**WARNING:**
**Improper installation, setup, modification, operation or maintenance of the heating system can cause personal injury and property damage.**
**Follow each appliances' instructions precisely.**
**For assistance or further information, contact a trained and certified installer, service provider, or the gas supply company.**

**Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations.**

**The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale.**

**Refer to the boiler, control and module installer manuals for additional detailed information!**

Gas Condensing Wall Hung & Floor Standing Boilers

# Bosch Greenstar™

Greenstar & Greenstar FS 100, 151, 131 Combi Boiler
Greenstar & Greenstar FS 79, 100, 131, 151 Regular Boiler

BOSCH

Applications Manual

# Table of Contents

# Explanation Of Symbols

## Key To Symbols

### Warnings

Warnings in this document are identified by a warning triangle printed against a grey background. Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and can be used in this document:

- **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.
- **NOTICE** is used to address practices not related to personal injury.

### Important information

This symbol indicates important information where there is no risk to people or property.

# System # 1

Single Zone
Combi Wall Boiler
Baseboard
On/off Tstat

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| Bases | |
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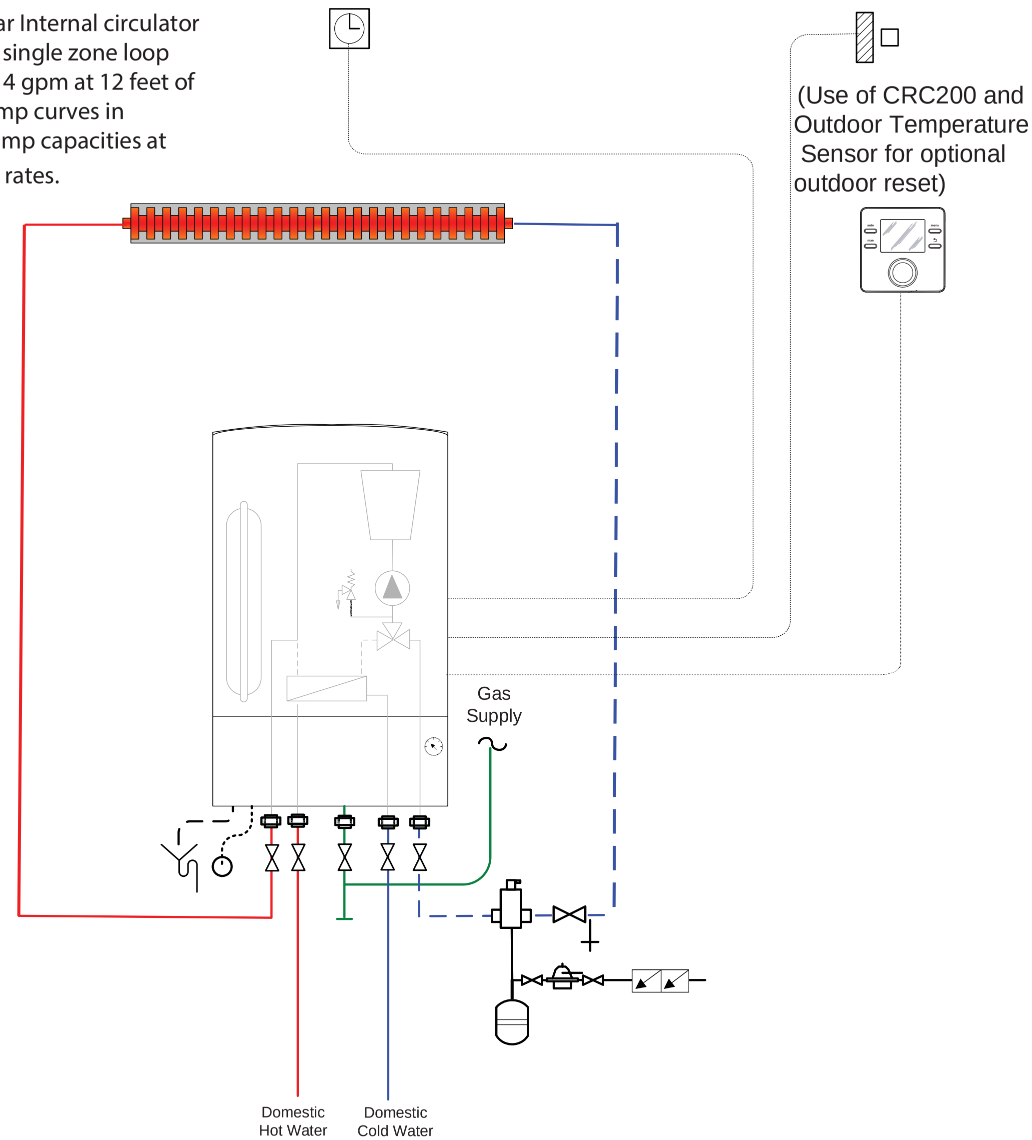
**Bosch**

| | |
|---|---|
| | **Isoloation Valve** |
| | **PRV Relief piping** |
| | **Purge Drain** |
| | **Room Thermostat** |
| | **Condensate drain** |
| | **Relief valve & pressure gauge** |
| | **Back-flow preventer** |
| | **Baseboard** |
| | **Expansion Tank** |
| | **Auto-Fill** |
| | **Air Eliminator** |

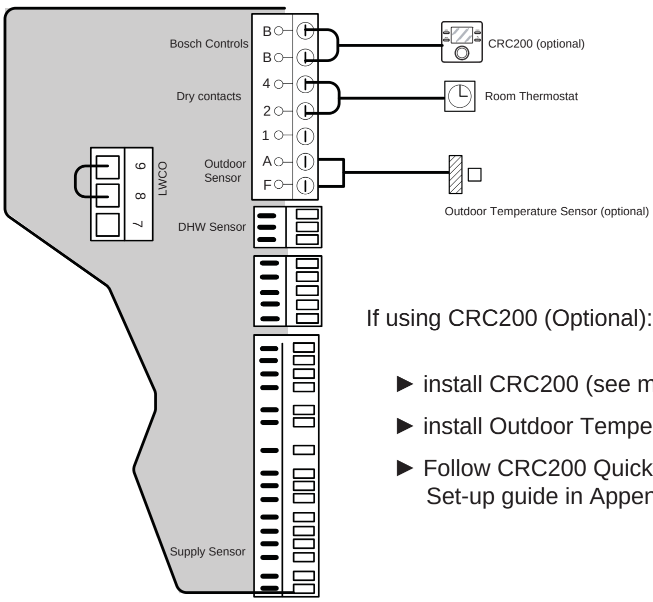
Note:Greenstar Internal circulator can support a single zone loop not to exceed 4 gpm at 12 feet of head. See pump curves in manual for pump capacities at alternate flow rates.



## System #1

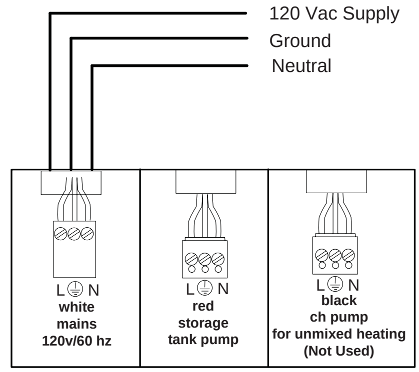
### Heatronic Internal Wiring

<u>Note</u>: For Low Water Cutoff Wiring see Appendix D of this manual




If using CRC200 (Optional):

- ► install CRC200 (see manual)
- ► install Outdoor Temperature Sensor
- ► Follow CRC200 Quick Set-up guide in Appendix C




External Boiler Junction box

### Wiring:

#### Low Voltage

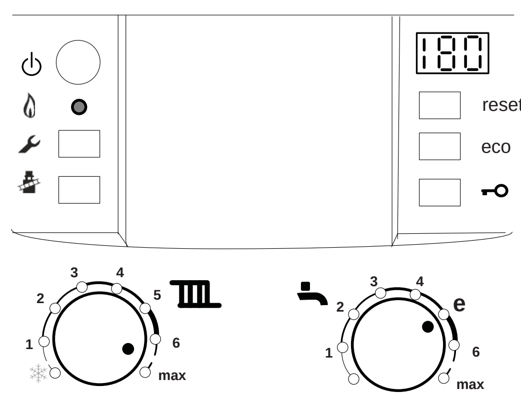
- ► Remove factory jumper from terminal #2 & #4 inside Heatronic control and connect non-power robbing thermostat (dry contacts only)
- ► Outdoor Temperature Sensor connect to terminals A & F
- ► CRC200 connect to terminals B & B

#### Line Voltage

- ► Wire Main power supply (120 v) to White molex

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |

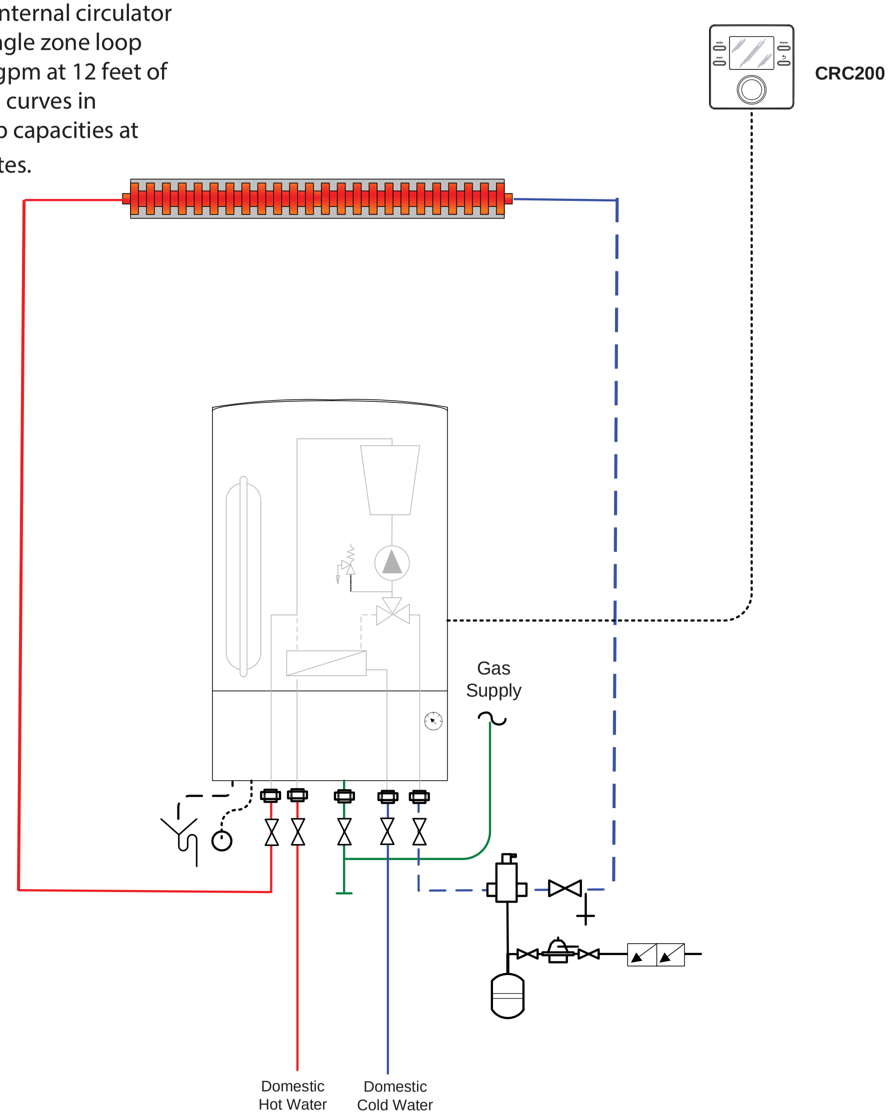



| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |

# System # 2

Single zone
Combi wall boiler
Baseboard
NSC Controls

Note:Greenstar Internal circulator can support a single zone loop not to exceed 4 gpm at 12 feet of head. See pump curves in manual for pump capacities at alternate flow rates.




| | |
|---|---|
| | PRV Relief piping |
| | Purge Drain |
| | Condensate drain |
| | Relief valve & pressure gauge |
| | Back-flow preventer |
| | Isolation valve |
| | Baseboard |
| | Expansion Tank |
| | Auto-Fill |
| | Air Eliminator |

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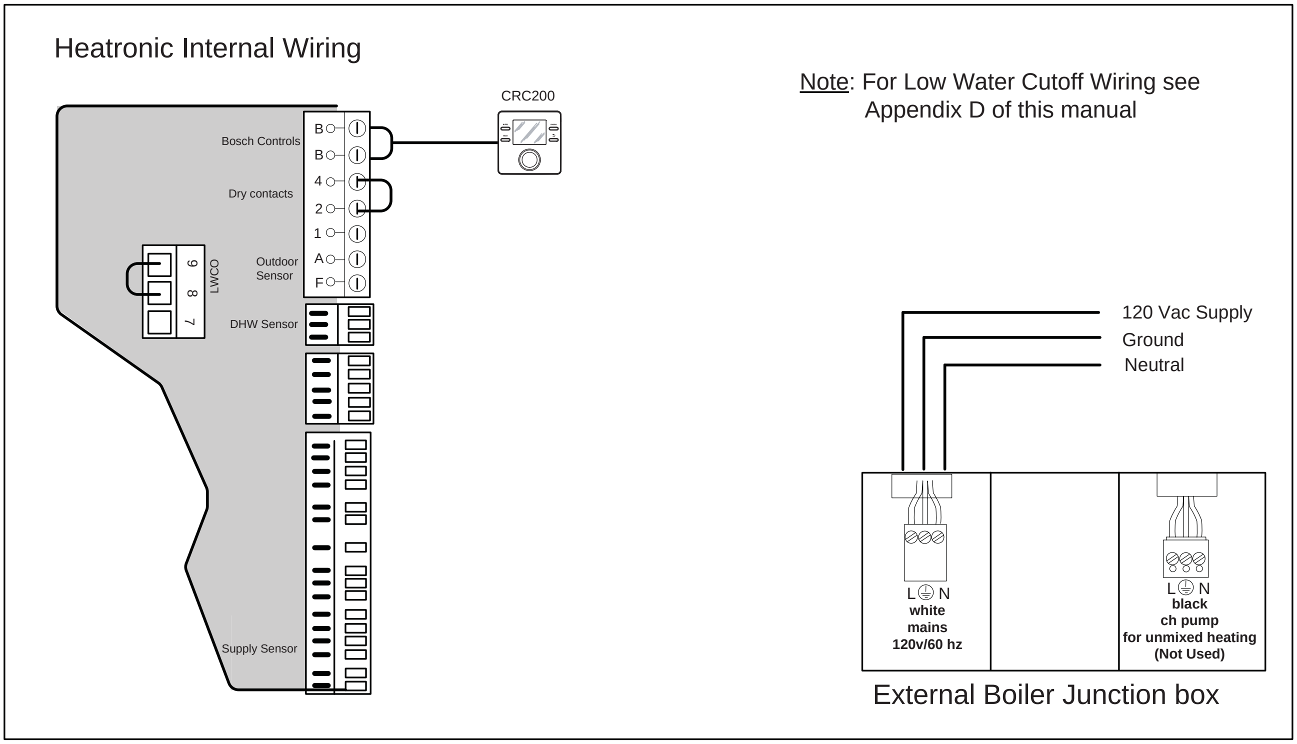
**Bosch**

## System #2




### Wiring:

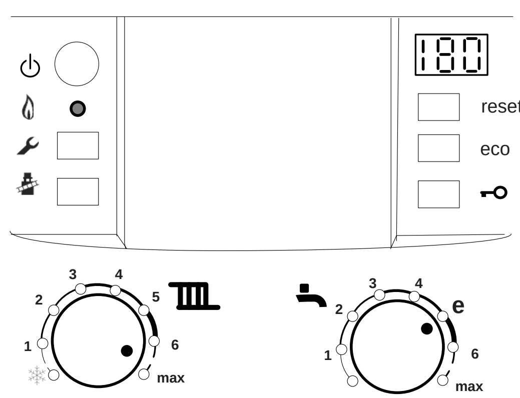
| Low Voltage | Line Voltage |
|---|---|

- ► Wire Comfort Room Controller (CRC200) to Terminals B & B of Heatronic control
- ► See Appendix C for CRC200 Quick Set-Up Guide

- ► Wire Main power supply (120 v) to White molex

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |

# System #3

Single Zone
Combi floor boiler
Baseboard
On/off Thermostat

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| | |
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| Created | |
| Released | |
| Changed | |
| Bases | |
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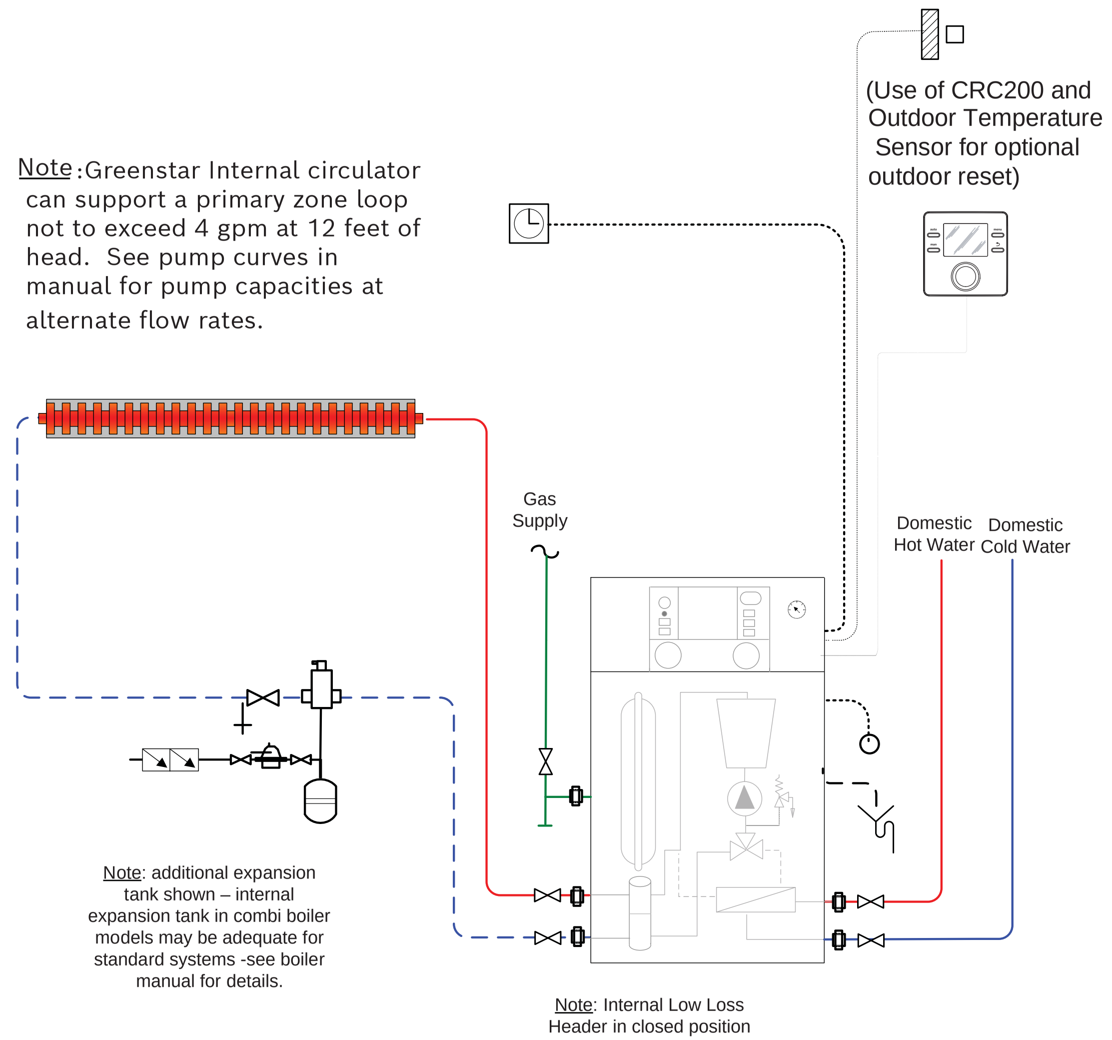
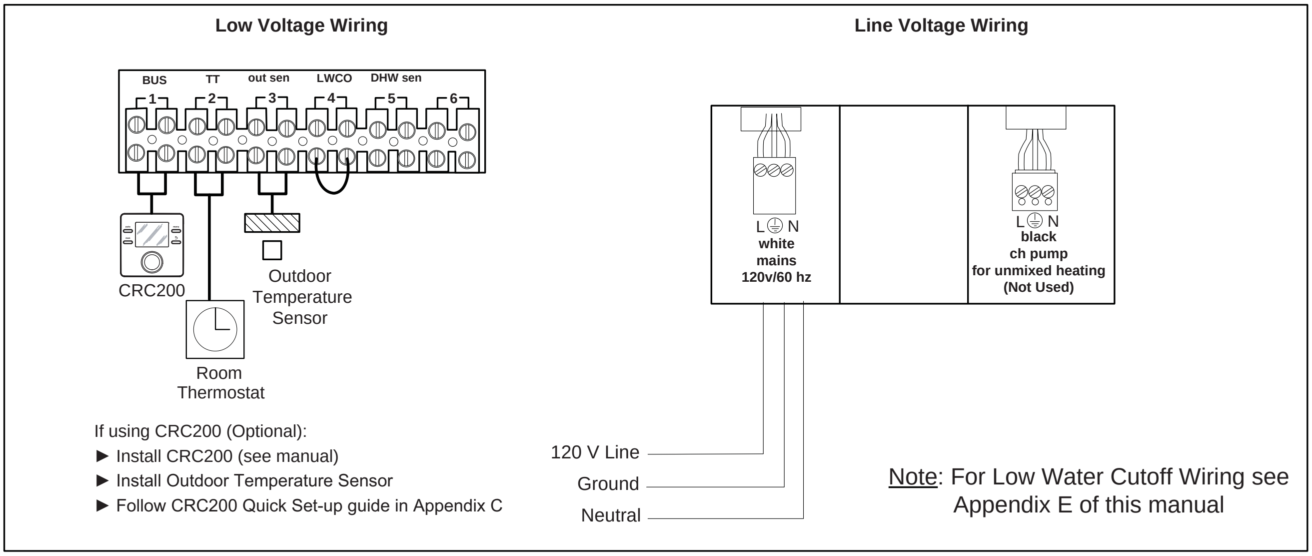
**Bosch**

| | |
|---|---|
| | **Isoloation Valve** |
| | **PRV Relief piping** |
| | **Purge Drain** |
| | **Room Thermostat** |
| | **Condensate drain** |
| | **Relief valve & pressure gauge** |
| | **Back-flow preventer** |
| | **Baseboard** |
| | **Expansion Tank** |
| | **Auto-Fill** |
| | **Air Eliminator** |



## System #3




### Wiring:

#### Low Voltage

► Remove factory jumper from terminal #2 and connect non-power robbing thermostat (dry contacts only) to terminal #2

► Outdoor Temperature Sensor connect to terminal #3 (OUT SEN)

► CRC200 connect to terminal #1 (BUS)

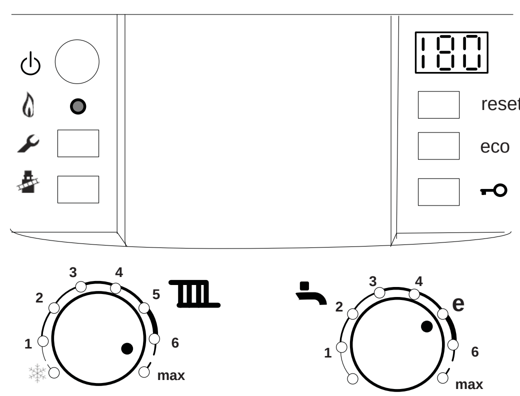
#### Line Voltage

► Wire Main power supply (120 v) to White molex

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |

| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |



# System #4

Single Zone
Combi floor boiler
Baseboard
NSC Controls

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| | |
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| Created | |
| Released | |
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| Bases | |
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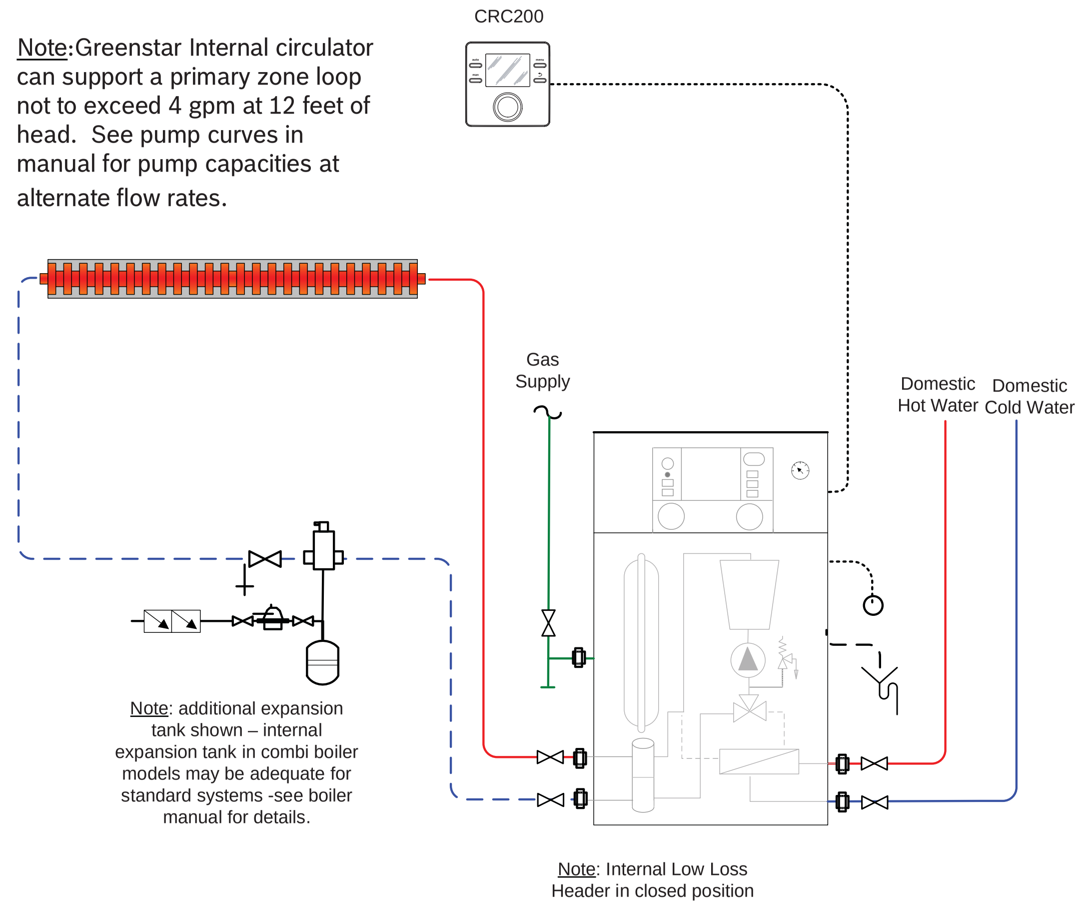
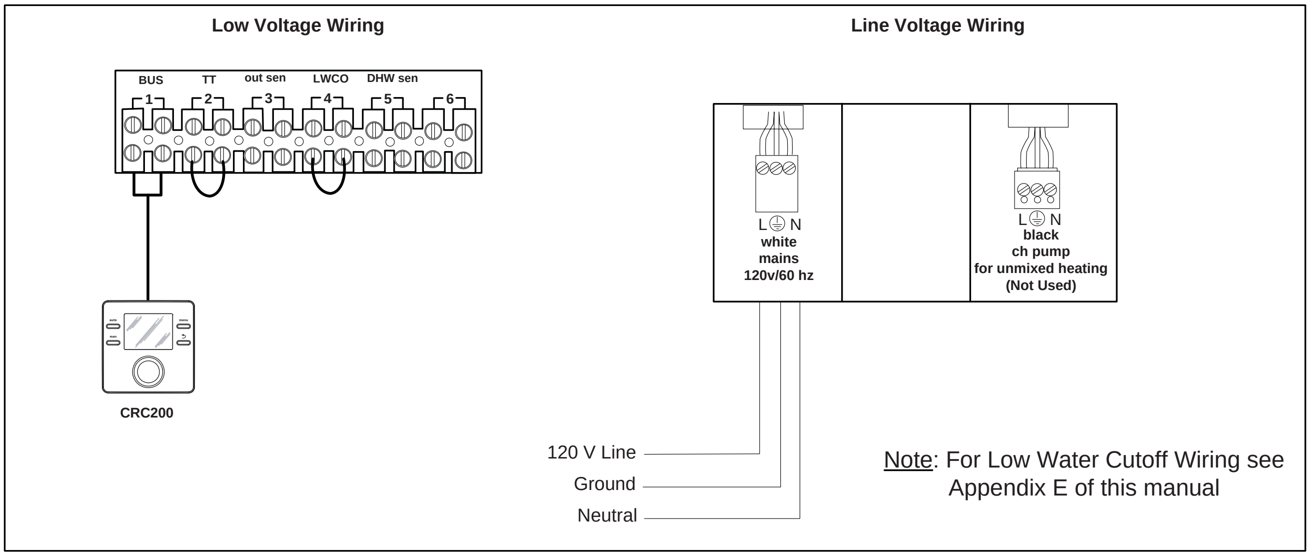
| No. | . |
| State | |

