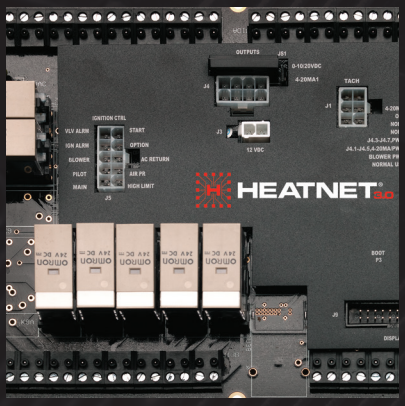
HEATNET® 3.0

Application System Diagrams



KN SERIES

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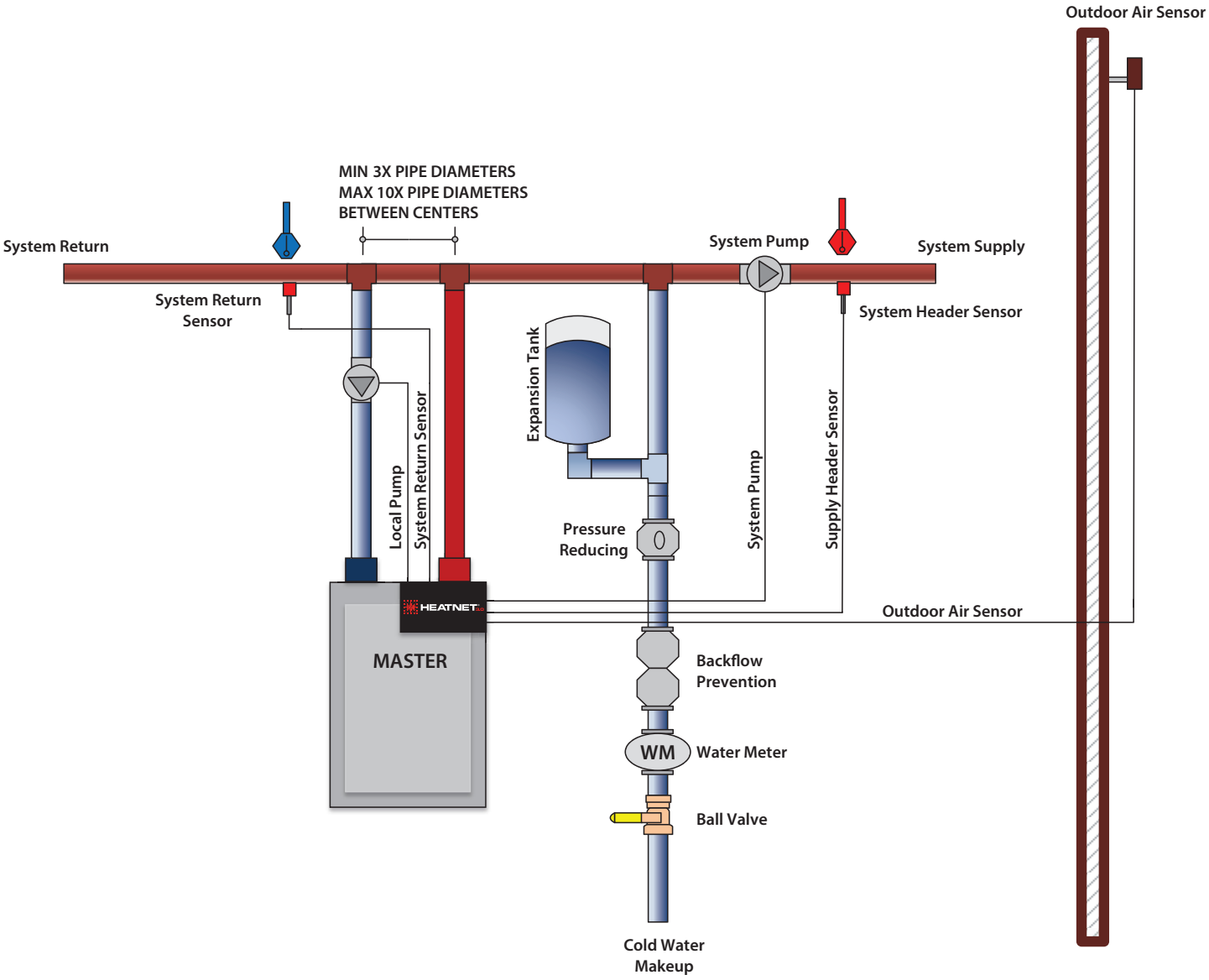
The enclosed diagrams are simplified to illustrate how HeatNet® can be applied to space heating systems. Menu item references are in changes to the default settings. The HeatNet settings for space heating are basic configurations, though many of the methods can be mixed to achieve complex heating systems.

Space Heating, Single Boiler, Primary Secondary



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

Space Heating, Single Boiler, Primary Secondary

When installed in a primary/secondary configuration, a space heating setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed, and the boiler will enable its local pump, and fire depending on the setpoint and water temperature in the system loop.

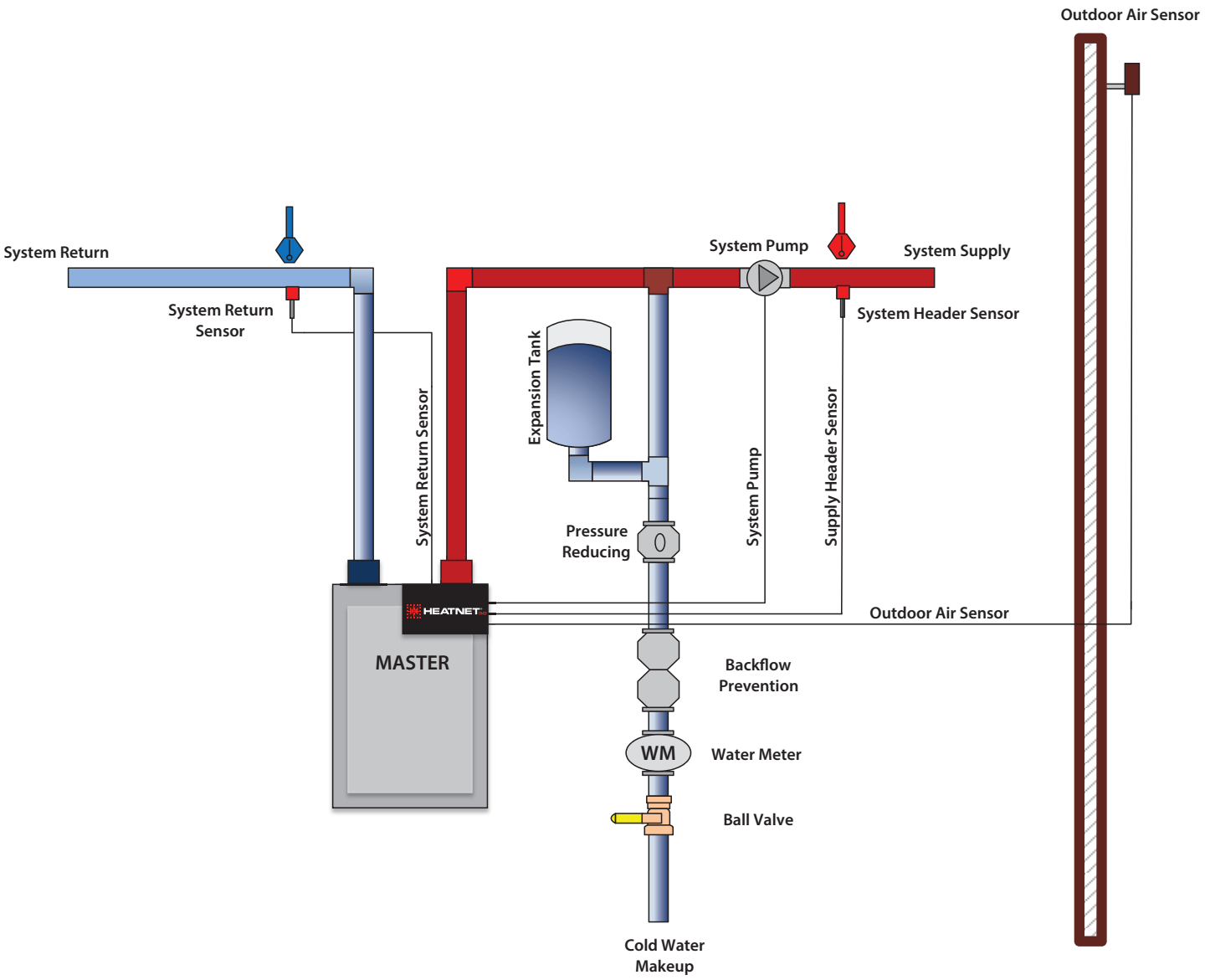
The Outdoor Air Temperature Sensor is used for Outdoor Reset and Warm Weather Shutdown.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

MASTER				
SETTINGS				
Master Type	**HeatNet Address**	**Combustion Air Damper**	**Outdoor Air Reset**	**Warm Weather Shutdown**
Auto	Automatic	Off	Optional	Optional
INPUTS				
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**	
Local	Yes	Yes	Optional	
OUTPUTS				
System Pump On	**Local Pump On**			
When Boiler Enabled	When Boiler Running			

Space Heating, Single Boiler, Direct Return



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KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

Space Heating, Single Boiler, Direct Return

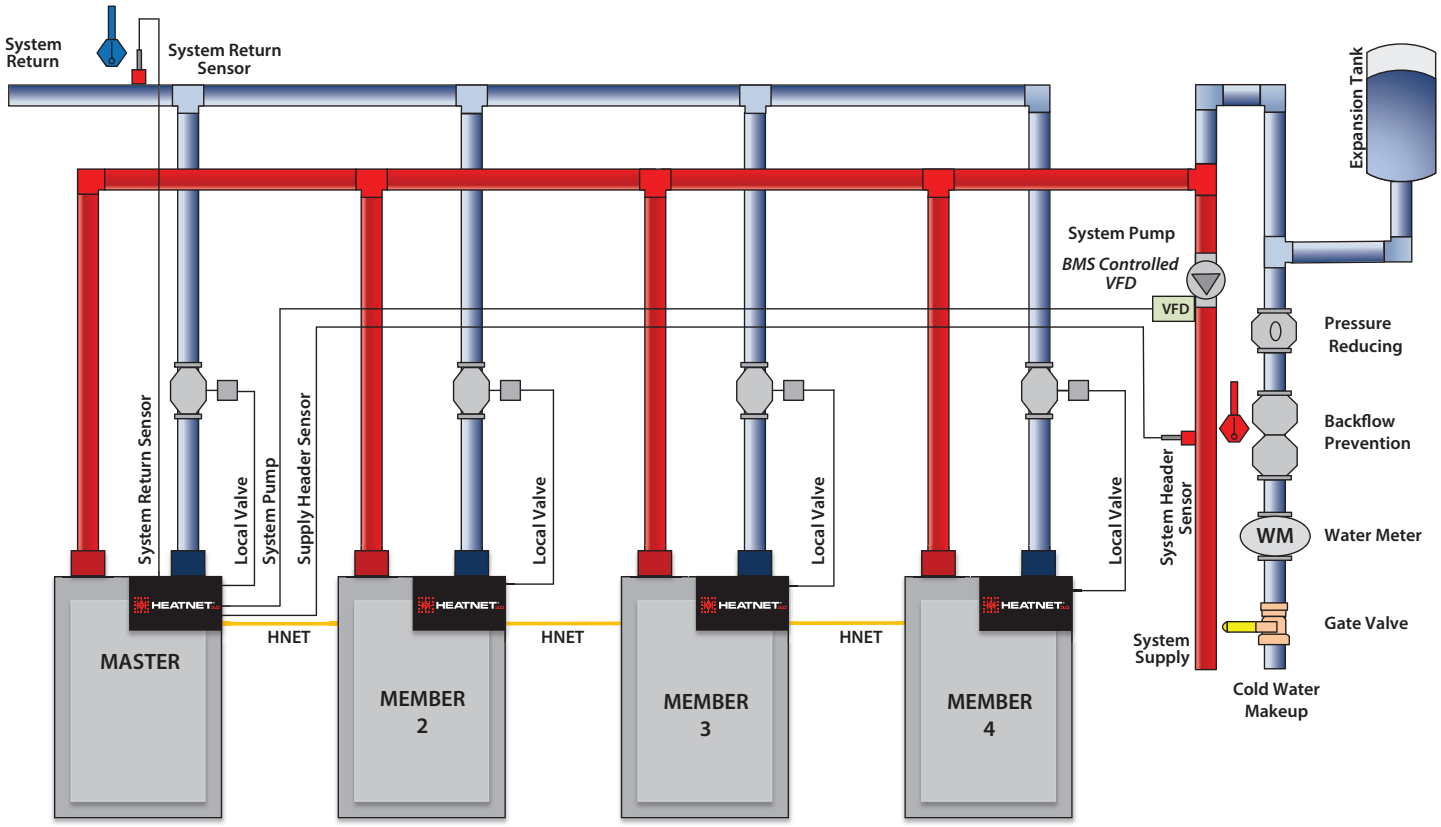
When installed in a direct return configuration, a space heating setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed, and the boiler will fire depending on the Heating Setpoint and water temperature in the system loop.

