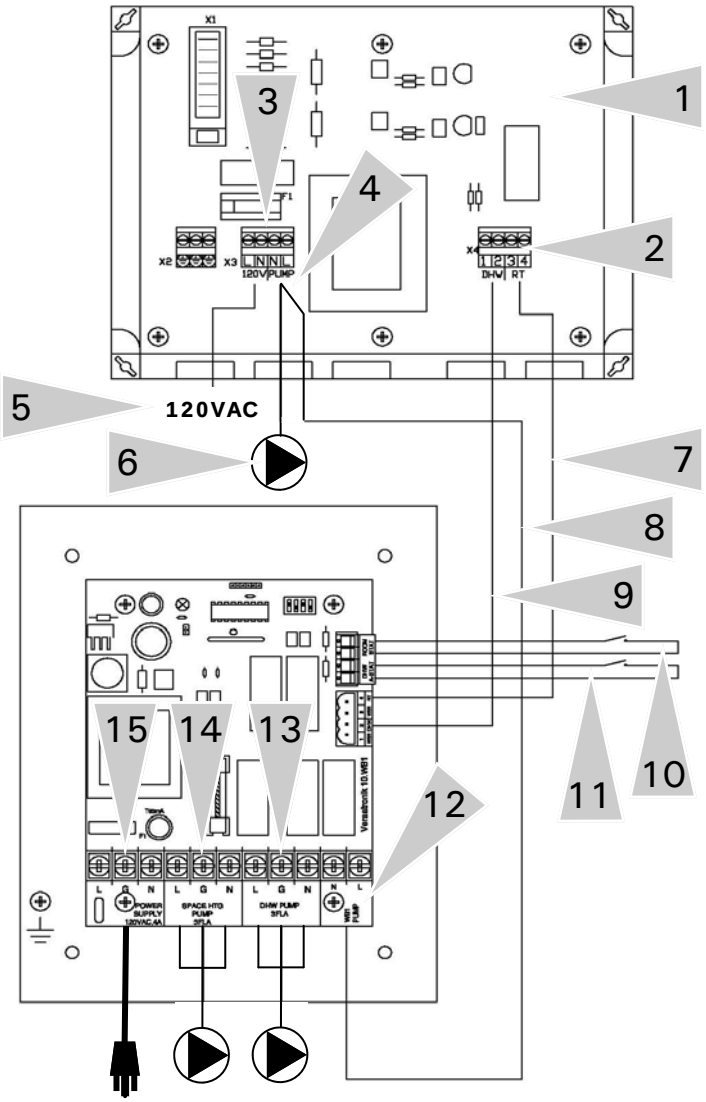
# Control Installation

## Typical System Applications—Low Loss Header




### System Overview

- Boiler with Low Loss Header
- Boiler pump connected to boiler pump module
- Optional Versatronik Como OT
- Space Heating pump connected to Versatronik 10.WB1.
- DHW pump connected to Versatronik 10.WB1.
- DHW heat demand by aquastat or set point control connected to Versatronik 10.WB1.
- Boiler pump output signal connected to Versatronik 10.WB1.




### Wiring Overview

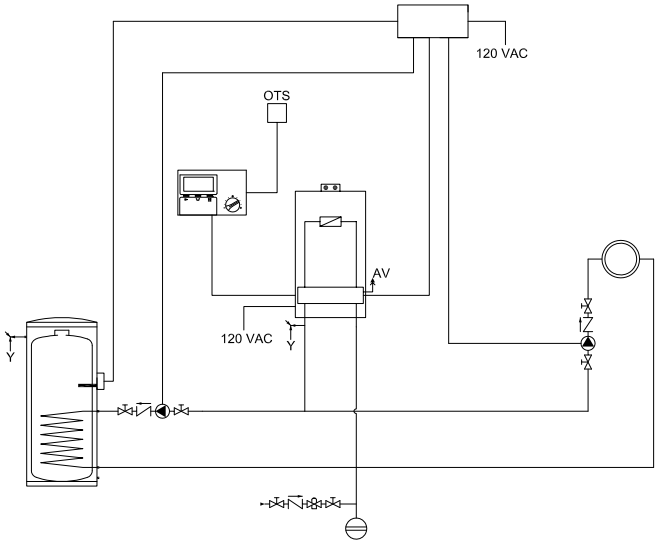
1. Vitodens Pump Module
2. Terminal strip in pump module for DHW and RT interconnections with Versatronik 10.WB1.
3. Terminal strip for incoming 120VAC power supply and pump output. Connection of boiler pump and demand signal to Versatronik 10.
4. Interconnection signal wires to Versatronik 10 pump module to signal pump operation.
5. 120VAC incoming power supply for boiler.
6. Connection of boiler pump to N and L of X3 terminal strip.
7. Interconnected wire between boiler pump module and Versatronik.
8. Pump signal wire.
9. Interconnected DHW demand wire between boiler pump module and Versatronik.
10. Room thermostat connection. Not used if using Versatronik Como OT with boiler.
11. DHW demand signal from either aquastat or set point control.
12. Connection of pump signal wire from boiler pump module.
13. DHW pump output
14. Space heating pump output
15. Incoming 120VAC for operation of Versatronik pump module.

**IMPORTANT**

Ensure that all applicable electrical codes are followed during the installation of the Versatronik product.