**Bosch**

| | |
|---|---|
| | **PRV Relief piping** |
| | **Purge Drain** |
| | **Supply Sensor** |
| | **Condensate drain** |
| | **Relief valve & pressure gauge** |
| | **Back-flow preventer** |
| | **Isolation valve** |
| | **Baseboard** |
| | **Expansion Tank** |
| | **Auto-Fill** |
| | **Air Eliminator** |



# System #4

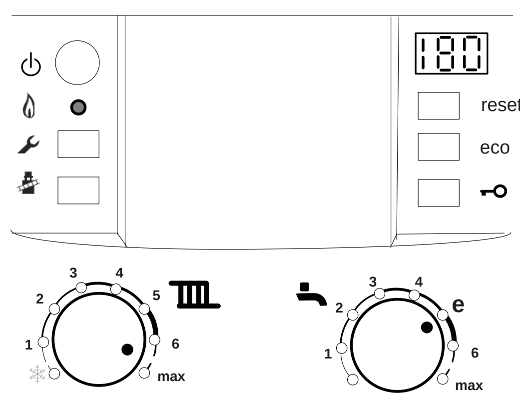



## Wiring:

| Low Voltage | Line Voltage |
|---|---|
| ► Wire Comfort Room Controller (CRC200) to Terminal # 1 on back of Greenstar FS Boiler<br>► See Appendix C for CRC200 Quick Set-Up Guide | ► Wire Main power supply (120 v) to White molex |

## Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |

# System # 5

Single Zone
Heat only wall boiler
Baseboard
On/off Thermostat

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| | |
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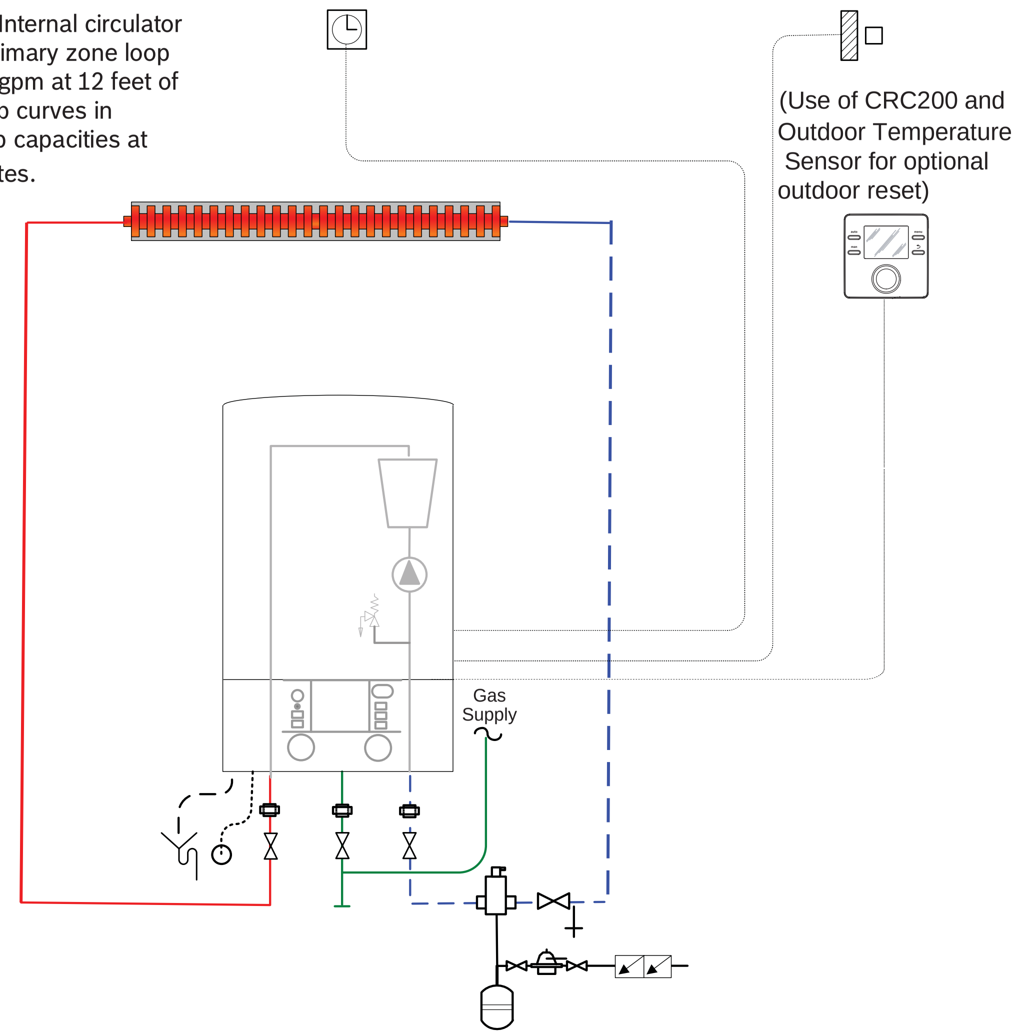
| Created | TK<br>02/20/15 |
| Released | |
| Changed | |
| Bases | |
| No. | . |
| State | |

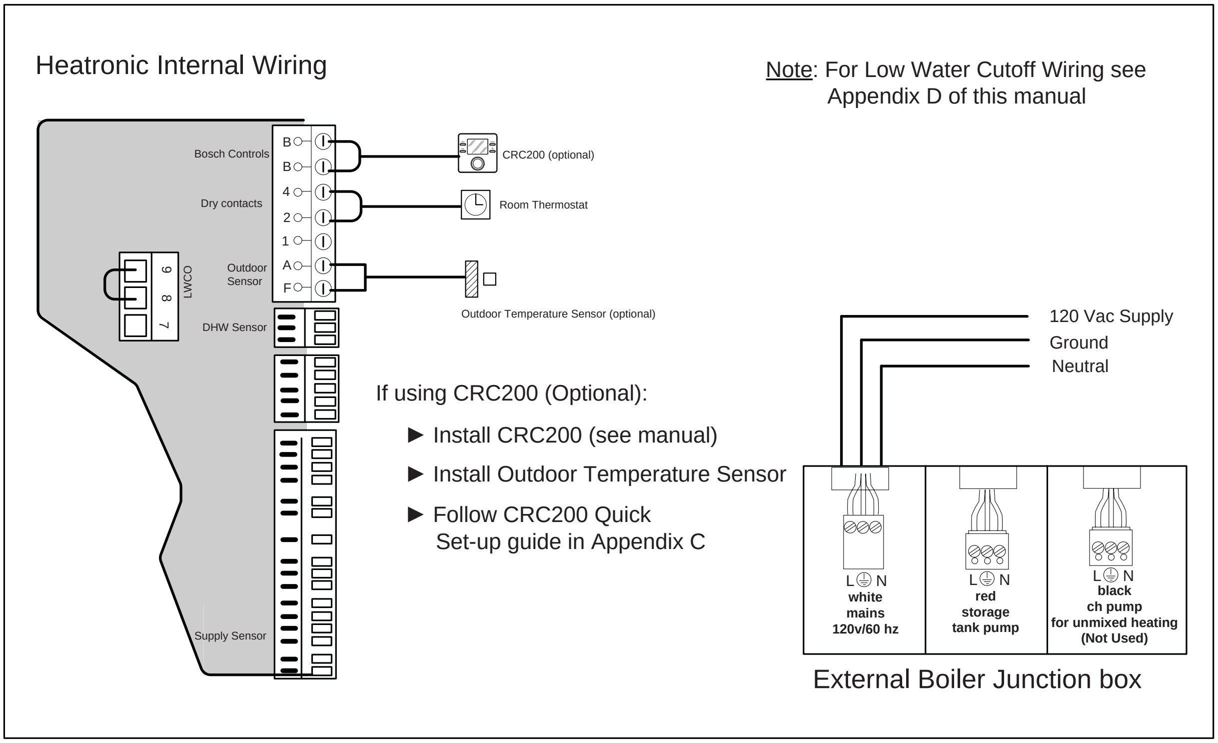
**Bosch**

| | |
|---|---|
| | **PRV Relief piping** |
| | **Purge Drain** |
| | **Room Thermostat** |
| | **Condensate drain** |
| | **Relief valve & pressure gauge** |
| | **Back-flow preventer** |
| | **Isoloation Valve** |
| | **Baseboard** |
| | **Expansion Tank** |
| | **Auto-Fill** |
| | **Air Eliminator** |

Note: Greenstar Internal circulator can support a primary zone loop not to exceed 4 gpm at 12 feet of head. See pump curves in manual for pump capacities at alternate flow rates.



## System #5




### Wiring:

#### Low Voltage

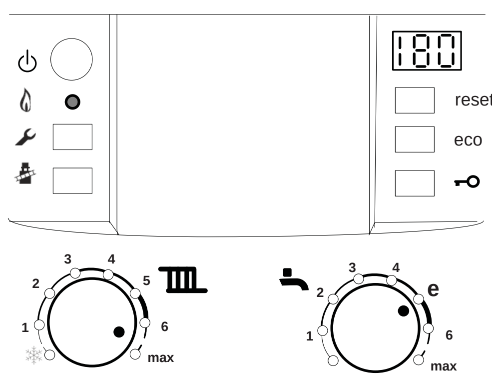
- ► Remove factory jumper from terminal #2 & #4 inside Heatronic control and connect non-power robbing thermostat (dry contacts only)
- ► Outdoor Temperature Sensor connect to terminals A & F
- ► CRC200 connect to terminals B & B

#### Line Voltage

- ► Wire Main power supply (120 v) to White molex

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |



# System # 6

Single Zone
Heat only wall boiler
Baseboard
NSC Controls

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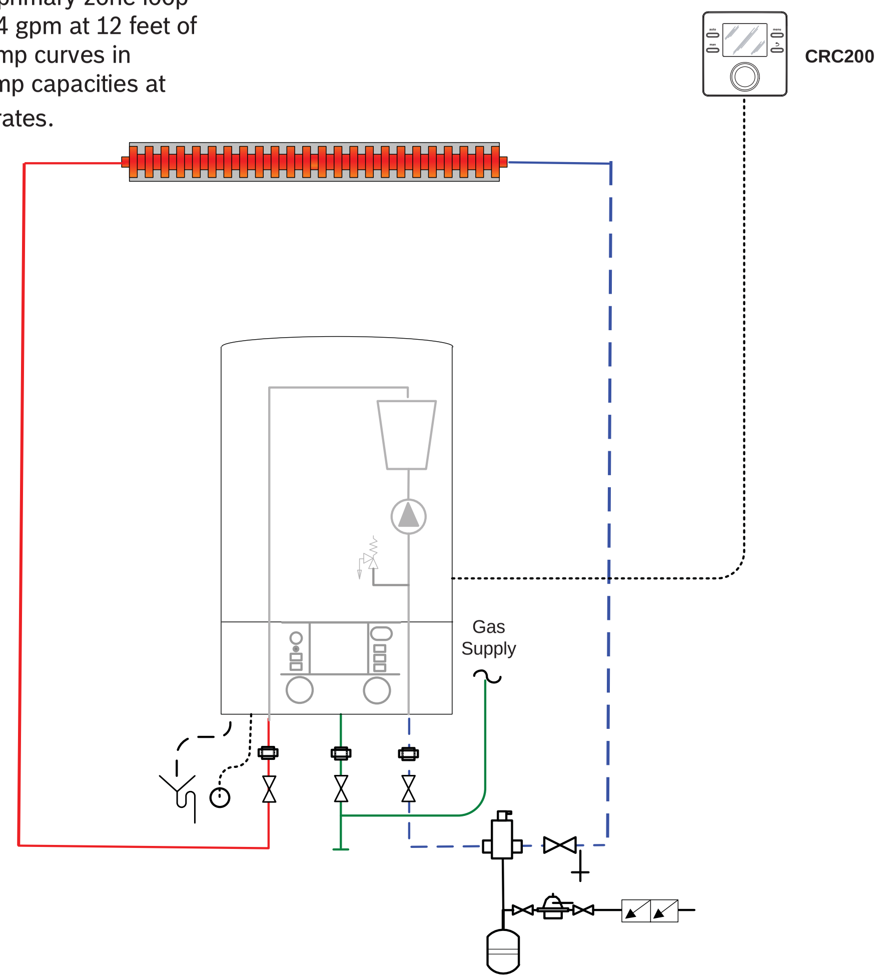
| | |
|---|---|
| Created | TK 02/20/15 |
| Released | |
| Changed | |
| Bases | |
| No. | . |
| State | |

**Bosch**

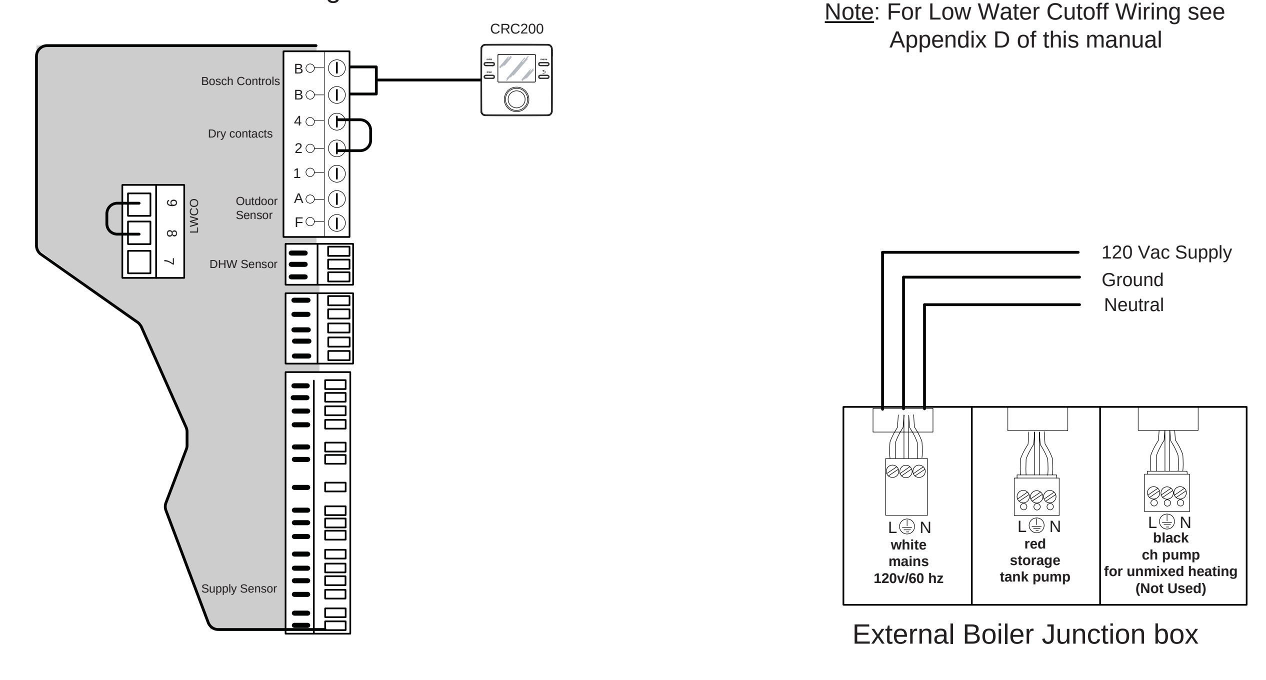
| | |
|---|---|
| | **PRV Relief piping** |
| | **Purge Drain** |
| | **Condensate drain** |
| | **Relief valve & pressure gauge** |
| | **Back-flow preventer** |
| | **Isolation valve** |
| | **Baseboard** |
| | **Expansion Tank** |
| | **Auto-Fill** |
| | **Air Eliminator** |

Note: Greenstar Internal circulator can support a primary zone loop not to exceed 4 gpm at 12 feet of head. See pump curves in manual for pump capacities at alternate flow rates.



## System #6

Heatronic Internal Wiring




### Wiring:

| Low Voltage | Line Voltage |
|---|---|

**Low Voltage**

► Wire Comfort Room Controller (CRC200) to Terminals B & B of Heatronic control

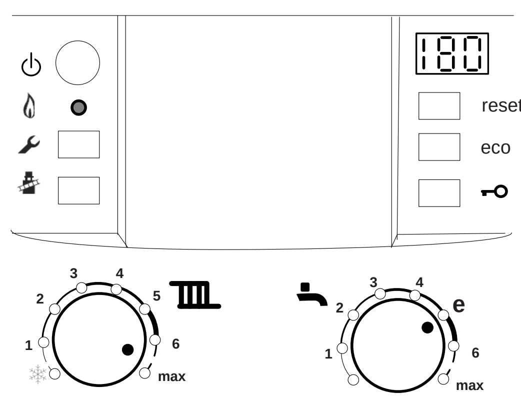
► See Appendix C for CRC200 Quick Set-Up Guide

**Line Voltage**

► Wire Main power supply (120 v) to White molex

### Heatronic Settings:

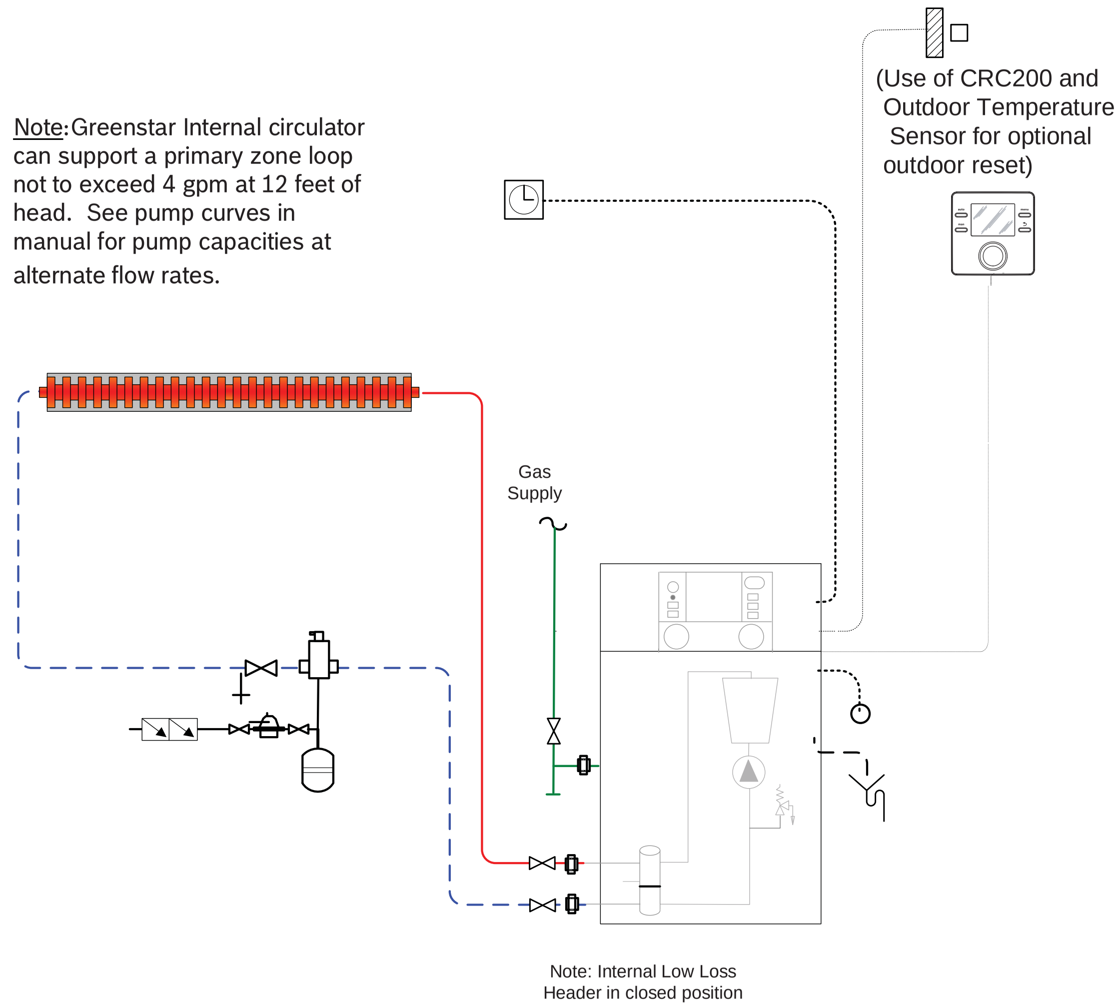
| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |



# System # 7

Single Zone
Heat only floor boiler
Baseboard
On/Off Thermostat

| | |
|---|---|
| | Isoloation Valve |
| | PRV Relief piping |
| | Purge Drain |
| | Room Thermostat |
| | Condensate drain |
| | Relief valve & pressure gauge |
| | Back-flow preventer |
| | Baseboard |
| | Expansion Tank |
| | Auto-Fill |
| | Air Eliminator |




Note: Greenstar Internal circulator can support a primary zone loop not to exceed 4 gpm at 12 feet of head. See pump curves in manual for pump capacities at alternate flow rates.

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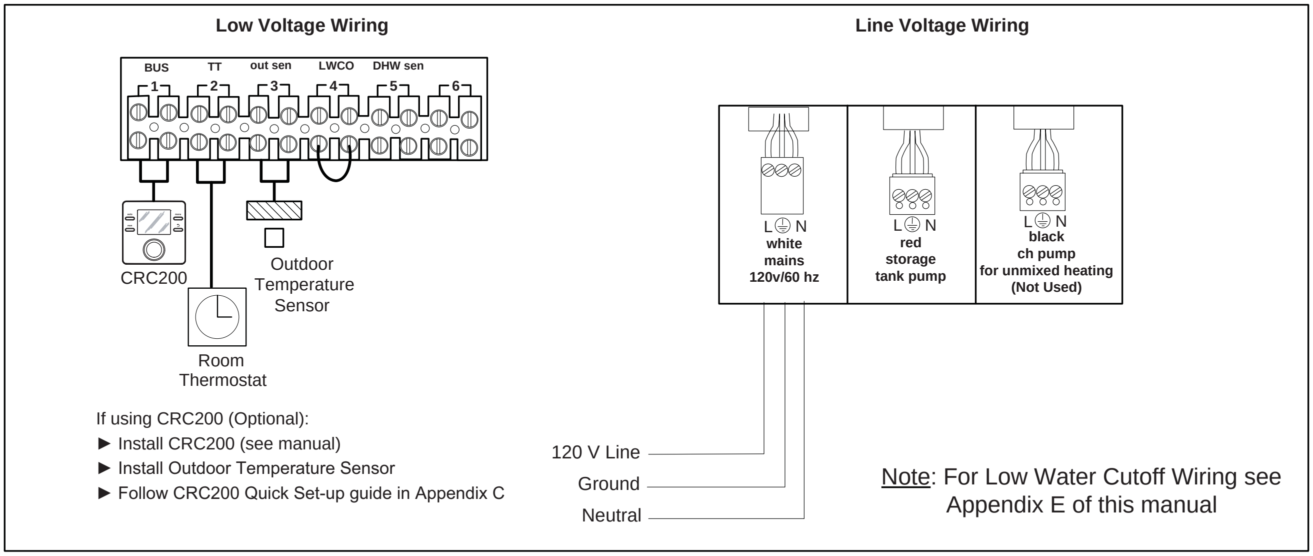
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |

| | |
|---|---|
| No. | . |
| State | |

**Bosch**

## System #7




### Wiring:

#### Low Voltage

► Remove factory jumper from terminal #2 and connect non-power robbing thermostat (dry contacts only) to terminal #2

► Outdoor Temperature Sensor connect to terminal #3 (OUT SEN)

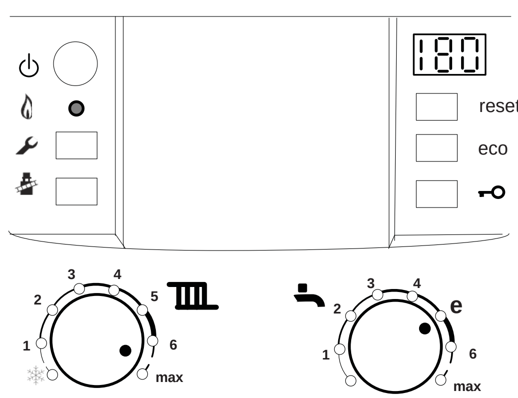
► CRC200 connect to terminal #1 (BUS)

#### Line Voltage

► Wire Main power supply (120 v) to White molex

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |



# System # 8

Single Zone
Heat only floor boiler
Baseboard
NSC Controls

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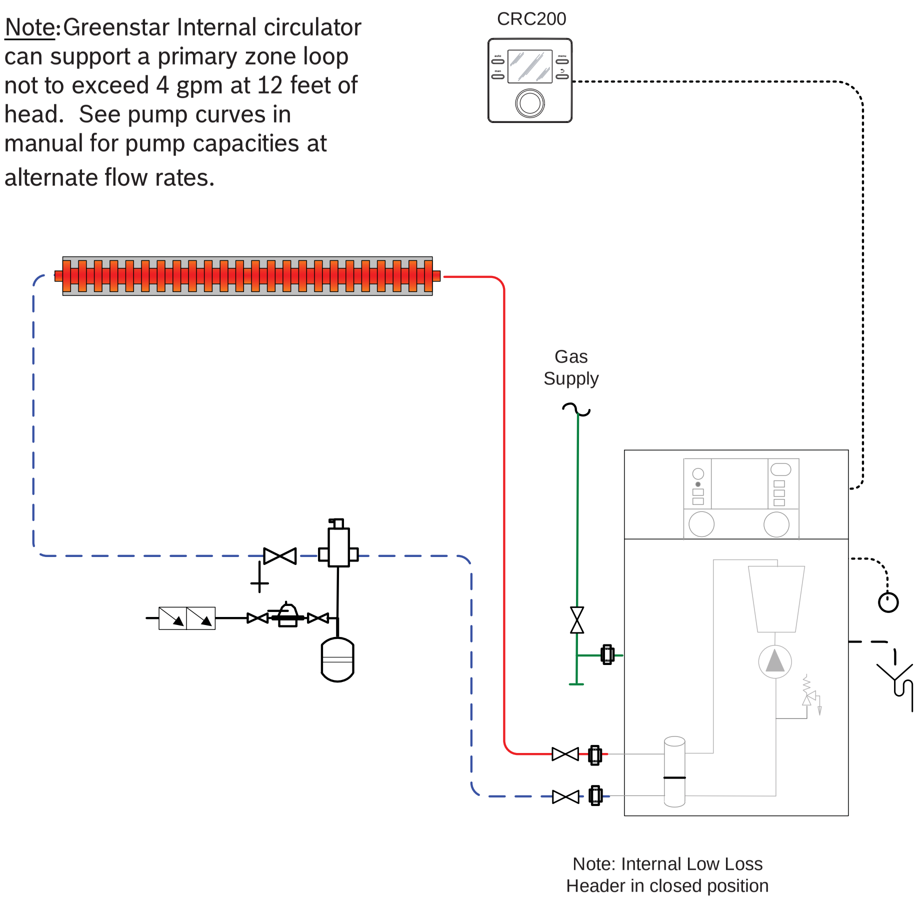
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |

| | |
|---|---|
| No. | . |
| State | |

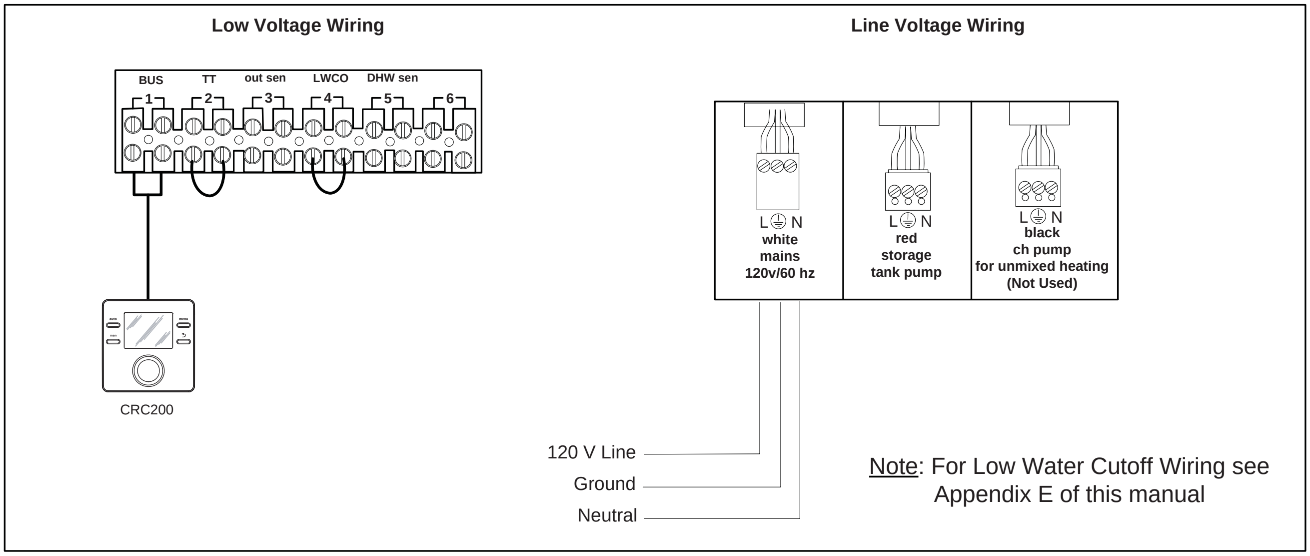
**Bosch**

| | |
|---|---|
| | **PRV Relief piping** |
| | **Purge Drain** |
| | **Condensate drain** |
| | **Relief valve & pressure gauge** |
| | **Back-flow preventer** |
| | **Isolation valve** |
| | **Baseboard** |
| | **Expansion Tank** |
| | **Auto-Fill** |
| | **Air Eliminator** |

Note: Greenstar Internal circulator can support a primary zone loop not to exceed 4 gpm at 12 feet of head. See pump curves in manual for pump capacities at alternate flow rates.



