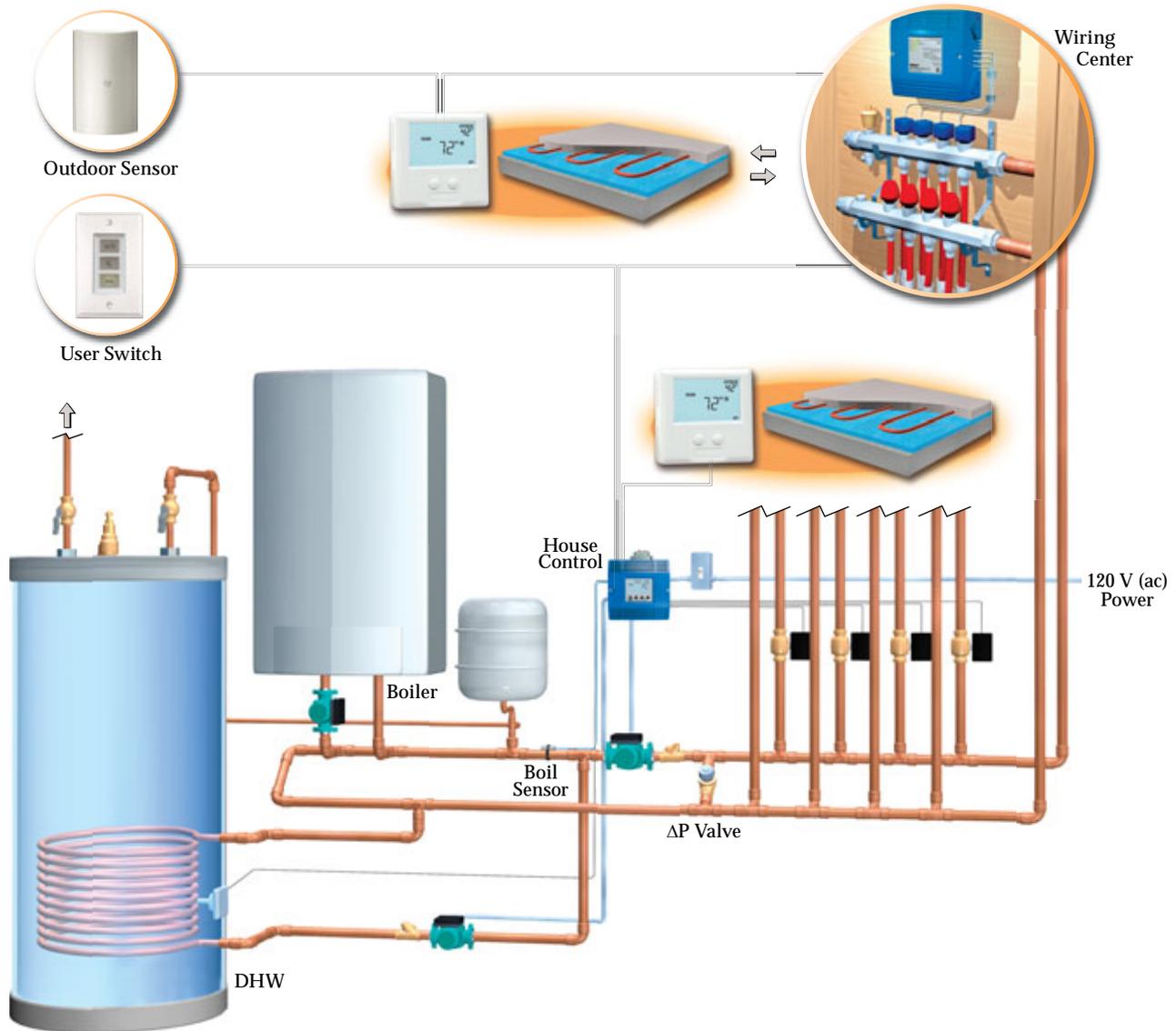


tekmar[®] **Application Selection Guide**
tekmarNet[®] House Control Systems



tekmarNet® House Control Systems

A House Control, together with tekmarNet® Thermostats, provides the best in energy efficiency with outdoor reset, indoor feedback and zone synchronization. The number of zones can easily be expanded with Wiring Centers installed in the mechanical room or at remote manifold locations. Two-wire thermostats are easy to use and make retrofit wiring a simple task. Maximize energy savings by adding a User Switch to these systems. The User Switch lowers all of the zone temperatures and suspends DHW operation with a simple touch of the 'Away' button. Resume normal operation of the system with another quick touch of the 'Occupied' button.



Installation Tips:

- House Controls & Wiring Centers require a 24 V (ac) transformer as a power source. This power is used for the control as well as thermostats & zone valves.
- The 120 V (ac) power used to operate pumps is wired to the back of the controls inside a 4" x 4" electrical box.
- 24 V (ac) & 120 V (ac) should not share the same electrical box. Always wire the 24 V (ac) power using the knockouts provided on the outer edges and back of the enclosure.
- The outdoor sensor can be wired to the House Control OR a 528 Thermostat that is not connected to a floor sensor.
- Accessories such as the User Switch 479 should be wired to the House Control or Wiring Center.

Your Guide to the House Controls



The tekmar House Controls are designed to provide simple, effective control solutions for common hydronic heating applications. As part of the Performance Series, these controls provide users with advanced features such as Zone Synchronization, Indoor Feedback, Cooling Groups, Schedules, and Scenes. Products within the Performance Series communicate to provide a superior level of efficiency, reliability and comfort. For more information about House Control benefits, see page 32.

Systems that are Ideal for a House Control Have the Following Characteristics in Common:

- A single boiler: modulating, on/off, or 2-stage
- One or two water temperatures: one boiler water temperature and/or one mixed water temperature
- Optional DHW (Domestic Hot Water) with sensor in tank or aquastat
- Mix using Floating Action, Variable Speed Injection, or modulating with 0-10 V (dc) or 4-20 mA
- Up to 24 zones per water temperature
- Central cooling

For More Product Information

All product specifications and literature are available from www.tekmarcontrols.com



House Controls can be found in the HVAC application group in the Performance Series.