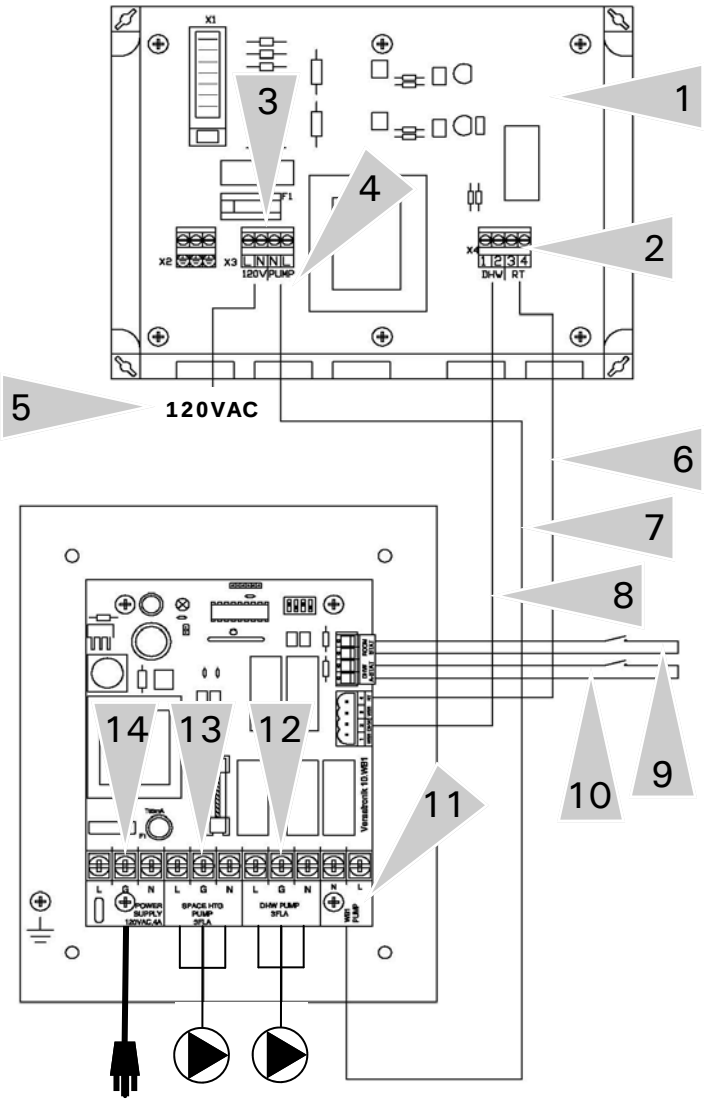
# Control Installation

## Typical System Applications—No Low Loss Header




### System Overview

- Low Loss Header not installed
- No dedicated boiler pump
- Optional Versatronik Como OT
- Space Heating pump connected to Versatronik 10.WB1.
- DHW pump connected to Versatronik 10.WB1
- DHW heat demand by aquastat or set point control connected to Versatronik 10.WB1
- Pump output signal from Vitodens Pump Module connected to Versatronik 10.WB1.
- DHW priority over space heating pump.




### Wiring Overview

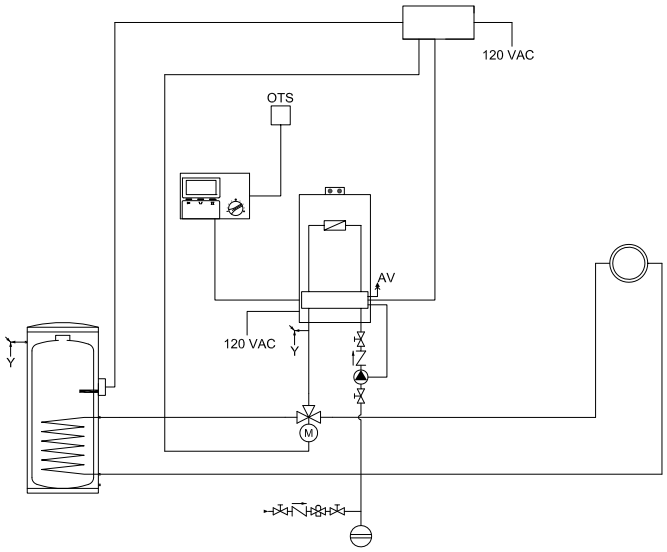
1. Vitodens Pump Module
2. Terminal strip in pump module for DHW and RT interconnections with Versatronik 10.WB1.
3. Terminal strip for incoming 120VAC power supply and pump output. Connection of boiler pump and demand signal to Versatronik 10.WB1.
4. Interconnection signal wires to Versatronik 10 pump module to signal pump operation.
5. 120VAC incoming power supply for boiler.
6. Interconnected wire between boiler pump module and Versatronik.
7. Pump signal wire.
8. Interconnected DHW demand wire between boiler pump module and Versatronik.
9. Room thermostat connection. Not used if using Versatronik Como OT with boiler.
10. DHW demand signal from either aquastat or set point control.
11. Connection of pump signal wire from boiler pump module.
12. DHW pump output
13. Space heating pump output
14. Incoming 120VAC for operation of Versatronik pump module.

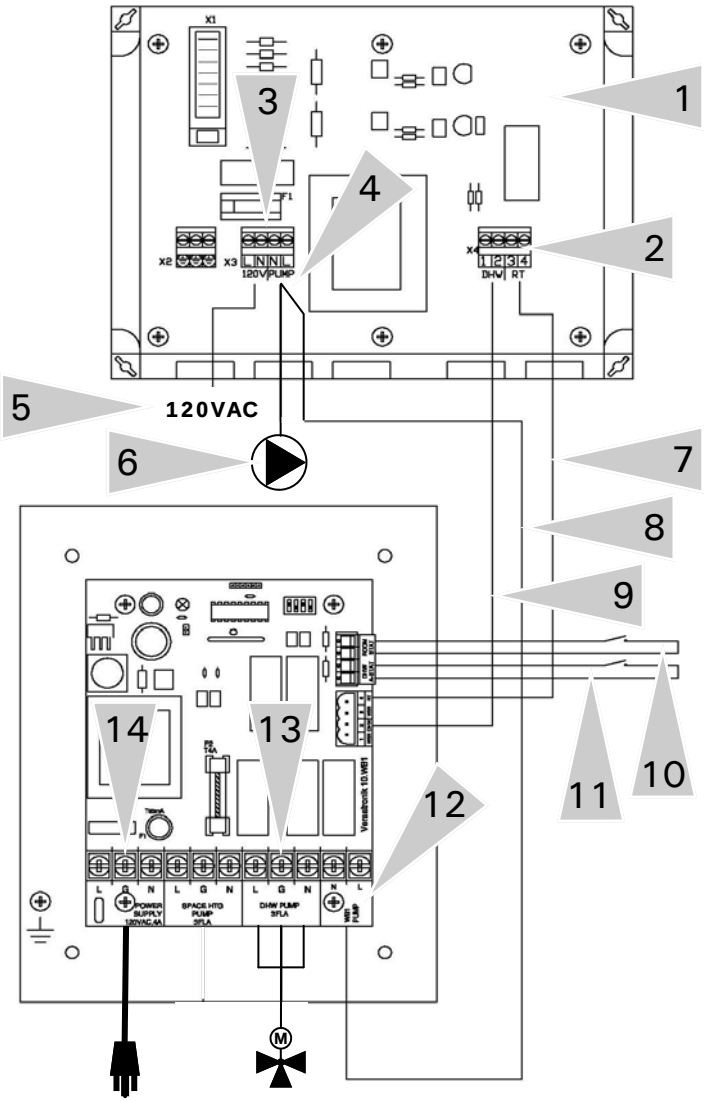
**IMPORTANT**

Ensure that all applicable electrical codes are followed during the installation of the Versatronik product.

# Control Installation

## Typical System Applications—Diverter Valve




### System Overview

- Low Loss Header not installed.
- Optional Versatronik Como OT.
- Dedicated boiler pump. Boiler pump connected to Vitodens pump module.
- Boiler pump signal connected to Versatronik 10.WB1.
- Diverter valve (power open, spring return) connected to Versatronik 10.WB1. Diverts flow to tank on DHW call.
- DHW heat demand by aquastat or set point control connected to Versatronik 10.WB1
- DHW function priority over space heating.