## System #8




### Wiring:

**Low Voltage**

► Wire Comfort Room Controller (CRC200) to Terminal # 1 on back of Greenstar FS Boiler

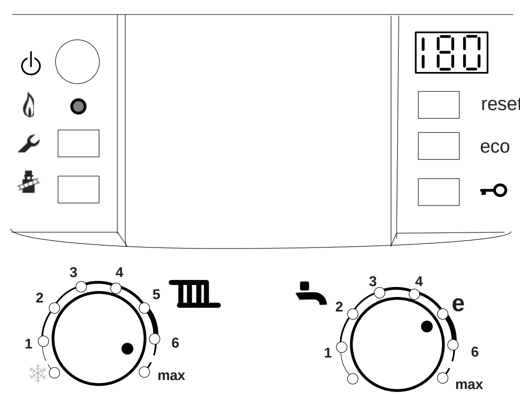
► See Appendix C for CRC200 Quick Set-Up Guide

**Line Voltage**

► Wire Main power supply (120 v) to White molex

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |



# System # 9

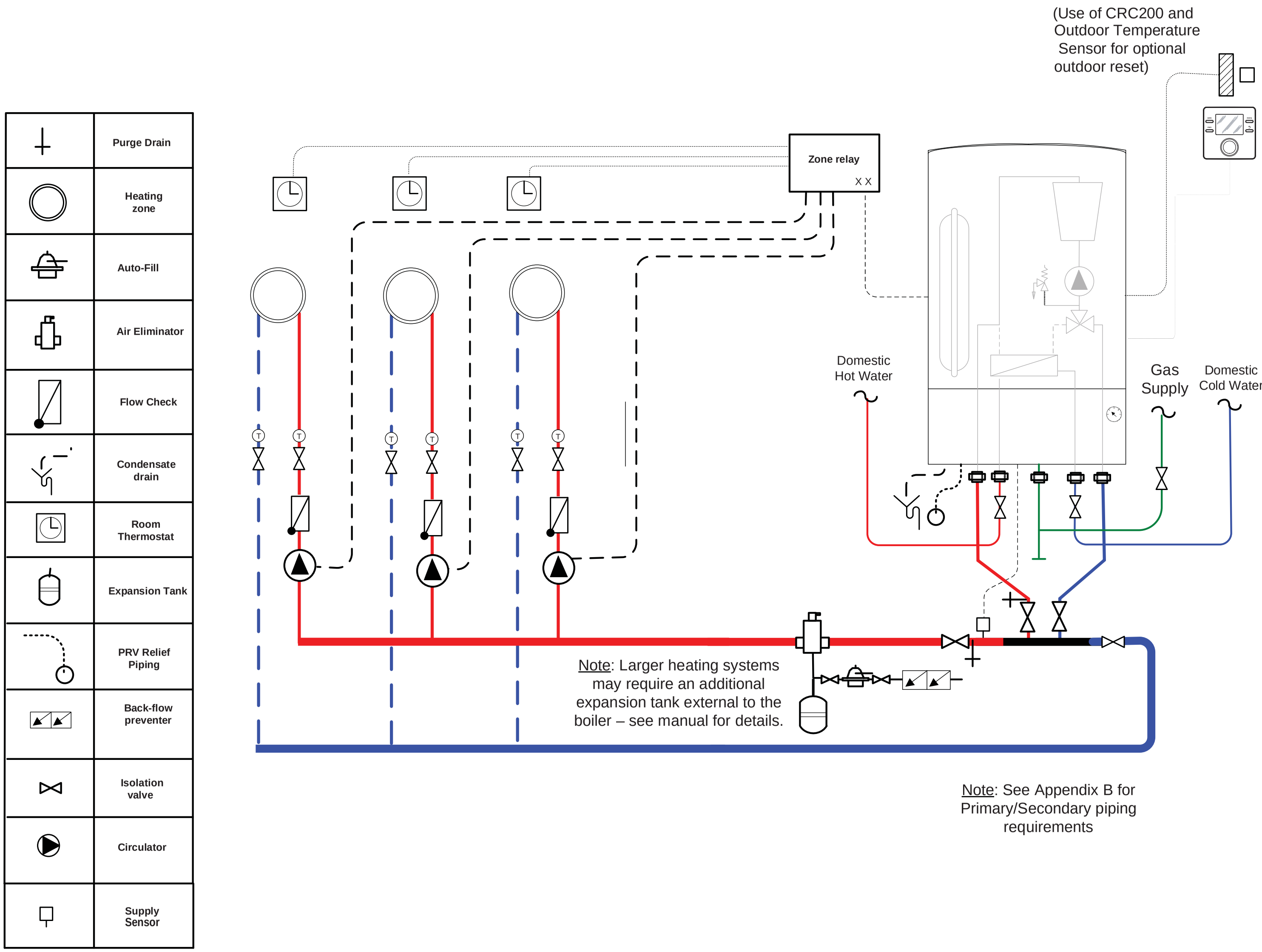
Multi Zone
Combi wall boiler
Circulators
Zone Relay

...

DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.

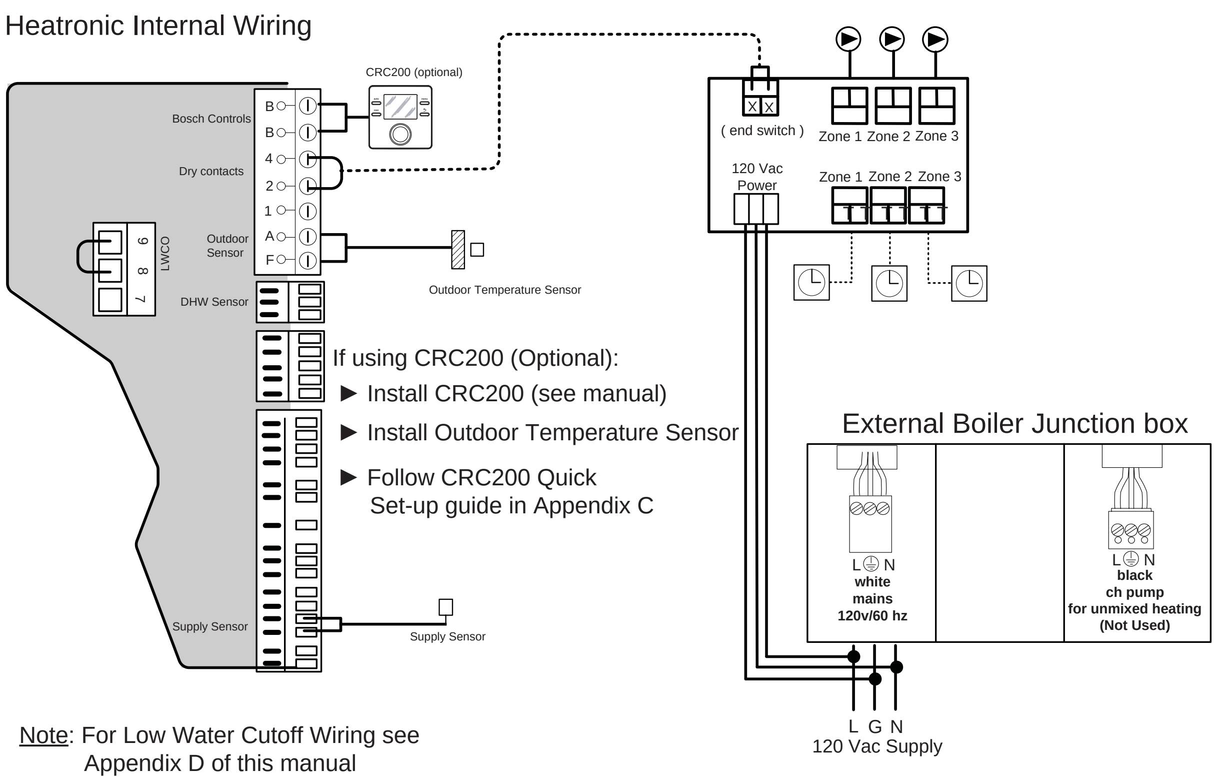
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |
| | |
| No. | |
| Date | |

**Bosch**




...

## System # 9




### Wiring:

#### Low Voltage

▶ Remove factory jumper from terminal #2 & #4 and connect to End Switch of Mult-Zone relay (dry contacts only)

▶ Outdoor Temperature Sensor connect to terminals A & F

▶ CRC200 connect to terminals B & B

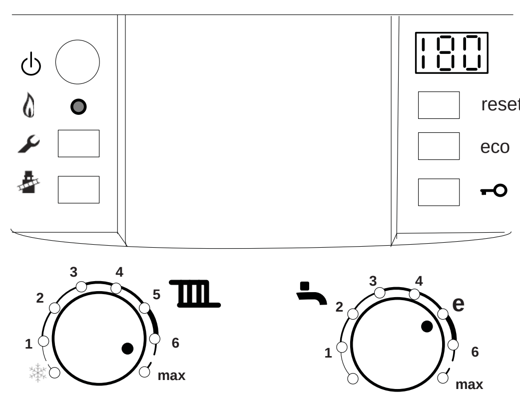
#### Line Voltage

▶ Wire Main power supply (120 v) to White molex of Boiler external junction box

▶ Wire 120 Vac power supply to zone relay

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |

# System # 10

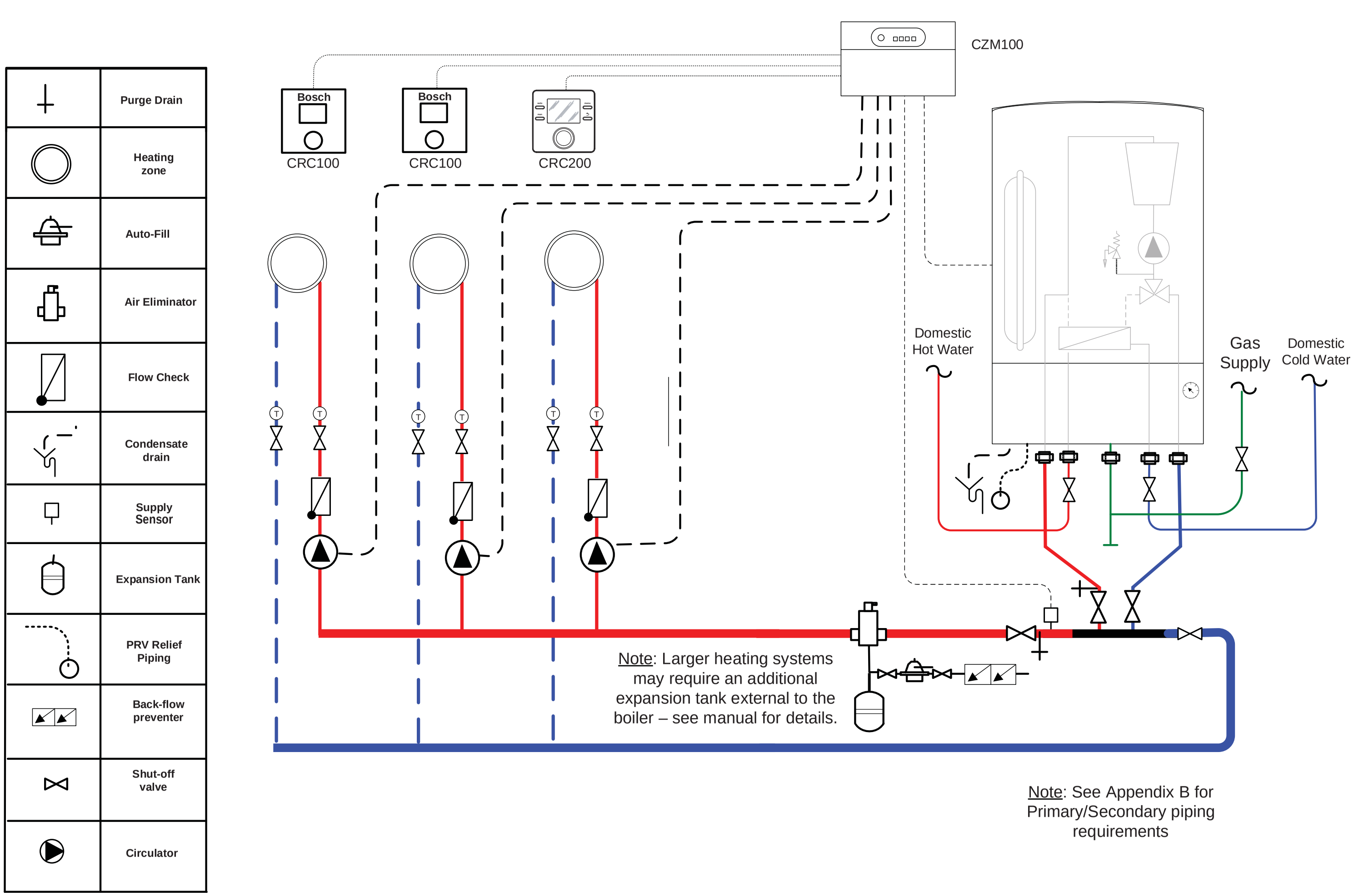
Multi Zone
Combi wall boiler
Circulators
NSC Controls

...

DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.

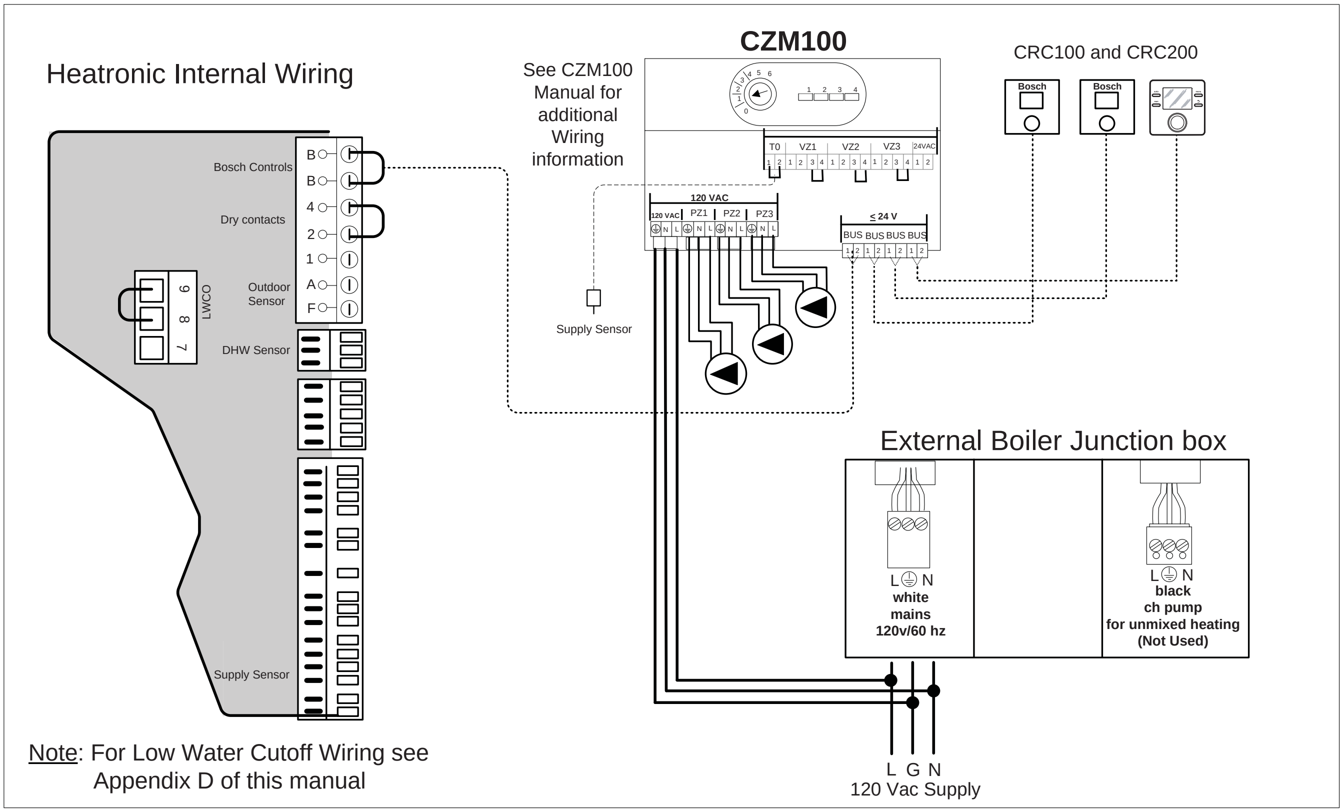
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |
| | |
| No. | |
| Date | |

**Bosch**




...

## System #10




### Wiring:

#### Low Voltage

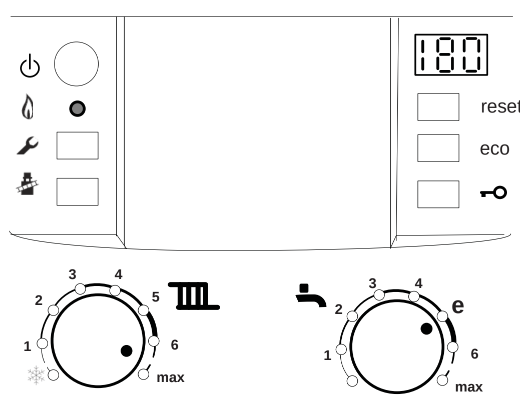
- ▶ Wire BUS terminal of CZM100 to Terminal B & B of Greenstar boiler
- ▶ Wire CRC controllers to BUS terminals of CZM100
- ▶ See Appendix A for Comfort Room Controller CRC100 and CZM100 Settings
- ▶ Wire Supply Sensor to “T0” connection on CZM100
- ▶ See Appendix C for CRC200 Quick Set-Up Guide

#### Line Voltage

- ▶ Wire Main power supply (120 v) to White molex of Boiler (external junction box) and to 120 VAC input of CZM100
- ▶ Wire 120 VAC ouputs of PZ1, PZ2 and PZ3 of CZM100 to Zone Circulators

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |

# System # 11

Multi Zone
Combi floor boiler
Circulators
Zone Relay

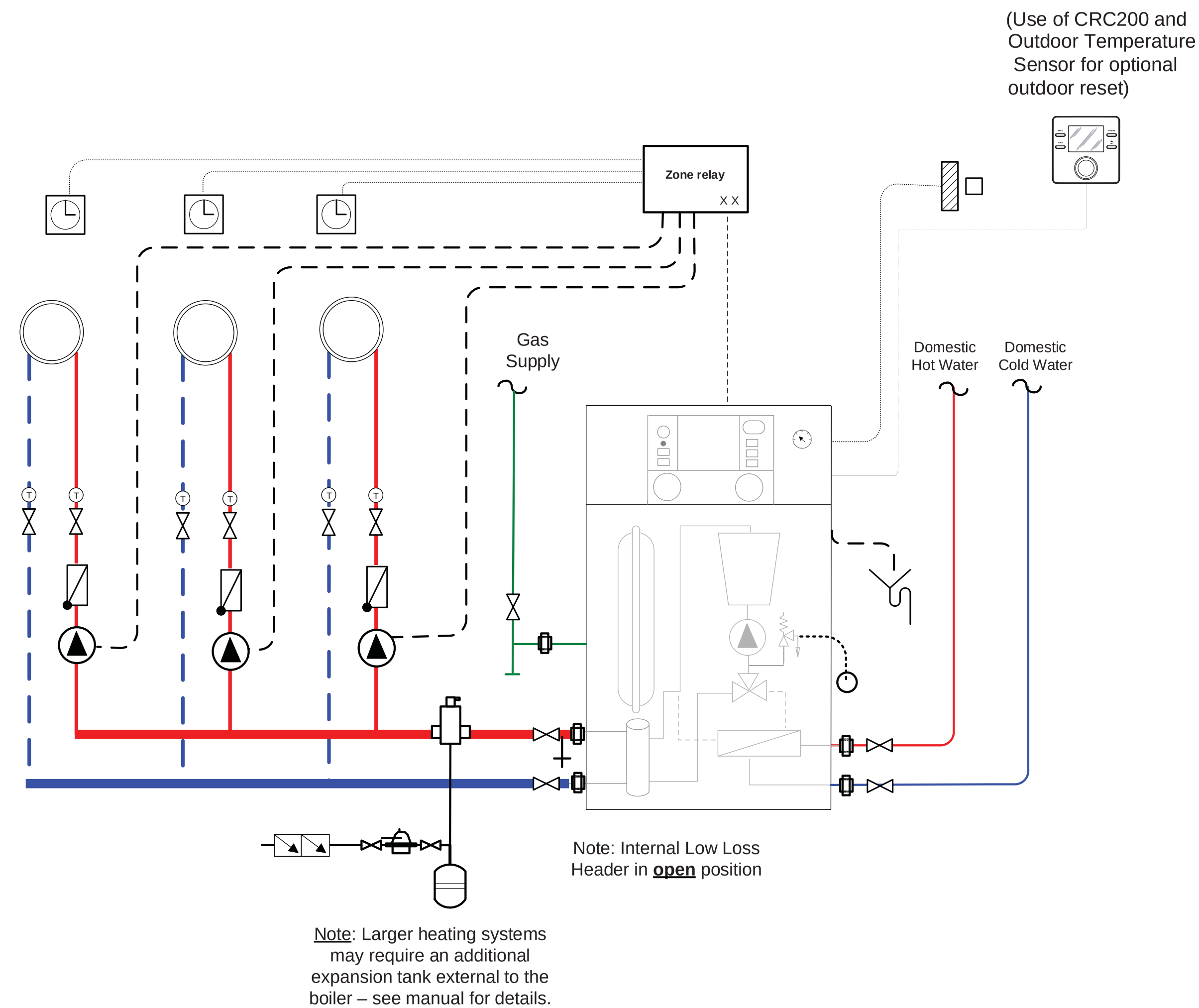
...

DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.

| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |
| | |
| No. | |
| Date | |

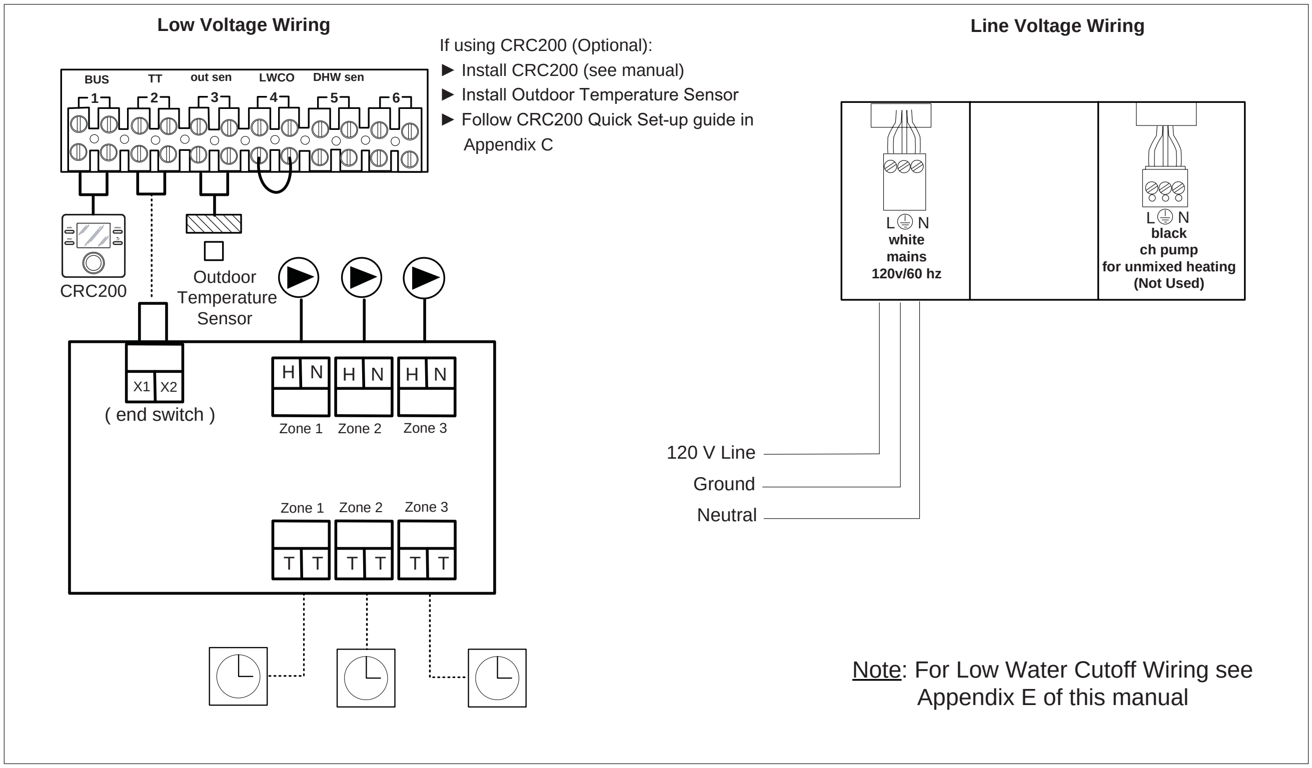
**Bosch**

| | |
|---|---|
| | Purge Drain |
| | Heating zone |
| | Auto-Fill |
| | Air Eliminator |
| | Flow Check |
| | Condensate drain |
| | Room Thermostat |
| | Expansion Tank |
| | PRV Relief Piping |
| | Back-flow preventer |
| | Shut-off valve |
| | Circulator |




...