The Outdoor Air Temperature Sensor is used for Outdoor Reset and Warm Weather Shutdown.

Please refer to the HeatNet Manual for more information or other options to this scheme.

MASTER				
SETTINGS				
Master Type	**HeatNet Address**	**Combustion Air Damper**	**Outdoor Air Reset**	**Warm Weather Shutdown**
Auto	Automatic	Off	Optional	Optional
INPUTS				
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**	
Local	Yes	Yes	Optional	
OUTPUTS				
System Pump On				
When Boiler Enabled				

Space Heating, Multiple Boilers, Reverse Return, using a System Pump and Local Valves



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KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

Space Heating, Multiple Boilers, Reverse Return, using a System Pump and Local Valves

A basic multi boiler system typically uses boilers of the same size and type. With HeatNet, this includes a single Master and multiple Member boilers. The boilers are connected together using a H-Net communications cable, effectively creating a single boiler. This allows the system heating BTUs to be evenly distributed amongst all of the boilers.

A Space Heating Setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed. Boilers are staged to meet the Space Heating Setpoint in the main loop based on their runtime, and each boiler will open its local valve when it is running. The Master boiler will also keep its local valve open when no boilers are running to allow system flow. The Master modulates the boilers to maintain the setpoint in the system loop.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

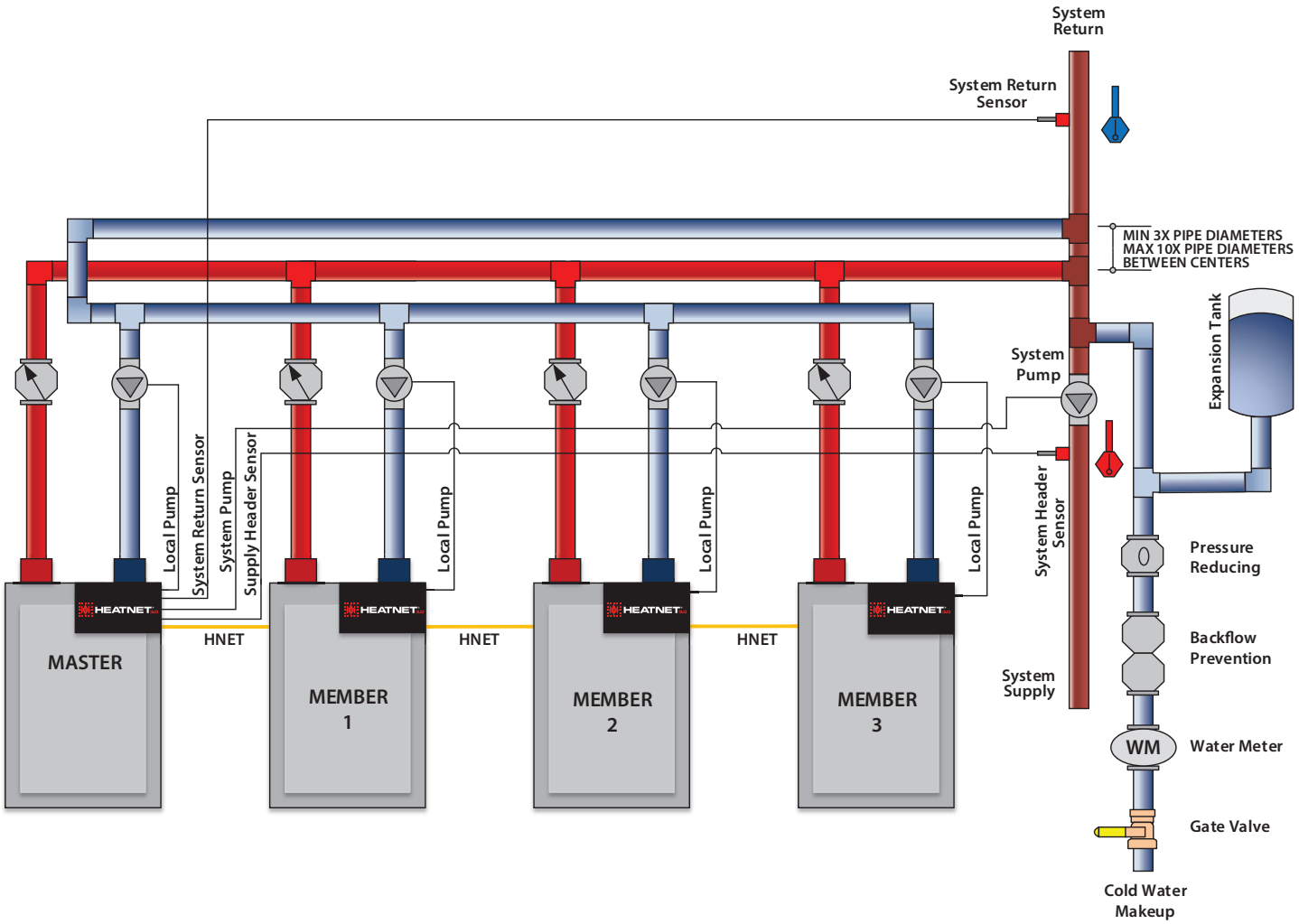
MASTER			
SETTINGS			
Master Type	**HeatNet Address**	**Combustion Air Damper**	**Master Pump Remains On**
Auto	Automatic	Off	On
INPUTS			
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**
Local	Optional	Yes	Optional
OUTPUTS			
System Pump On	**Local Valve On**		
When Boiler Enabled	When Boiler Running		
	No Boilers are Running		

MEMBER 2	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
2	Off
INPUTS	
Local/Remote	
Remote	
OUTPUTS	
Local Valve On	
When Boiler Running	

MEMBER 3	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
3	Off
INPUTS	
Local/Remote	
Remote	
OUTPUTS	
Local Valve On	
When Boiler Running	

MEMBER 4	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
4	Off
INPUTS	
Local/Remote	
Remote	
OUTPUTS	
Local Valve On	
When Boiler Running	

Space Heating, Multiple Boilers, Primary Secondary, Reverse Return



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Space Heating, Multiple Boilers, Primary Secondary, Reverse Return

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A Space Heating Setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed. Boilers are staged to meet the Space Heating Setpoint in the main loop based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers to maintain the setpoint in the system loop.

Please refer to the HeatNet Manual for more information or other options to this scheme.

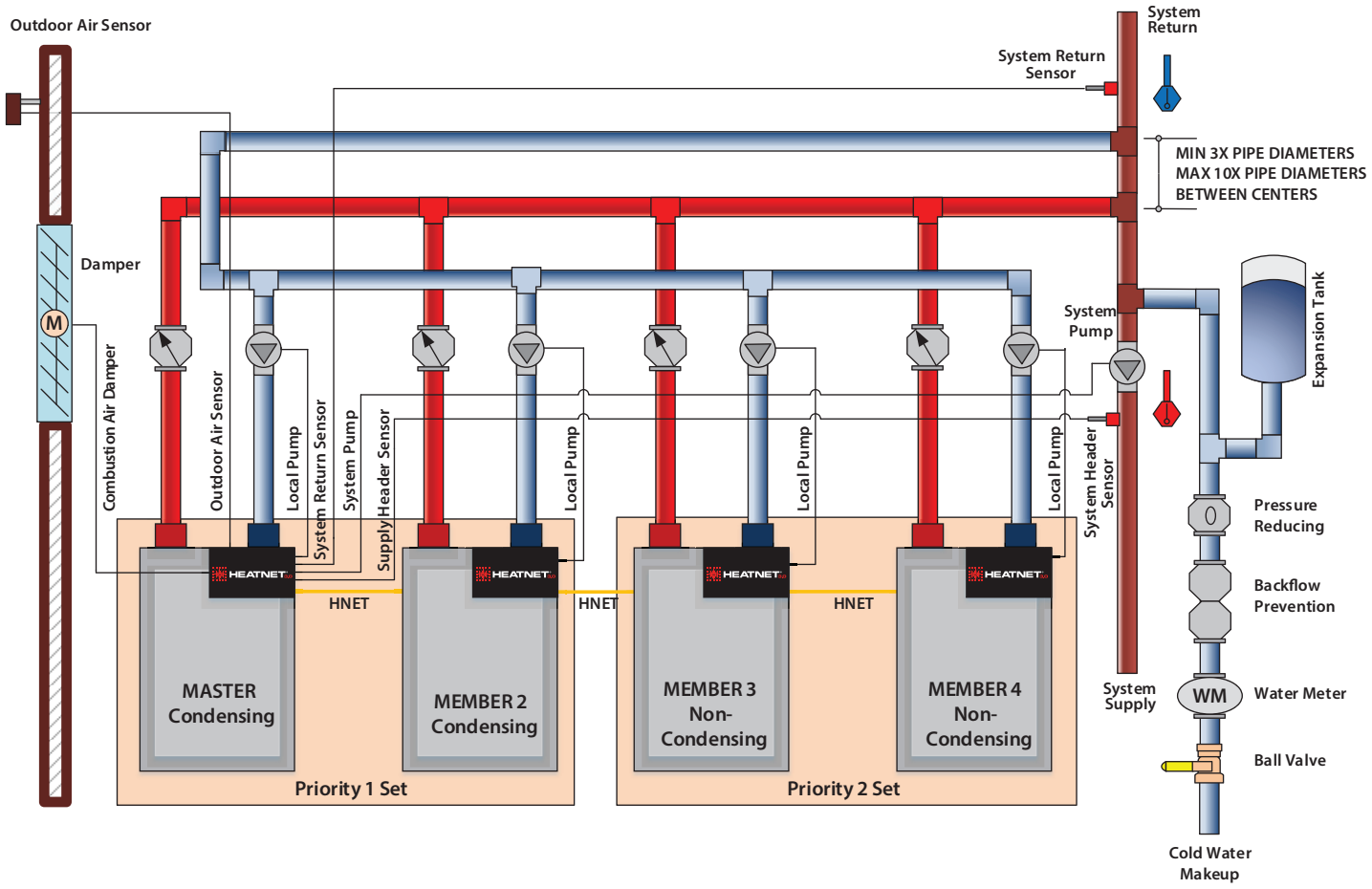
MASTER			
SETTINGS			
Master Type	**HeatNet Address**	**Combustion Air Damper**	
Auto	Automatic	Off	
INPUTS			
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**
Local	Optional	Yes	Optional
OUTPUTS			
System Pump On	**Local Pump On**		
When Boiler Enabled	When Boiler Running		

MEMBER 2	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
2	Off
INPUTS	
Local/Remote	
Remote	
OUTPUTS	
Local Pump On	
When Boiler Running	

MEMBER 3	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
3	Off
INPUTS	
Local/Remote	
Remote	
OUTPUTS	
Local Pump On	
When Boiler Running	

MEMBER 4	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
4	Off
INPUTS	
Local/Remote	
Remote	
OUTPUTS	
Local Pump On	
When Boiler Running	

Space Heating, Multiple Boilers, Mixed Types, Primary Secondary, Reverse Return



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KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

Space Heating, Multiple Boilers, Mixed Types, Primary Secondary, Reverse Return

A multi boiler system typically uses boilers of the same size and type. However, condensing and non-condensing boilers can be mixed in the same system if controlled correctly. The Master and Member 2 are condensing boilers set as Priority 1. Members 3 and 4 are non-condensing boilers set as Priority 2. In this configuration the Master and Member 2 are set to fire first. The Priority 2 boiler set is also set to shut off first. This allows the system return temperature to rise before the non-condensing Priority 2 boilers can fire. The non-condensing boilers can also be held offline until the system return temperature rises above 140F.

A Space Heating Setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed. Boilers are staged to meet the Space Heating Setpoint in the main loop based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers in order to maintain the setpoint in the system loop.