Wiring Centers and tekmarNet® Thermostats can be found in the Zoning application group in the Performance and Designer Series.

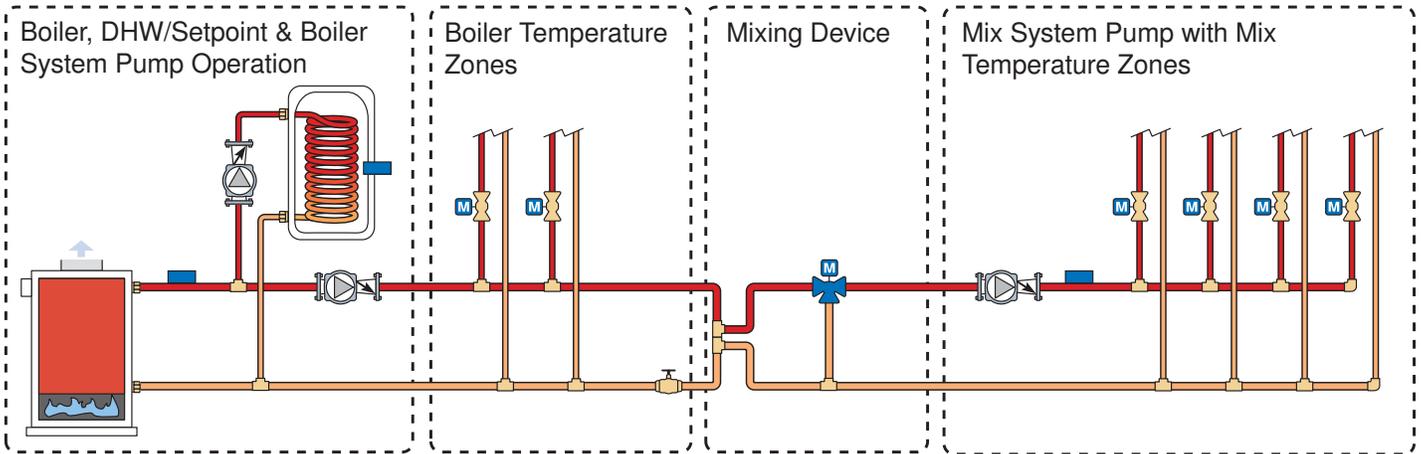
Have a System with More Requirements?

tekmar has a full suite of control products that handle applications with multiple boilers, up to four water temperatures, alternative heat sources (e.g. solar, heat pumps), multiple cooling groups and systems with up to ninety-six zones. Refer to the tekmarNet® Application Catalog A001 for example applications or the Building Control Systems brochure P315 for general product information. For more information regarding products and purchasing or help with design and commissioning, please contact your local tekmar representative. Contact information and downloadable literature is available from www.tekmarcontrols.com.

How to Use This Guide

A tekmarNet® House Control system has the ability to provide an exceptional level of comfort and operational efficiency in any hydronic-heated home. tekmar has designed these controls to optimize specific applications. By choosing one of the applications provided in the following pages, the installer can ensure that the House Control's capabilities match the mechanical system it is meant to operate.

Typical parts of a House Control System:



Step 1 - Find Application

Refer to the chart below to find an application that is the closest match to your system. All example applications have a minimum and maximum number of zones that can be controlled using the equipment shown. To increase the maximum number of zones (up to 24 total per water temperature), connect additional wiring centers to available tN4 expansion terminals.

Drawing	# Boiler Temperature Zones		# Mix Temperature Zones		Mixing Device	Page
	Zone Valves	Zone Pumps	Zone Valves	Zone Pumps		
A400-1	1 to 4	-	-	-	-	4
A400-2	1 to 8	-	-	-	-	6
A400-3	1 to 4	-	-	-	-	8
A400-4	1 to 4	-	-	-	-	10
A401-1	-	1 to 4	-	-	-	12
A401-2	-	1 to 8	-	-	-	14
A402-1	-	-	1 to 4	-	Variable Speed Injection	16
A402-2	1 to 4	-	1 to 8	-	3-Way Valve	18
A402-3	-	-	1 to 4	-	3-Way Valve	20
A402-4	-	-	1 to 8	-	Variable Speed Injection	22
A403-1	-	-	-	1 to 4	Variable Speed Injection	24
A403-2	-	1 to 4	-	1 to 8	3-Way Valve	26

Modifying Applications

To Add:	Use:	Page
Up to four zones with zone valves	Wiring Center 313	28
Up to four zones with zone pumps	Wiring Center 314	29

Note: For multiple mixed water temperatures or boilers, refer to the A001 brochure on www.tekmarcontrols.com

Step 2 - tekmarNet® Thermostat Selection

The featured applications require a tekmarNet®2 Thermostat for each zone. Select thermostats based on heating, cooling and other temperature sensing requirements. For systems with cooling, one thermostat with 'Cool Group Master' functionality is required. Other tekmarNet® thermostats can communicate with the cooling thermostat as 'cool group members'. This creates a cooling zone that spans multiple heating zones and provides an interlock between heating and cooling operation.



tekmarNet®2
Thermostat 527



tekmarNet®2
Thermostat 528



tekmarNet®2
Thermostat 529



tekmarNet®2
Thermostat 530



tekmarNet®
Thermostat 552

Functions	527	528	529	530	552
General	Heat Only	Heat Only	2 Stage Heat	Heat/Cool	Heat Only
Output Relays (H2 - 2nd stage heat, C - cool, F - fan)	-	-	H2	C, F	-
Touchscreen	-	-	-	-	•
Auxiliary Sensor Input	-	•	•	-	•
Heating					
Floor Minimum (With optional floor sensor)		•	•	-	•
Thermal Motor Support	•	•	•	•	•
Cooling and Ventilation					
Cool Group Master	-	-	-	•	-
Cool Group Member	•	•	•	-	•
Auto Heat-Cool Switchover and Cooling Interlock	-	-	-	•	-
Ventilation Fan	-	-	-	•	-
Setback					
Internal schedule (Available to other thermostats)	-	-	-	-	•
Schedule support (Can follow 552 or 033 schedule)	•	•	•	•	•
Schedule events per day	4	4	4	4	4
Scene Support	•	•	•	•	•
Optimum Start	•	•	•	•	•