# System #11




## Wiring:

### Low Voltage

▶ Remove factory jumper from terminal #2 and connect End Switch of Mult-Zone relay (dry contacts only) to terminal #2

▶ Outdoor Temperature Sensor connect to terminal #3 (OUT SEN)

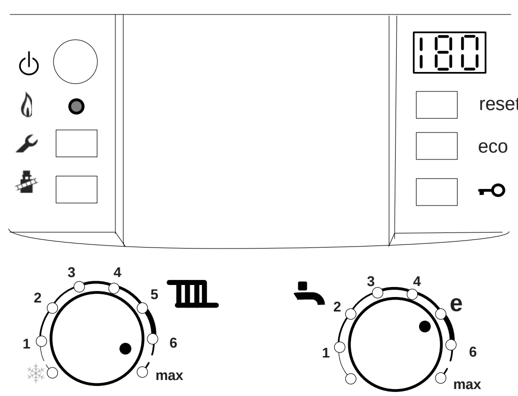
▶ CRC200 connect to terminal #1 (BUS)

### Line Voltage

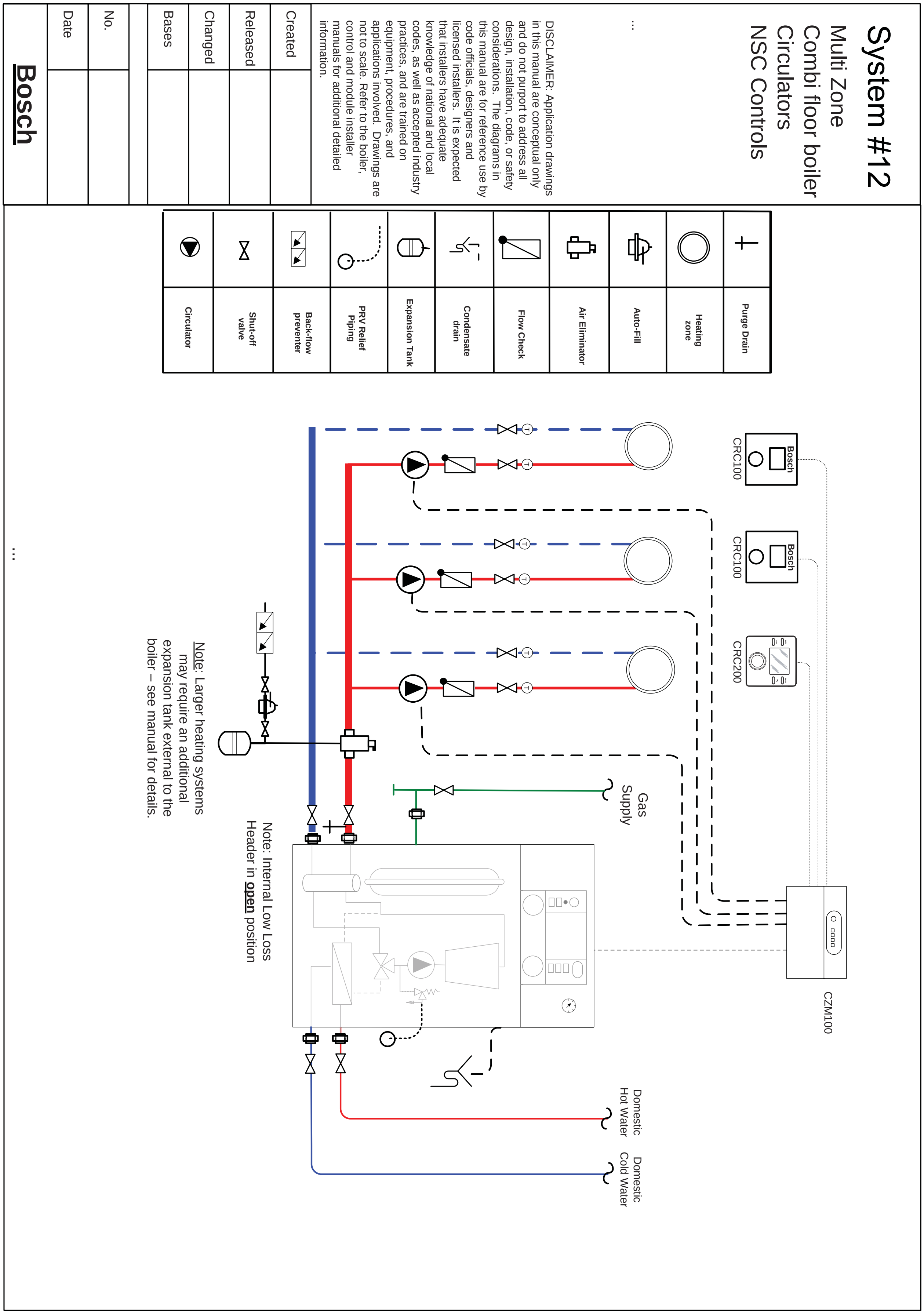
▶ Wire Main power supply (120 v) to White molex of Boiler

## Heatronic Settings:

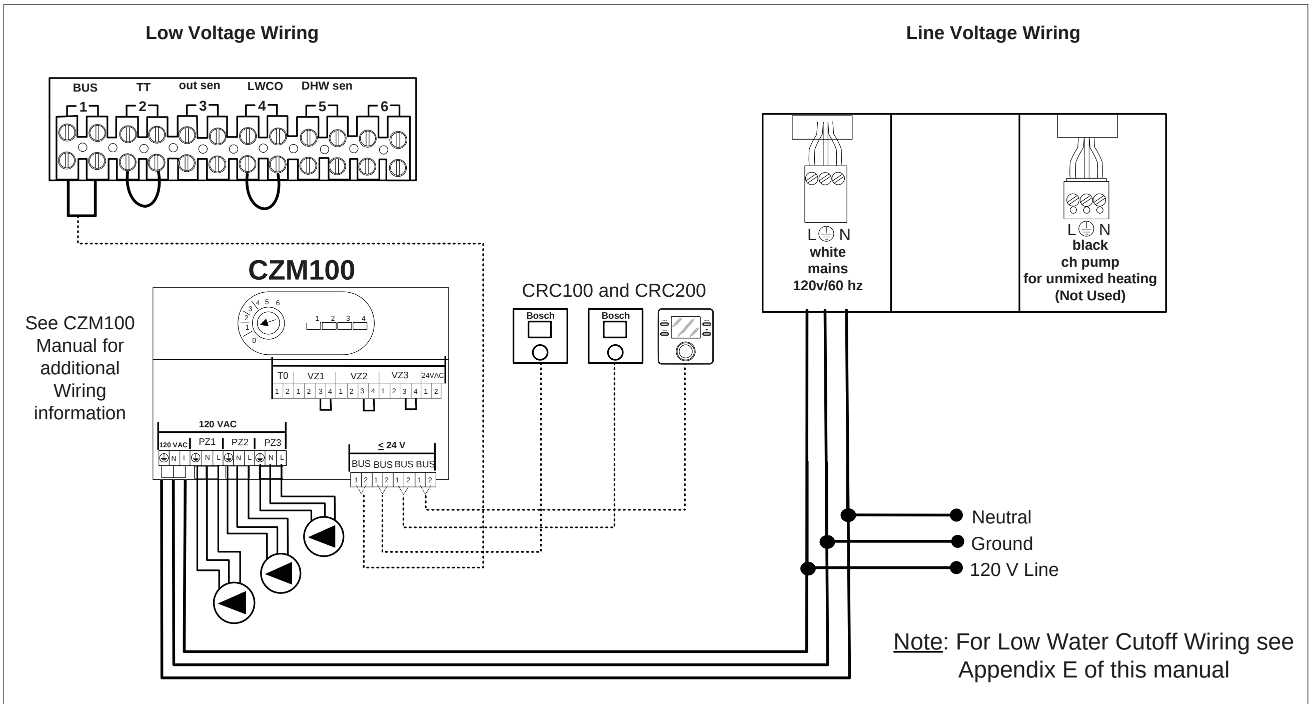
| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |


System #12
Multi Zone
Combi floor boiler
Circulators
NSC Controls
DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.
Created
Released
Changed
Bases
No.
Date
Bosch
Purge Drain
Heating zone
Auto-Fill
Air Eliminator
Flow Check
Condensate drain
Expansion Tank
PRV Relief Piping
Back-flow preventer
Shut-off valve
Circulator
CRC100
CRC100
CRC200
CZM100
Gas Supply
Note: Larger heating systems may require an additional expansion tank external to the boiler – see manual for details.
Note: Internal Low Loss Header in open position
Domestic Hot Water
Domestic Cold Water

# System #12




## Wiring:

### Low Voltage

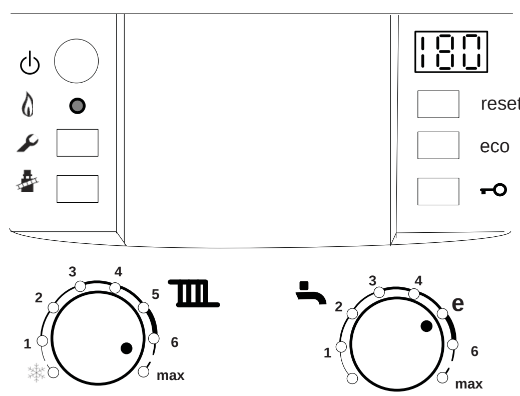
- ► Wire BUS terminal of CZM100 to Terminal #1 of Greenstar FS boiler
- ► Wire CRC controllers to BUS terminals of CZM100
- ► See Appendix A for Comfort Room Controller CRC100 and CZM100 Settings
- ► See Appendix C for CRC200 Quick Set-up guide

### Line Voltage

- ► Wire Main power supply (120 v) to White molex of Boiler and to 120 VAC input of CZM100
- ► Wire 120 VAC ouputs of PZ1, PZ2 and PZ3 to Zone Circulators

## Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |

# System # 13

Multi Zone
Heat only wall boiler
Circulators
Indirect Tank
Zone Relay

...

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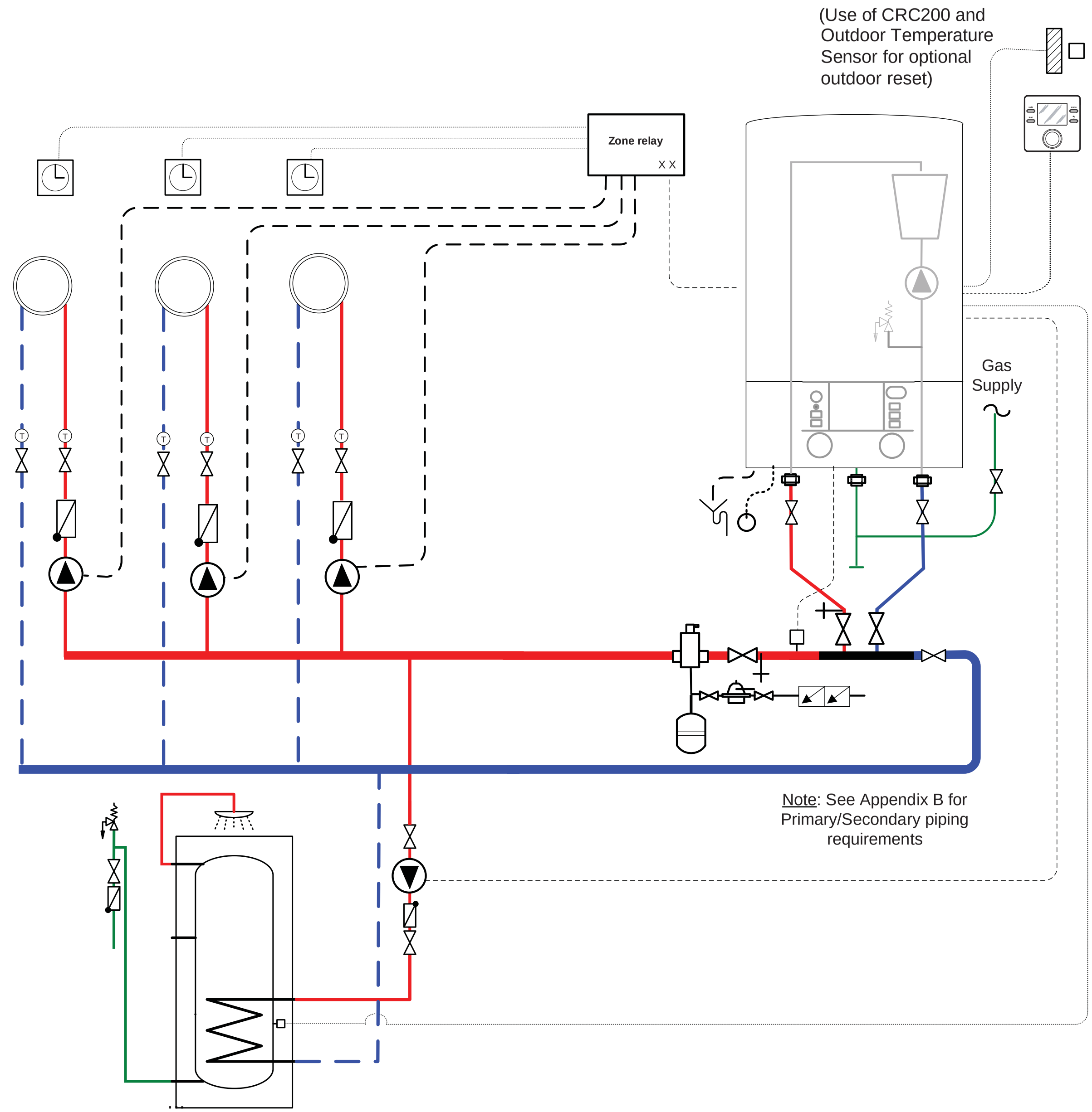
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |

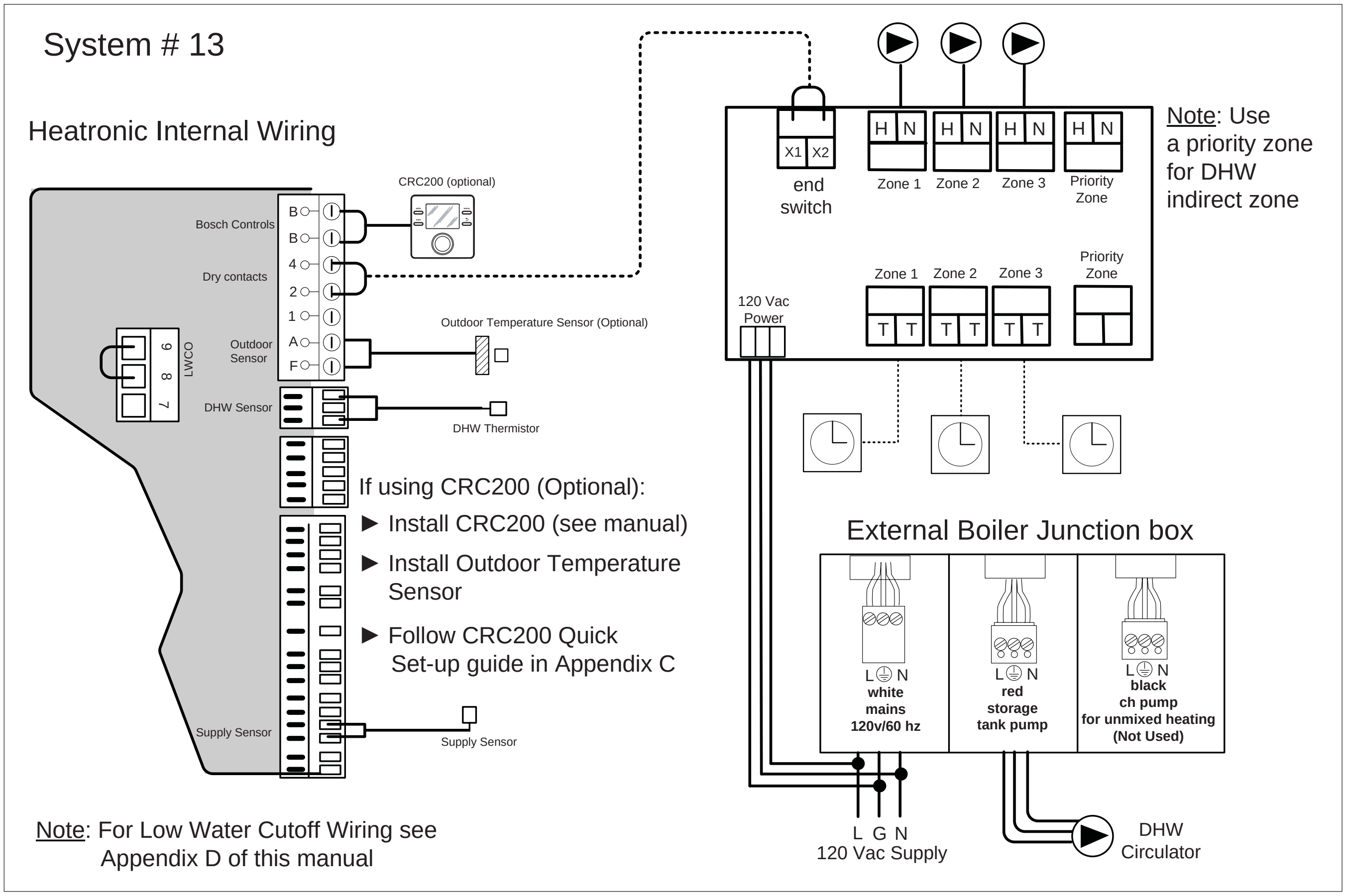
| | |
|---|---|
| No. | |
| Date | |

**Bosch**

| | |
|---|---|
| | DHW Thermistor |
| | Purge Drain |
| | Heating zone |
| | Auto-Fill |
| | Air Eliminator |
| | Flow Check |
| | Condensate drain |
| | Room Thermostat |
| | Expansion Tank |
| | PRV Relief Piping |
| | Back-flow preventer |
| | Shut-off valve |
| | Circulator |
| | Supply Sensor |




...




## Wiring:

### Low Voltage

▶ Remove factory jumper from terminal #2 & #4 and connect to End Switch of Mult-Zone relay (dry contacts only)

▶ Outdoor Temperature Sensor connect to terminals A & F

▶ CRC200 connect to terminals B & B

▶ Wire DHW Thermistor to blue molex adapter in Greenstar boiler wire harness

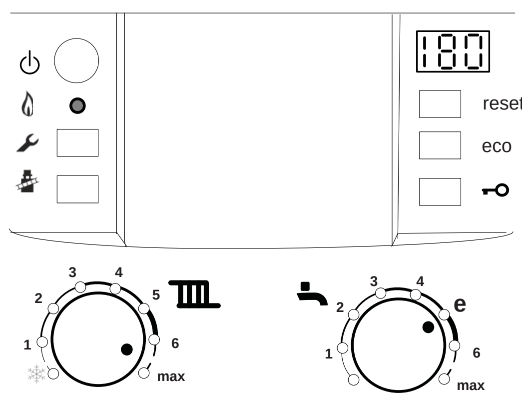
### Line Voltage

▶ Wire Main power supply (120 v) to White molex of Boiler (external junction box)

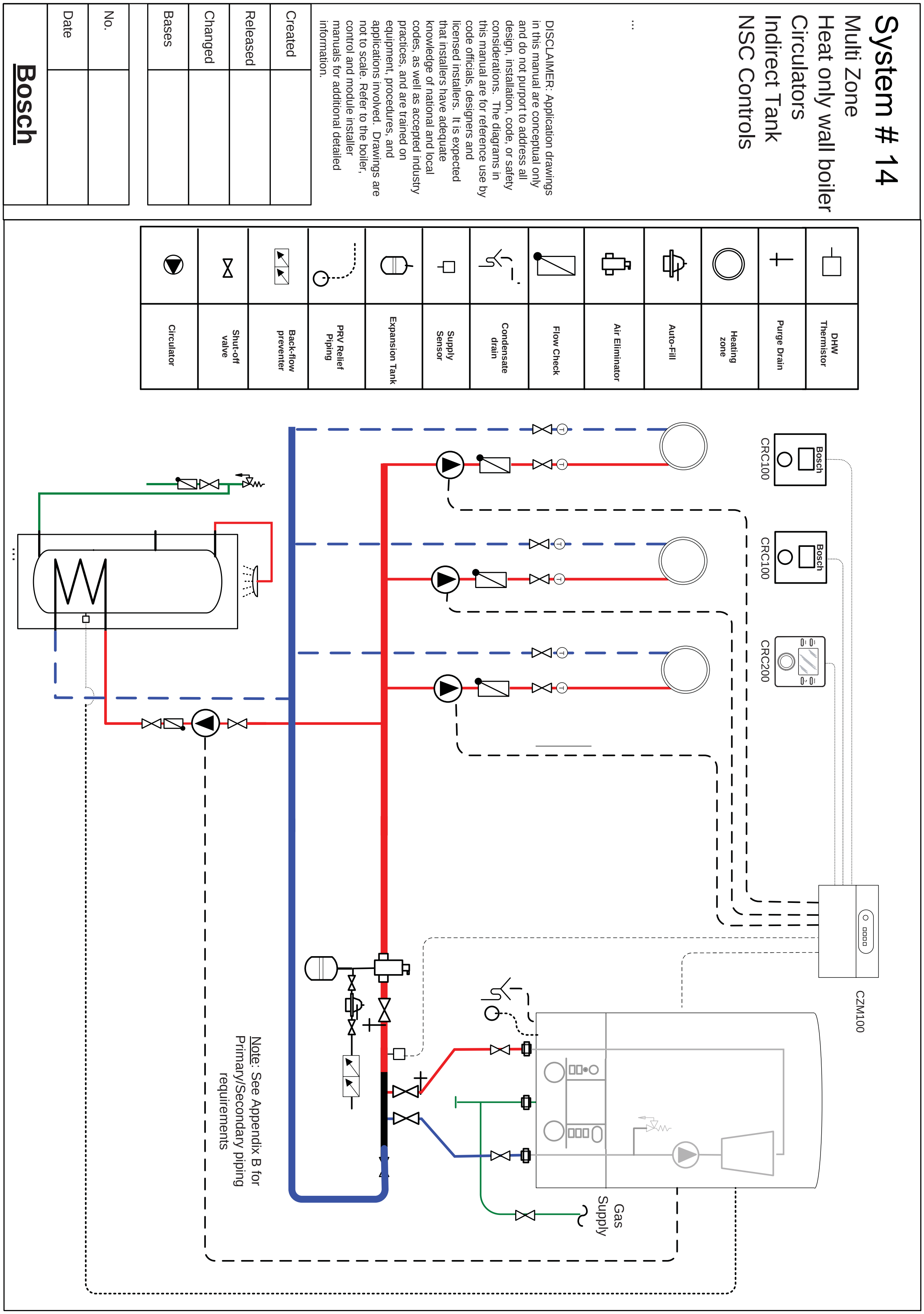
▶ Wire 120 Vac power supply to zone relay

## Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |

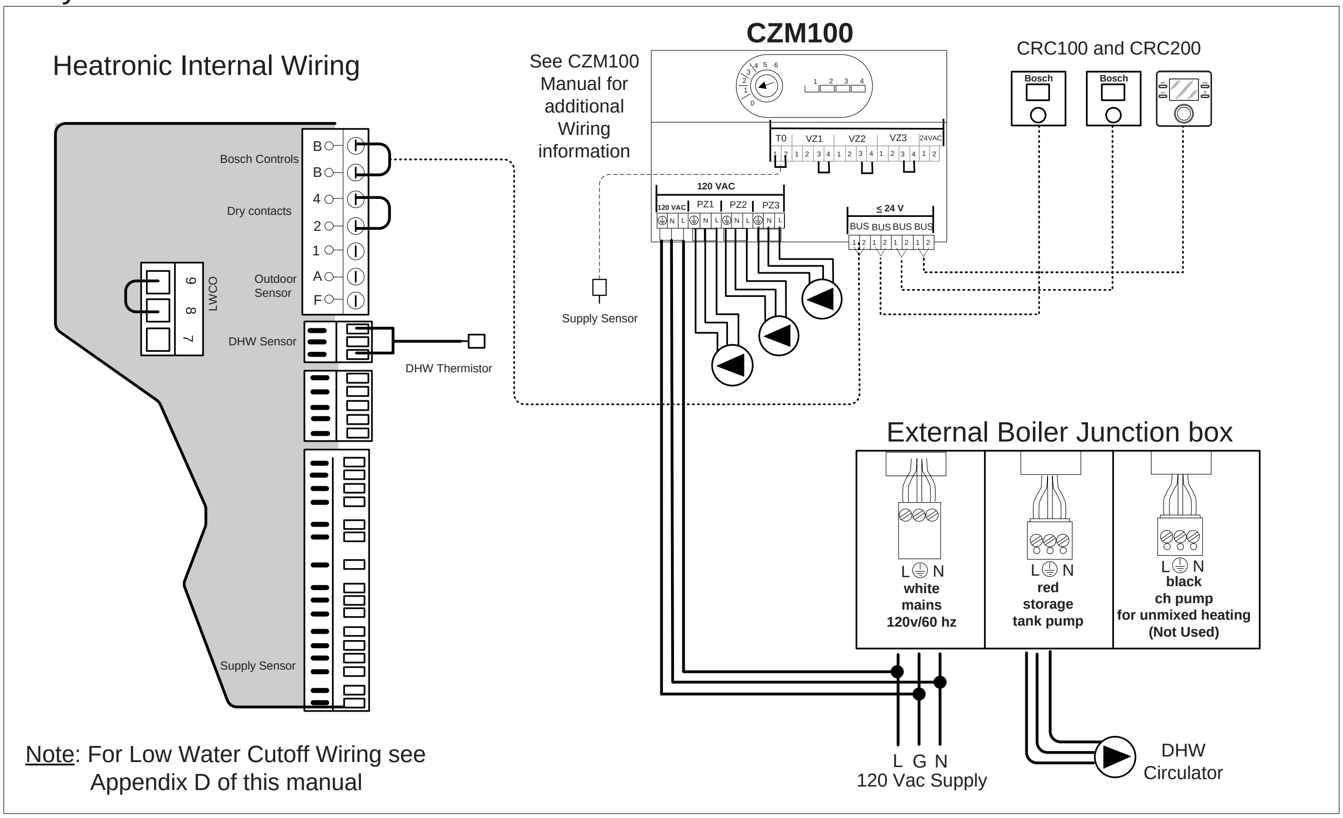



| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |



System # 14
Multi Zone
Heat only wall boiler
Circulators
Indirect Tank
NSC Controls
DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.
Created
Released
Changed
Bases
No.
Date
Bosch
DHW Thermistor
Purge Drain
Heating zone
Auto-Fill
Air Eliminator
Flow Check
Condensate drain
Supply Sensor
Expansion Tank
PRV Relief Piping
Back-flow preventer
Shut-off valve
Circulator
CRC100
CRC100
CRC200
CZM100
Gas Supply
Note: See Appendix B for Primary/Secondary piping requirements

## System #14




### Wiring:

#### Low Voltage

- ▶ Wire BUS terminal of CZM100 to Terminal B & B of Greenstar boiler
- ▶ Wire CRC controllers to BUS terminals of CZM100
- ▶ See Appendix A for Comfort Room Controller CRC100 and CZM100 Settings
- ▶ Wire Supply Sensor to “T0” connection of CZM100
- ▶ See Appendix C for CRC200 Quick Set-up guide
- ▶ Wire Greenstar Tank thermistor sensor to blue molex adaptor in Greenstar boiler wire harness

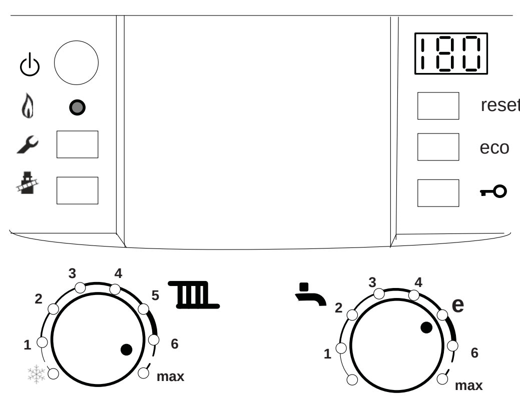
#### Line Voltage

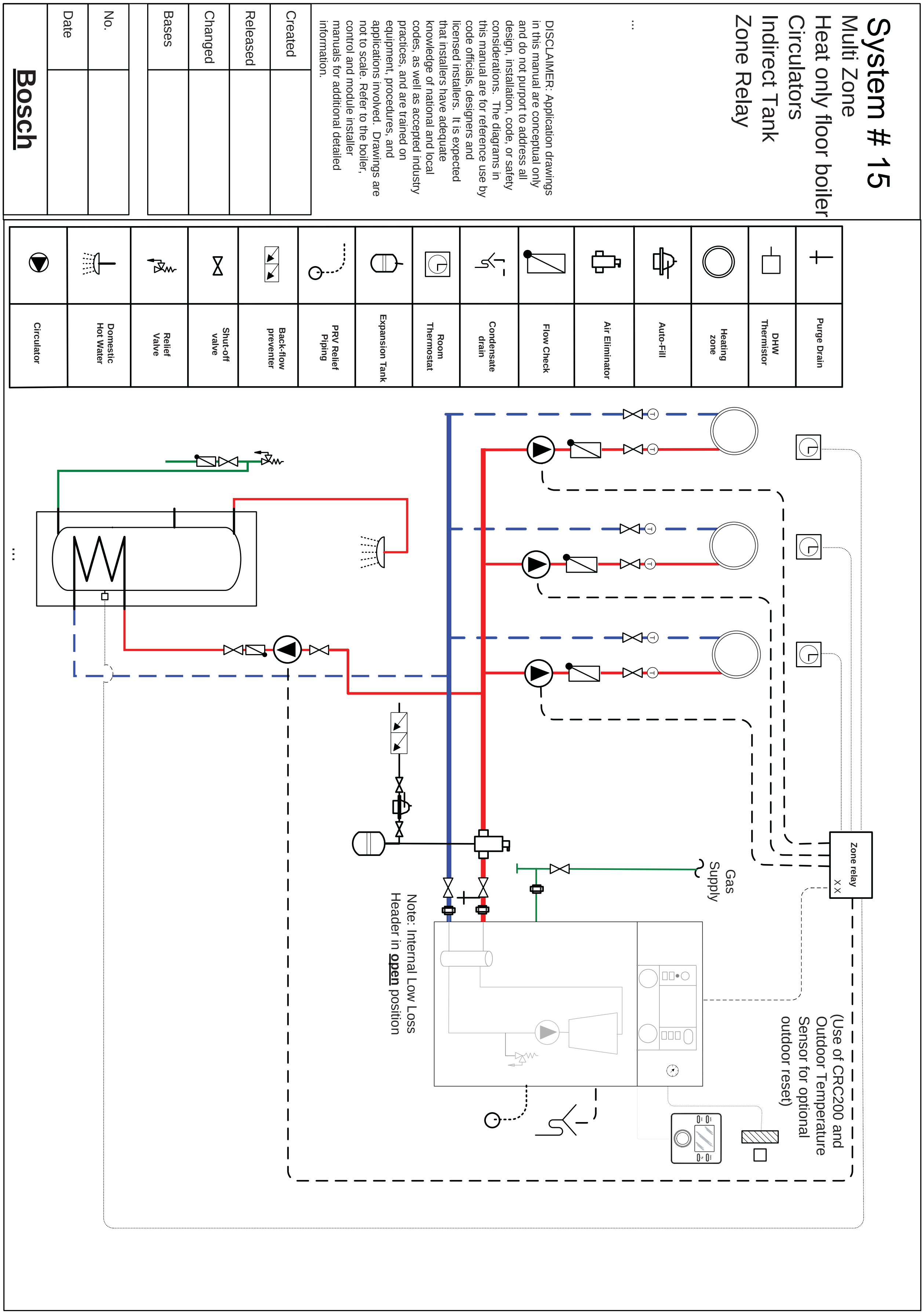
- ▶ Wire Main power supply (120 v) to White molex of Boiler (external junction box) and to 120 VAC input of CZM100
- ▶ Wire 120 VAC ouputs of PZ1, PZ2 and PZ3 of CZM100 to Zone Circulators
- ▶ Wire 120 VAC of Red Molex to DHW Circulator