The Combustion Air Damper is common to all boilers, and the Outdoor Air Temperature Sensor is used for Outdoor Reset and Warm Weather Shutdown.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

MASTER				
SETTINGS				
Master Type	**HeatNet Address**	**Combustion Air Damper**	**Outdoor Air Reset**	**Warm Weather Shutdown**
Auto	Automatic	Linked/Common	Optional	Optional
Firing Mode	**Firing Priority**	**Start Set 1**	**Stop Set 1**	
Mixed	1	Always First	Always Last	
INPUTS				
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**	
Local	Yes	Yes	Optional	
OUTPUTS				
System Pump On	**Local Pump On**	**Combustion Air Damper On**		
When Boiler Enabled	When Boiler Running	When any HNet boiler is running		

MEMBER 2		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
2	Off	1
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 3		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
3	Off	2
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 4		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
4	Off	2
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

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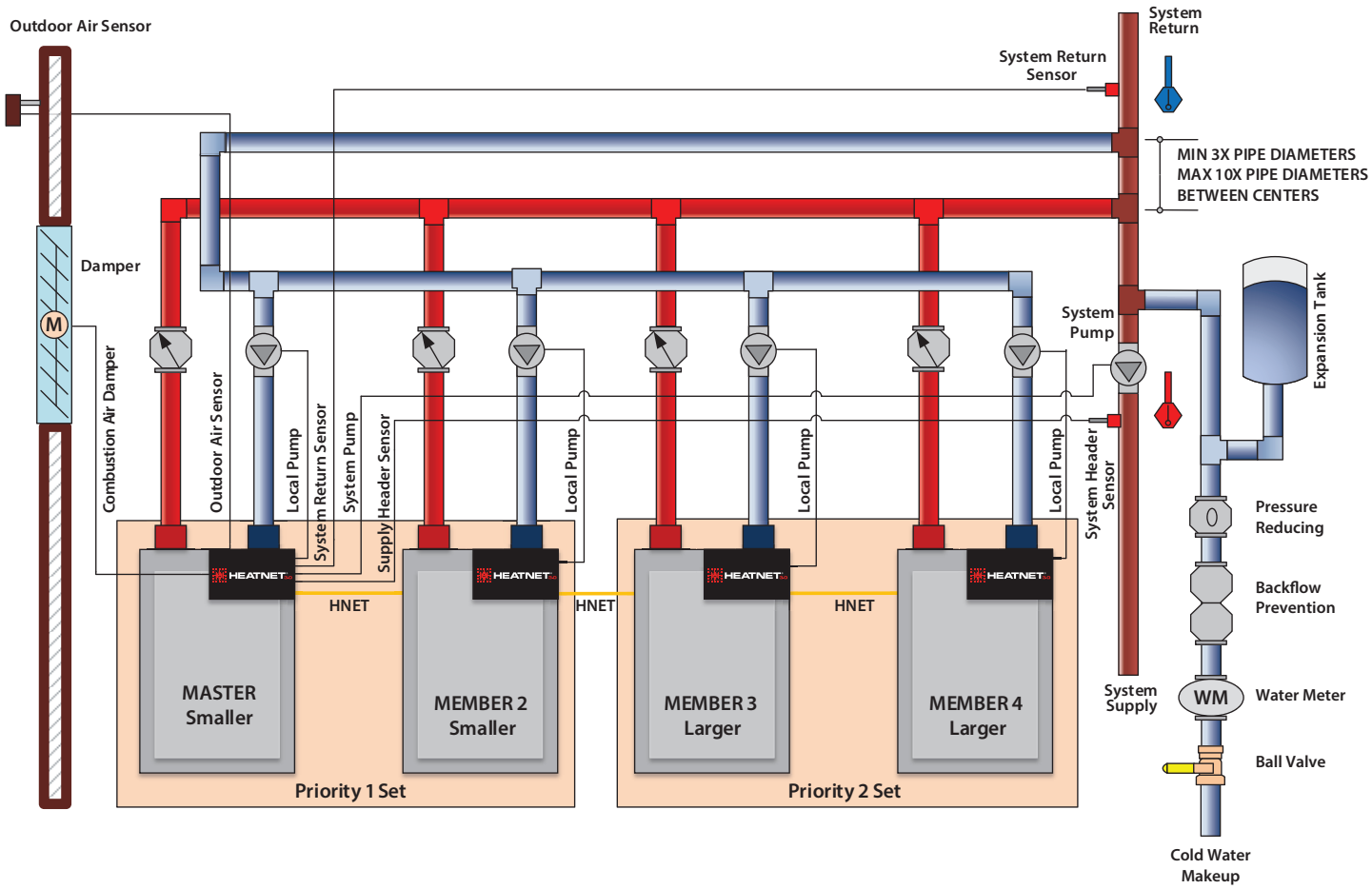
Space Heating, Multiple Boilers, Mixed Sizes, Primary Secondary, Reverse Return



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KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

Space Heating, Multiple Boilers, Mixed Sizes, Primary Secondary, Reverse Return

A multi boiler system typically uses boilers of the same size and type. However, different sized boilers can be mixed to achieve a higher system turndown if controlled correctly. The Master and Member 2 are smaller boilers set as Priority 1. Members 3 and 4 are larger boilers set as Priority 2. In this configuration the Master and Member 2 are set to fire first. The Priority 2 boiler set is also set to shut off first. This allows the system to deliver a minimum amount of BTUs to satisfy lite demands using the smaller priority 1 set boilers before the larger boilers are fired.

A Space Heating Setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed. Boilers are staged to meet the Space Heating Setpoint in the main loop based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers in order to maintain the setpoint in the system loop.

The Combustion Air Damper is common to all boilers, and the Outdoor Air Temperature Sensor is used for Outdoor Reset and Warm Weather Shutdown.

Please refer to the HeatNet Manual for more information on selecting the boiler sizes or other options to this scheme.

HEATNET 3.0 Settings

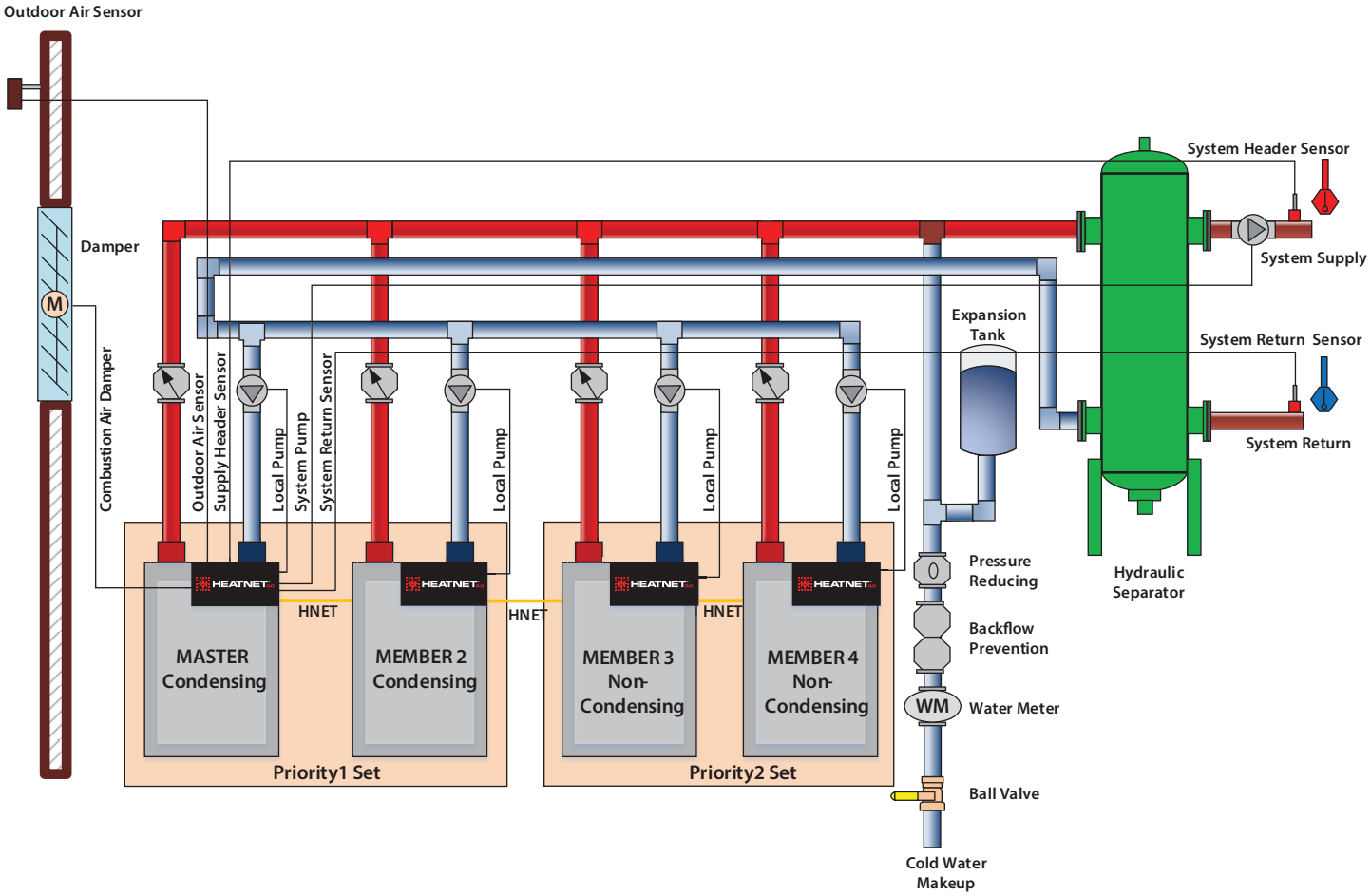
MASTER				
SETTINGS				
Master Type	**HeatNet Address**	**Combustion Air Damper**	**Outdoor Air Reset**	**Warm Weather Shutdown**
Auto	Automatic	Linked/Common	Optional	Optional
Firing Mode	**Firing Priority**	**Start Set 1**	**Stop Set 1**	
Mixed	1	Always First	Always Last	
INPUTS				
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**	
Local	Yes	Yes	Optional	
OUTPUTS				
System Pump On	**Local Pump On**	**Combustion Air Damper On**		
When Boiler Enabled	When Boiler Running	When any HNet boiler is running		

MEMBER 2		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
2	Off	1
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 3		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
3	Off	2
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 4		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
4	Off	2
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

Space Heating, Multiple Boilers, Mixed Types, Primary Secondary, Reverse Return, using a Hydraulic Separator



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A **Hydraulic Separator** reduces flow velocity, in the vessel, which allows for two secondary functions - air removal and dirt removal - in one device. 3-in-1 hydraulic separators make air removal and dirt removal primary functions, along with hydraulic separation, with no added piping connections or installation costs.

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

Space Heating, Multiple Boilers, Mixed Types, Primary Secondary, Reverse Return, using a Hydraulic Separator

A multi boiler system typically uses boilers of the same size and type. However, condensing and non-condensing boilers can be mixed in the same system if controlled correctly. The Master and Member 2 are condensing boilers set as Priority 1. Members 3 and 4 are non condensing boilers set as Priority 2. In this configuration the Master and Member 2 are set to fire first. The Priority 2 boiler set is also set to shut off first. This allows the system return temperature to rise before the non-condensing Priority 2 boilers can fire. The non-condensing boilers can also be held offline until the system return temperature rises above 140F.

A Space Heating Setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed. Boilers are staged to meet the Space Heating Setpoint in the main loop based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers to maintain the setpoint in the system loop.