### Wiring Overview

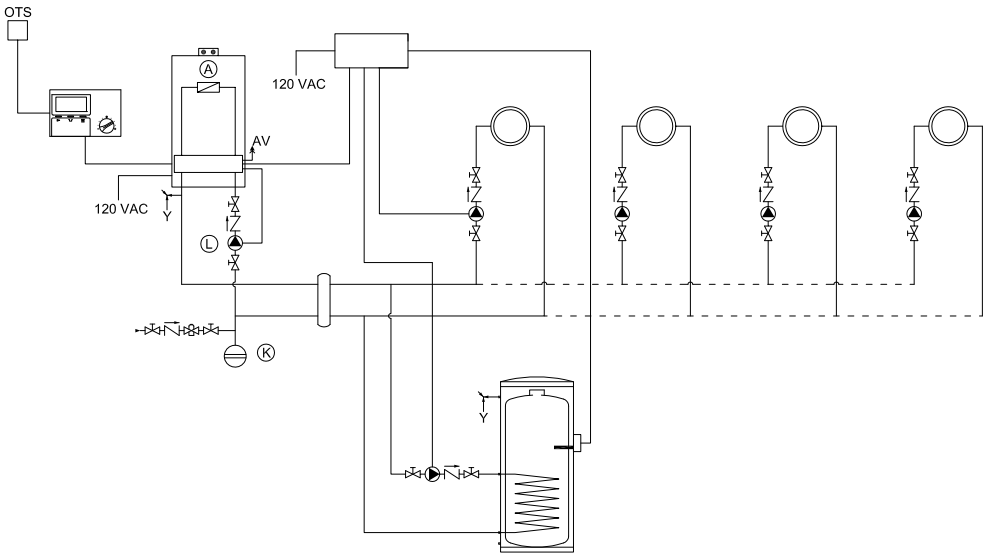
1. Vitodens Pump Module
2. Terminal strip in pump module for DHW and RT interconnections with Versatronik 10.WB1.
3. Terminal strip for incoming 120VAC power supply and pump output. Connection of boiler pump and demand signal to Versatronik 10.
4. Interconnection signal wires to Versatronik 10 pump module to signal pump operation.
5. 120VAC incoming power supply for boiler.
6. Connection of boiler pump to N and L of X3 terminal strip.
7. Interconnected wire between boiler pump module and Versatronik.
8. Pump signal wire.
9. Interconnected DHW demand wire between boiler pump module and Versatronik.
10. Room thermostat connection. Not used if using Versatronik Como OT with boiler.
11. DHW demand signal from either aquastat or set point control.
12. Connection of pump signal wire from boiler pump module.
13. DHW pump output Power-open/Spring-return valve 120VAC
14. Incoming 120VAC for operation of Versatronik pump module.

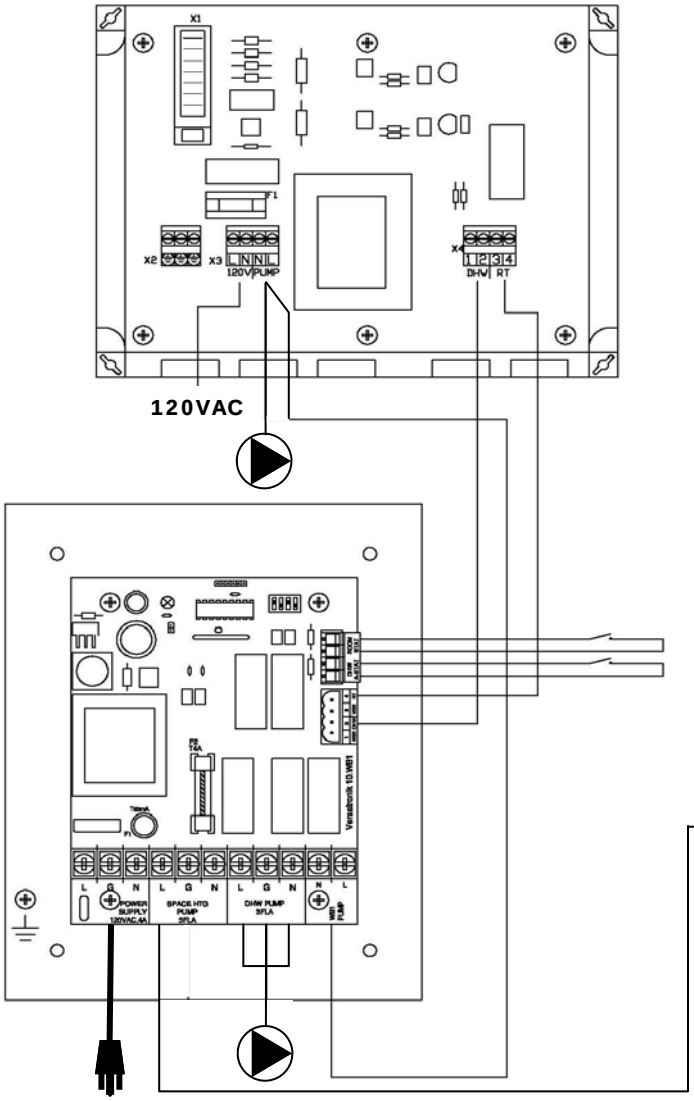
**IMPORTANT**

Ensure that all applicable electrical codes are followed during the installation of the Versatronik product.

# Control Installation

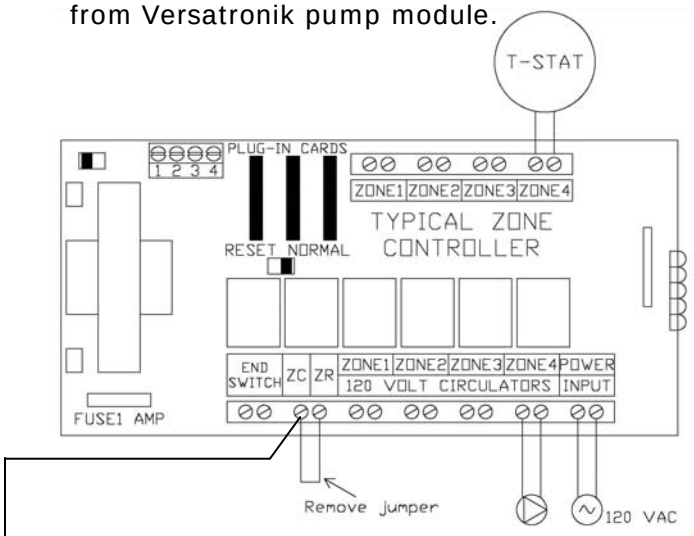
## Typical System Applications—Multizone




### System Overview

- Optional Versatronik Como OT.
- Dedicated boiler pump. Boiler pump connected to Vitodens pump module.
- Boiler pump signal connected to Versatronik 10.WB1.
- DHW heat demand by aquastat or set point control connected to Versatronik 10.WB1.
- Zones controlled by T-Stats with DHW priority from Versatronik pump module.