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |

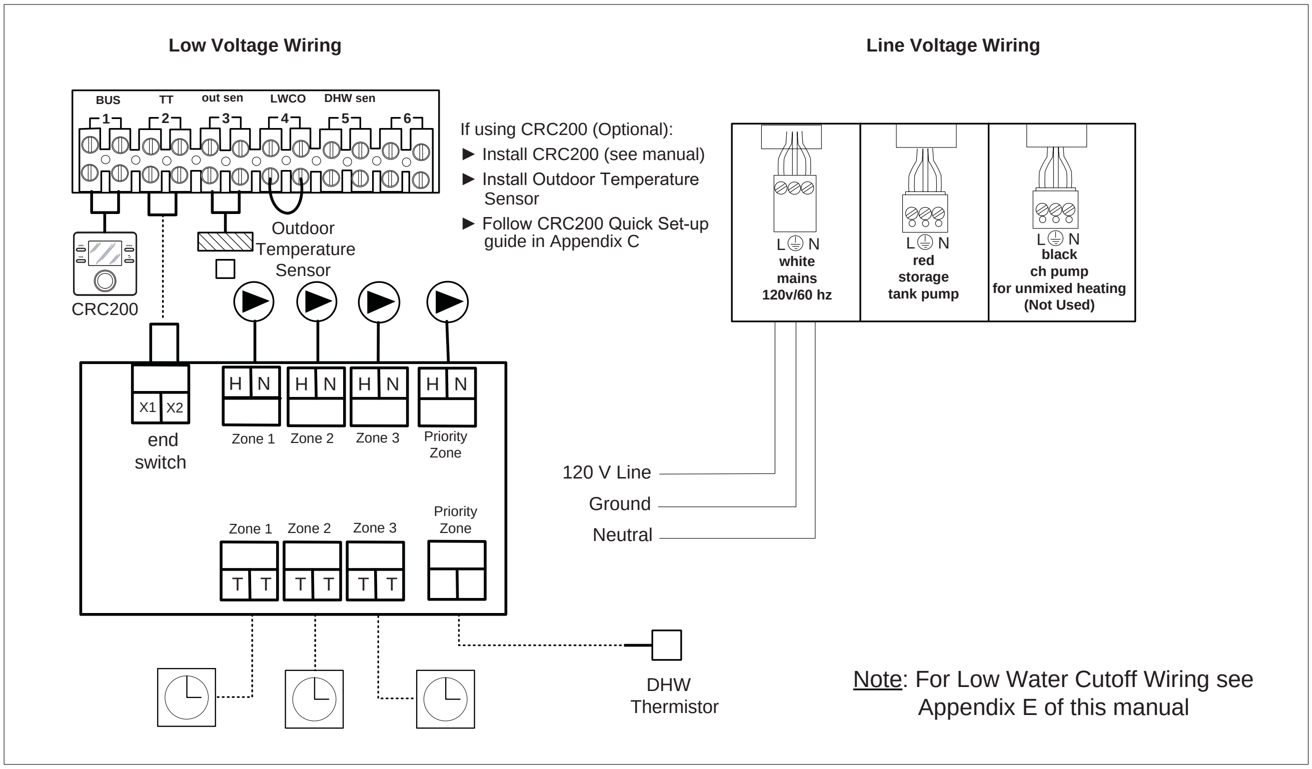
| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |





System # 15
Multi Zone
Heat only floor boiler
Circulators
Indirect Tank
Zone Relay
DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.
Created
Released
Changed
Bases
No.
Date
Bosch
Purge Drain
DHW Thermistor
Heating zone
Auto-Fill
Air Eliminator
Flow Check
Condensate drain
Room Thermostat
Expansion Tank
PRV Relief Piping
Back-flow preventer
Shut-off valve
Relief Valve
Domestic Hot Water
Circulator
Zone relay
Gas Supply
Note: Internal Low Loss Header in open position
(Use of CRC200 and Outdoor Temperature Sensor for optional outdoor reset)

# System #15




## Wiring:

### Low Voltage

► Remove factory jumper from terminal #2 and connect End Switch of Mult-Zone relay (dry contacts only) to terminal #2

► Outdoor Temperature Sensor connect to terminal #3 (OUT SEN)

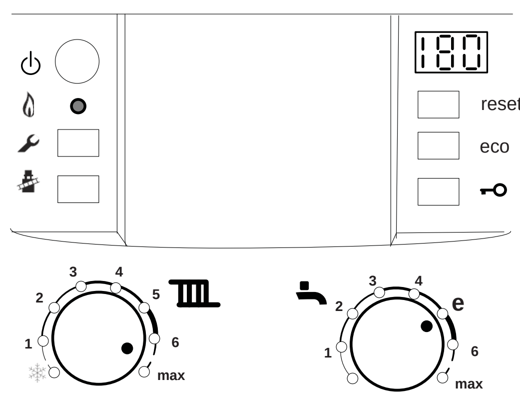
► CRC200 connect to terminal #1 (BUS)

### Line Voltage

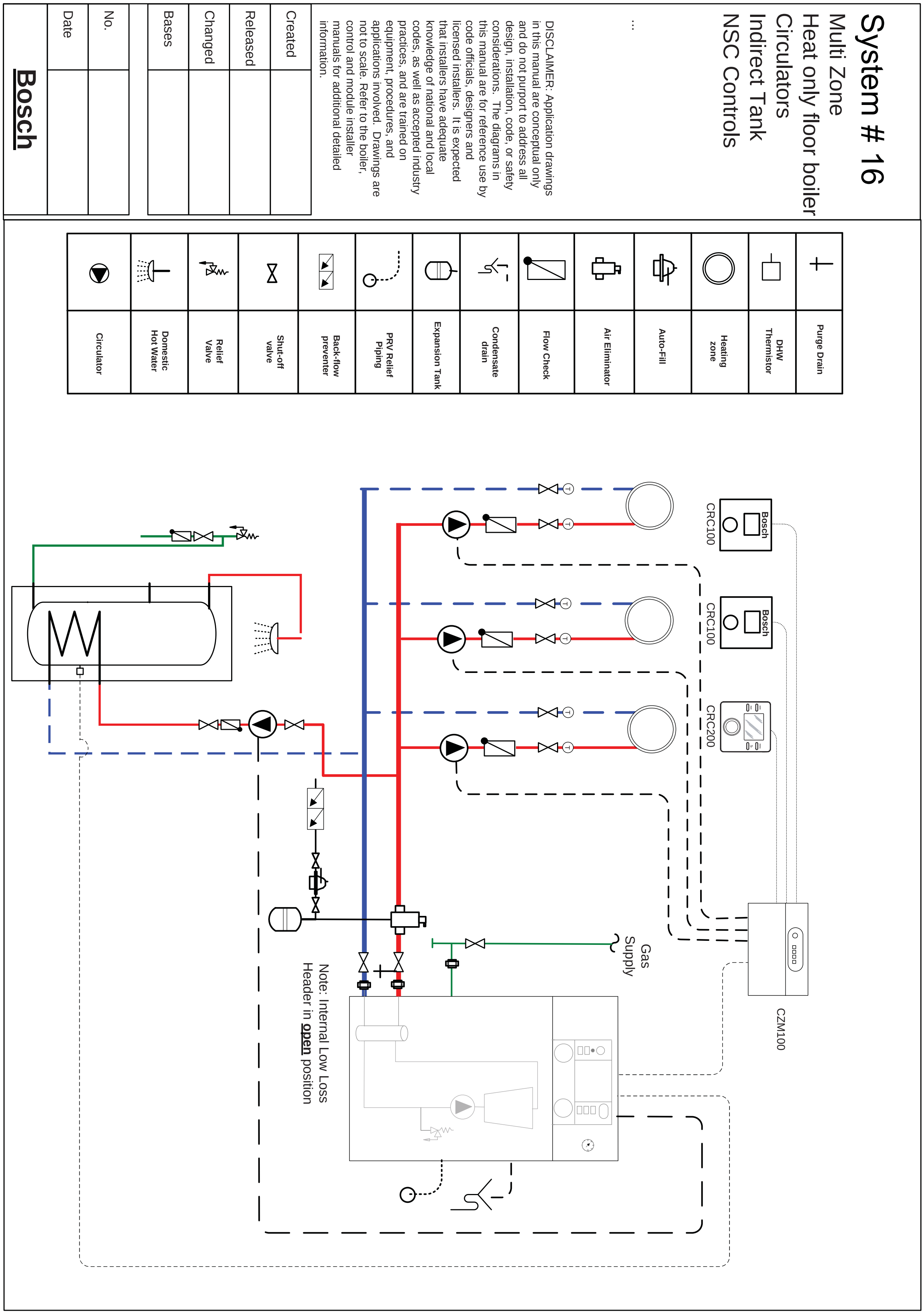
► Wire Main power supply (120 v) to White molex of Boiler

## Heatronic Settings:

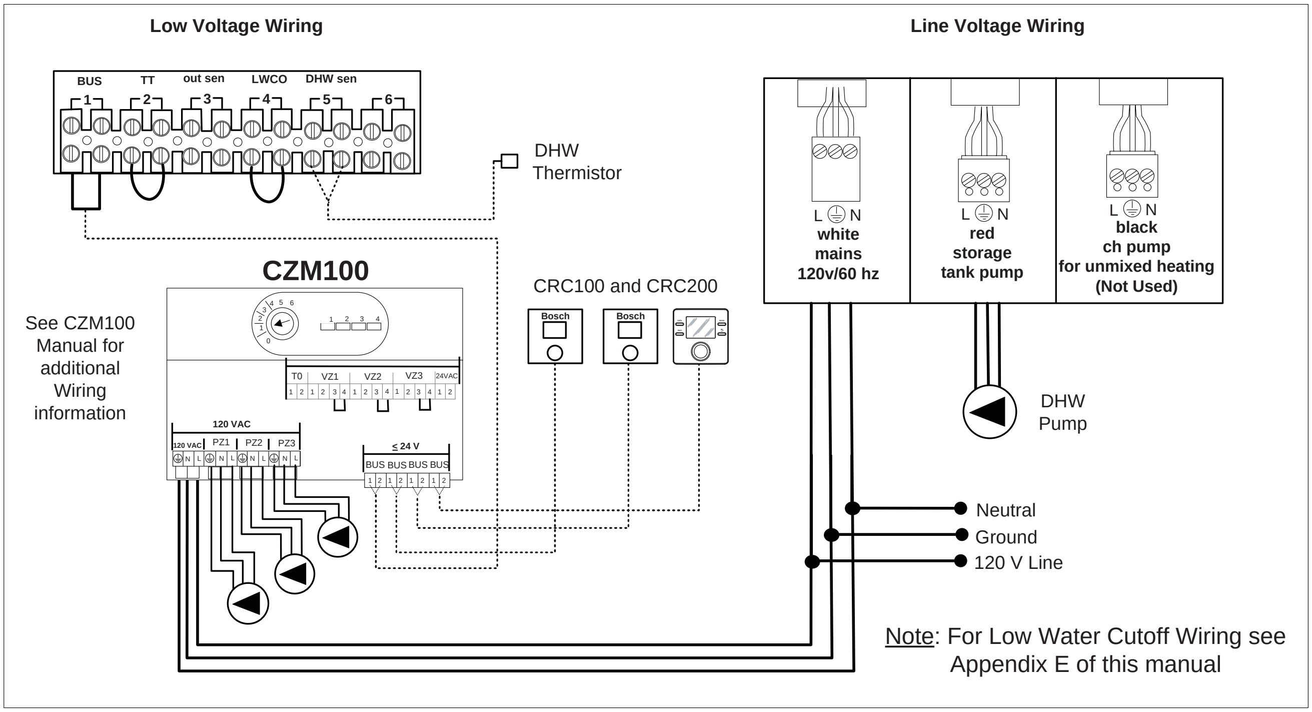
| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |


System # 16
Multi Zone
Heat only floor boiler
Circulators
Indirect Tank
NSC Controls
DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.
Created
Released
Changed
Bases
No.
Date
Bosch
Purge Drain
DHW Thermistor
Heating zone
Auto-Fill
Air Eliminator
Flow Check
Condensate drain
Expansion Tank
PRV Relief Piping
Back-flow preventer
Shut-off valve
Relief Valve
Domestic Hot Water
Circulator
CRC100
CRC100
CRC200
CZM100
Gas Supply
Note: Internal Low Loss Header in open position

## System #16




### Wiring:

#### Low Voltage

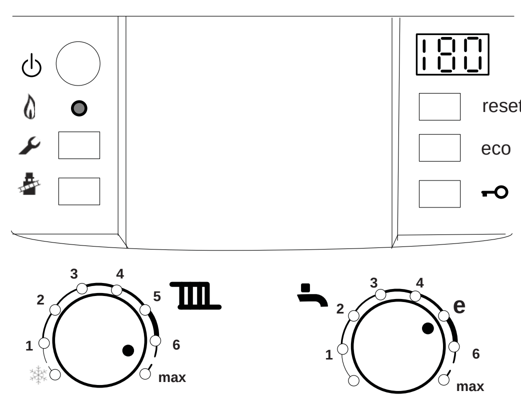
- ► Wire BUS terminal of CZM100 to Terminal #1 of Greenstar FS boiler
- ► Wire CRC controllers to BUS terminals of CZM100
- ► Wire Greenstar DHW Thermistor to Terminal #5 of Greenstar FS boiler
- ► See Appendix A for Comfort Room Controller CRC100 and CZM100 Settings
- ► See Appendix C for CRC200 Quick Set-up guide

#### Line Voltage

- ► Wire Main power supply (120 v) to White molex of Boiler and to 120 VAC input of CZM100
- ► Wire 120 VAC ouputs of PZ1, PZ2 and PZ3 to Zone Circulators
- ► Wire Red molex on back of Greenstar FS boiler to DHW indirect tank pump

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |

# System #17

Multi Zone
Combi wall boiler
Zone Valves
Zone Relay

...

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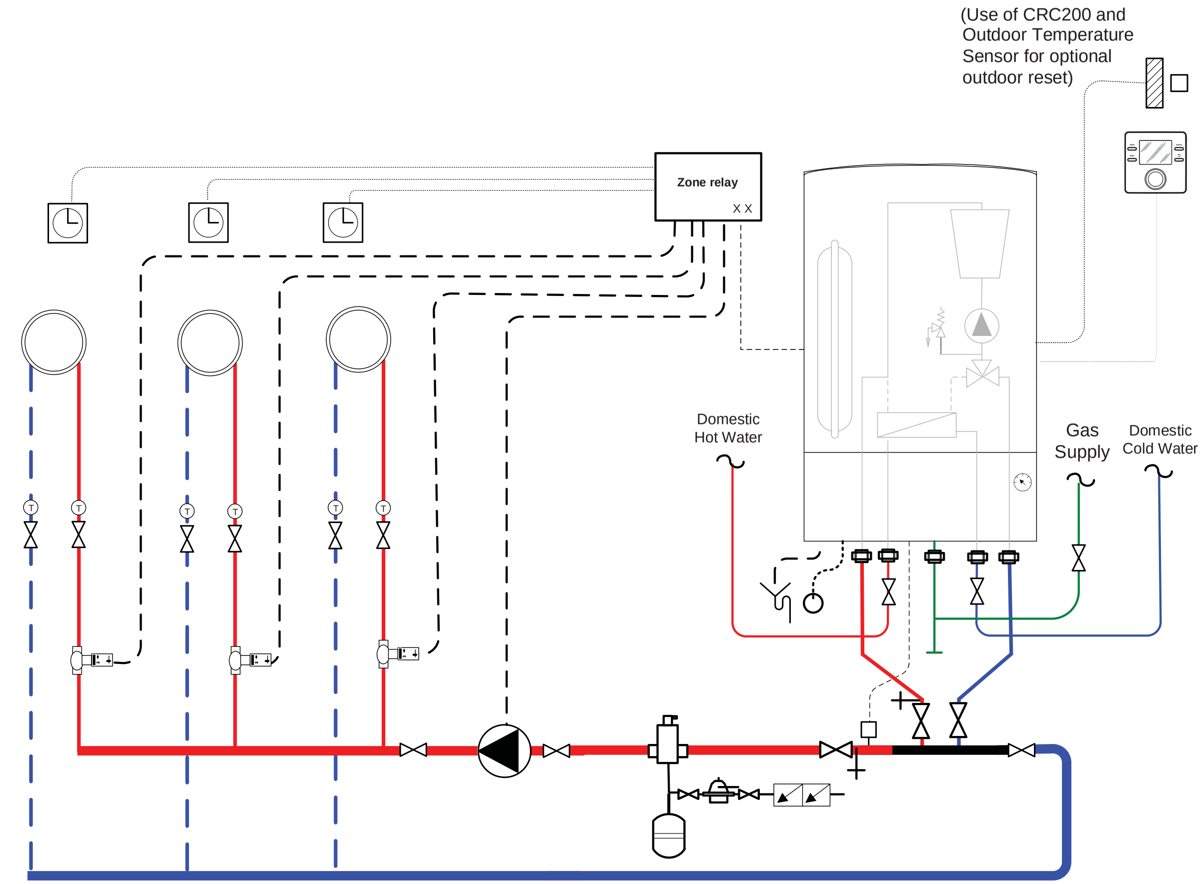
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |

| | |
|---|---|
| No. | |
| Date | |

**Bosch**

| | |
|---|---|
| | Suppy Sensor |
| | Purge Drain |
| | Heating zone |
| | Auto-Fill |
| | Air Eliminator |
| | Flow Check |
| | Condensate drain |
| | Room Thermostat |
| | Expansion Tank |
| | PRV Relief Piping |
| | Back-flow preventer |
| | Shut-off valve |
| | Circulator |
| | Zone Valve |

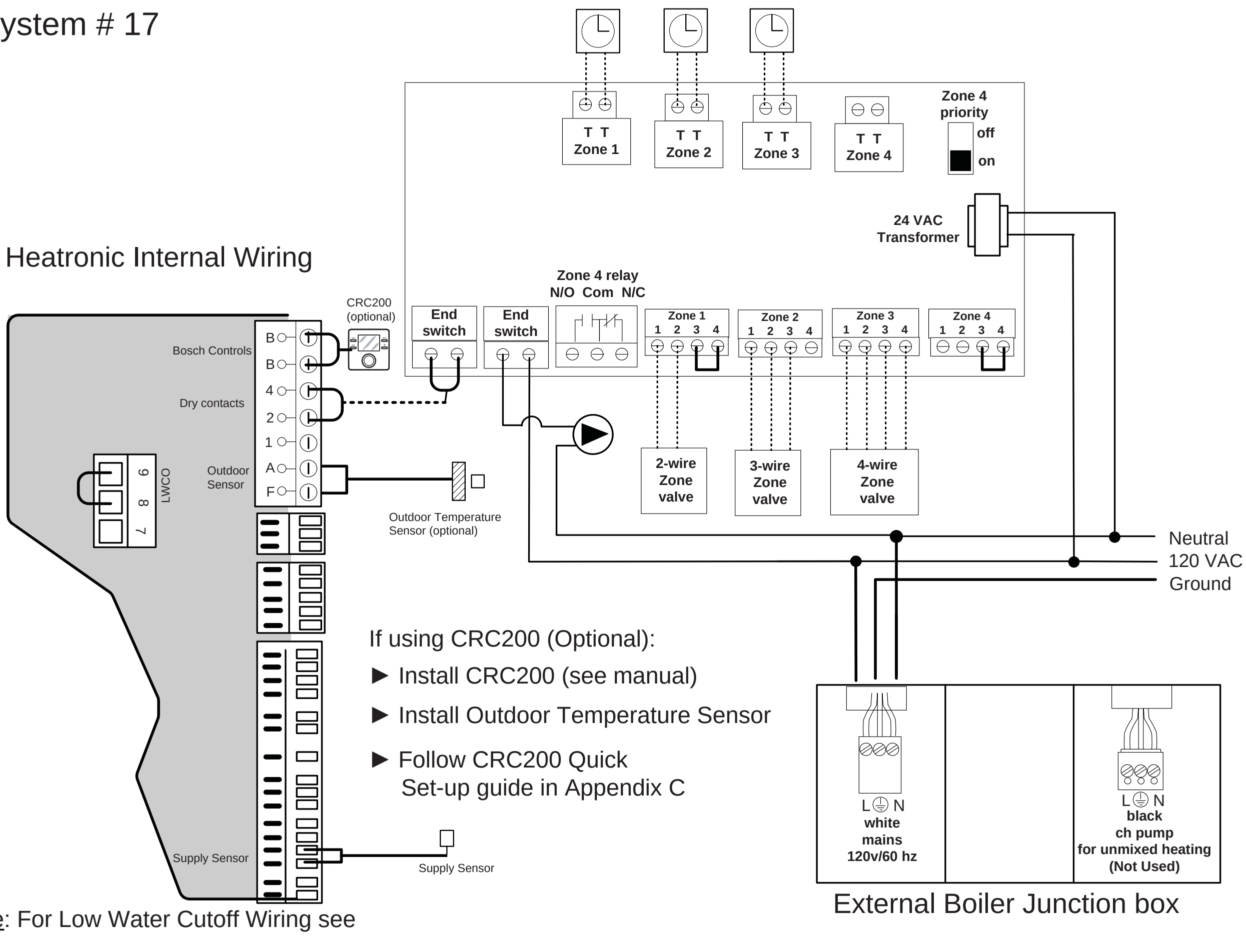



Note: Larger heating systems may require an additional expansion tank external to the boiler – see manual for details.

Note: See Appendix B for Primary/Secondary piping requirements

...

## System # 17




If using CRC200 (Optional):

- ► Install CRC200 (see manual)
- ► Install Outdoor Temperature Sensor
- ► Follow CRC200 Quick Set-up guide in Appendix C

Note: For Low Water Cutoff Wiring see Appendix D of this manual

## Wiring:

### Low Voltage

► Remove factory jumper from terminal #2 & #4 and connect to End Switch of Mult-Zone relay (dry contacts only)

► Outdoor Temperature Sensor connect to terminals A & F

► CRC200 connect to terminals B & B

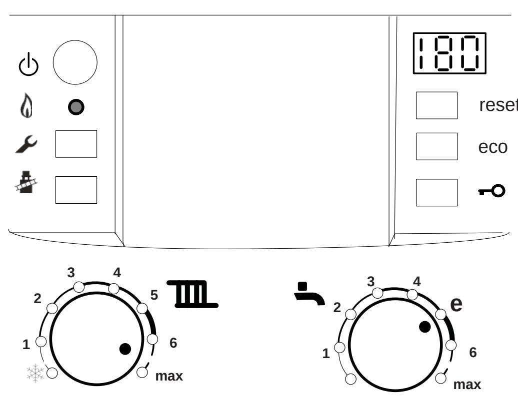
### Line Voltage

► Wire Main power supply (120 v) to White molex of Boiler external junction box

► Wire 120 Vac power supply to zone relay

## Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |

# System # 18

Multi Zone
Combi wall boiler
Zone Valves
NSC Controls

...

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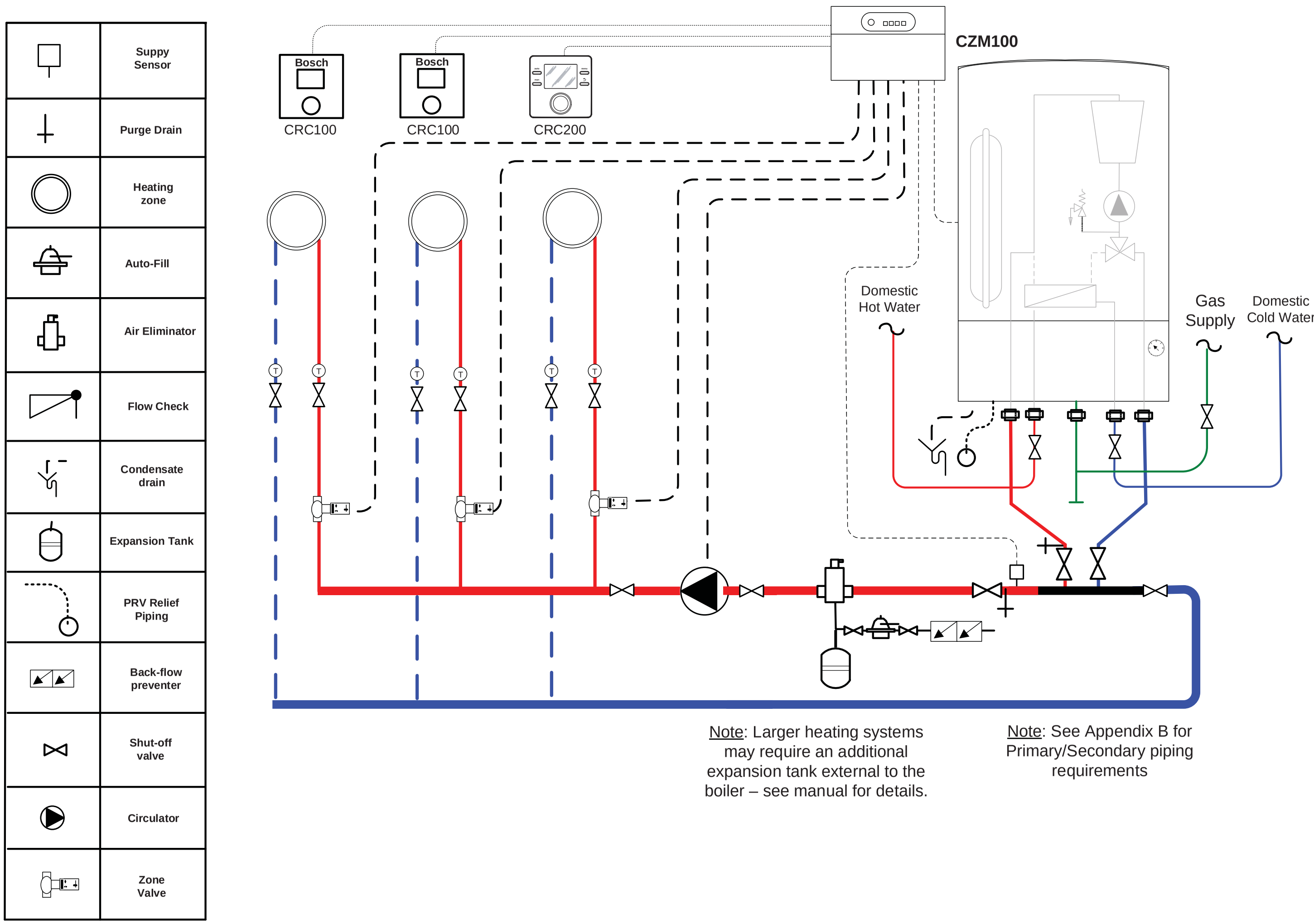
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |
| | |
| No. | |
| Date | |

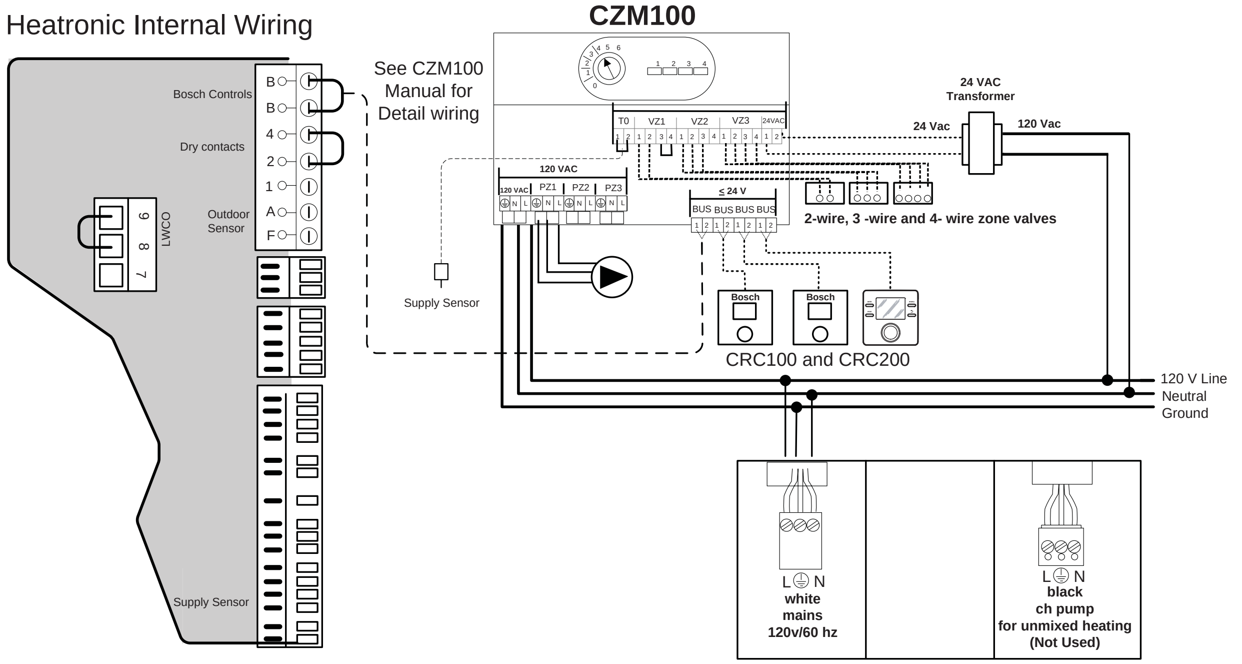
**Bosch**




...