The Combustion Air Damper is common to all boilers, and the Outdoor Air Temperature Sensor is used for Outdoor Reset and Warm Weather Shutdown.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

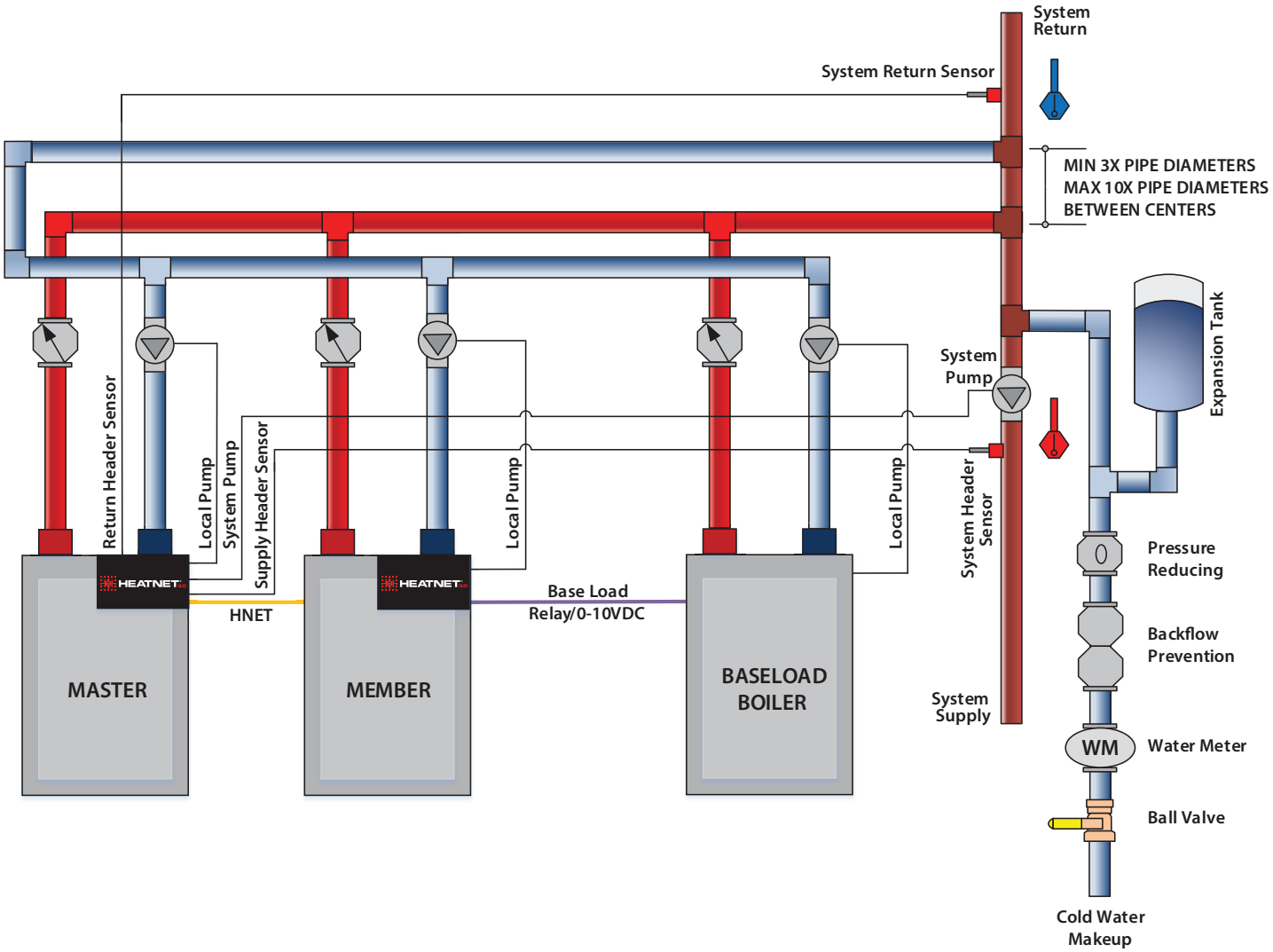
MASTER				
SETTINGS				
Master Type	**HeatNet Address**	**Combustion Air Damper**	**Outdoor Air Reset**	**Warm Weather Shutdown**
Auto	Automatic	Linked/Common	Optional	Optional
Firing Mode	**Firing Priority**	**Start Set 1**	**Stop Set 1**	
Mixed	1	Always First	Always Last	
INPUTS				
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**	
Local	Yes	Yes	Optional	
OUTPUTS				
System Pump On	**Local Pump On**	**Combustion Air Damper On**		
When Boiler Enabled	When Boiler Running	When any HNet boiler is running		

MEMBER 2		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
2	Off	1
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 3		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
3	Off	2
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 4		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	**Firing Priority**
4	Off	2
INPUTS		
Local/Remote		
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

Space Heating, Multiple Boilers, Primary Secondary, Reverse Return, using a non-HeatNet Base Load Boiler



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KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

Space Heating, Multiple Boilers, Primary Secondary, Reverse Return, using a non-HeatNet Base Load Boiler

A non-HeatNet legacy boiler can be integrated into a HeatNet boiler system. The base load boiler can be connected to any boiler on the HeatNet network, and can be fired based on several conditions including Outdoor Air Temperature, Modulation Rate, and Return Water Temperature.

A Space Heating Setpoint is maintained in the system loop based on the Master's System Header Sensor. The system pump is enabled when the Master's Heat Demand input is closed. Boilers are staged to meet the Space Heating Setpoint in the main loop based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers to maintain the setpoint in the system loop.

Please refer to the HeatNet Manual for more information or other options to this scheme.

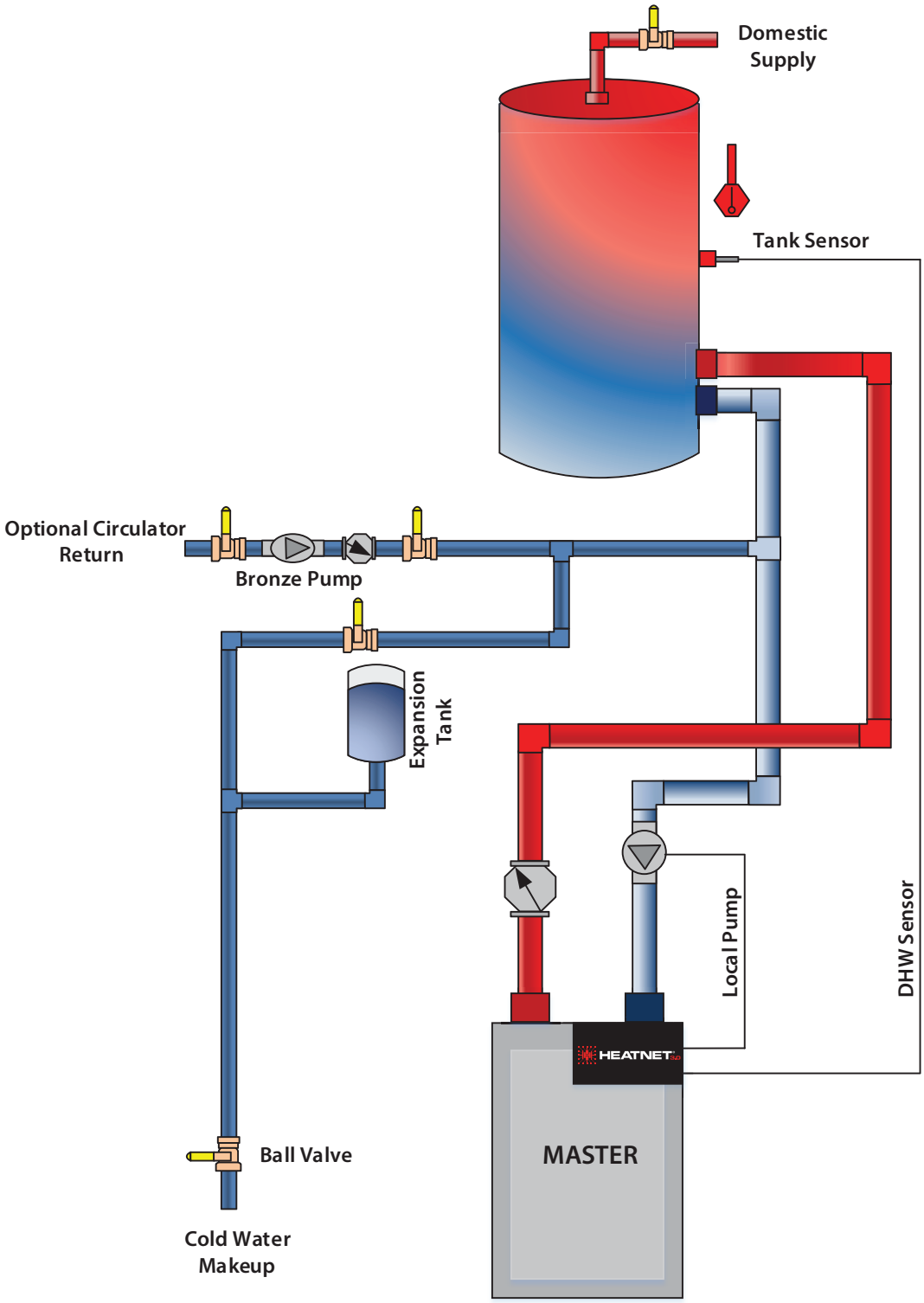
HEATNET 3.0 Settings

MASTER			
SETTINGS			
Master Type	**HeatNet Address**	**Combustion Air Damper**	
Auto	Automatic	Off	
INPUTS			
Local/Remote	**OA Sensor**	**Header Sensor**	**System Return**
Local	Optional	Yes	Optional
OUTPUTS			
System Pump On	**Local Pump On**		
When Boiler Enabled	When Boiler Running		

MEMBER 2			
SETTINGS			
HeatNet Address	**Combustion Air Damper**		
2	Off		
Boiler Type Option	**Baseload Boilers**	**Baseload Start**	**Baseload Stop**
Baseload	1	Conditional	Conditional
INPUTS			
Local/Remote			
Remote			
OUTPUTS			
Local Valve On	**Base Load On**		
When Boiler Running	Conditional		

DHW METHOD 1:

DHW Heating ONLY using a DHW MASTER, Condensing Boiler



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

UNITS NOT LISTED AS WATER HEATERS, SHALL HAVE AN INDIRECT COIL TO GENERATE HOT WATER.

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 1:

DHW Heating ONLY using a DHW MASTER, Condensing Boiler

A DHW Setpoint is maintained in the DHW tank based on the Master's DHW Sensor. The system pump is enabled when the boiler's Heat Demand input is closed, and the boiler will enable its local pump, and fire depending on the DHW Setpoint and water temperature in the tank.

The cold water make up is piped into the boiler to return to increase condensing in the boilers.

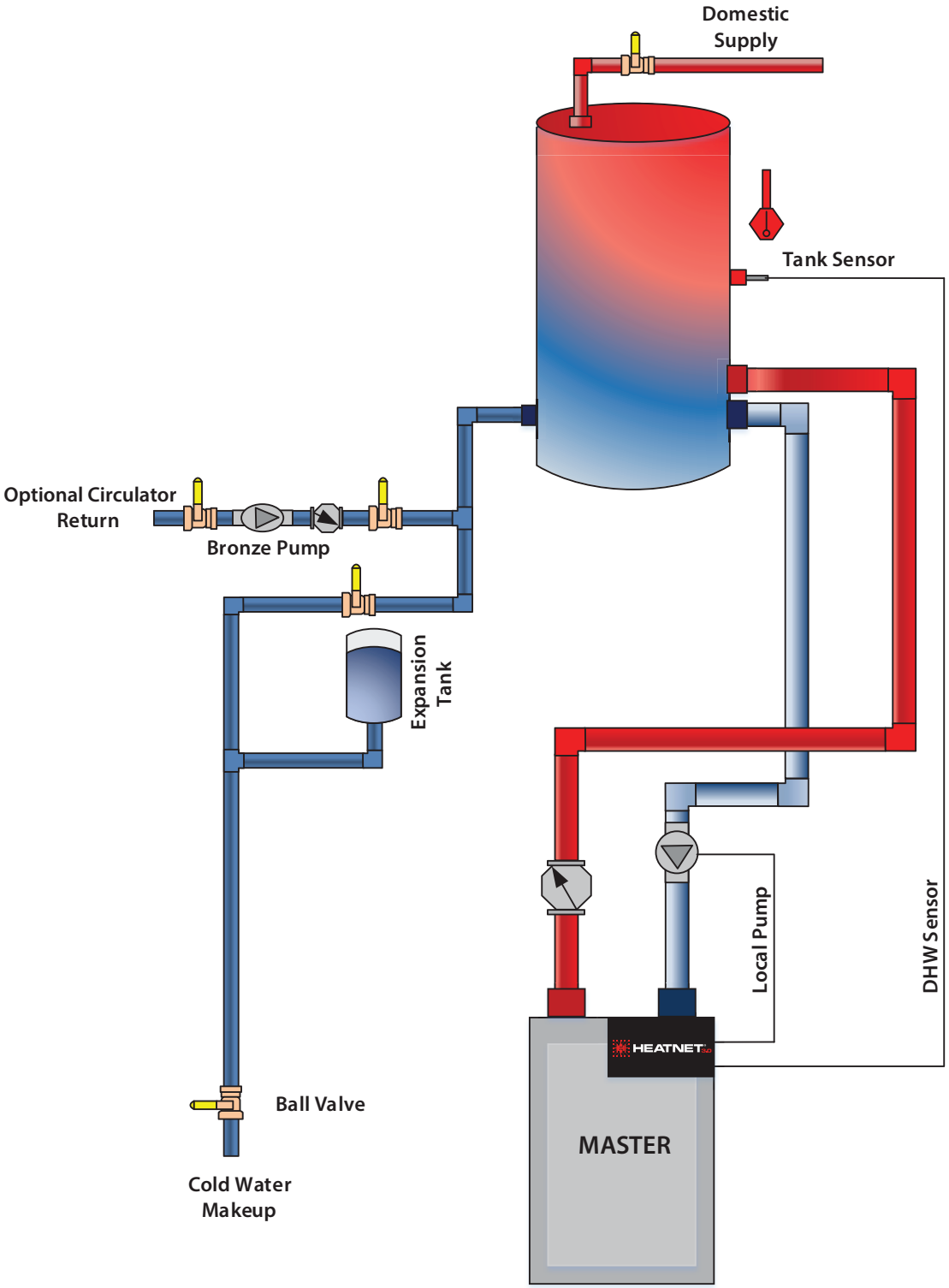
Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

MASTER (DHW ONLY)			
SETTINGS			
DHW Use Sensor	**HeatNet Address**	**Master Type**	**Combustion Air Damper**
Yes	Automatic	DHW Only	Off
INPUTS			
Local/Remote	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**	
Local	Yes - Tank		
OUTPUTS			
Local Pump On			
When Boiler Running			

DHW METHOD 1:

DHW Heating ONLY using a DHW MASTER, Non-Condensing Boiler



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

UNITS NOT LISTED AS WATER HEATERS, SHALL HAVE AN INDIRECT COIL TO GENERATE HOT WATER.