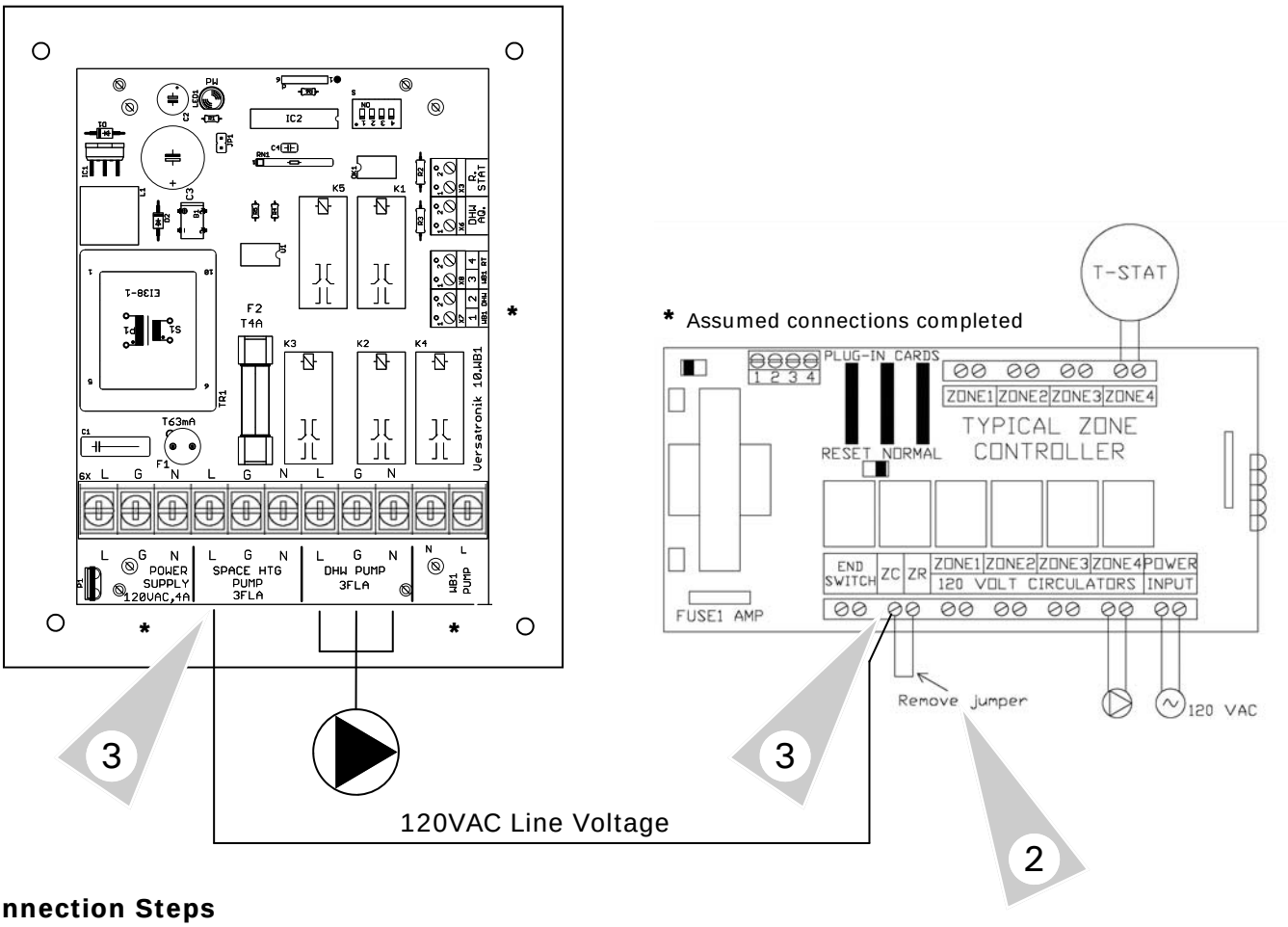

**IMPORTANT**

Ensure that all applicable electrical codes are followed during the installation of the Versatronik product.

# Control Installation

## Wiring Versatronik 10.WB1 to Space Heating Zone Controller

- Connection to field-supplied zone controller for heating pumps
- Boiler used with Versatronik Como OT for outdoor reset operation—No Room Thermostat
- No heat demand from zone controller
- Individual zone T-stat controls zone valve/pump corresponding output




### Connection Steps

1. Disconnect power from Versatronik 10.WB1 and zone control.
2. Remove ZC/ZR jumper from zone controller.
3. Connect L output from Versatronik 10.WB1 space heating pump to ZC of typical field-supplied zone controller.
4. Power both devices and test operation.

### Intended Operation

When the output of the Versatronik space heating pump is ON, the 120VAC control signal will be sensed by the zone controller. If the zone controller T-Stat is calling, the individual zone pump/valve will operate. If there is no signal output from the Versatronik, the zone controller will not turn on any of the zones upon T-Stat call.

**IMPORTANT**

Disconnect boiler and Versatronik from 120VAC power supply before commencing any work. Ensure all wiring connections are checked before applying power to the Versatronik. Failure to do so may cause premature failure of the pump module. Please also note the pump output from the Vitodens boiler to the Versatronik shall not be live.

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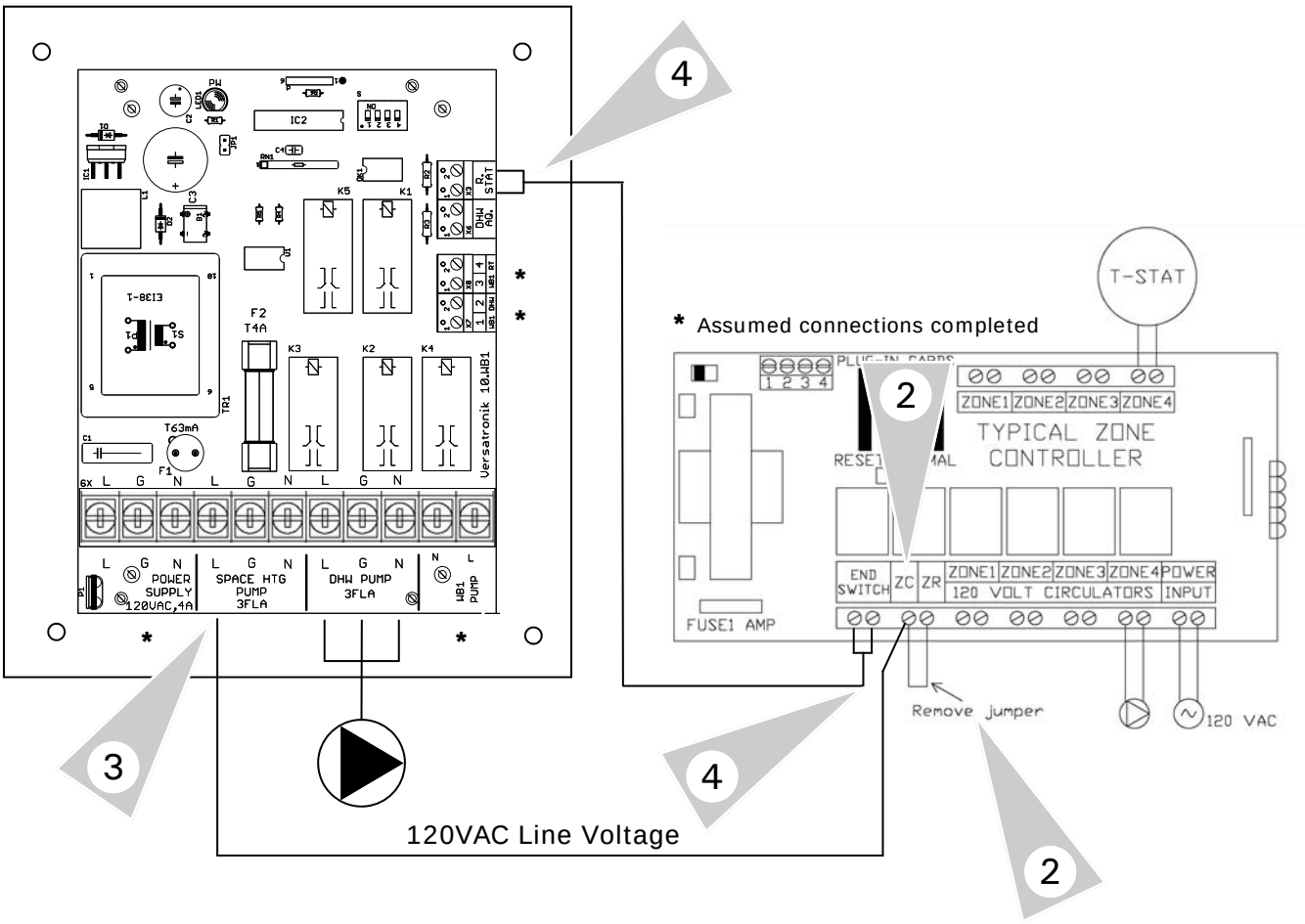
# Control Installation