Step 3 - Accessory Selection

To Add:	Use:
One Touch Setback	tekmarNet®4 User Switch 479
Programmable Setback Schedule	tekmarNet®4 Timer 033 or tekmarNet® Thermostat 552
Control and display of DHW tank temperature	tekmar Universal Sensor 078

Drawing Disclaimer

The drawings in this guide are only concept drawings, not engineered drawings. They are not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

Recommended Applications

A400-1 Mechanical

This application is designed for a House Control 400 operating an On/Off boiler with indirect Domestic Hot Water. The four zones shown are operated directly from the 400, but additional zones can be added with a Wiring Center through the tN4 Expansion terminals. tekmarNet®2 Thermostat 527's provide quality zone temperature control in an easy-to-use two button format. One zone is controlled by a touchscreen tekmarNet® Thermostat 552. The 552 provides a setback schedule that can be followed by all of the thermostats.

Application Settings

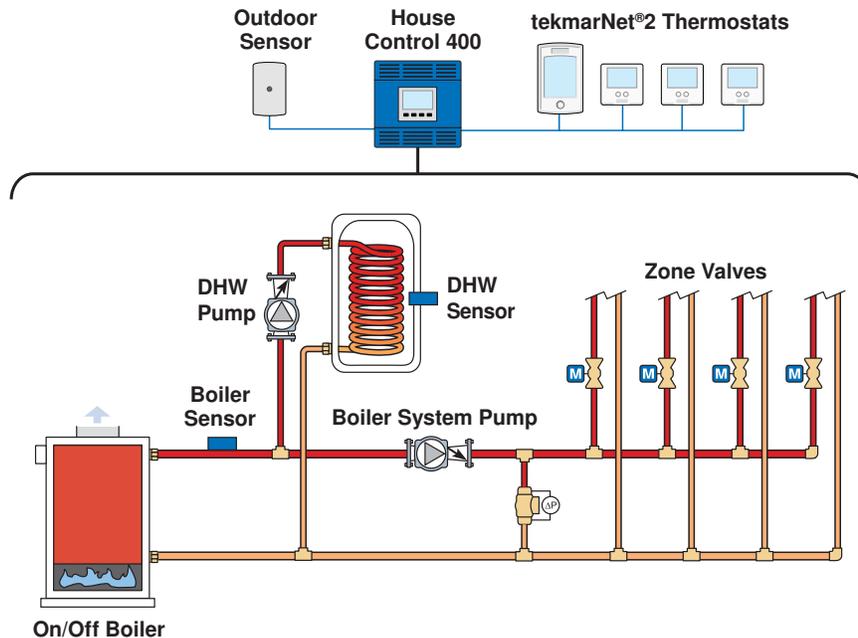
Outdoor Design	Typical coldest day of year
Boil Type	1 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

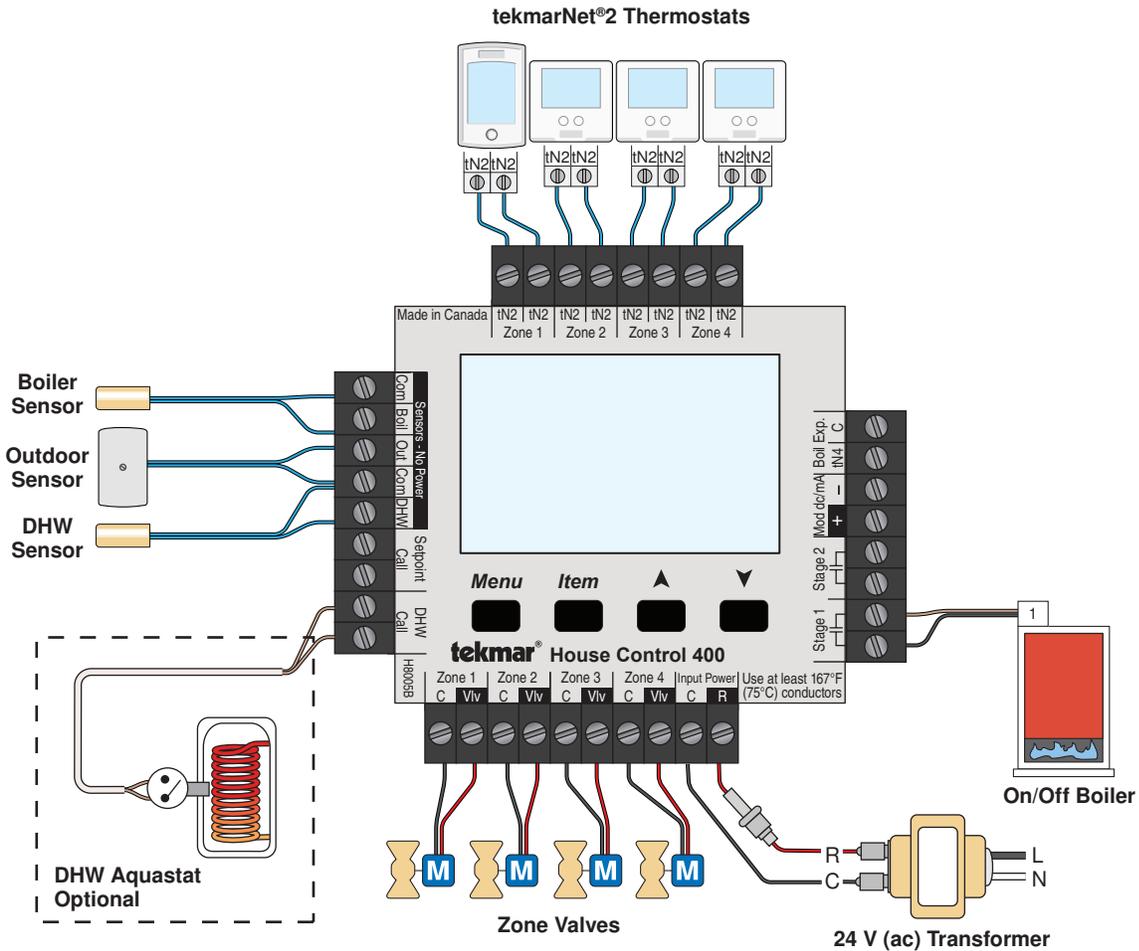
Suggested Controls

Product Name	Part Number
tN2 House Control	400
3 x Thermostat	527
1 x Thermostat	552
Transformer Kit	009K