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 1:

DHW Heating ONLY using a DHW MASTER, Non-Condensing Boiler

A DHW Setpoint is maintained in the DHW tank based on the Master's DHW Sensor. The system pump is enabled when the boiler's Heat Demand input is closed, and the boiler will enable its local pump, and fire depending on the DHW Setpoint and water temperature in the tank.

The cold water make up is piped into the tank to reduce the possibility of condensing in the boiler.

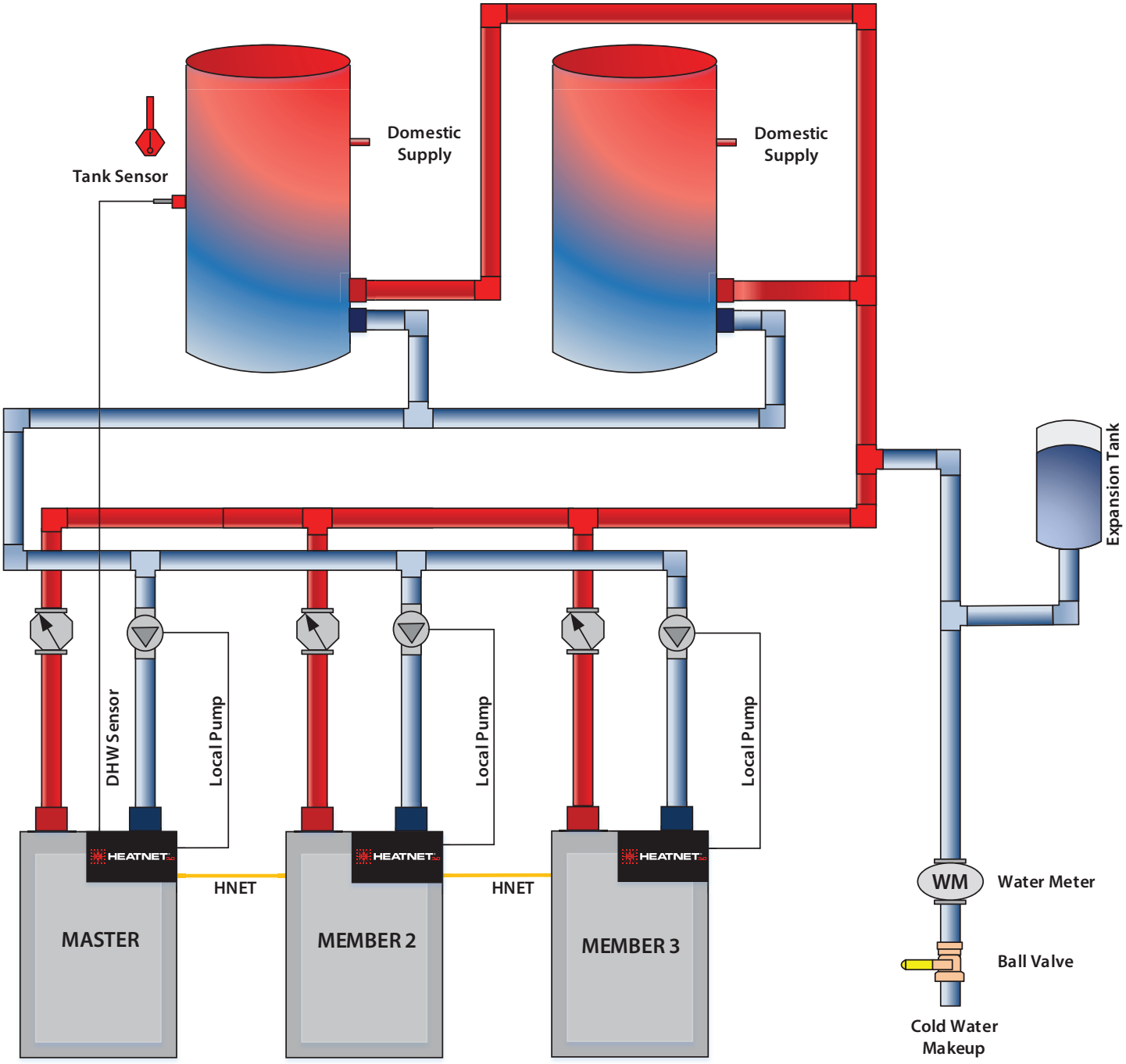
Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

MASTER (DHW ONLY)			
SETTINGS			
DHW Use Sensor	**HeatNet Address**	**Master Type**	**Combustion Air Damper**
Yes	Automatic	DHW Only	Off
INPUTS			
Local/Remote	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**	
Local	Yes - Tank		
OUTPUTS			
Local Pump On			
When Boiler Running			

DHW METHOD 1:

DHW Heating ONLY using a DHW MASTER, Multiple Non-Condensing Boilers



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KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

UNITS NOT LISTED AS WATER HEATERS, SHALL HAVE AN INDIRECT COIL TO GENERATE HOT WATER.

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 1:

DHW Heating ONLY using a DHW MASTER, Multiple Non-Condensing Boilers

A DHW Setpoint is maintained in the DHW tank based on the Master's DHW Sensor. The system pump is enabled when the boiler's Heat Demand input is closed. Boilers are staged to meet the DHW Setpoint in the tank based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers to maintain the setpoint in the tank.

The cold water make up is piped into the supply piping to reduce the possibility of condensing in the boilers.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

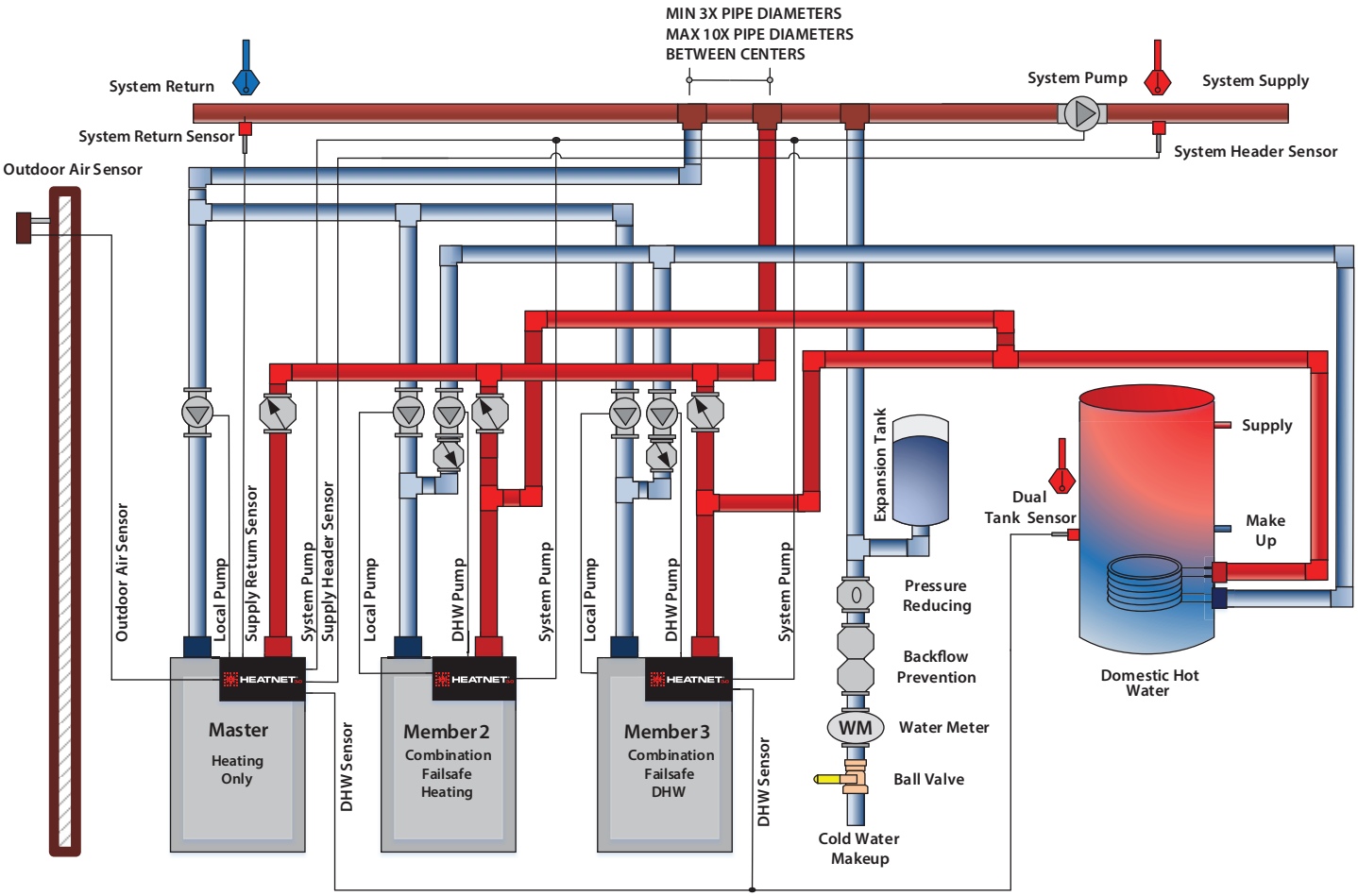
MASTER (DHW ONLY)			
SETTINGS			
DHW Use Sensor	**HeatNet Address**	**Master Type**	**Combustion Air Damper**
Yes	Automatic	DHW Only	Off
INPUTS			
Local/Remote	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**	
Local	Yes - Tank		
OUTPUTS			
Local Pump On			
When Boiler Running			

MEMBER 2	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
2	Off
INPUTS	
Local/Remote	**JPS1 Jumper must be cut to service DHW**
Remote	
OUTPUTS	
Local Pump On	
When Boiler Running	

MEMBER 3	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
3	Off
INPUTS	
Local/Remote	**JPS1 Jumper must be cut to service DHW**
Remote	
OUTPUTS	
Local Pump On	
When Boiler Running	

DHW METHOD 2:

Combination DHW and Space Heating using a MASTER Boiler and Member Boilers with Pumps



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 2:

Combination DHW and Space Heating using a MASTER Boiler and Member Boilers with Pumps

In this method the Master simultaneously controls both space heating and DHW heating. The Master is piped to only service space heating, and both members are piped to service space heating and DHW heating demands. The Master's Heat Demand input enables space heating by energizing the system pump and maintaining the Heating Setpoint at the System Header Sensor. The Master's OR OVR input enables the DHW heating, by maintaining the DHW Setpoint at the DHW Sensor located in the DHW tank.

Boilers are staged to meet both the Space Heating Setpoint, and the DHW Setpoint based on their runtime. When a boiler is fired to service a space heating demand it will enable its local pump, and when a boiler is fired to service a DHW demand it will enable its DHW pump. The Master modulates the boilers in order to maintain the setpoints.