# System # 18

## Heatronic Internal Wiring




Note: For Low Water Cutoff Wiring see Appendix D of this manual

## Wiring:

### Low Voltage

► Wire BUS terminal of CZM100 to Terminal B & B of Greenstar boiler Heatronic control

► Wire CRC controllers to BUS terminals of CZM100 (See Appendix A for CRC100 and CZM100 Settings)

► Provide 24 Vac from transformer to Terminals 1 and 2 of CZM100 labeled “24 VAC”

► Wire zone valves to “VZ” terminals of CZM100 – remove jumper from terminal 3 and 4 for 3-wire and 4-wire zone valves

► See Appendix C for CRC200 Quick Set-up guide

► Wire Supply Sensor to “T0” connection of CZM100

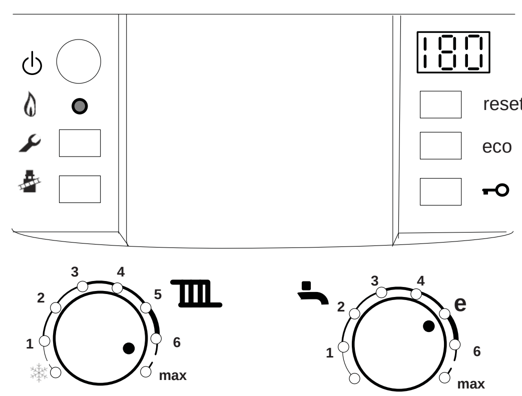
### Line Voltage

► Wire Main power supply (120 v) to White molex of Boiler (external junction box) and to 120 VAC input of CZM100

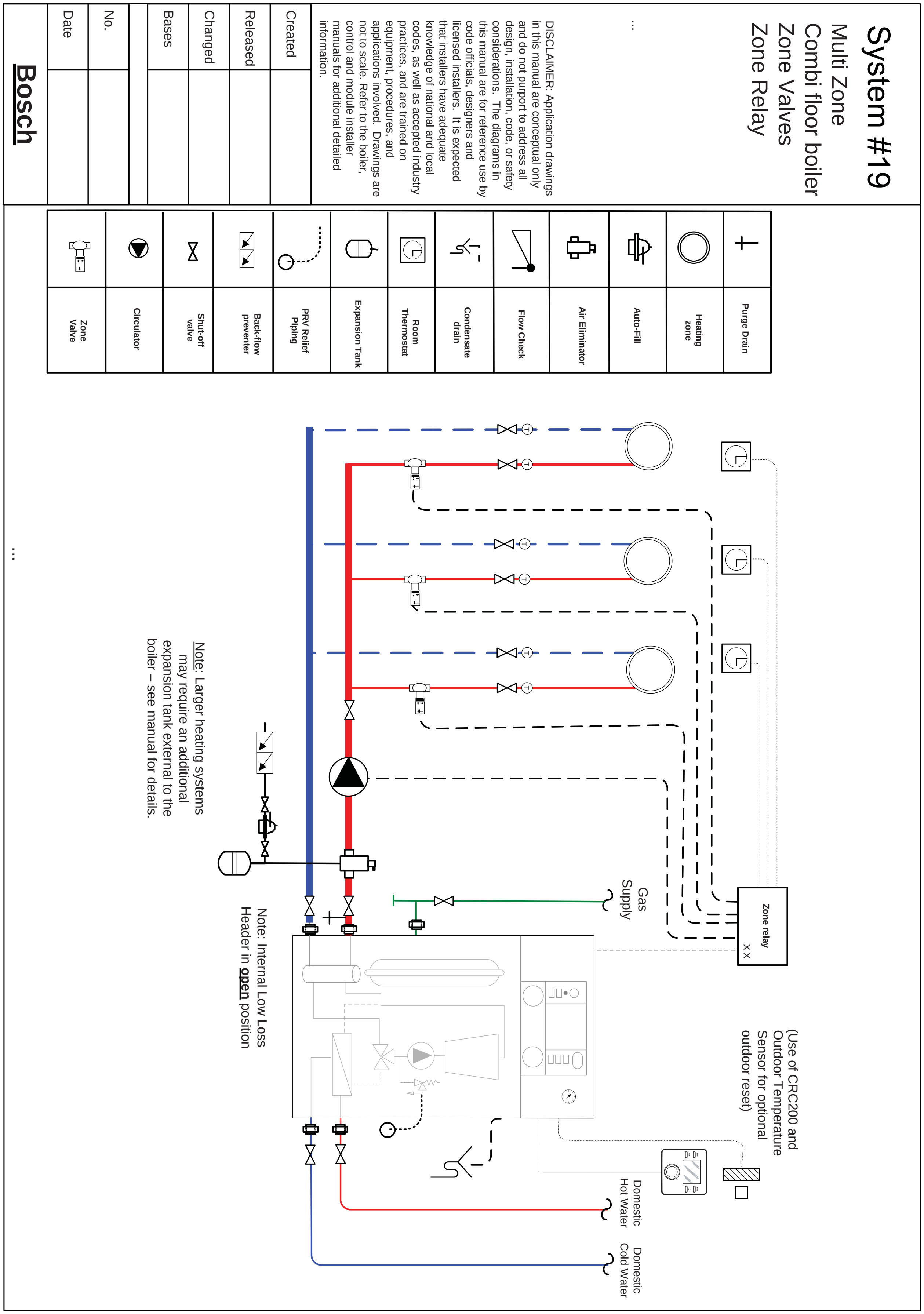
► Wire 120 VAC ouput of PZ1 to system pump

## Heatronic Settings:

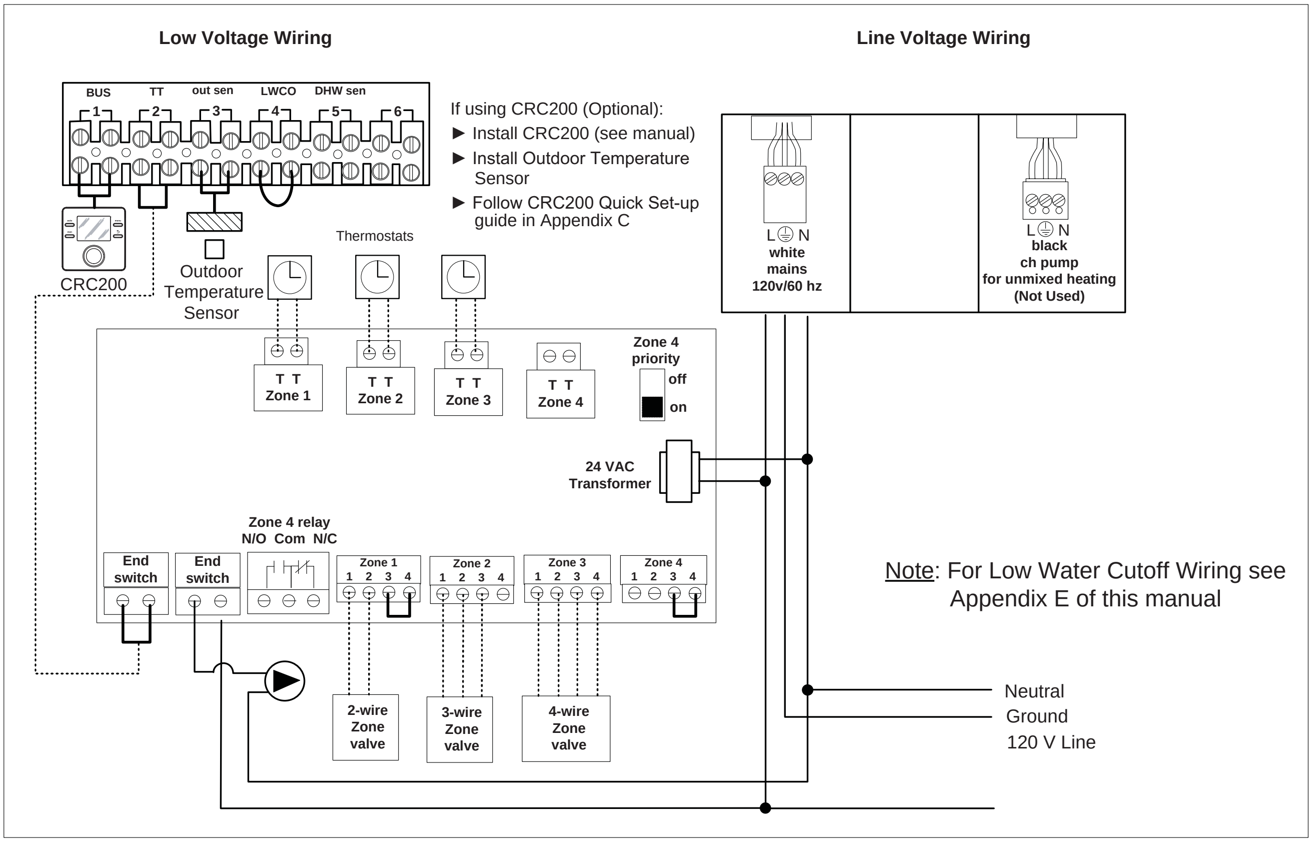
| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |


System #19
Multi Zone
Combi floor boiler
Zone Valves
Zone Relay
DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.
Created
Released
Changed
Bases
No.
Date
Bosch
Purge Drain
Heating zone
Auto-Fill
Air Eliminator
Flow Check
Condensate drain
Room Thermostat
Expansion Tank
PRV Relief Piping
Back-flow preventer
Shut-off valve
Circulator
Zone Valve
Zone relay
Gas Supply
(Use of CRC200 and Outdoor Temperature Sensor for optional outdoor reset)
Domestic Hot Water
Domestic Cold Water
Note: Larger heating systems may require an additional expansion tank external to the boiler – see manual for details.
Note: Internal Low Loss Header in open position

## System # 19




### Wiring:

#### Low Voltage

► Remove factory jumper from terminal #2 and connect End Switch of Multi-Zone relay (dry contacts only) to terminal #2

► Outdoor Temperature Sensor connect to terminal #3 (OUT SEN)

► CRC200 connect to terminal #1 (BUS)

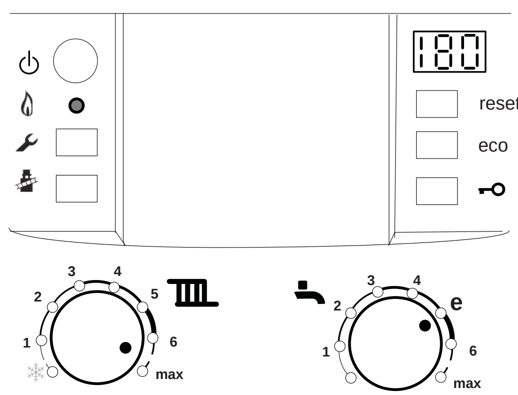
#### Line Voltage

► Wire Main power supply (120 v) to White molex of Boiler

► Wire System circulator to Zone Relay end switch

### Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |

# System # 20

Multi Zone
Combi floor boiler
Zone Valves
NSC Controls

...

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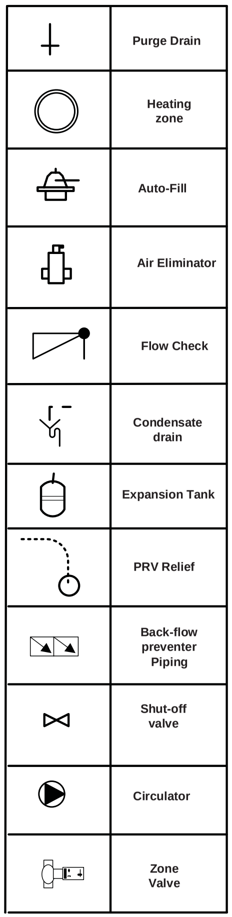
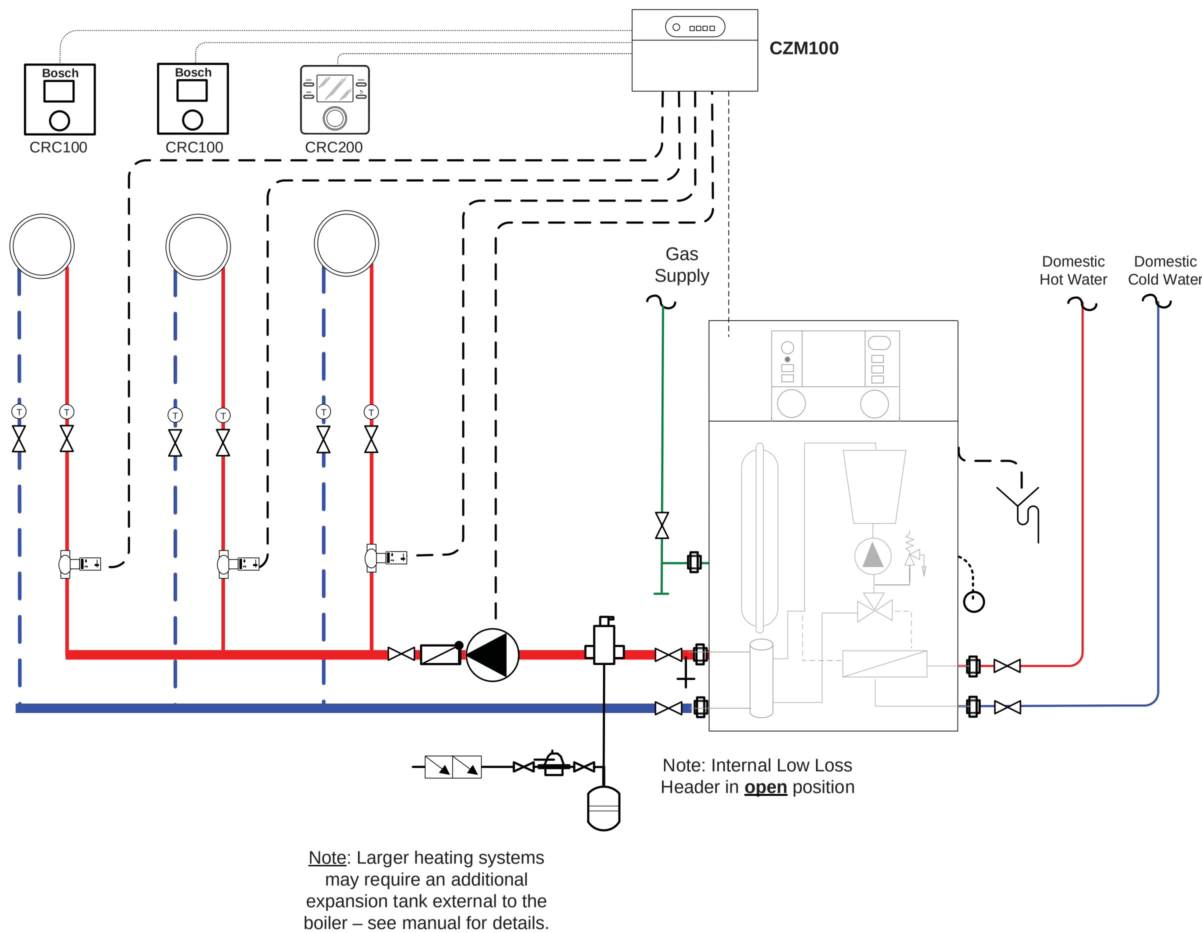
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |
| | |
| No. | |
| Date | |

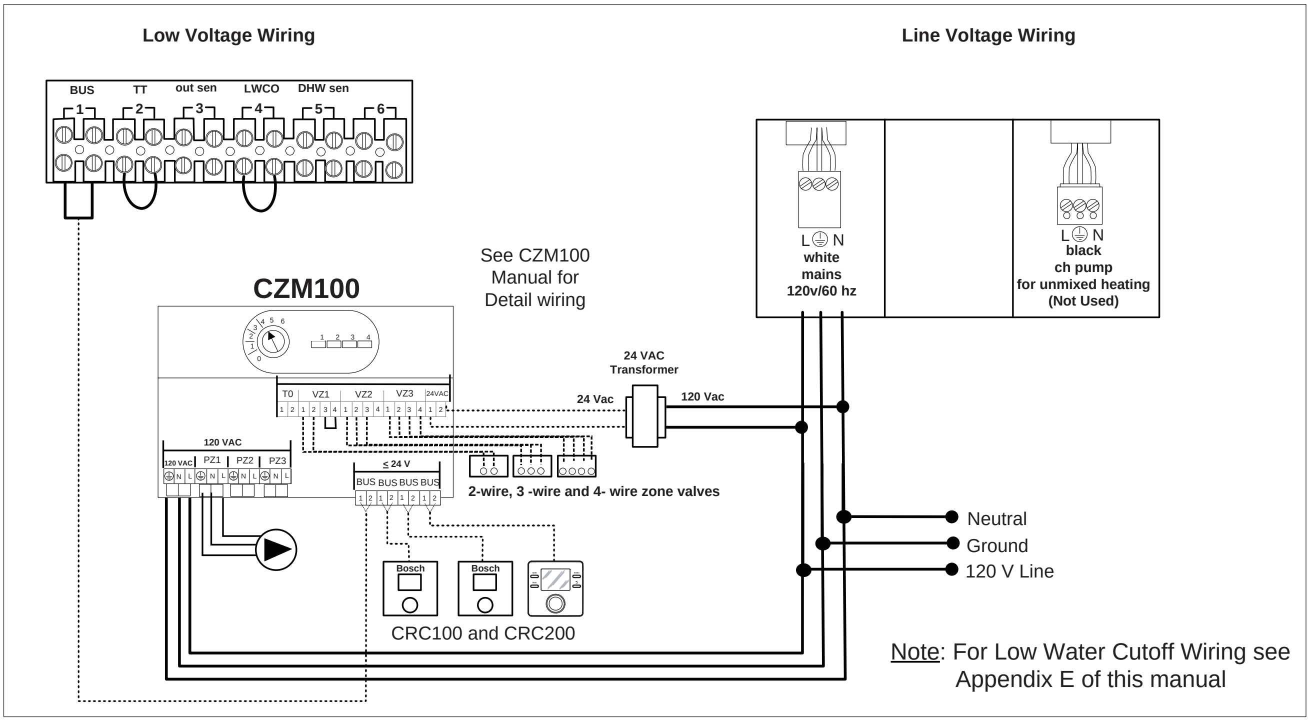
**Bosch**




...

# System #20




## Wiring:

### Low Voltage

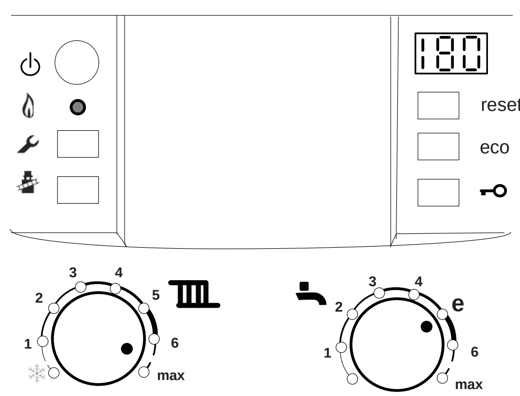
- ► Wire BUS terminal of CZM100 to Terminal #1 of Greenstar FS boiler
- ► Wire CRC controllers to BUS terminals of CZM100 (See Appendix A for CRC100 and CZM100 Settings)
- ► Provide 24 Vac from transformer to Terminals 1 and 2 of CZM100 labeled “24 VAC”
- ►Wire zone valves to “VZ” terminals of CZM100 – remove jumper from terminal 3 and 4 for 3-wire and 4-wire zone valves
- ► See Appendix C for CRC200 Quick Set-up guide
- ► See Appendix A for Comfort Room Controller CRC100 and CZM100Settings

### Line Voltage

- ► Wire Main power supply (120 v) to White molex of Boiler and to 120 VAC input of CZM100
- ► Wire 120 VAC ouput of PZ1 to system pump

## Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 104 °F (40 °C) |
| e | approx. 122 °F (50 °C) |
| max | approx. 140 °F (60 °C) |

# System #21

## Multi Zone
## Heat only wall boiler
## Zone Valves
## Indirect Tank
## Zone Relay

...

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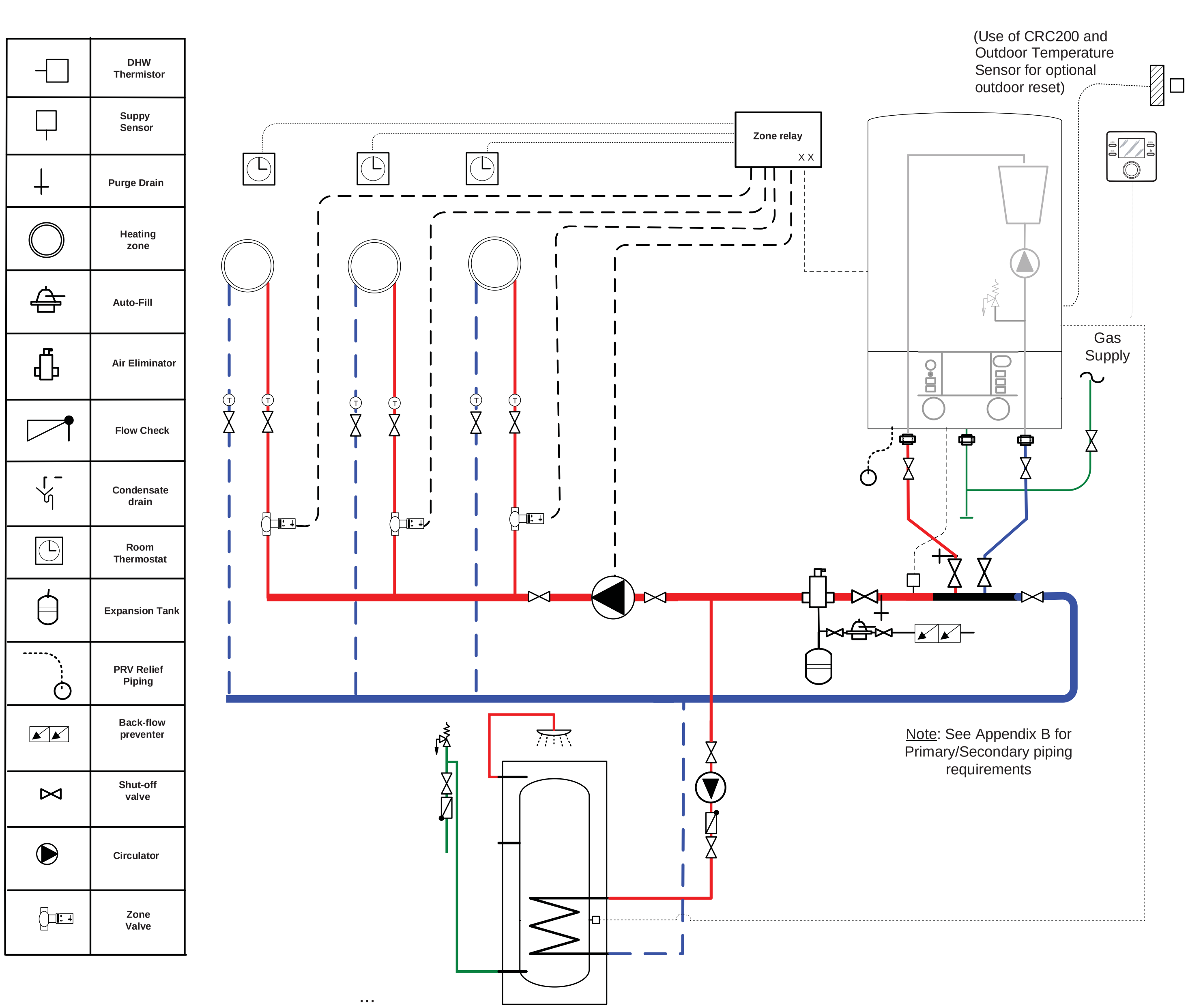
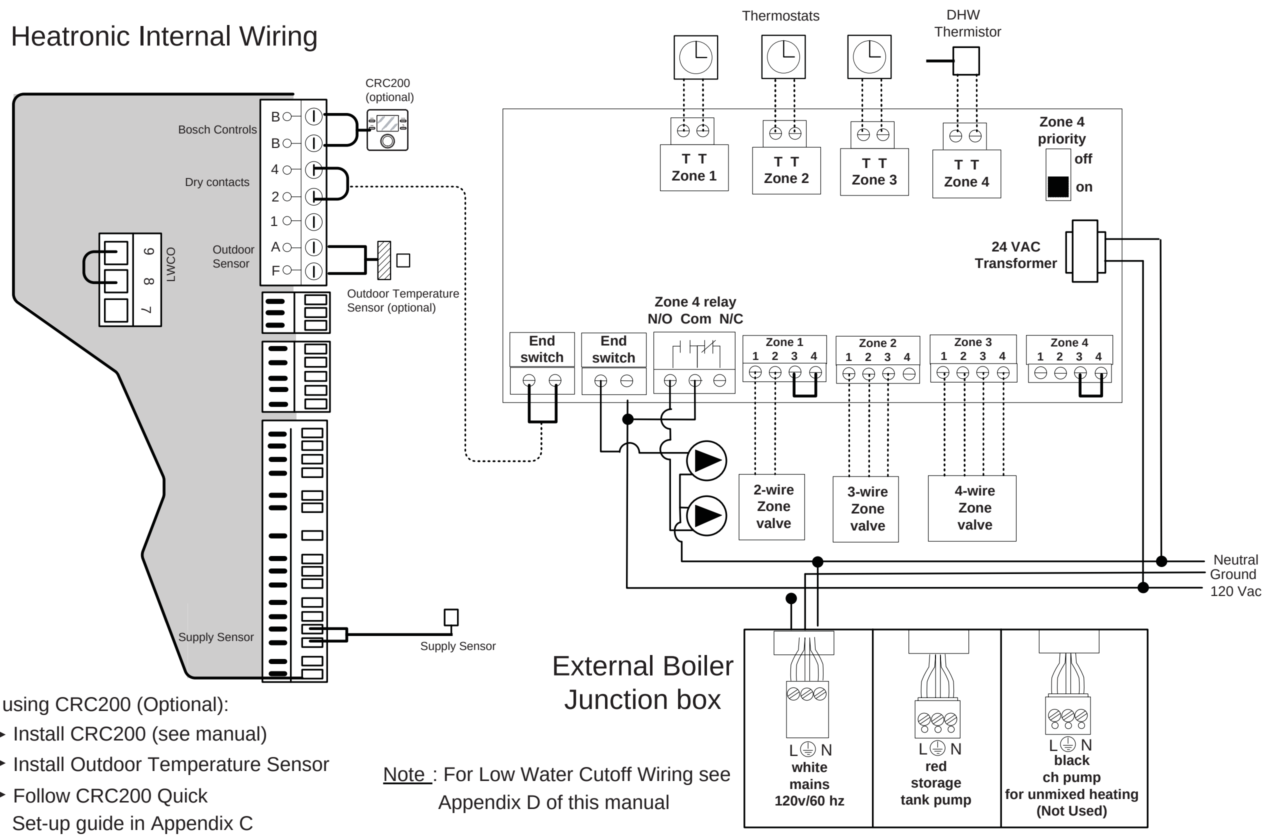
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |

| | |
|---|---|
| No. | |
| Date | |

**Bosch**



## System # 21




If using CRC200 (Optional):