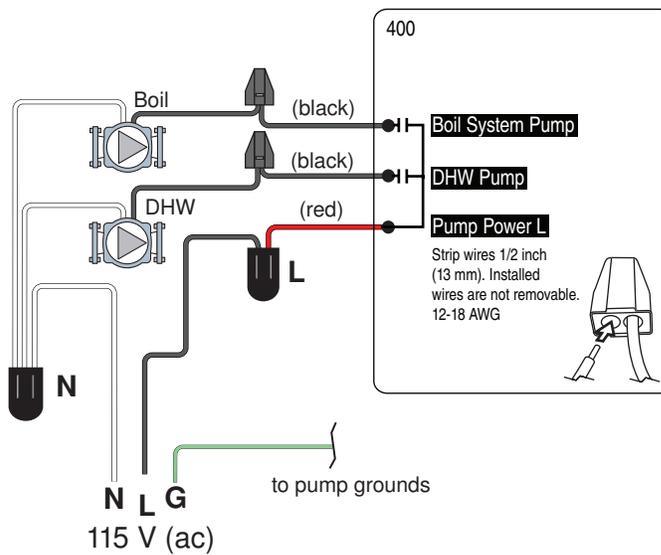
Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479





Back of House Control 400



A400-2 Mechanical

This application is designed for a House Control 400 operating a modulating boiler with indirect Domestic Hot Water. Four of the zones shown are operated directly from the 400, with an additional four zones added through the use of a 313 Wiring Center mounted remotely at the manifold. One 552 and seven 528's provide control of radiant floors and improve comfort through the use of 079 slab sensors. The 552 provides a setback schedule that can be followed by all of the thermostats. The boiler operates its own circulator to maintain adequate flow.

Application Settings

Outdoor Design	Typical coldest day of year
Boil Type	0-10
Boil Min	Off
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

313 Wiring Center DIP Switch Settings

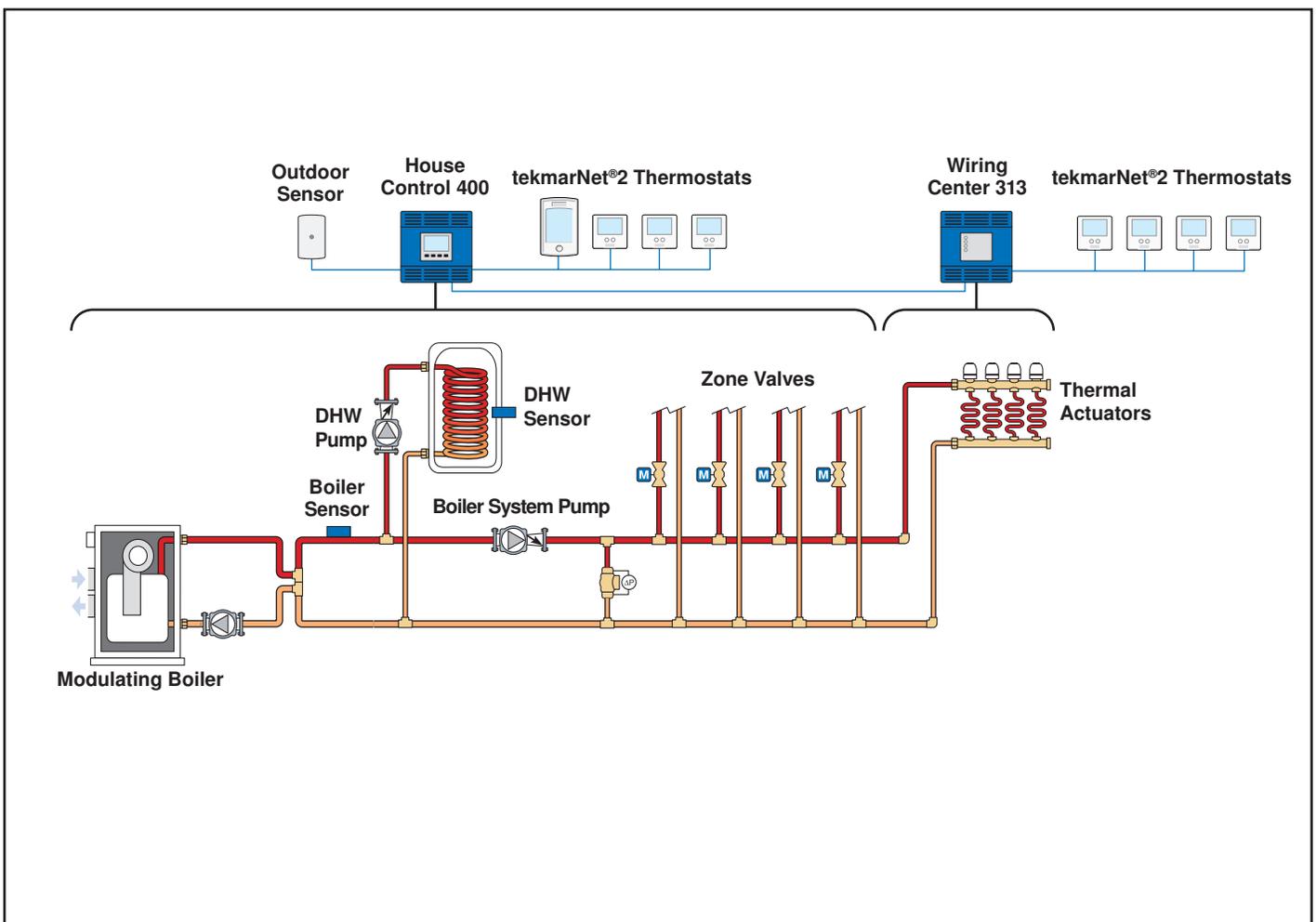
Zone Group Pump	
DIP 1	Off
DIP 2	Off
DIP 3	Off
DIP 4	Off