This method allows for a Member boiler to provide failsafe mechanisms in the event the Master fails and stops communicating to the Members. Member 2 is configured to provide failsafe space heating, and Member 3 is configured to provide both failsafe space heating and failsafe DHW heating.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

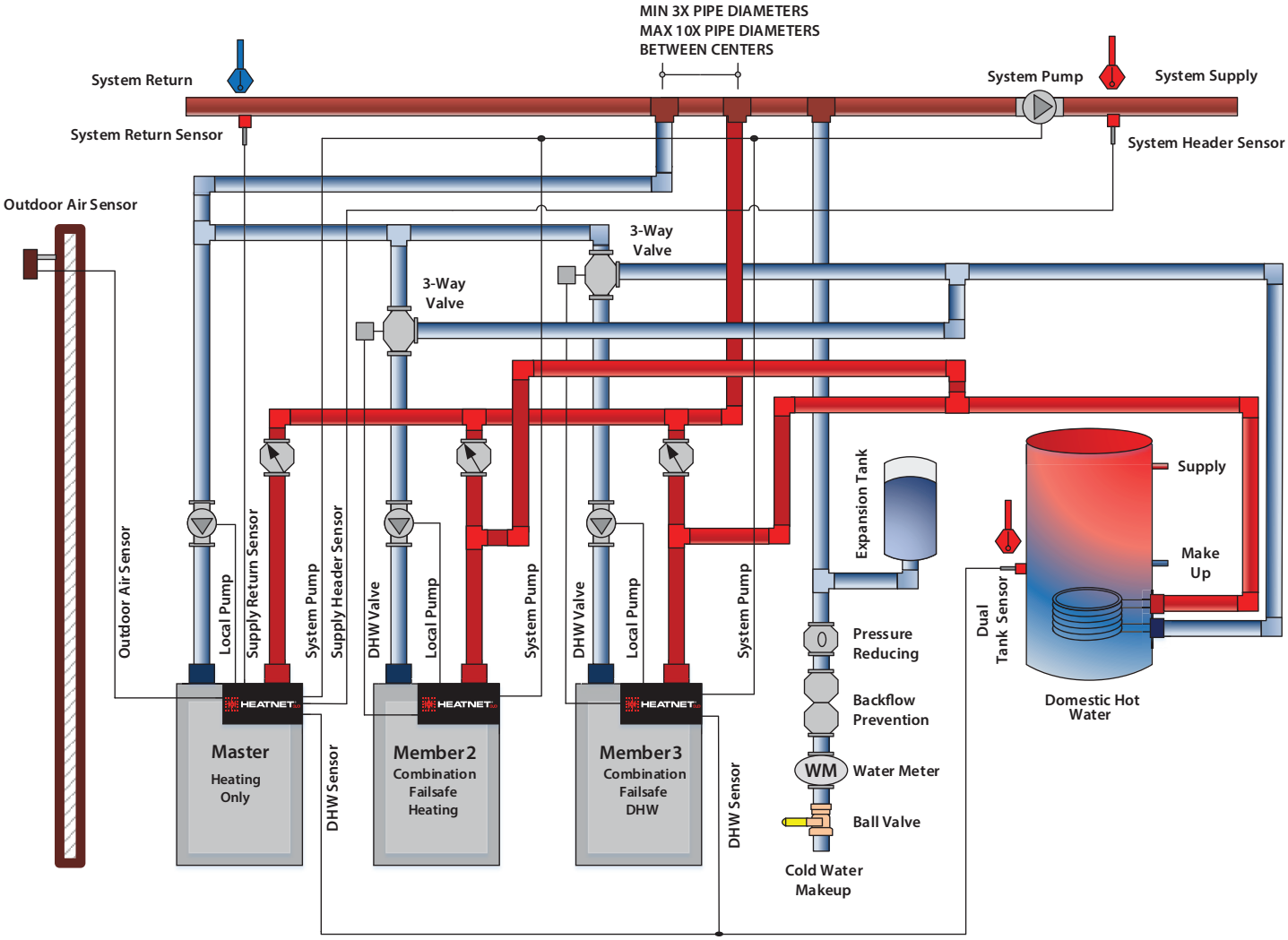
MASTER (SPACE HEATING ONLY)				
SETTINGS				
Master Type	**HeatNet Address**	**DHW Use Sensor**	**Combustion Air Damper**	
Combination	Automatic	Yes	Off	
INPUTS				
Local/Remote	**OR/OVR**	**Header Sensor**	**System Return**	**DHW Sensor**
Local	Jumper	Yes	Optional	Yes - Tank
OUTPUTS				
System Pump On		**Local Pump**		
When Boiler Enabled		When Boiler Running		

MEMBER 2 (SPACE HEATING OR DHW, FAILSAFE SPACE HEATING)			
SETTINGS			
HeatNet Address	**DHW Boiler Mode**	**DHW Local Pump Off**	**Combustion Air Damper**
2	Combination	Yes	Off
HNet Failsafe			
On			
INPUTS			
Local/Remote	**JPS1 Jumper must be cut to service DHW**		
Remote			
OUTPUTS			
System Pump On	**Local Pump On**	**DHW Pump On**	
Failsafe Heating	When Boiler Running	DHW Call	

MEMBER 3 (SPACE HEATING OR DHW, FAILSAFE SPACE HEATING AND DHW)			
SETTINGS			
HeatNet Address	**DHW Boiler Mode**	**DHW Local Pump Off**	**Combustion Air Damper**
3	Combination	Yes	Off
HNet Failsafe	**DHW Use Sensor**	**System Pump Priority**	
On	Yes	Yes	
INPUTS			
Local/Remote	**OR/OVR**	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**
Remote	Jumper	Yes - Tank	
OUTPUTS			
System Pump On	**Local Pump On**	**DHW Pump On**	
Failsafe Heating	When Boiler Running	DHW Call	

DHW METHOD 2:

Combination DHW and Space Heating using a MASTER Boiler and Member Boilers with Valves



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 2:

Combination DHW and Space Heating using a MASTER Boiler and Member Boilers with Valves

In this method the Master simultaneously controls both space heating and DHW heating. The Master is piped to only service space heating, and both members are piped to service space heating and DHW heating. The Master's Heat Demand input enables space heating by energizing the system pump and maintaining the Heating Setpoint at the System Header Sensor. The Master's OR OVR input enables the DHW heating, by maintaining the DHW Setpoint at the DHW Sensor located in the DHW tank.

Boilers are staged to meet both the Space Heating Setpoint, and the DHW Setpoint based on their runtime. When a boiler is fired to service a space heating demand it will enable its local pump, and when a boiler is fired to service a DHW demand it will enable its local pump and enable its DHW valve to divert water to the tank. The Master modulates the boilers in order to maintain the setpoints.

This method allows for a Member boiler to provide failsafe mechanisms in the event the Master fails and stops communicating to the Members. Member 2 is configured to provide failsafe space heating, and Member 3 is configured to provide both failsafe space heating and failsafe DHW heating.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

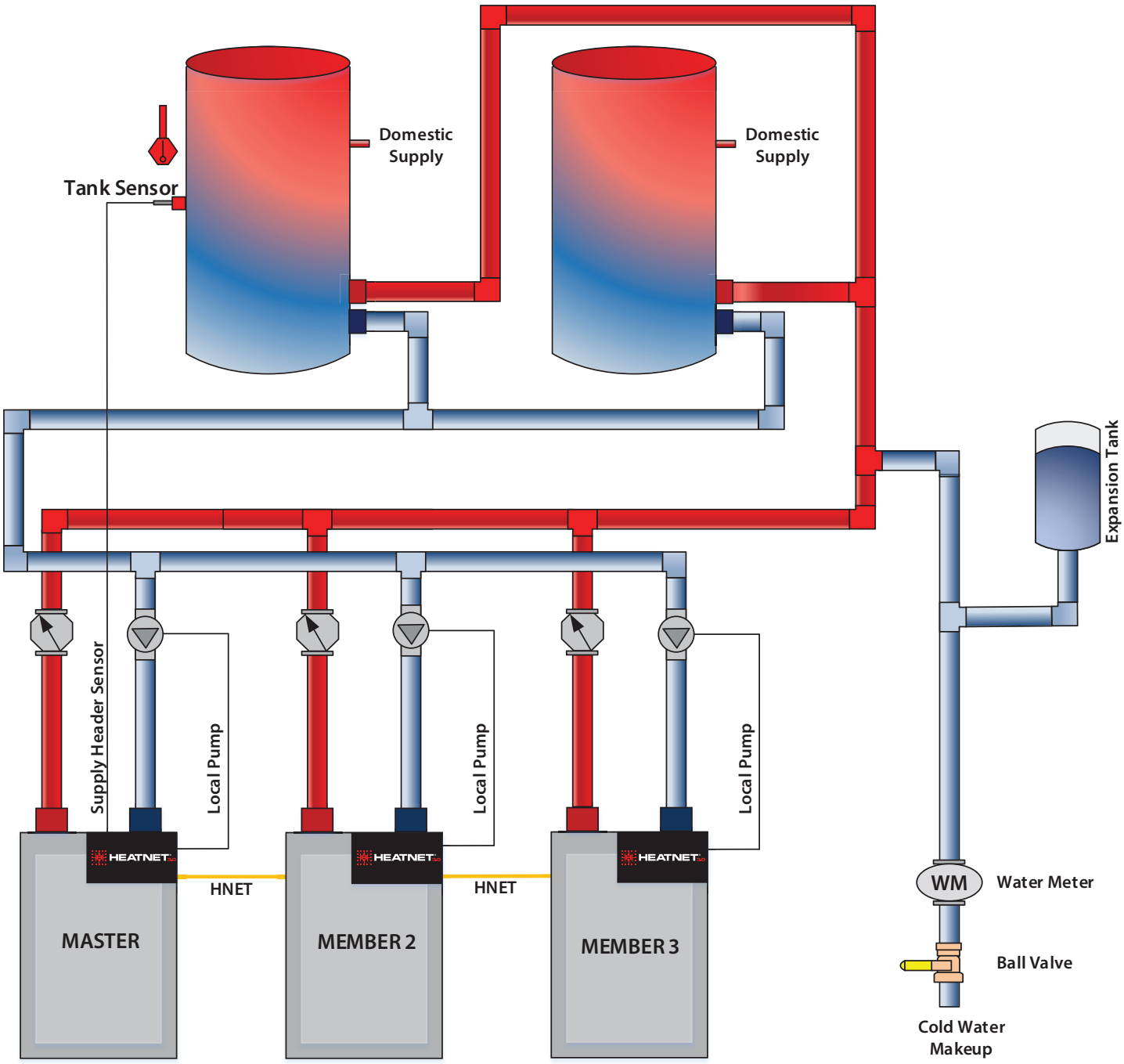
MASTER (SPACE HEATING ONLY)				
SETTINGS				
Master Type	**HeatNet Address**	**DHW Use Sensor**	**Combustion Air Damper**	
Combination	Automatic	Yes	Off	
INPUTS				
Local/Remote	**OR/OVR**	**Header Sensor**	**System Return**	**DHW Sensor**
Local	Jumper	Yes	Optional	Yes - Tank
OUTPUTS				
System Pump On		**Local Pump**		
When Boiler Enabled		When Boiler Running		

MEMBER 2 (SPACE HEATING OR DHW, FAILSAFE SPACE HEATING)			
SETTINGS			
HeatNet Address	**DHW Boiler Mode**	**DHW Local Pump Off**	**Combustion Air Damper**
2	Combination	No	Off
HNet Failsafe			
On			
INPUTS			
Local/Remote	**JPS1 Jumper must be cut to service DHW**		
Remote			
OUTPUTS			
System Pump On	**Local Pump On**	**DHW Pump On**	
Failsafe Heating	When Boiler Running	DHW Call	

MEMBER 3 (SPACE HEATING OR DHW, FAILSAFE SPACE HEATING AND DHW)			
SETTINGS			
HeatNet Address	**DHW Boiler Mode**	**DHW Local Pump Off**	**Combustion Air Damper**
3	Combination	Yes	Off
HNet Failsafe	**DHW Use Sensor**	**System Pump Priority**	
On	Yes	Yes	
INPUTS			
Local/Remote	**OR/OVR**	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**
Remote	Jumper	Yes - Tank	
OUTPUTS			
System Pump On	**Local Pump On**	**DHW Valve On**	
Failsafe Heating	When Boiler Running	DHW Call	

DHW METHOD 3:

DHW Heating ONLY using a Header Sensor Input, Multiple Boilers, Reverse Return



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

UNITS NOT LISTED AS WATER HEATERS, SHALL HAVE AN INDIRECT COIL TO GENERATE HOT WATER.