- ▶ Install CRC200 (see manual)
- ▶ Install Outdoor Temperature Sensor
- ▶ Follow CRC200 Quick Set-up guide in Appendix C

Note : For Low Water Cutoff Wiring see Appendix D of this manual

### Wiring:

#### Low Voltage

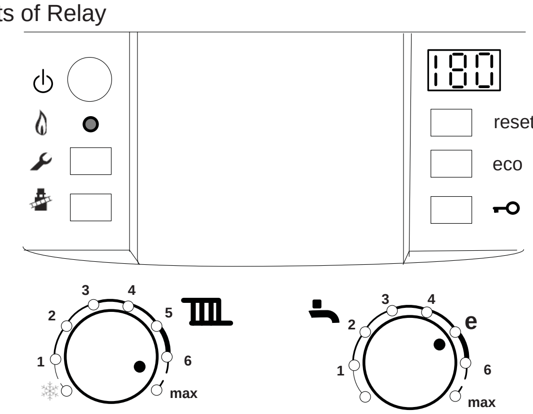
- ▶ Remove factory jumper from terminal #2 & #4 connect End Switch of Multi-Zone relay (dry contacts only)
- ▶ Outdoor Temperature Sensor connect to terminals A & F
- ▶ CRC200 connect to terminals B & B

#### Line Voltage

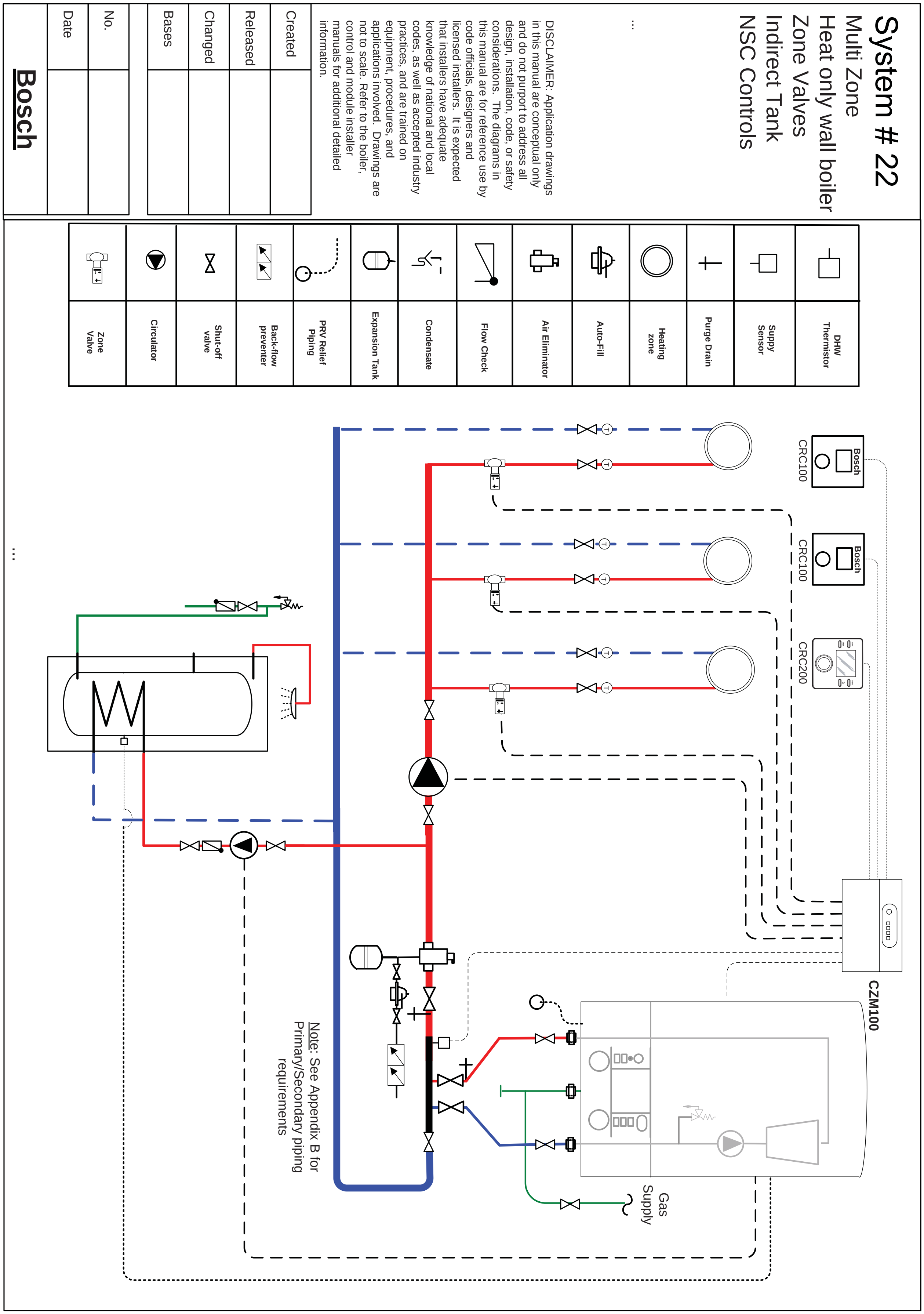
- ▶ Wire Main power supply (120 v) to White molex of Boiler
- ▶ Wire System Circulator to end switch of Relay
- ▶ Wire DHW Circulator to Normally Open priority contacts of Relay

### Heatronic Settings:

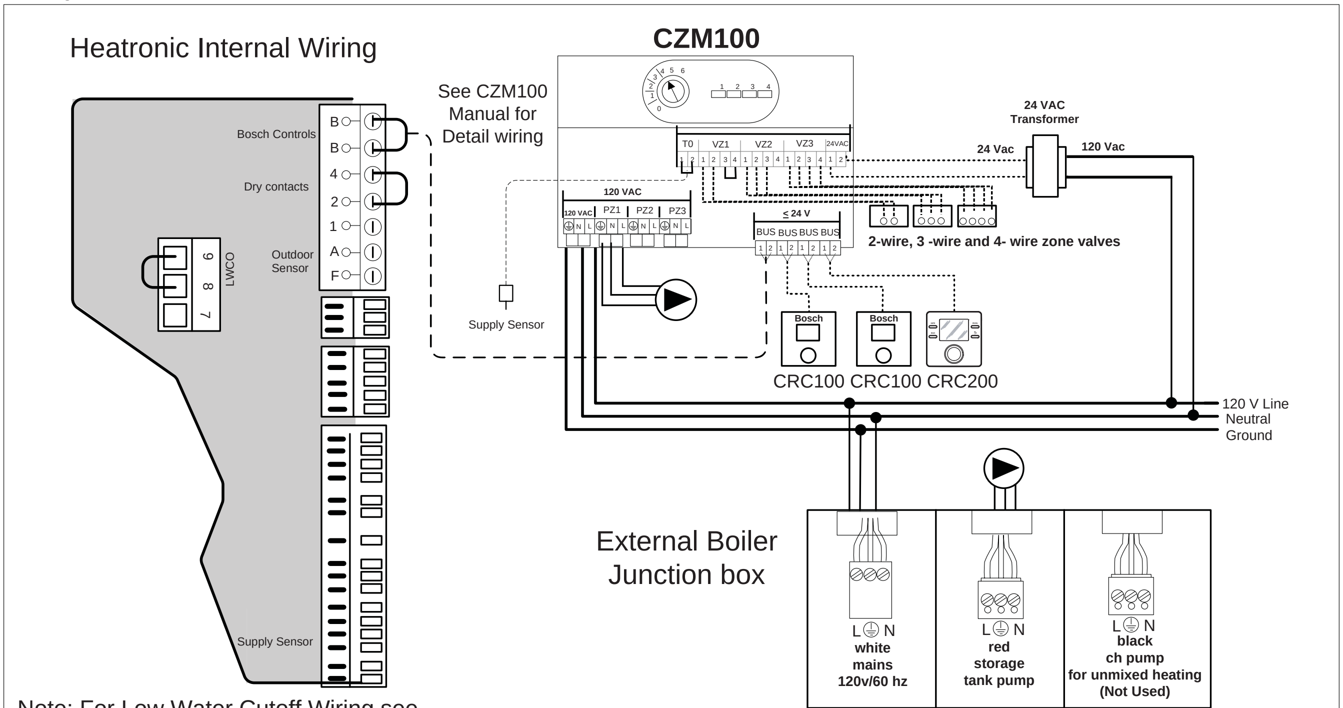
| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |


System # 22
Multi Zone
Heat only wall boiler
Zone Valves
Indirect Tank
NSC Controls
...
DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.
Created
Released
Changed
Bases
No.
Date
Bosch
DHW Thermistor
Suppy Sensor
Purge Drain
Heating zone
Auto-Fill
Air Eliminator
Flow Check
Condensate
Expansion Tank
PRV Relief Piping
Back-flow preventer
Shut-off valve
Circulator
Zone Valve
Bosch
CRC100
Bosch
CRC100
CRC200
CZM100
T
Gas Supply
Note: See Appendix B for Primary/Secondary piping requirements
...

## System # 22




Note: For Low Water Cutoff Wiring see Appendix D of this manual

### Wiring:

#### Low Voltage

► Wire BUS terminal of CZM100 to Terminal BB of Greenstar boiler Heatronic control

► Wire CRC controllers to BUS terminals of CZM100 (See Appendix A for CRC100 and CZM100 Settings)

► Provide 24 Vac from transformer to Terminals 1 and 2 of CZM100 labeled “24 VAC”

►Wire zone valves to “VZ” terminals of CZM100 – remove jumper from terminal 3 and 4 for 3-wire and 4-wire zone valves

► See Appendix C for CRC200 Quick Set-up guide

► Wire Supply Sensor to “T0” connection of CZM100

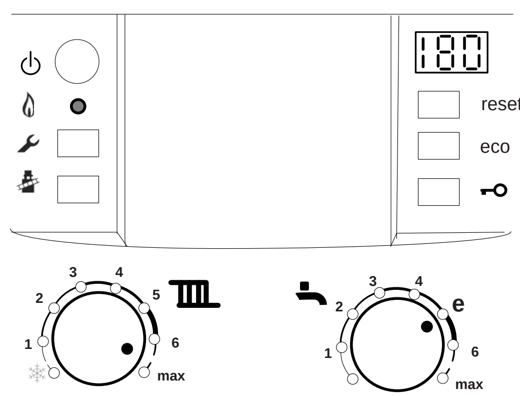
#### Line Voltage

► Wire Main power supply (120 v) to White molex of Boiler (external junction box) and to 120 VAC input of CZM100

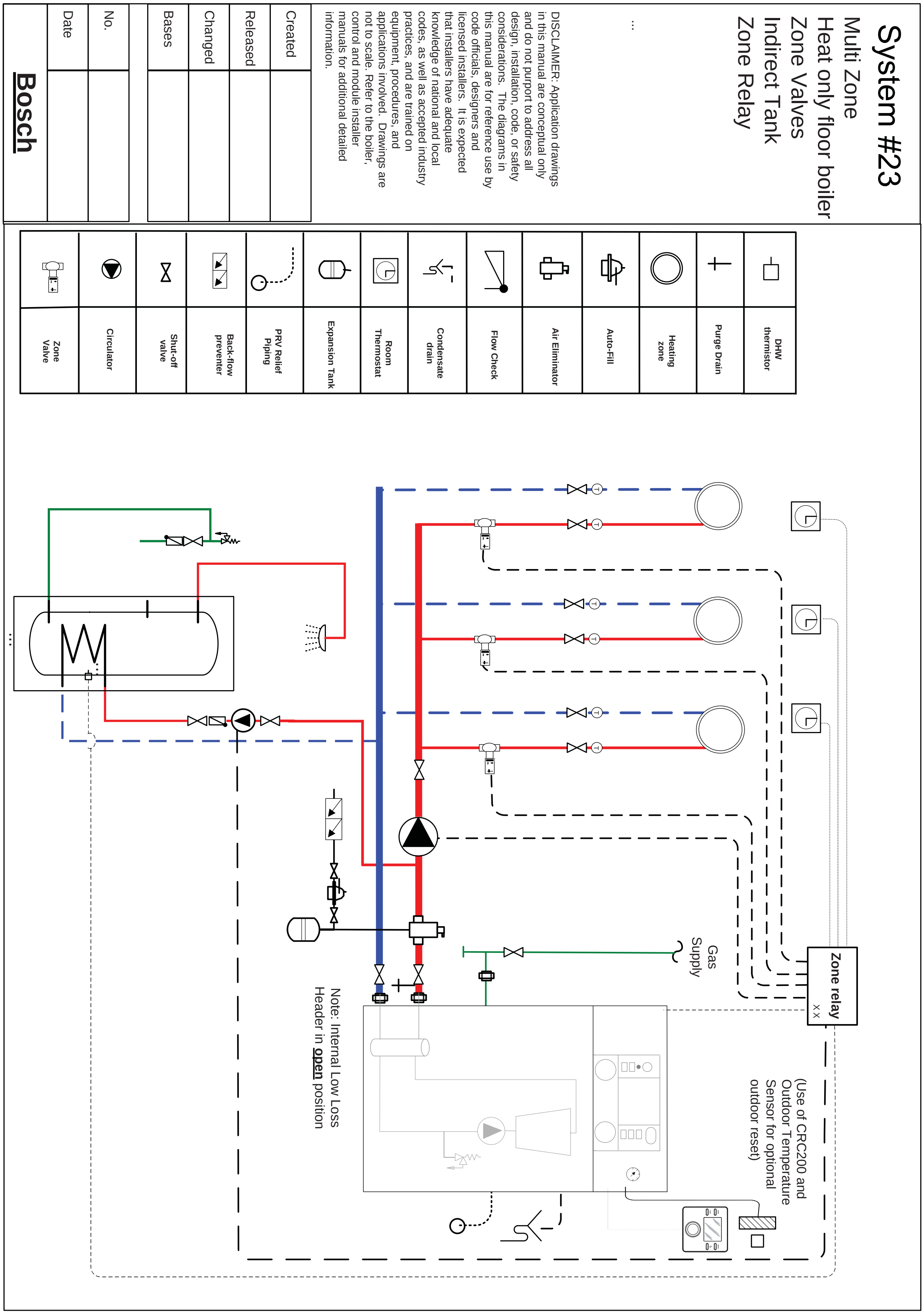
► Wire 120 VAC ouput of PZ1 to system pump

### Heatronic Settings:

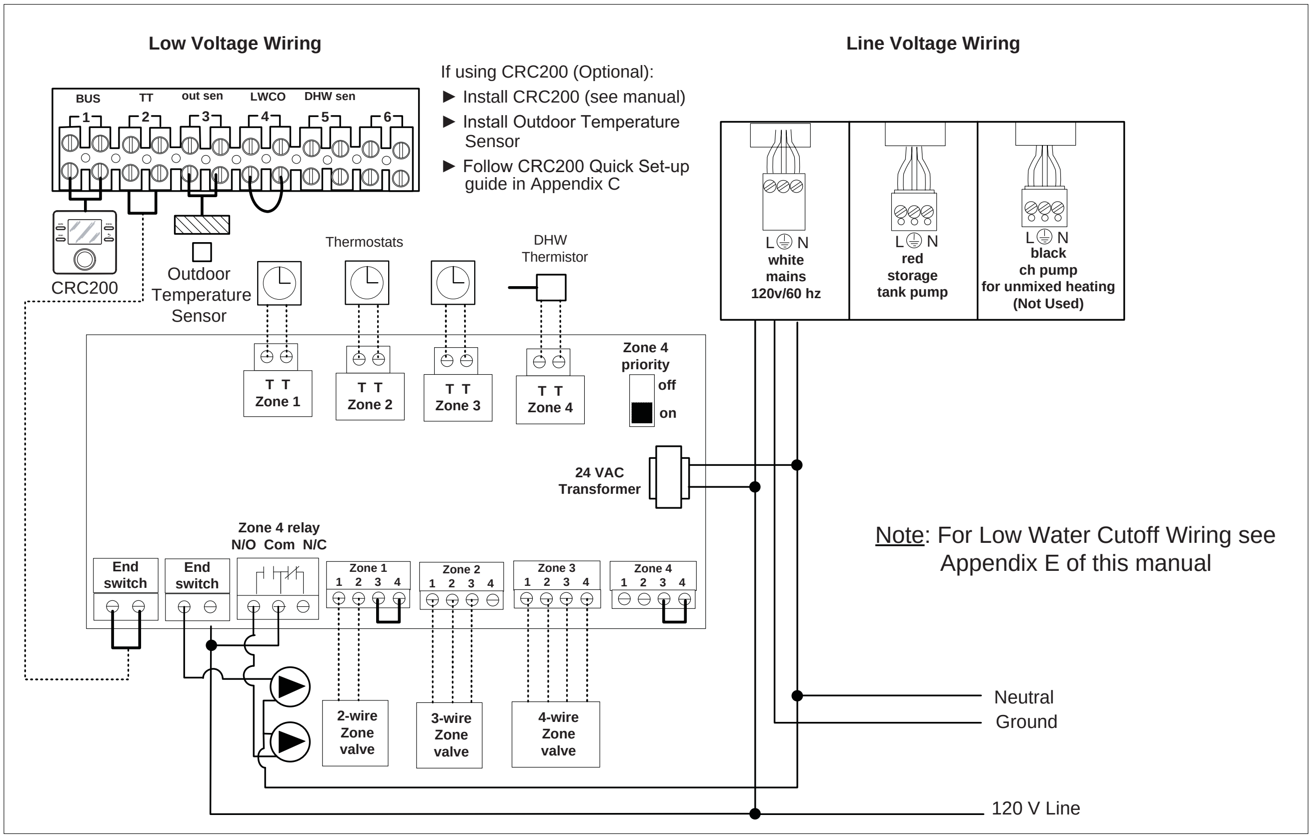
| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |


System #23
Multi Zone
Heat only floor boiler
Zone Valves
Indirect Tank
Zone Relay
DISCLAIMER: Application drawings in this manual are conceptual only and do not purport to address all design, installation, code, or safety considerations. The diagrams in this manual are for reference use by code officials, designers and licensed installers. It is expected that installers have adequate knowledge of national and local codes, as well as accepted industry practices, and are trained on equipment, procedures, and applications involved. Drawings are not to scale. Refer to the boiler, control and module installer manuals for additional detailed information.
Created
Released
Changed
Bases
No.
Date
Bosch
DHW thermistor
Purge Drain
Heating zone
Auto-Fill
Air Eliminator
Flow Check
Condensate drain
Room Thermostat
Expansion Tank
PRV Relief Piping
Back-flow preventer
Shut-off valve
Circulator
Zone Valve
Gas Supply
Zone relay
(Use of CRC200 and Outdoor Temperature Sensor for optional outdoor reset)
Note: Internal Low Loss Header in open position

# System # 23




## Wiring:

### Low Voltage

▶ Remove factory jumper from terminal #2 and connect End Switch of Multi-Zone relay (dry contacts only) to terminal #2

▶ Outdoor Temperature Sensor connect to terminal #3 (OUT SEN)

▶ CRC200 connect to terminal #1 (BUS)

### Line Voltage

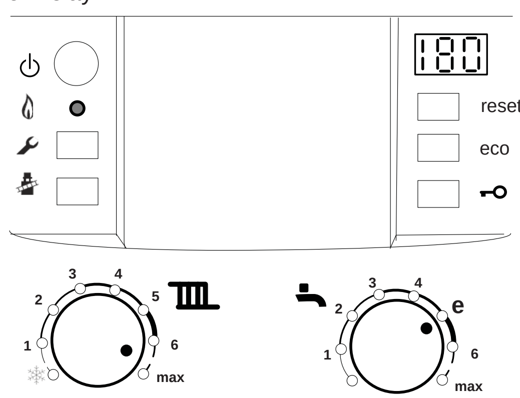
▶ Wire Main power supply (120 v) to White molex of Boiler

▶ Wire System Circulator to end switch of Relay

▶ Wire DHW Circulator to Normally Open priority contacts of Relay

## Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |




| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |

# System # 24

Multi Zone
Heat only floor boiler
Zone Valves
Indirect Tank
NSC Controls

...

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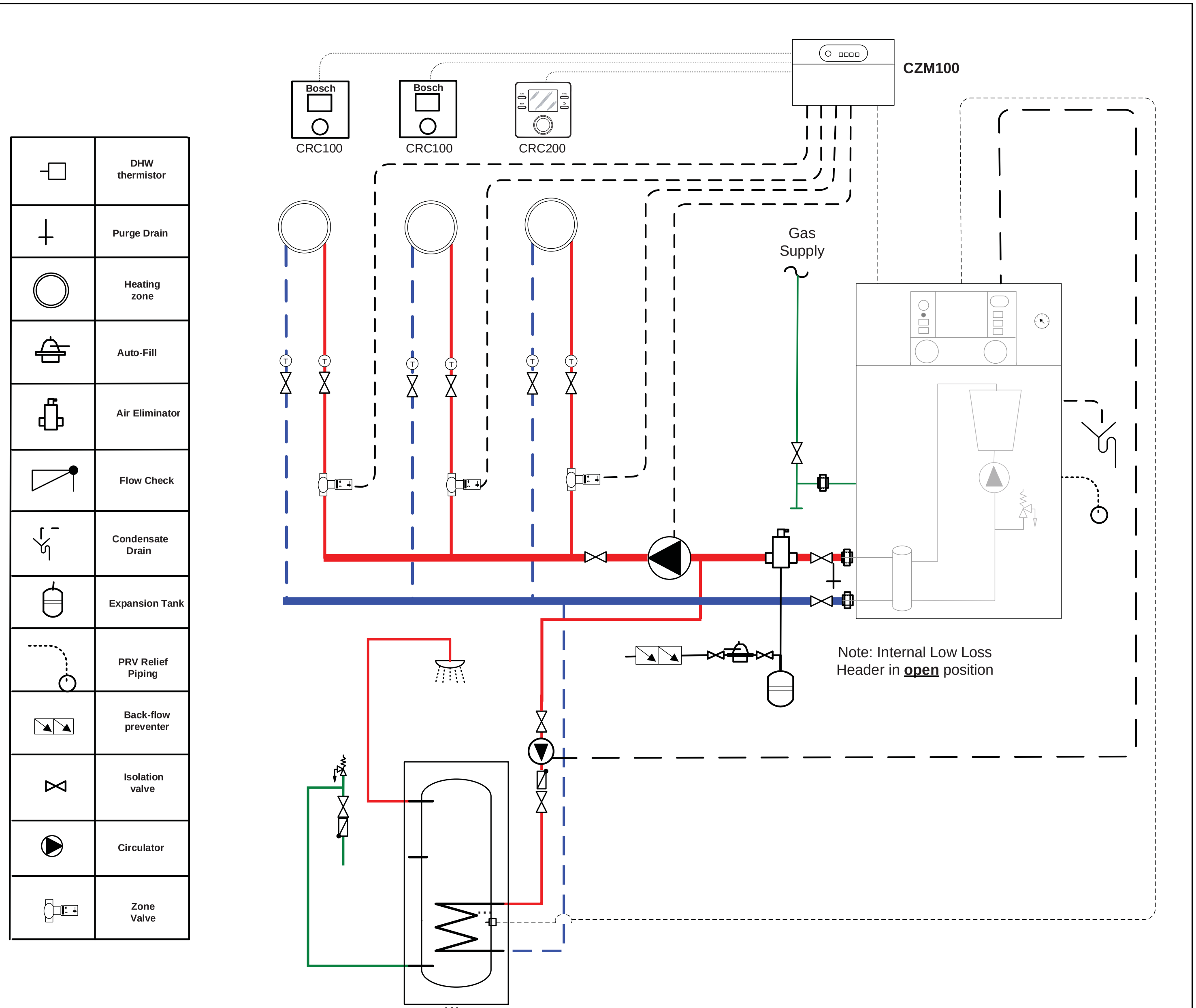
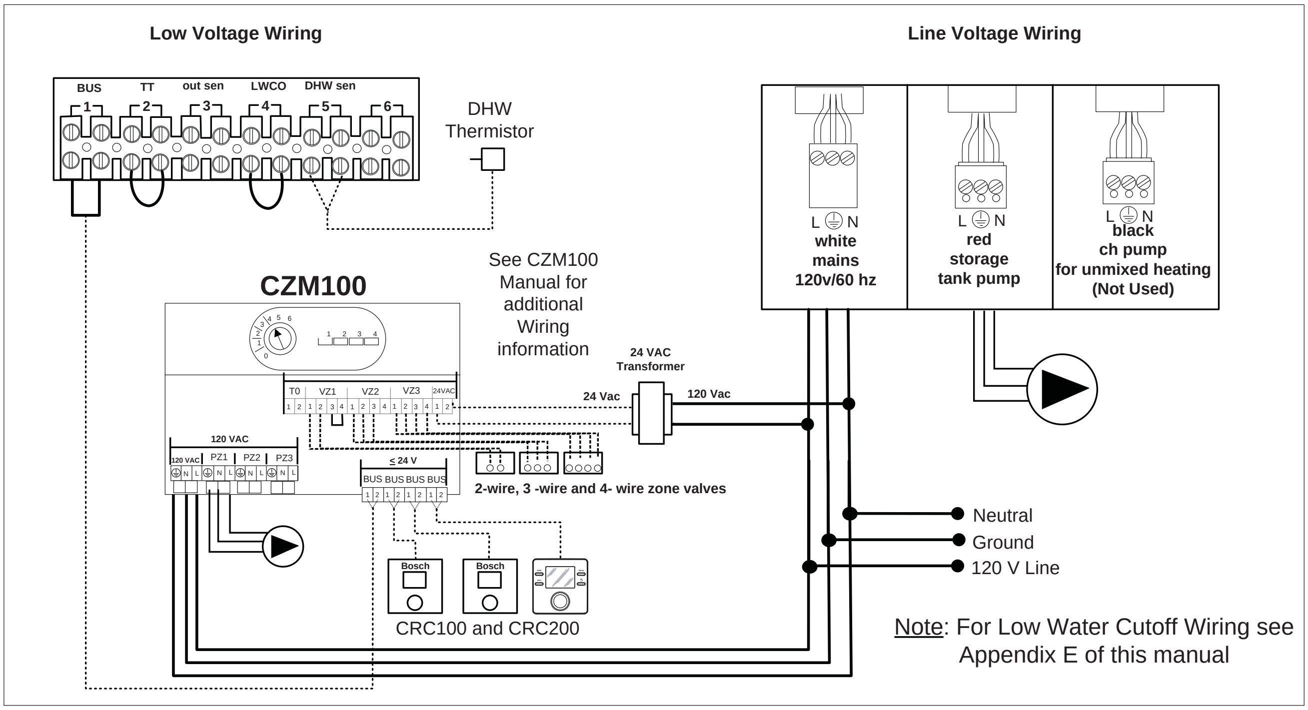
| | |
|---|---|
| Created | |
| Released | |
| Changed | |
| Bases | |

| | |
|---|---|
| No. | |
| Date | |

**Bosch**



# System #24




## Wiring:

### Low Voltage

- ► Wire BUS terminal of CZM100 to Terminal #1 of Greenstar FS boiler
- ► Wire CRC controllers to BUS terminals of CZM100
- ► Provide 24 Vac from transformer to Terminals 1 and 2 of CZM100 labeled “24 VAC”
- ► Wire Greenstar DHW Thermistor to Terminal #5 of Greenstar FS boiler
- ► Wire zone valves to “VZ” terminals of CZM100 – remove jumper from terminal 3 and 4 for 3-wire and 4-wire zone valves

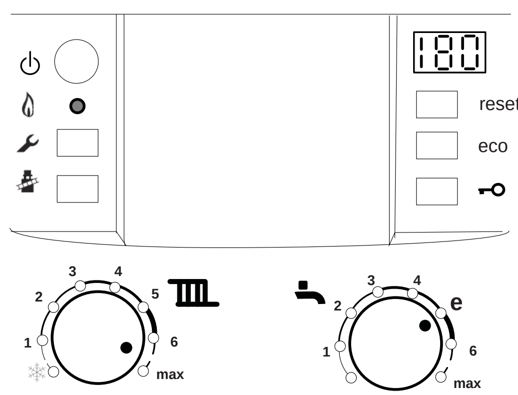
- ► See Appendix A for Comfort Room Controller CRC100 and CZM100 Settings
- ► See Appendix C for CRC200 Quick Set-up guide

### Line Voltage

- ► Wire Main power supply (120 v) to White molex of Boiler and to 120 VAC input of CZM100
- ► Wire 120 VAC ouput of PZ1 on CZM 100 to system pump
- ► Wire 120 VAC ouput of RED Molex on Greenstar to DHW Circulator

## Heatronic Settings:

| Boiler Heating Dial | Typical supply temperatures | Application |
|---|---|---|
| 1 | approx. 95 °F (35 °C) | Frost protection |
| 2 | approx. 109 °F (43 °C) | |
| 3 | approx. 122 °F (50 °C) | Radiant floor heating |
| 4 | approx. 140 °F (60 °C) | Panel radiator system |
| 5 | approx. 153 °F (67 °C) | Cast Iron radiator system |
| 6 | approx. 167 °F (75 °C) | |
| max | Approx. 194 °F (90°C) | Baseboard & convector system |



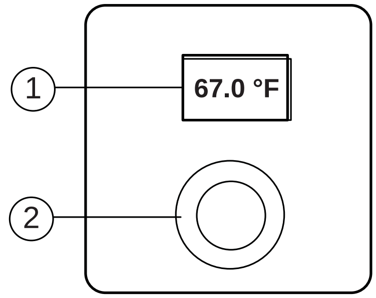

| DHW thermostat | Typical DHW temperatures |
|---|---|
| min | approx. 59 °F (15 °C) |
| e | approx. 131 °F (55 °C) |
| max | approx. 158 °F (70 °C) |

# Appendix A: Quick Set-up Guide for Comfort Room Controllers

**CRC100 - Operation**
The following table shows how to change a value in the service menu of the CRC100

1 = Display

2 = Dial




| Open the service menu | |
|---|---|
| 1. press and hold dial until two dashes appear. | - - |
| 2. Release dial to displaythe first setting. | A . 1 |

| Changing the setting (e.g. heating zone H.C) | |
|---|---|
| 1. Turn the dial to select a setting. | H.C |
| 2. Press dial to show the current value. | 3 |
| 3. Press dial to change the value. | 3 |
| 4. Turn dial to set the required value. | 2 |
| 5. Press the dial to store the value. | 2 |
| 6. Press and hold dial until the setting is displayed again. | H.C |

| Close the service menu | |
|---|---|
| 1. Press and hold idal until three dashes appear. | - - - |
| 2. Release dial.<br>The display changes to the standard display, and the user interface works with the changed setting. | 67.0 °F |

# Appendix A: Quick Set-up Guide for Comfort Room Controllers

Note: Please consult the installation manual for a complete overview of the controller settings and proper installation. The following guide is not a substitute for the installation manual.