Suggested Controls

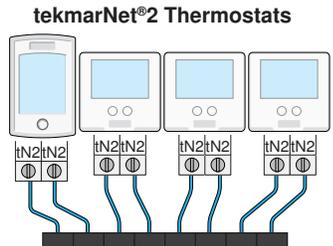
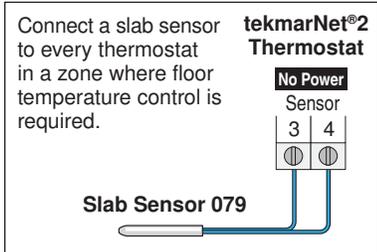
Product Name	Part Number
tN2 House Control	400
tN2 Wiring Center	313
7 x Thermostat	528
1 x Thermostat	552
8 x Slab Sensor	079
2 x Transformer Kit	009K

Recommended Accessories

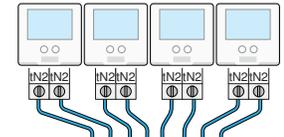
Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479



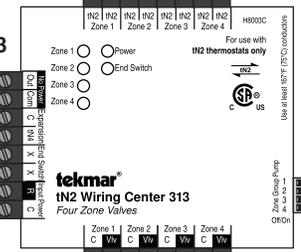
A400-2 Electrical



tekmarNet®2 Thermostats



Wiring Center 313



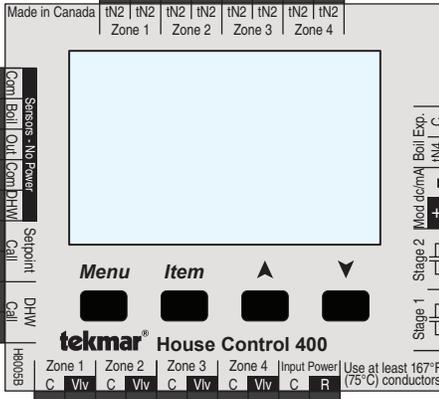
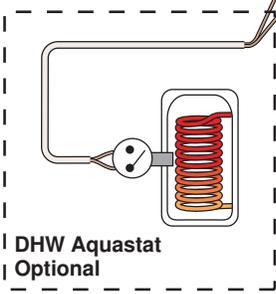
Thermal Actuators

24 V (ac) Transformer

Modulating Boiler

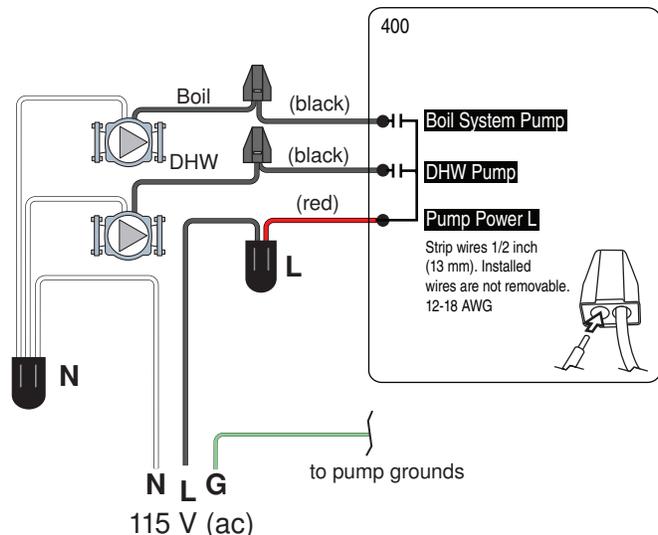
24 V (ac) Transformer

Boiler Sensor
Outdoor Sensor
DHW Sensor



Zone Valves

Back of House Control 400



A400-3 Mechanical

This application is designed for a House Control 400 operating an On/Off boiler with indirect Domestic Hot Water. The four zones shown are operated directly from the 400, but additional zones can be added with a Wiring Center through the tN4 Expansion terminals. Two zones are controlled with tekmarNet[®]2 Thermostat 527's. One zone is controlled by a touchscreen tekmarNet[®] Thermostat 552. The 552 provides a setback schedule that can be followed by all of the thermostats. The final heating zone and the cooling equipment is operated with a tekmarNet[®]2 Thermostat 530 through Y and G contacts on the thermostat.

Application Settings

Outdoor Design	Typical coldest day of year
Boil Type	1 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