## Wiring Versatronik 10.WB1 to Space Heating Zone Controller

- Connection to field-supplied zone controller for heating pumps
- Boiler operation based on zone controller heat demands (non-outdoor reset)
  ***Versatronik Como OT cannot be used***
- Individual zone T-stat controls corresponding zone valve/pump device




### Connection Steps

1. Disconnect power from Versatronik 10.WB1 and zone control.
2. Remove ZC/ZR jumper from zone controller
3. Connect L output from Versatronik 10.WB1 space heating pump output to ZC of typical field-supplied zone controller.
4. Connect potential free (dry contact) output of zone controller to Versatronik R-Stat input terminals.
5. Power both devices and test operation.

### Intended Operation

Upon a call for heat from the T-Stat based on room thermostat call, the potential-free end switch will provide a contact closure to the R-Stat input to the Versatronik. The R-Stat call will then turn on the space heating pump output of the Versatronik 10.WB1 and provide a call to the zone controller to turn on the zone/pump output.

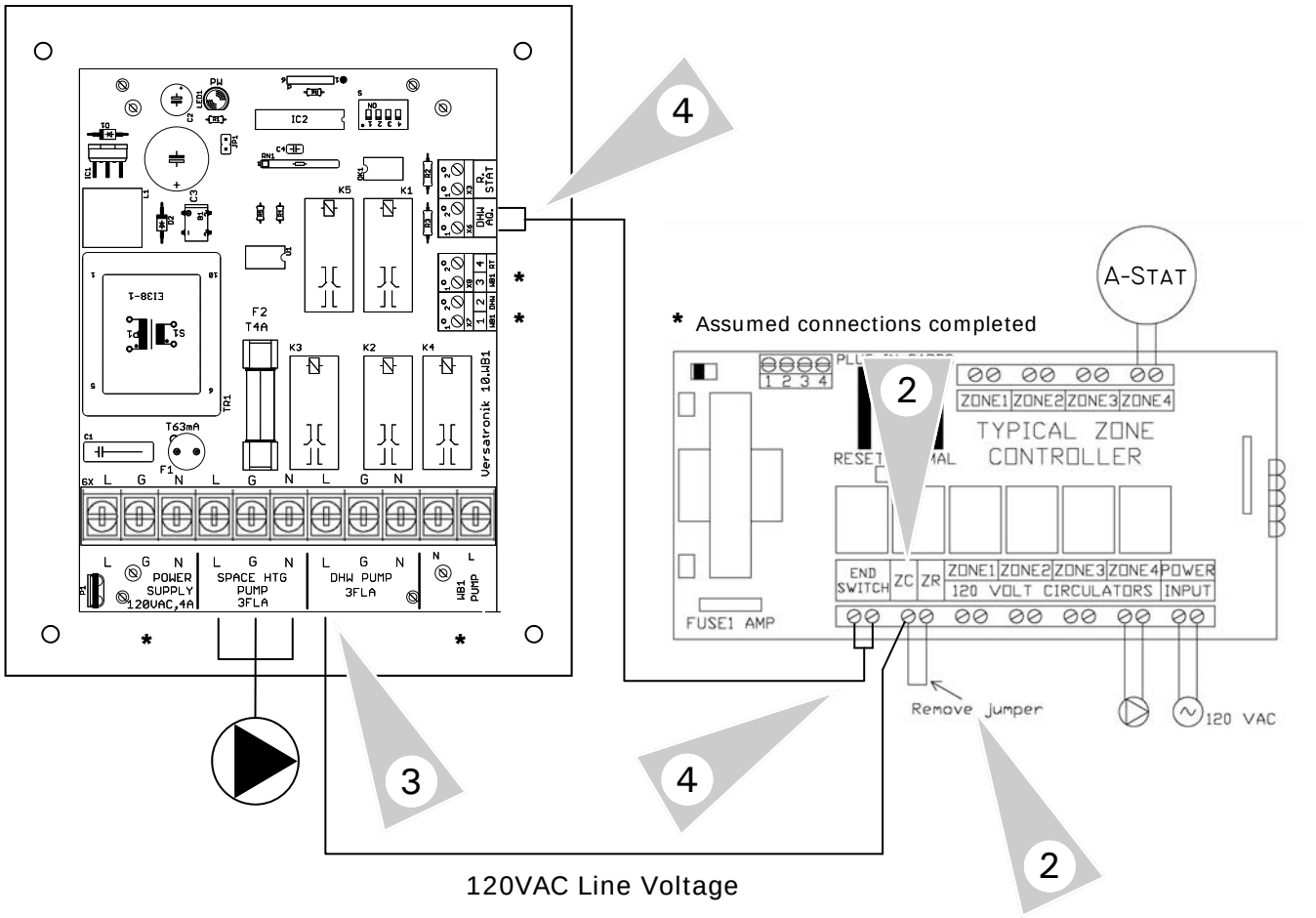
**IMPORTANT**

Disconnect boiler and Versatronik from 120VAC power supply before commencing any work. Ensure all wiring connections are checked before applying power to the Versatronik. Failure to do so may cause premature failure of the pump module. Please also note the pump output from the Vitodens boiler to the Versatronik shall not be live.

# Control Installation

## Wiring Versatronik 10.WB1 to DHW/Pool/Spa zone controller

- Connection to field-supplied zone controller DHW/Pool/Spa Pump Control
- Multiple DHW/Pool/Spa or elevated boiler water temperature demands
- Boiler pump connected to Vitodens Pump Module w/signal to Versatronik 10




### Connection Steps

1. Remove power from Versatronik 10.WB1 and zone control.
2. Remove ZC/ZR jumper from zone controller.
3. Connect L output from Versatronik 10.WB1 DWH heating pump output to ZC of typical field-supplied zone controller.
4. Connect potential-free (dry contact) output of zone controller to Versatronik DHW AQ input terminals.
5. Power both devices and test operation.

### Intended Operation

Upon a call for heat from the A-Stat based on DHW temperature or Pool/Spa call, the potential-free end switch will provide a contact closure to the DHW AQ input to the Versatronik. The DHW call will then turn on the DHW pump output of the Versatronik 10.WB1 and provide a call to the zone controller to turn on the zone/pump output.

**IMPORTANT**

Disconnect boiler and Versatronik from 120VAC power supply before commencing any work. Ensure all wiring connections are checked before applying power to the Versatronik. Failure to do so may cause premature failure of the pump module. Please also note the pump output from the Vitodens boiler to the Versatronik shall not be live.