**Part Numbers:**

| Description | Part Number |
|---|---|
| CRC 100 | 7738110090 |
| CRC 200 | 7738111034 |
| CZM | 7738110112 |
| Outdoor Temperature Sensor | 87472071010 |

**CRC100 control set-up:**

For single zone application where CRC100 is connected directly to the boiler:

- ► Set A.1 value to "CO"

For a multi- zone application where CRC100 is connected to a CZM100:

- ► Set H.C on each CRC100 to the appropriate zone number (1 thru 8)

**CRC200 control set-up:**

For single zone application where the CRC200 is connected directly to the boiler:

- ►Set DHW to "yes – pr. pump" if indirect tank is connected to the system
- ► Set "Heat System" to "High Temp" or "Low Temp" depending upon system requirement
- ► Set "Max Supply Temp" to appropriate maximum temperature for the system

For a multi- zone application where CRC200 is connected to a CZM100:

- ► Set HC on each CRC200 to the appropriate zone number (1 thru 8)

For CRC200 located in Zone #1:

- ► Set DHW to "yes – pr. pump" if indirect tank is connected to the system
- ► Set "Heat System" to "High Temp" or "Low Temp" depending upon zone requirement
- ► Set "Max Supply Temp" to appropriate maximum temperature for the zone

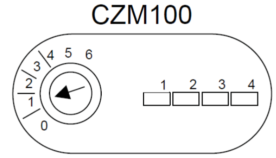
For CRC200 located in zones 2 thru 8:

- ►Set "Heat System" to "High Temp" or "Low Temp" depending upon zone requirement
- ►Set "Max supply Temp" to appropriate maximum temperature for the zone

**Zone number and corresponding pump/Zone valve output on CZM100:**

The CZM100 can support systems using Pumps or Zone valves but not both. The maximum number of CZM100 in a system is 3. The CZM100 address can be set by adjusting the potentiometer screw on the front of the CZM100 (see image right). Address #1 thru #3 is for systems using pumps. Address #4 thru #6 is for systems using zone valves. Charts below show the heating zone number and the corresponding pump or zone valve contacts on the CZM100.

CZM100



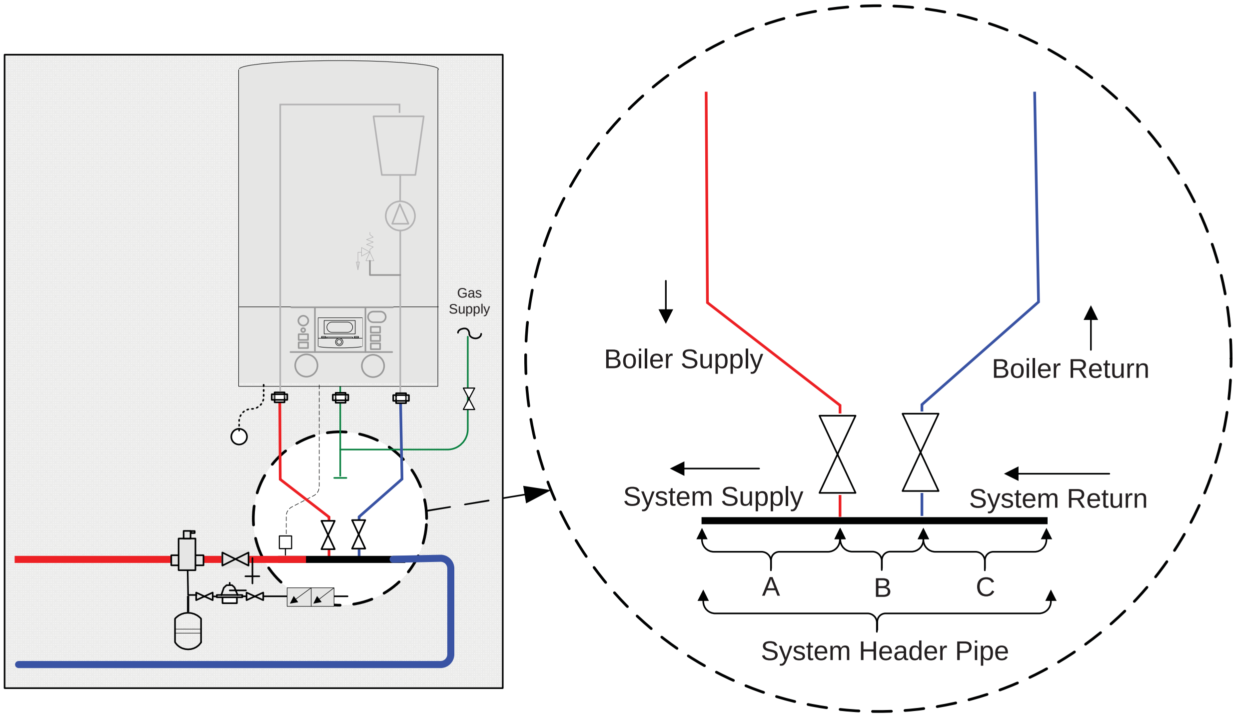

Pumps

| Heating Zone Number | Coding and Connection to….. | | | Pump contacts |
|---|---|---|---|---|
| | CZM100 #1 | CZM100 #2 | CZM100 #3 | |
| 1 | 1 | - | - | PZ1 |
| 2 | 1 | - | - | PZ2 |
| 3 | 1 | - | - | PZ3 |
| 4 | - | 2 | - | PZ1 |
| 5 | - | 2 | - | PZ2 |
| 6 | - | 2 | - | PZ3 |
| 7 | - | - | 3 | PZ1 |
| 8 | - | - | 3 | PZ2 |

Zone Valves

| Heating Zone Number | Coding and Connection to….. | | | Zone Valve Contacts |
|---|---|---|---|---|
| | CZM100 #1 | CZM100 #2 | CZM100 #3 | |
| 1 | 4 | - | - | VZ1 |
| 2 | 4 | - | - | VZ2 |
| 3 | 4 | - | - | VZ3 |
| 4 | - | 5 | - | VZ1 |
| 5 | - | 5 | - | VZ2 |
| 6 | - | 5 | - | VZ3 |
| 7 | - | - | 6 | VZ1 |
| 8 | - | - | 6 | VZ2 |

## **Appendix B**: Primary/Secondary piping for Greenstar Wall Boiler




| Piping Section | Description | Requirements |
|---|---|---|
| A | System Supply | Minimum length of 4 x pipe diameter based on System header pipe size |
| B | Closely Spaced Tees | Maximum distance of 4 x pipe diameter (center-to-center) based on System header pipe size |
| C | System Return | Minimum length of 8 x pipe diameter based on System header pipe |

| Boiler Input (btu/hr) | Boiler Supply/Return pipe diameter | System Supply/Return Header pipe diameter* | |
|---|---|---|---|
| | | system ΔT of 20° | system ΔT of 10° |
| 57,000 | 1" | 1" | 1.25" |
| 79,000 | 1" | 1" | 1.25" |
| 100,000 | 1" | 1.25" | 1.5" |
| 131,000 | 1" | 1.25" | 1.5" |
| 151,000 | 1" | 1.5" | 2.0" |

*based on 2 – 4 ft/sec flow velocity.

# **Appendix C:** CRC200 Quick Set-up Guide for Outdoor Reset

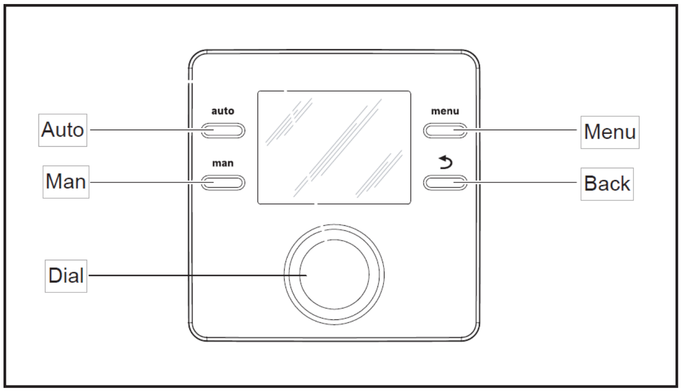



*Figure 1*

For Wall units make sure out door temperature sensor is connected to the boiler at terminals A & F and the CRC200 is connected to B &B.

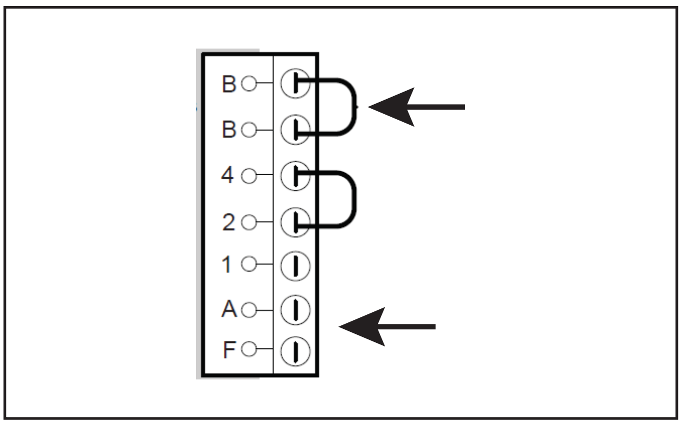



*Figure 2 Greenstar Wall Boiler Terminals*

For floor models and terminal 3 (Out Sen) and the CRC200 is connected to terminal 1 (BUS).

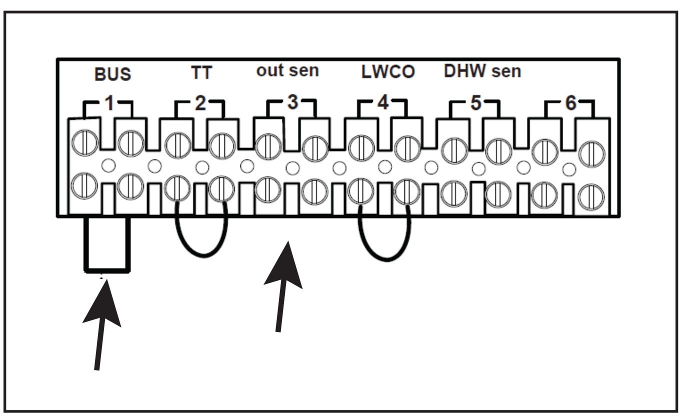



*Figure 3 Greenstar Floor Boiler Terminals*

### Option 1 Simple outdoor reset control:

- Press and hold the **menu** button until the service menu icon appears

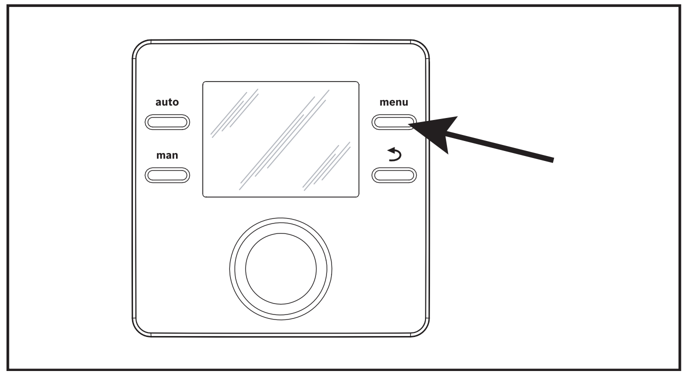



*Figure 4*

- The **Service** menu will appear 
- Press the **Dial** to select
- Use the round **Dial** to scroll down and press the round **Dial** to select **System Data**
- Use the round **Dial** to scroll down and press the round **Dial** to select **Control Type**
- Use the round **Dial** to scroll and press the round **Dial** to select **External Simple**
- Press the **Back Button** to get back to **System Data**

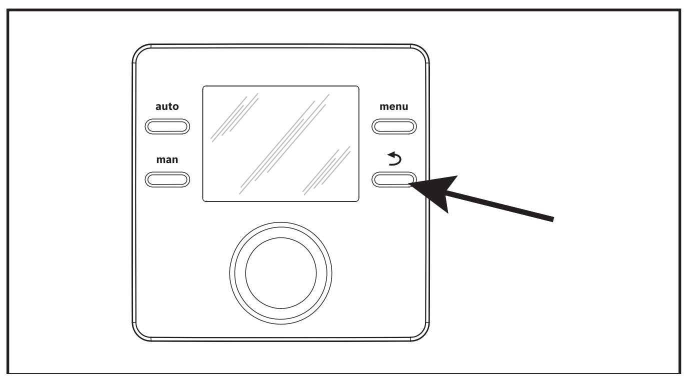



*Figure 5*

- Press the **Dial** to select
- Use the round **Dial** to scroll down and press the round **Dial** to select **Min.outs.temp**
  - Set this to what the coldest temperature seen is at the house's location
- Press the **Back Button** to get back to **Service** menu
- Press the **Dial** to select
- Use the round **Dial** to scroll down and press the round **Dial** to select **Heating circ.**

- Use the round **Dial** to scroll down and press the round **Dial** to select **Base Point**
  - This will set the minimum outdoor temperature the curve will stop at.
- Press the **Back Button** to get back to **Heating circ.** menu
- Press the **Dial** to select
- Use the round **Dial** to scroll and press the round **Dial** to select **End point**
- Complete

### Option 2 Optimized outdoor reset control:

- Press and hold the **menu** button until the service menu icon appears

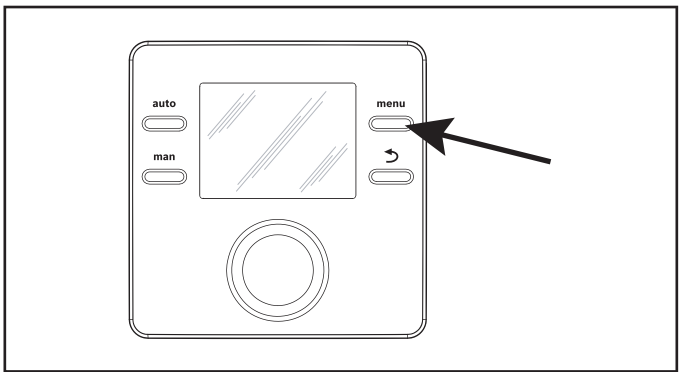



*Figure 6*

- The **Service** menu will appear 
- Press the **Dial** to select
- Use the round **Dial** to scroll down and press the round **Dial** to select **System Data**
- Use the round **Dial** to scroll down and press the round **Dial** to select **Control Type**
- Use the round **Dial** to scroll and press the round **Dial** to select **External Simple**
- Press the **Back Button** to get back to **System Data**

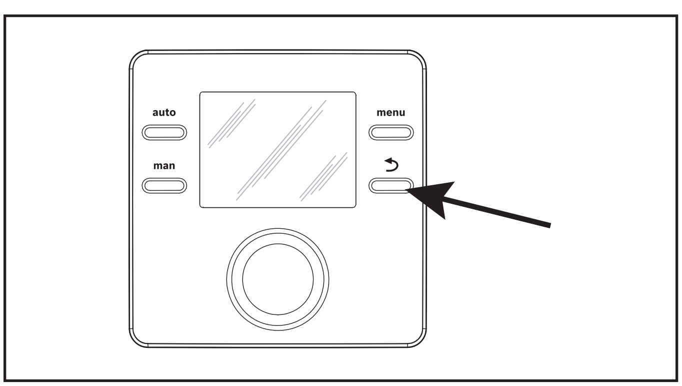
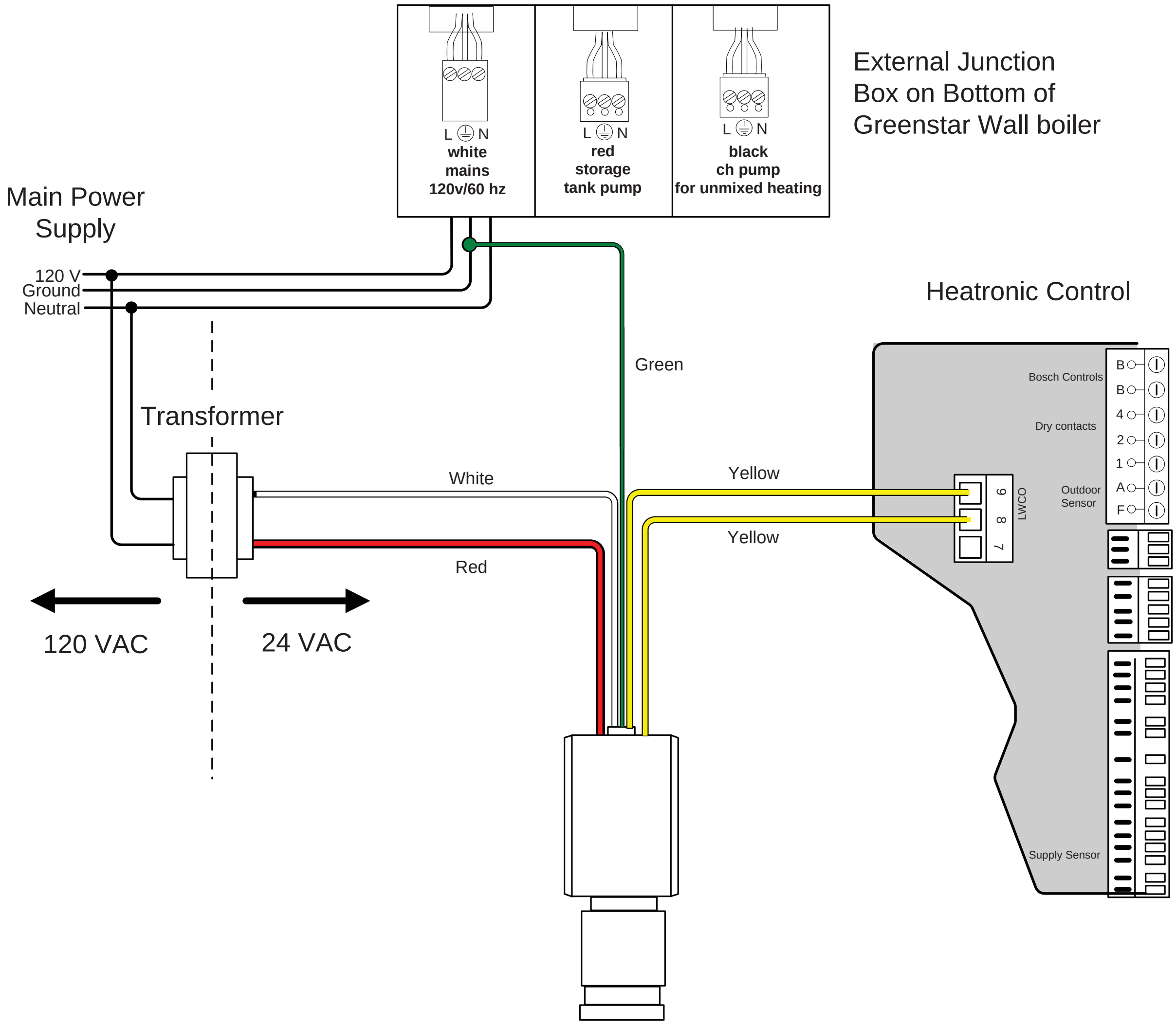



*Figure 7*

- Press the **Dial** to select
- Use the round **Dial** to scroll down and press the round **Dial** to select **Min.outs.temp**
  - Set this to what the coldest temperature seen is at the house's location
- Press the **Back Button** to get back to **Service** menu
- Press the **Dial** to select
- Use the round **Dial** to scroll down and press the round **Dial** to select **Damping**
  - Select **ON**, This will help factor in the building and indoor temperature to better control the Boiler.
- Press the **Back** Button to get back to **System Data**
- Press the **Dial** to select
- Use the round **Dial** to scroll down and press the round **Dial** to select **Building Type**
  - Select **Tight, Medium, Loose,** This will tell the controller the thermal storage capacity of the building.
- Press the **Back** Button to get back to Service menu **System Data**
- Use the round **Dial** to scroll down and press the round **Dial** to select **Heating circ.**
- Use the round **Dial** to scroll down and press the round **Dial** to select **Design Temp**
  - This will set the supply temperature in relation to the outdoor design temperature.
- Use the round **Dial** to scroll down and press the round **Dial** to select **Max. Suppl. T.**
  - This will set the boilers maximum supply temperature
- Use the round **Dial** to scroll down and press the round **Dial** to select **Room Feedback**
  - The higher the setting value the greater the influence the room temperature will have on the heating curve.
- Use the round **Dial** to scroll down and press the round **Dial** to select **Contin. heat**
  - When the outdoor temperature sensor reaches this point it will no longer modulate and continue to provide heating demand to prevent the home getting cold.
- Press the Back Button to get back to main screen

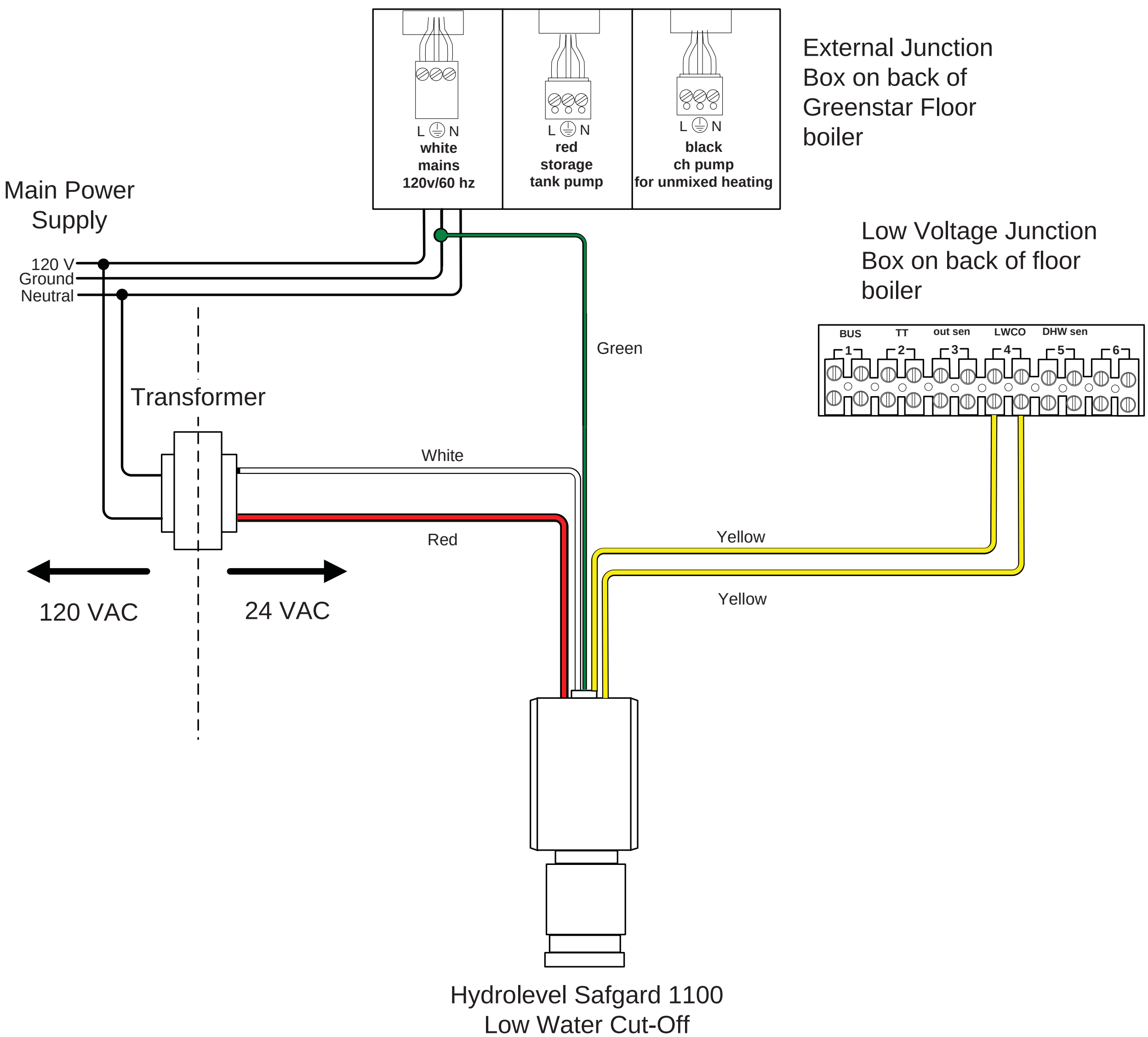
# Appendix D: Wiring Hydrolevel Safgard 1100 Low Water Cut-off to Greenstar Wall Boiler




Hydrolevel Safgard 1100
Low Water Cut-Off

- ►Install a 24VAC 20VA Transformer near the boiler
- ►Follow LWCO manufacturer's instructions
- ►Connect the lead labeled BOILER GROUND (green) to the ground wire of the white plug in the boiler junction box
- ►Connect the leads labeled 24V HOT(red) and 24V COMMON(white) to the external 24VAC transformer (field supplied)
- ►Inside the Heatronic Control of the boiler, remove jumper from terminal #8 and #9 and connect the leads labeled SWITCH CONTACT (yellow) to terminals #8 and #9

# Appendix E: Wiring Hydrolevel safgard 1100 Low Water Cut-Of to Greenstar Floor Boiler




- ►Install a 24VAC 20VA Transformer near the boiler
- ►Follow LWCO manufacturer's instructions
- ►Connect the lead labeled BOILER GROUND (green) to the ground wire of the white plug in the boiler junction box
- ►Connect the leads labeled 24V HOT(red) and 24V COMMON(white) to the external 24VAC transformer (field supplied)
- ►AT the Low Voltage box on the rear of the boiler, remove the jumper acros the LWCO connections and connect the leads labeled SWITCH CONTACT (yellow) to these connections.

NOTES:

NOTES:

NOTES:

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