530 Thermostat Settings

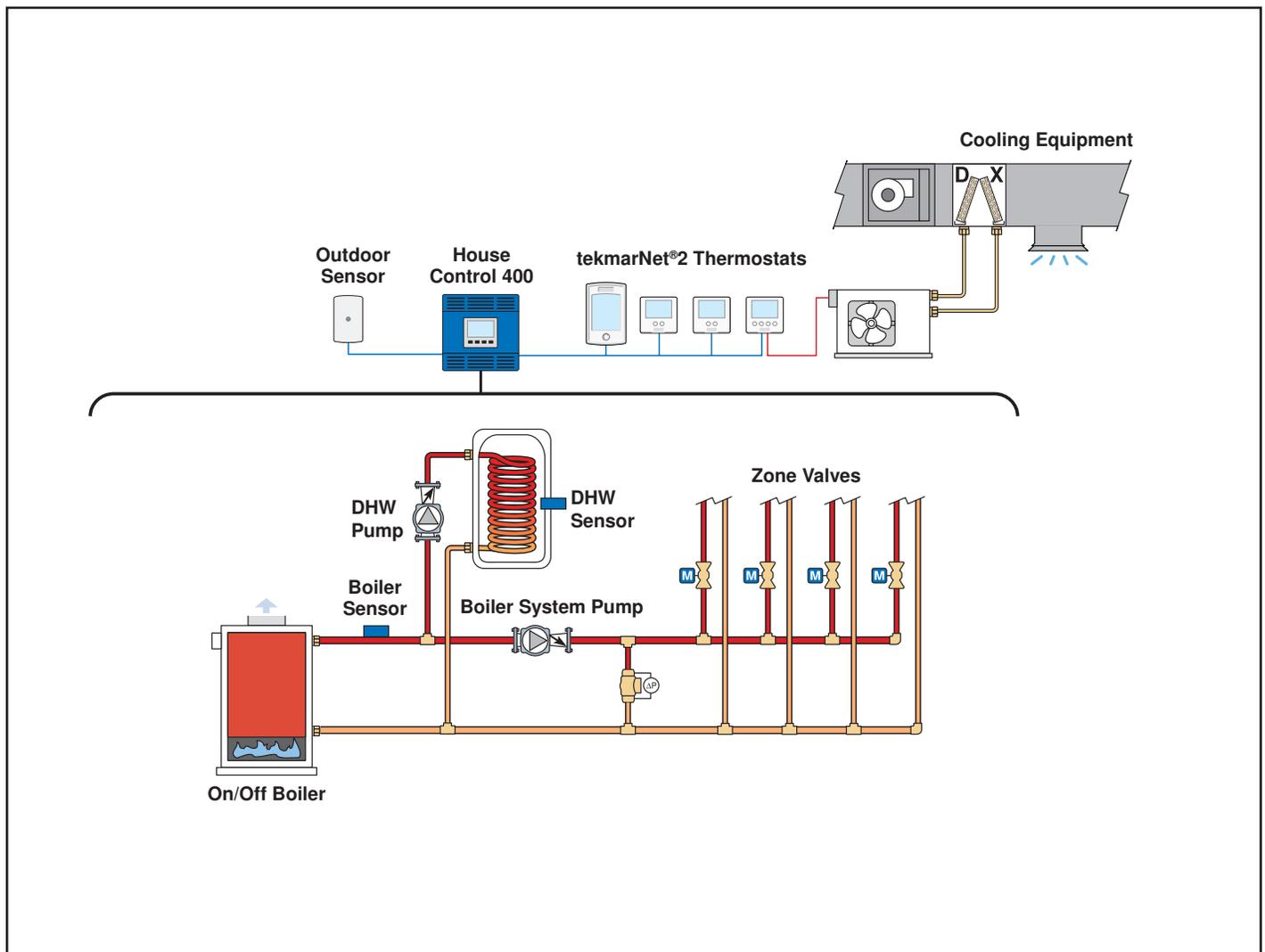
DIP 3	Cool Master 1
Fan Mode	1

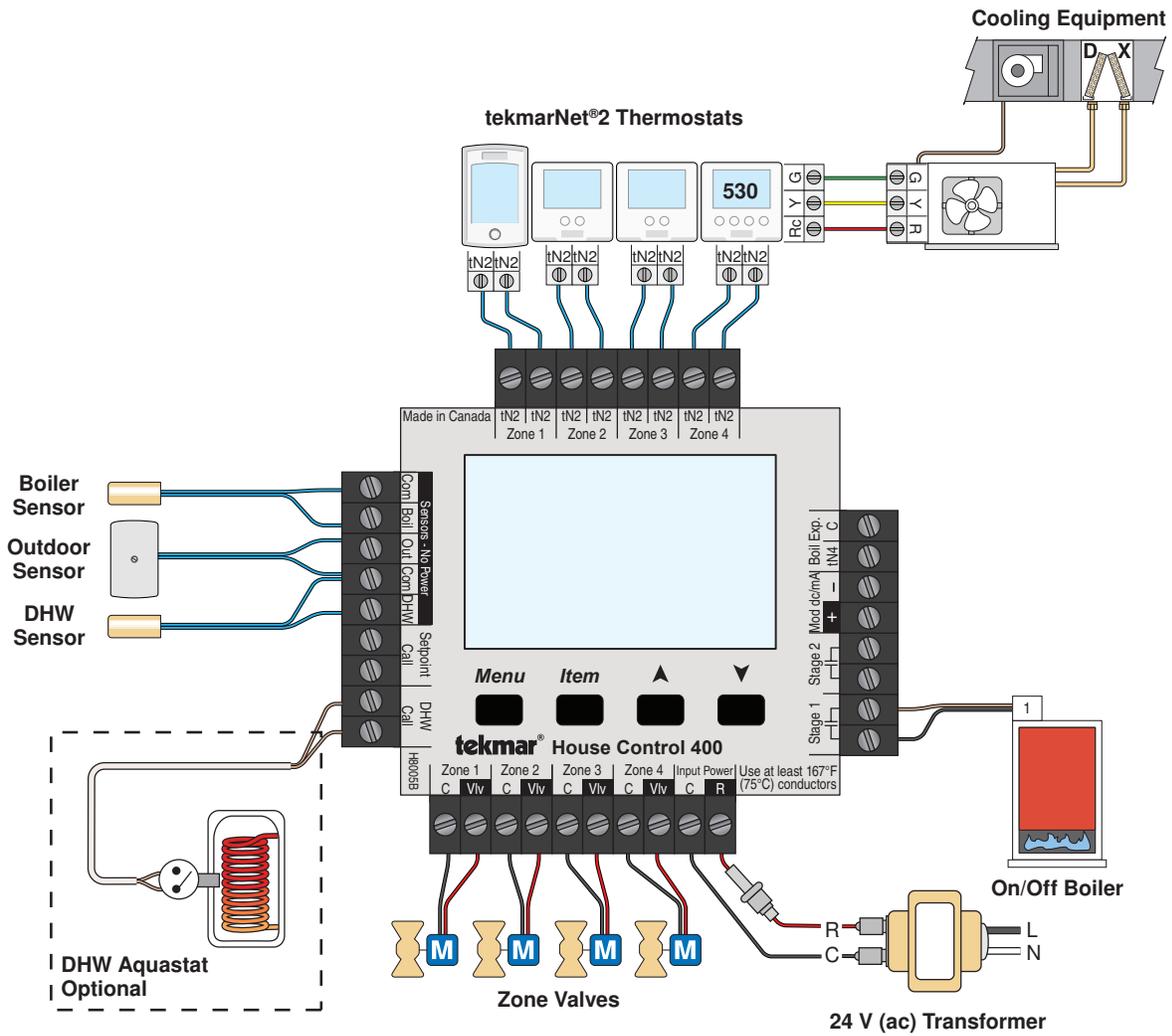
Suggested Controls

Product Name	Part Number
tN2 House Control	400
2 x Thermostat	527
1 x Thermostat	530
1 x Thermostat	552
Transformer Kit	009K