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 3:

DHW Heating ONLY using a Header Sensor Input, Multiple Boilers, Reverse Return

In this method a Heating Setpoint is maintained at the Master's System Header Sensor located in the DHW tank. The Master's Heat Demand input enables space heating and maintains the Heating Setpoint at the System Header Sensor. Boilers are staged to meet the setpoint in the DHW tank based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers to maintain the Heating Setpoint at the header sensor located in the DHW tank.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

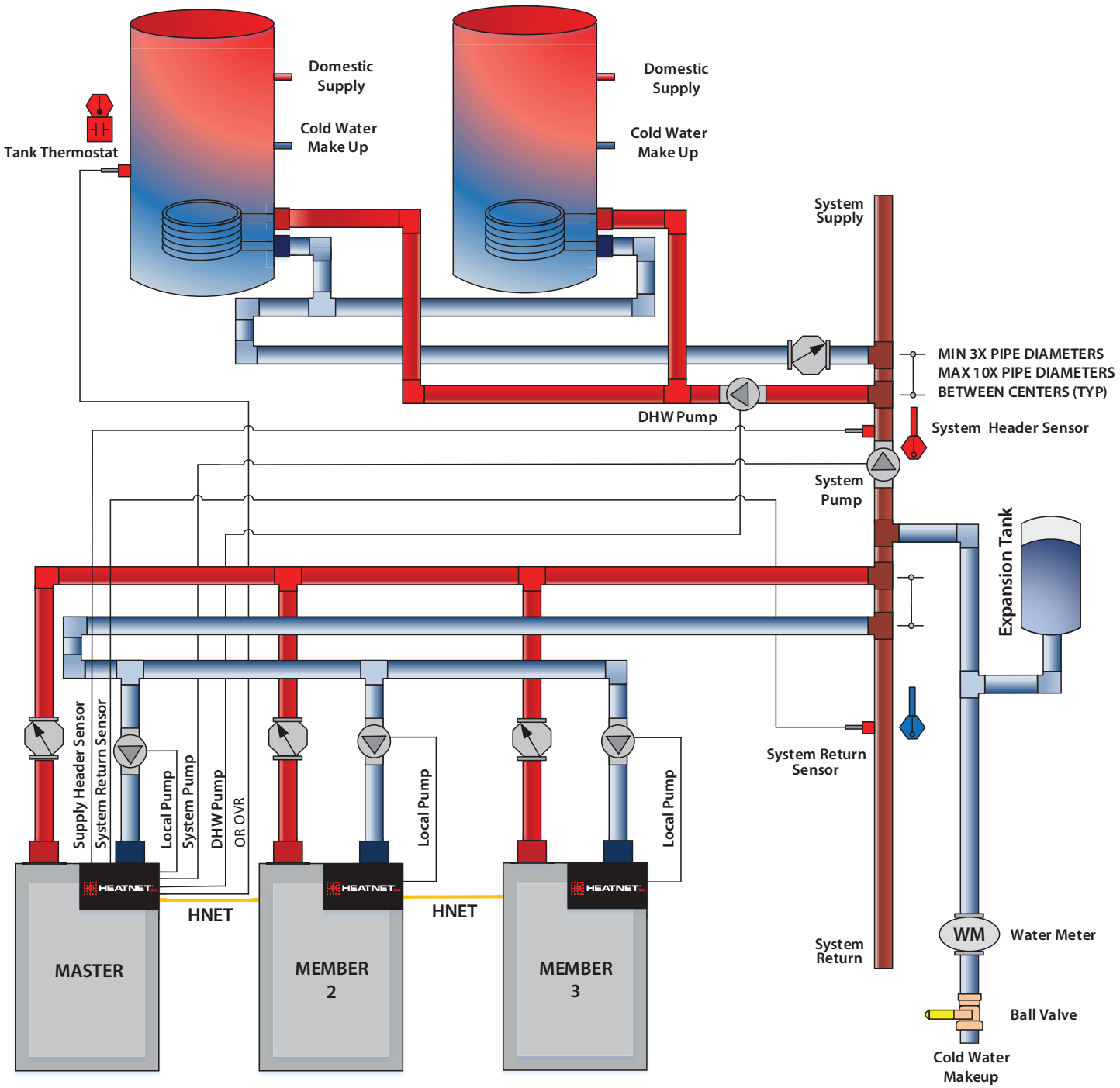
MASTER			
SETTINGS			
Master Type	**HeatNet Address**	**Combustion Air Damper**	
Automatic	Automatic	Off	
INPUTS			
Local/Remote	**Header Sensor**	**JPS1 Jumper must be cut to service DHW**	
Local	Yes - Tank		
OUTPUTS			
Local Pump On			
When Boiler Running			

MEMBER 2	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
2	Off
INPUTS	
Local/Remote	**JPS1 Jumper must be cut to service DHW**
Remote	
OUTPUTS	
Local Pump/Valve On	
When Boiler Running	

MEMBER 3	
SETTINGS	
HeatNet Address	**Combustion Air Damper**
3	Off
INPUTS	
Local/Remote	**JPS1 Jumper must be cut to service DHW**
Remote	
OUTPUTS	
Local Pump/Valve On	
When Boiler Running	

DHW METHOD 4a:

Space Heating with DHW Override of Setpoint on Master, using an Aquastat, Primary Secondary, Reverse Return



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 4a:

Space Heating with DHW Override of Setpoint on Master, using an Aquastat, Primary Secondary, Reverse Return

In DHW METHOD 4a, the Master's Heat Demand input enables space heating by energizing the system pump and maintaining the Heating Setpoint at the Master's System Header Sensor. When the aquastat located in the DHW tank calls for heat, the system loop temperature is overridden with the DHW Setpoint. The system pump continues to run, and the DHW pump is enabled to supply heat to the tanks until the aquastat is satisfied.

Boilers are staged to meet the active setpoint based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers in order to maintain the active setpoint.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

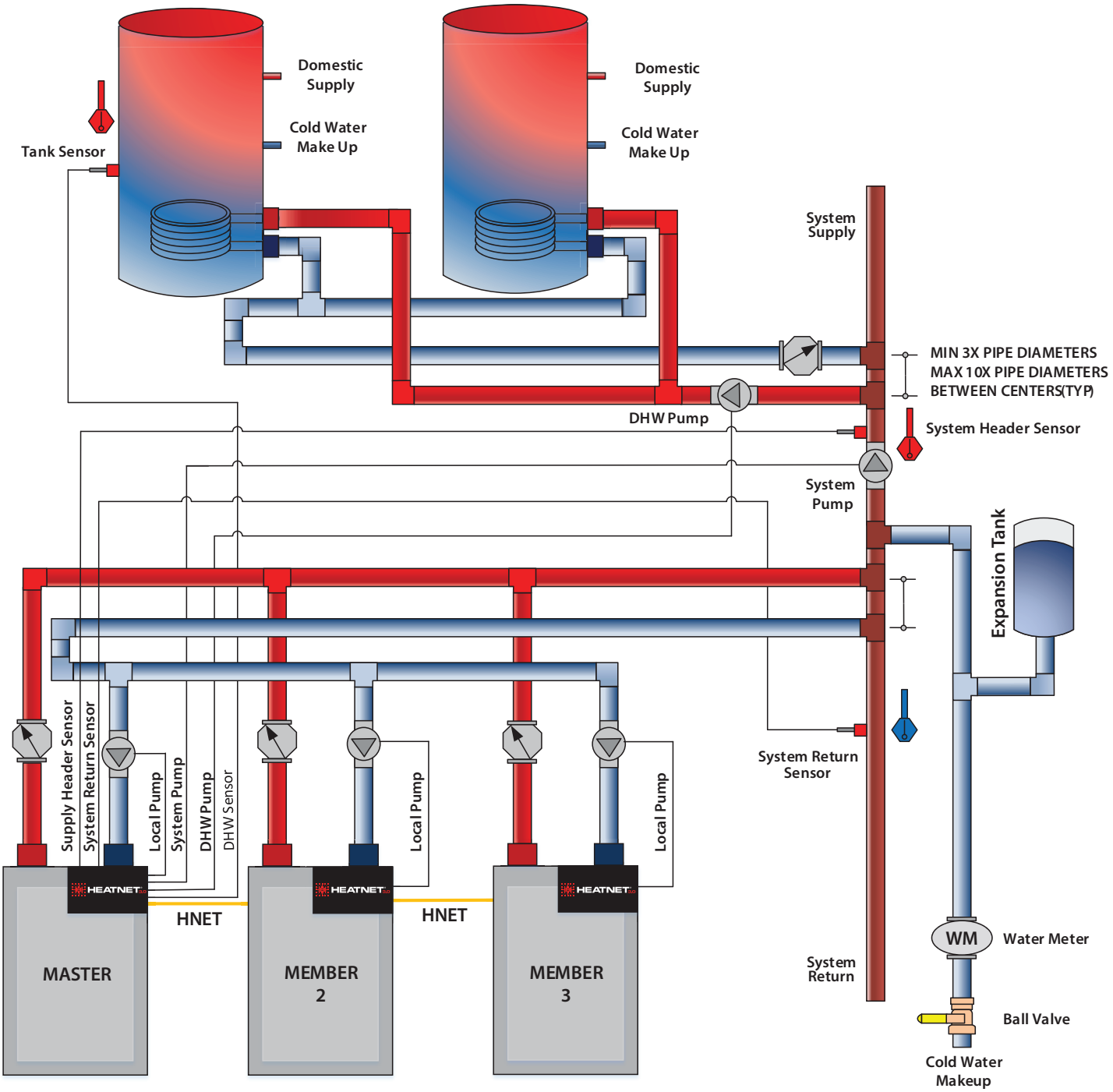
MASTER				
SETTINGS				
Master Type	**HeatNet Address**	**Combustion Air Damper**		
Auto	Automatic	Off		
INPUTS				
Local/Remote	**OR OVR**	**Header Sensor**	**System Return**	**JPS1 Jumper must be cut to service DHW**
Local	Tank Aquastat	Yes	Optional	
OUTPUTS				
System Pump On	**Local Pump On**	**DHW Pump On**		
When Boiler Enabled	When Boiler Running	DHW Call		

MEMBER 2		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	
2	Off	
INPUTS		
Local/Remote	**JPS1 Jumper must be cut to service DHW**	
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 3		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	
3	Off	
INPUTS		
Local/Remote	**JPS1 Jumper must be cut to service DHW**	
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

DHW METHOD 4b:

Space Heating with DHW Override of Setpoint on Master, using a DHW Sensor, Primary Secondary, Reverse Return



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 4b:

Space Heating with DHW Override of Setpoint on Master, using a DHW Sensor, Primary Secondary, Reverse Return

In DHW METHOD 4b, the Master's Heat Demand input enables space heating by energizing the system pump and maintaining the Heating Setpoint at the Master's System Header Sensor. The Master's OR OVR input is jumpered to enable DHW heating using the DHW tank sensor. When the DHW tank temperature drops, a DHW heat demand is generated, and the system loop temperature is overridden with the DHW Setpoint. They system pump continues to run, and the DHW pump is enabled to supply heat to the tanks until the DHW tank is satisfied.

Boilers are staged to meet the active setpoint based on their runtime, and each boiler will enable its local pump when it is running. The Master modulates the boilers in order to maintain the active setpoint.

Please refer to the HeatNet Manual for more information or other options to this scheme.