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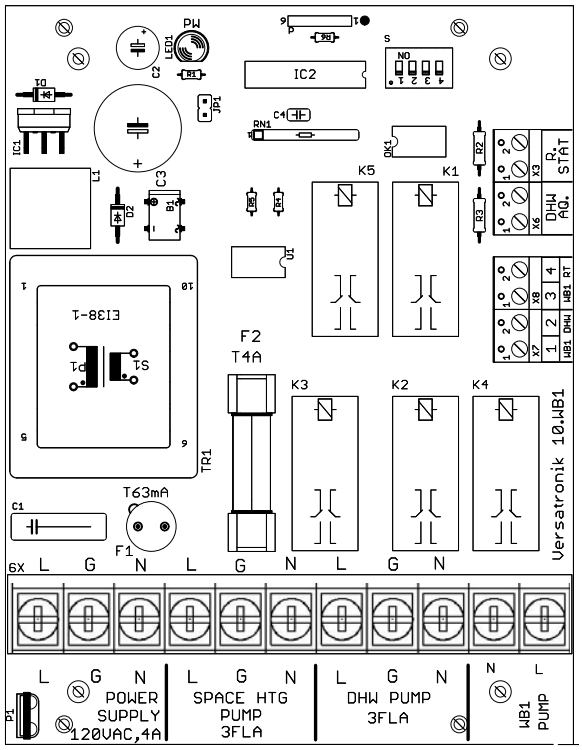
## Control Operation Overview

## Control Operation Overview

The Versatronik 10.WB1 is designed to operate in conjunction with the Viessmann Vitodens 100-W, WB1A and B boiler. This unit provides an independent space heating pump and DHW pump output. The outputs can be used to connect either a pump or provide a call for operation signal to a field-supplied relay or relay module box.

There are a number of 120VAC connections as well as low voltage and dry contact (potential free) connections located on the PCB in the Versatronik 10.WB1.

Incoming power to the Versatronik 10.WB1 is provided to the 6X terminal strip at L, G and N terminals. The space heating pump is connected to the L, G and N terminals (marked “power supply”). The DHW pump, if used, is connected to the L, G and N connections (marked “DHW Pump).




The two remaining 120VAC connections are N and L. This is the pump demand signal input from the Vitodens pump module output. This pump control signal from the pump module controls when the pumps in the Versatronik pump module are to operate.

There are (8) low voltage connections found on the side of the Versatronik 10.WB1. The connections marked *DHW AQ* and *R. Stat* are for dry contact (potential free) external heat demands.

The DWH production demand signal is connected to DHW AQ terminal block (not visible on PCB). The DHW demand signal can be supplied from either an electronic set-point control or a DHW tank aquastat (field-supplied).

The R-Stat connections are from a simple room thermostat connection or a demand from an outdoor reset control heat demand. If a Versatronik Como OT Room Controller is being used, these terminations cannot be utilized. The remaining four terminals are the interconnections made between the boiler and the Versatronik 10.WB1.

Terminals WB1 and DHW (X7.1 and X7.2) are connections between the Versatronik 10.WB1 and the boiler for DHW operation. When the Versatronik 10.WB1 senses a DHW call into the DHW AQ terminals, it provides a DHW demand signal to the boiler. This demand signal will cause the boiler to modulate to an increased boiler water temperature to satisfy the DHW demand.

Terminals WB1 and RT (X8.3 and X8.4) are connections from the Versatronik 10.WB1 to the boiler which provides a call for heat from the R-Stat inputs. Upon a call for heat on the R-Stat terminals, the boiler will operate to satisfy the room temperature demand. The boiler water temperature is controlled by the boiler’s temperature controls.

When the Versatronik 10.WB1 is receiving both a heat demand from a room thermostat and a call for heat from a DHW control, priority switching will take place. The DHW pump output will be activated for DHW production until the demand is satisfied and then switch back to space heating.

The Versatronik 10.WB1 pump module incorporates a selectable timer function that can be turned ON and allows the DHW production to be momentarily stopped and switch back over to space heating. If DHW production time exceeds the timer setting, the DHW pump and the call for DHW to the boiler are ceased until the room temperature demand has been satisfied. At that time, the DHW production will restart.
The Versatronik 10.WB1 pump module includes a selectable DHW pump post purge timer.



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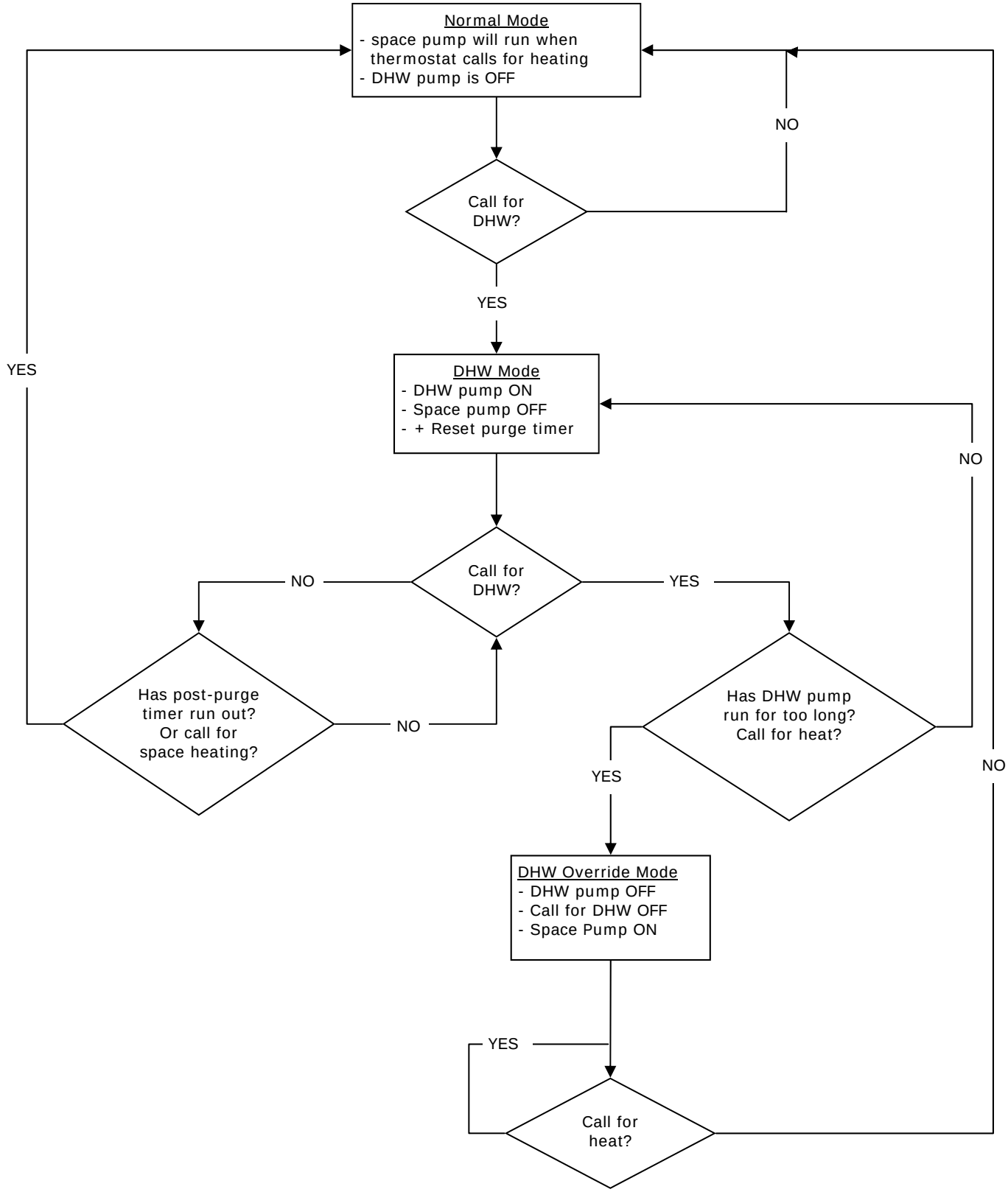
## Control Operation Overview