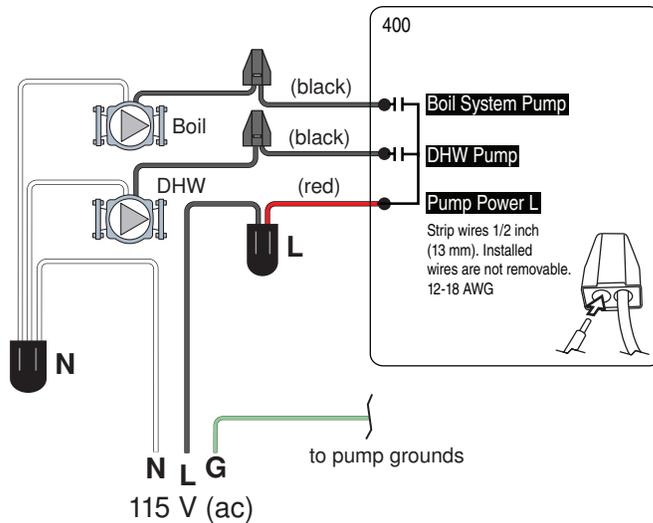
Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479





Back of House Control 400



A400-4 Mechanical

This application is designed for a House Control 400 operating a Modulating boiler with indirect Domestic Hot Water. The boiler maintains adequate flow by operating its own pump. The three zones are operated directly from the 400, but additional zones can be added with a Wiring Center through the tN4 Expansion terminals. One 552 and two 528's provide control over radiant floors and improve comfort through the use of 079 slab sensors. The 552 provides a setback schedule that can be followed by all of the thermostats. A single tekmarNet[®]2 Thermostat 530 operates a hot-air furnace and air conditioning unit through contacts on the thermostat, to provide climate control to areas not served by hydronic heat.

Application Settings

Outdoor Design	Typical coldest day of year
Boil Type	0-10
Boil Min	Off
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

Suggested Controls

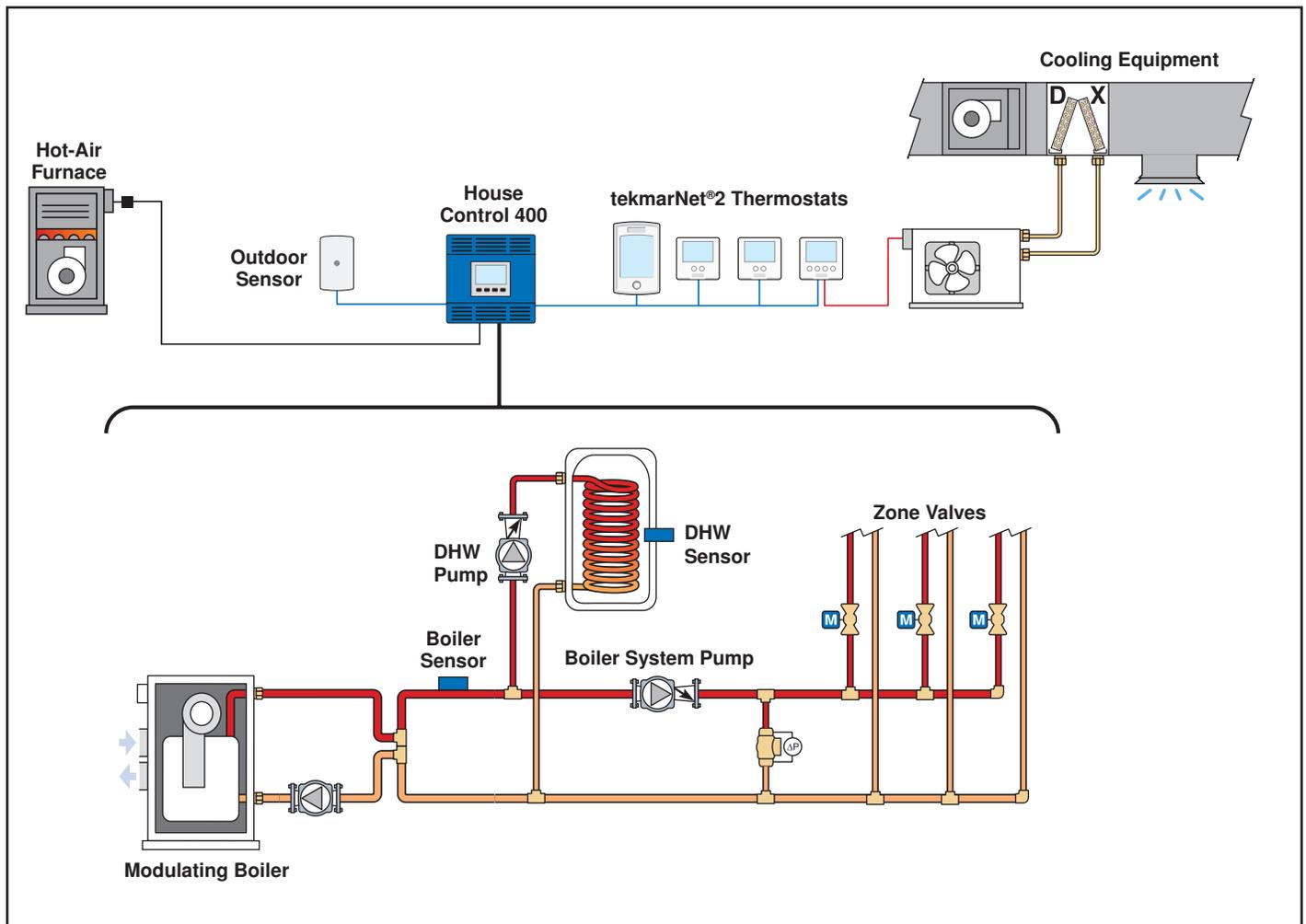
Product Name	Part Number
tN2 House Control	400
2 x Thermostat	528
1 x Thermostat	530
1 x Thermostat	552
3 x Slab Sensor	079
Transformer Kit	009K