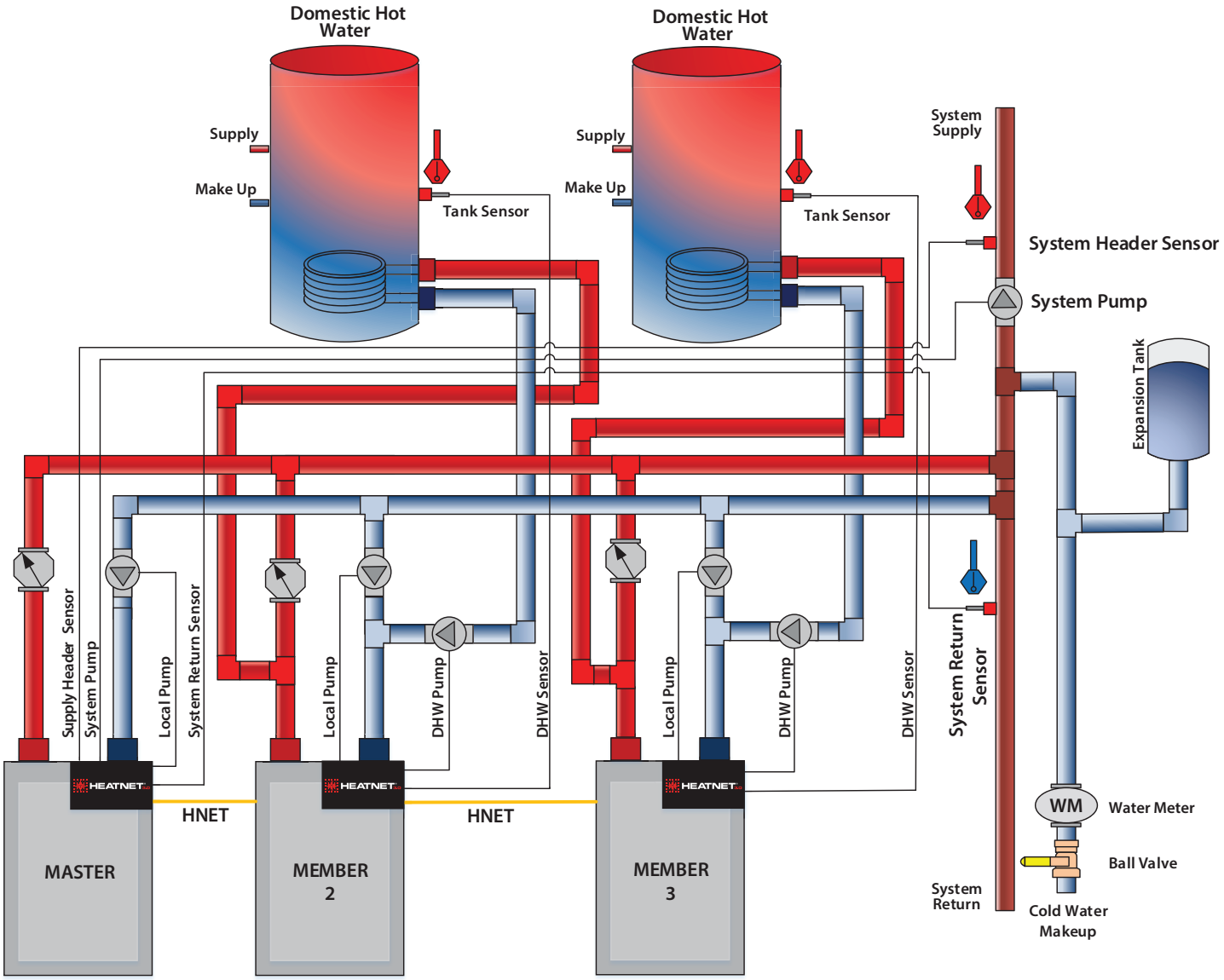
HEATNET 3.0 Settings

MASTER (SPACE HEATING ONLY)					
SETTINGS					
Master Type	**HeatNet Address**	**DHW Use Sensor**	**Combustion Air Damper**		
Auto	Automatic	Yes	Off		
INPUTS					
Local/Remote	**OR OVR**	**Header Sensor**	**System Return**	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**
Local	Jumper	Yes	Optional	Yes - Tank	
OUTPUTS					
System Pump On	**Local Pump/Valve On**	**DHW Pump On**			
When Boiler Enabled	When Boiler Running	DHW Call			

MEMBER 2		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	
2	Off	
INPUTS		
Local/Remote	**JPS1 Jumper must be cut to service DHW**	
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

MEMBER 3		
SETTINGS		
HeatNet Address	**Combustion Air Damper**	
3	Off	
INPUTS		
Local/Remote	**JPS1 Jumper must be cut to service DHW**	
Remote		
OUTPUTS		
Local Pump On		
When Boiler Running		

DHW METHOD 5a:
Local DHW Tank Heating Override using a Tank Sensor



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 5a:
Local DHW Tank Heating Override using a Tank Sensor

In DHW METHOD 5a: Local DHW Tank Heating Override, the Master's Heat Demand input enables space heating by energizing the system pump and maintaining the Heating Setpoint at the Master's System Header Sensor using the available members. A Member boiler will enable its local pump when called to service a heating call by the Master. Each member has its OR OVR input jumpered to enable local DHW heating using its DHW Sensor. When a DHW tank sensor calls for heat, the local boiler goes offline from the Master. The boiler then disables its local pump, and enables its DHW pump to service the local tank until the tank sensor has been satisfied. Once the call for DHW heat has been satisfied, the boiler is placed back online for the Master to service the main heating loop.

Please refer to the HeatNet Manual for more information or other options to this scheme.

HEATNET 3.0 Settings

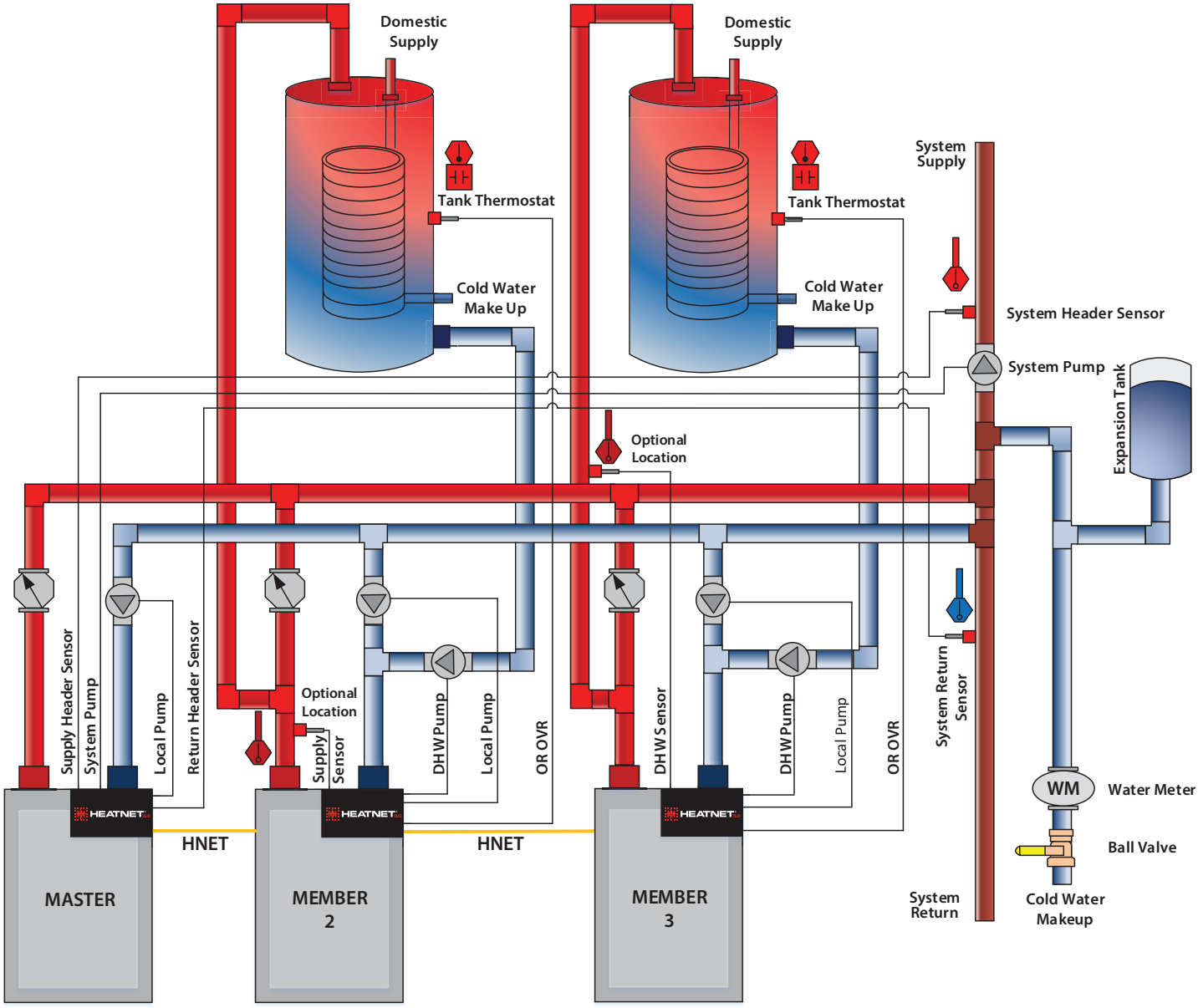
MASTER		
SETTINGS		
Master Type	**HeatNet Address**	**Combustion Air Damper**
Auto	Automatic	Off
INPUTS		
Local/Remote	**OA Sensor**	**Header Sensor**
Local	Optional	Yes
OUTPUTS		
System Pump On	**Local Pump On**	
When Boiler Enabled	When Boiler Running	

MEMBER 2				
SETTINGS				
HeatNet Address	**DHW Boiler Mode**	**DHW Use Sensor**	**DHW Local Pump Off**	**Combustion Air Damper**
2	Local	Yes	Yes	Off
INPUTS				
Local/Remote	**OR OVR**	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**	
Remote	Jumper	Yes - Tank		
OUTPUTS				
Local Pump On	**DHW Pump On**			
Space Heating Call	DHW Call			

MEMBER 3				
SETTINGS				
HeatNet Address	**DHW Boiler Mode**	**DHW Use Sensor**	**DHW Local Pump Off**	**Combustion Air Damper**
3	Local	Yes	Yes	Off
INPUTS				
Local/Remote	**OR OVR**	**DHW Sensor**	**JPS1 Jumper must be cut to service DHW**	
Remote	Jumper	Yes - Tank		
OUTPUTS				
Local Pump On	**DHW Pump On**			
Space Heating Call	DHW Call			

DHW METHOD 5b:

Local DHW Tank Heating using an Aquastat and a Hybrid Sensor



June 9, 2017 REV-2.1

KEY:

Motorized Valve | Motorized 3-Way | Check Valve | Pump | Temperature Sensor | Thermostat

Note: This is a simplified drawing, only major components are illustrated. Check with local codes and ordinances for specific requirements.

DHW METHOD 5b:
Local DHW Tank Heating using an Aquastat and a Hybrid Sensor

In DHW METHOD 5b: Local DHW Tank Heating using an aquastat and a Hybrid Sensor, the Master's Heat Demand input enables space heating by energizing the system pump and maintaining the Heating Setpoint at the Master's System Header Sensor using the available members. A Member boiler will enable its local pump when called to service a heating call by the Master.

Each member has its OR OVR input connected to a local tank aquastat. This method allows the DHW Temperature Sensor to be placed in many locations. This sensor is called the Hybrid Sensor. When the aquastat located in the DHW tank calls for heat, the local boiler goes offline from the Master and services the DHW call. The Member then disables its local pump, and enables its DHW pump to maintain the DHW Setpoint at the Hybrid Sensor location. Once the DHW aquastat has been satisfied, the boiler is placed back online for the Master to service the main heating loop.

Member 2 is configured to use its Local Supply sensor when servicing DHW demands, and Member 3 is configured to use its DHW sensor.

HEATNET 3.0 Settings

MASTER		
SETTINGS		
Master Type	**HeatNet Address**	**Combustion Air Damper**
Automatic	Automatic	Off
INPUTS		
Local/Remote	**Header Sensor**	**System Return**
Local	Yes	Optional
OUTPUTS		
System Pump On	**Local Pump On**	
When Boiler Enabled	When Boiler Running	

MEMBER 2		
SETTINGS		
HeatNet Address	**DHW Boiler Mode**	**Combustion Air Damper**
2	Local	Off
DHW Use Sensor	**Hybrid Sensor**	**DHW Local Pump Off**
No	Supply	Yes
INPUTS		
Local/Remote	**OR OVR**	**JPS1 Jumper must be cut to service DHW**
Remote	Tank Aquastat	
OUTPUTS		
Local Pump On	**DHW Pump On**	
Space Heating Call	DHW Call	

MEMBER 3		
SETTINGS		
HeatNet Address	**DHW Boiler Mode**	**Combustion Air Damper**
3	Local	Off
DHW Use Sensor	**Hybrid Sensor**	**DHW Local Pump Off**
No	DHW	Yes
INPUTS		
Local/Remote	**OR OVR**	**JPS1 Jumper must be cut to service DHW**
Remote	Tank Aquastat	
OUTPUTS		
Local Pump On	**DHW Pump On**	
Space Heating Call	DHW Call	

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