## Control Operation Overview

### Modes of Operation

**Normal Mode**
In this mode the space heating pump will run whenever there is a heat demand from the room thermostat or 120VAC control signal being applied to the WB1 terminals. A call from the room thermostat is achieved by shorting terminals X3.1 and X3.2 (“R-Stat”).

When a DHW call is sensed, the pump module will switch over to DHW mode.

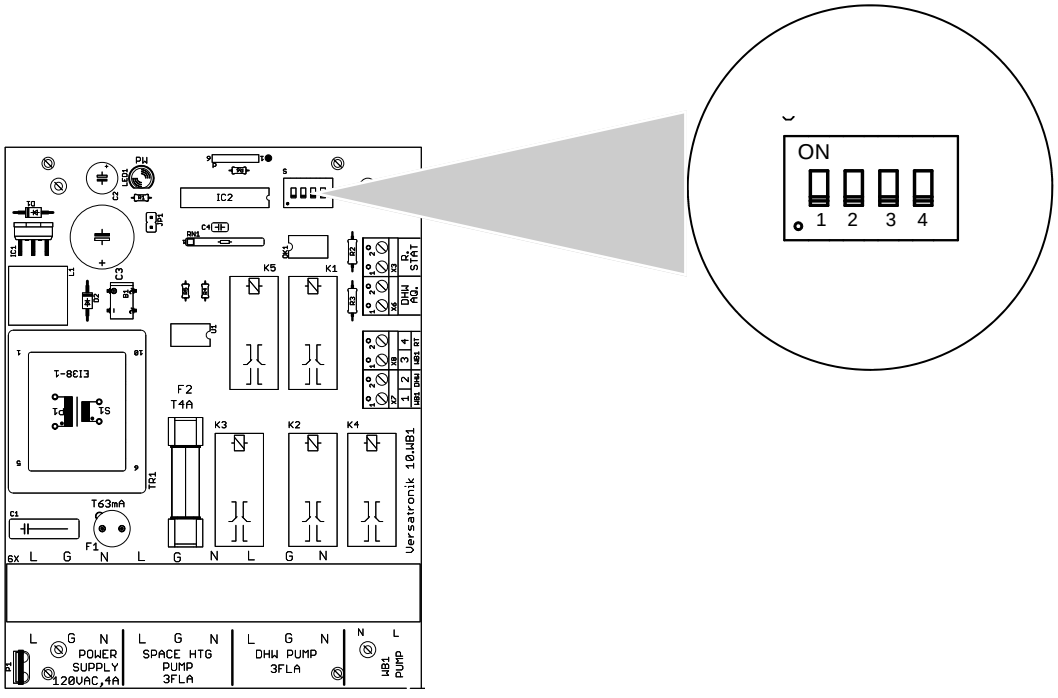
**DHW Mode**
When in the DHW mode, the space heating pump is disabled. The DHW pump will run for as long as the DHW is being called for from either an aquastat or set-point control. When the DHW call ceases, an internal timer will begin a countdown sequence. When the timer is 0 the DHW pump output is turned off and the Versatronik 10.WB1 will switch back to normal mode.

**Override Mode**
When the DHW demand is present and has exceeded the selectable timer setting, the unit will enter the override mode. In this mode, the DHW pump output and the boiler call will be turned off and switch to space heating assuming a room thermostat call is present. The override mode will be exited once the room thermostat call is finished.



Settings Table

| | ON | OFF |
|---|---|---|
| **Switch 1** | DHW Pump post-purge timer ON | DHW Pump post-purge timer OFF |
| **Switch 2** | 60 Second post purge | 120 Second post purge |
| **Switch 3** | Override timer ON | Override timer off |
| **Switch 4** | ½ hour override timer | 1 hour override timer |

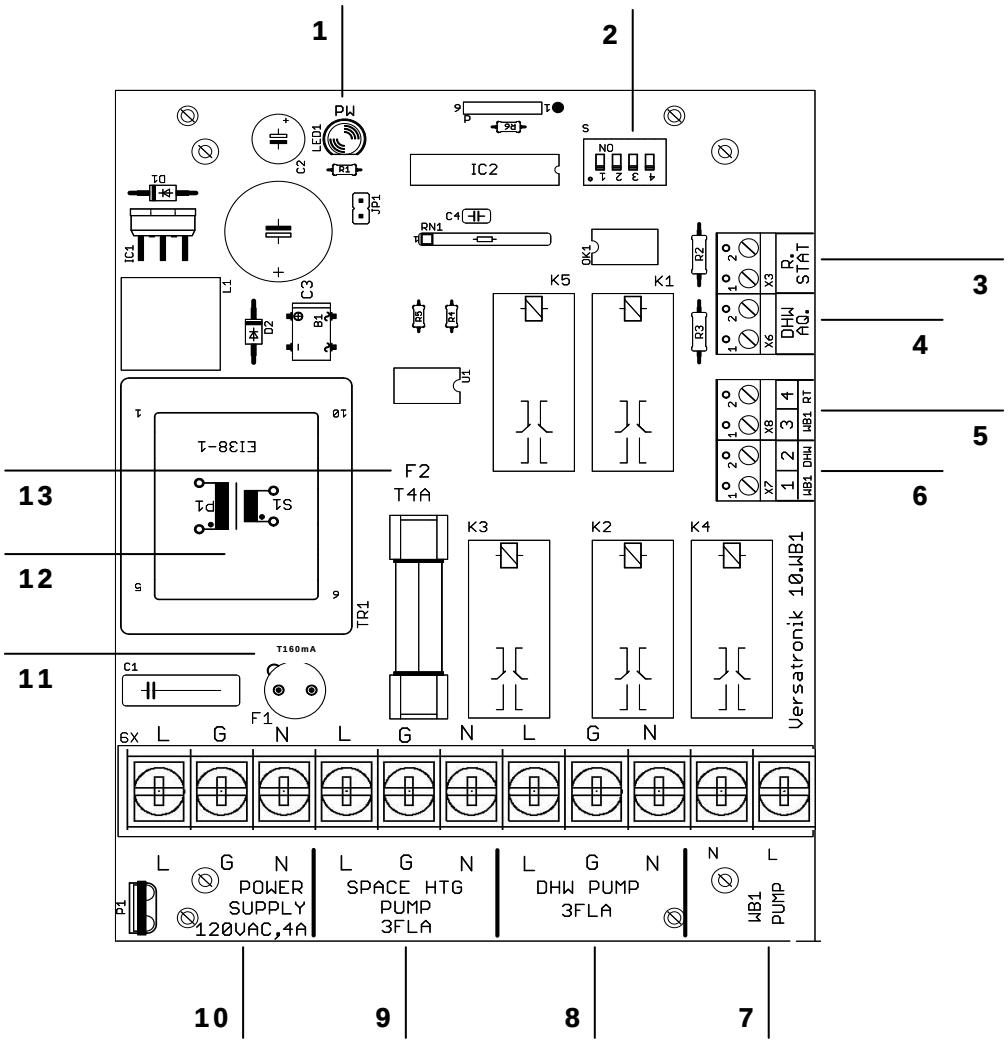


## Technical Information

PCB Identifiers and Specifications **Section 4.1**

## Fault Diagnosis

| | |
|---|---|
| Unit does not power up | Check F1 fuse |
| | Check incoming power |
| | Check incoming power polarity |
| | Verify terminal connections |
| | |
| Pump outputs not powered | Check F2 fuse |
| | Call for space heating/DHW not present |
| | Input 120VAC signal from boiler not present |
| | Verify terminal connections |
| | |
| Boiler not firing | Check RT/DHW interconnections between Versatronik 10.WB1 and boiler |
| | Consult boiler manual for further fault diagnosis |




## PCB Identifiers

| | |
|---|---|
| 1 | LED Power Indicator |
| 2 | DIP Switches |
| 3 | Room Thermostat Dry Contact/Potential Free input |
| 4 | DHW Aquastat Input |
| 5 | Vitodens WB1 Connection Room Thermostat |
| 6 | Vitodens WB1 Connection DHW call |
| 7 | Vitodens WB1 Input (120VAC) |
| 8 | DHW Pump Output |
| 9 | Space Heating Pump Output |
| 10 | Incoming Power Supply |
| 11 | F1 Fuse T63mA |
| 12 | TR Transformer |
| 13 | F2 Fuse 4A |

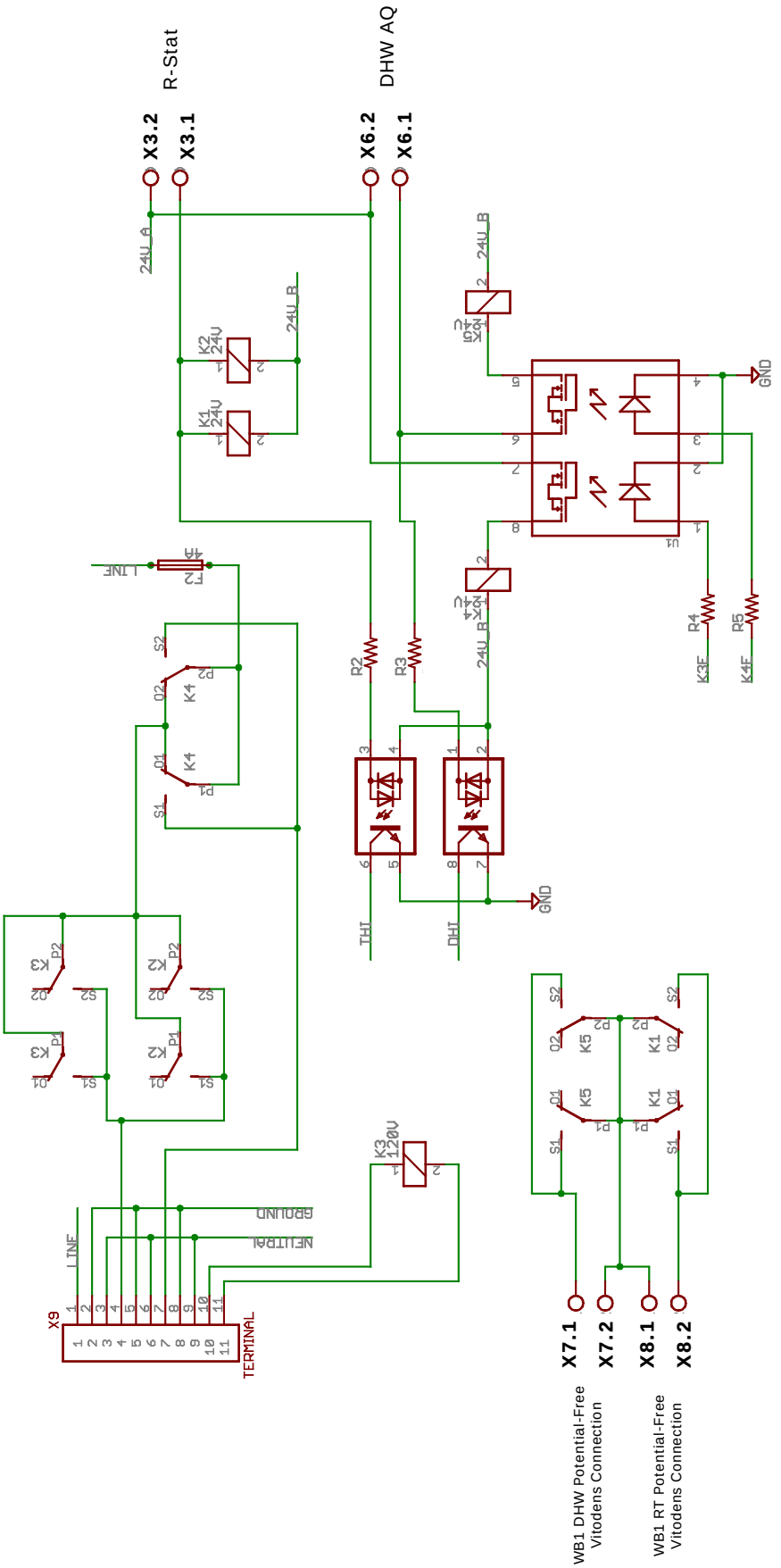
## Specifications

| | |
|---|---|
| Voltage Requirements | 120VAC |
| Fuse Rating F1 | 160mA Time Delay |
| Fuse Rating F2 | 4A Time Delay |
| Power | 4VA |
| Maximum Pump Current | 3FLA |
| Pump Output Voltage | 120VAC |
| WB1 Pump Input (from Vitodens WB1) | 120VAC |

**CAUTION**

Static sensitive components may be damaged by improper handling or work within the control. Ensure all possible measures are taken to eliminate build-up of static electricity.

KWE P/N 394002 Versatronik 10.WB1 V1.3 01/2013 Technical information subject to change without notice


R-Stat
DHW AQ
X3.2
X3.1
X6.2
X6.1
24U_A
24U_B
K2 24V
K1 24V
K3 120V
LINE
NEUTRAL
GROUND
X9
TERMINAL
THI
DHI
GND
R2
R3
R4
R5
K3F
K4F
X7.1
X7.2
X8.1
X8.2
WB1 DHW Potential-Free Vitodens Connection
WB1 RT Potential-Free Vitodens Connection

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