530 Thermostat Settings

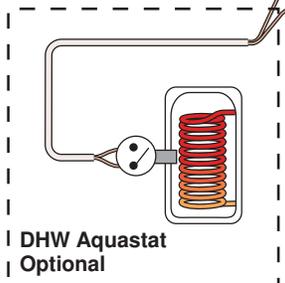
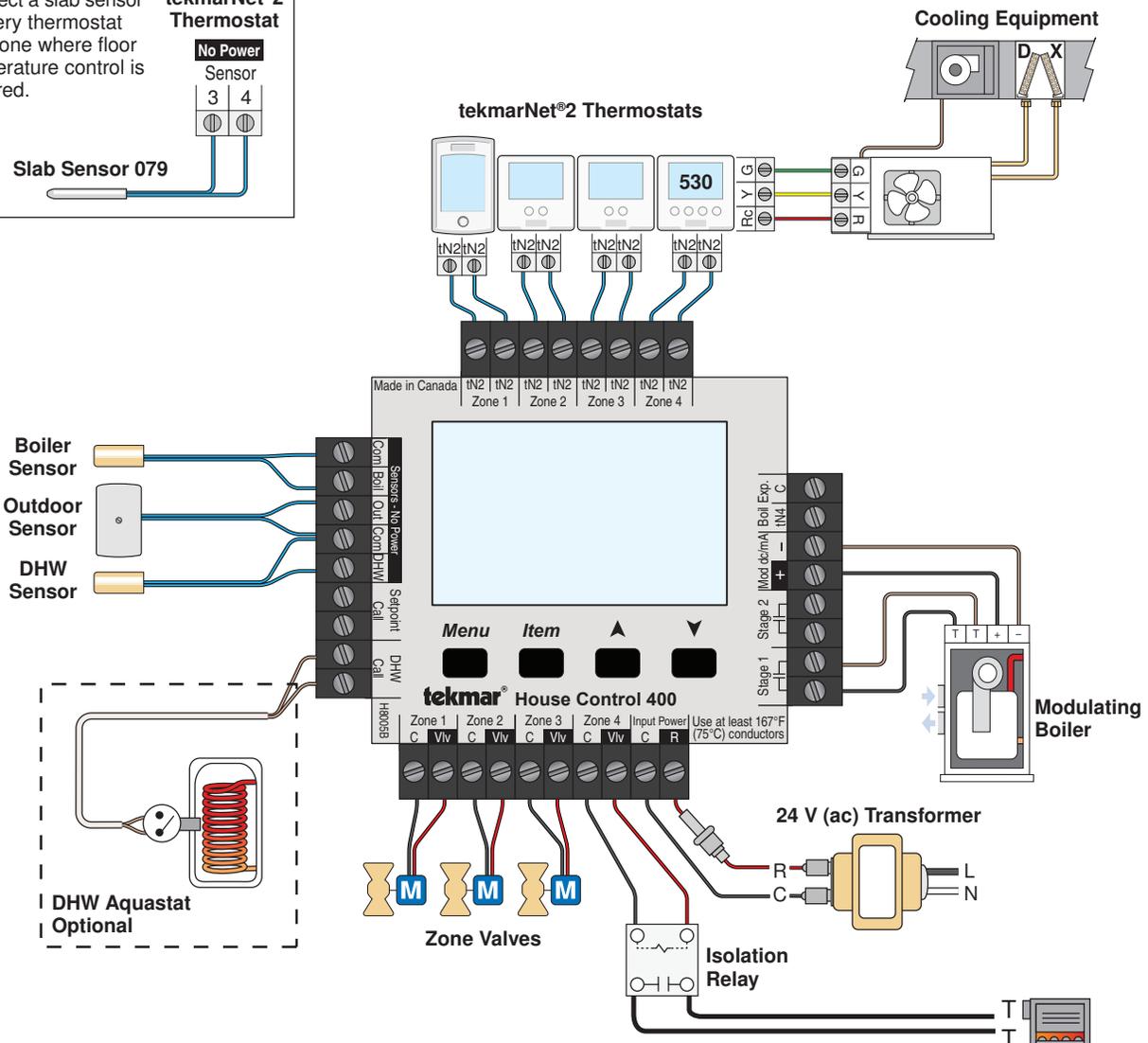
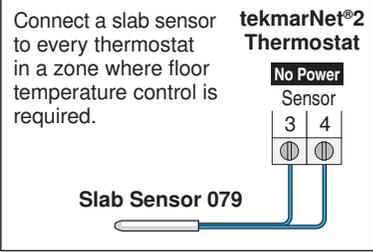
DIP 3	Cool Master 1
Fan Mode	1
Heat Terminal	Other

Recommended Accessories

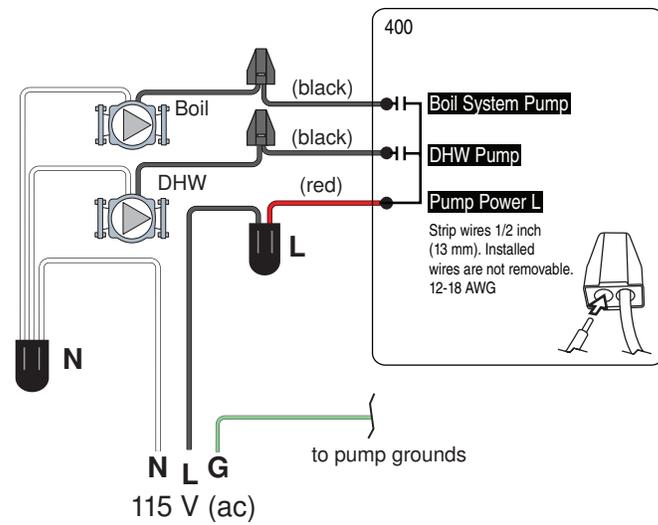
Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479



A400-4 Electrical



Back of House Control 400



A401-1 Mechanical

This application is designed for a House Control 401 operating a 2-stage On/Off boiler with indirect Domestic Hot Water. The four zones shown are operated directly from the 401, but additional zones can be added with a Wiring Center through the tN4 Expansion terminals. tekmarNet®2 thermostat 527's provide quality zone temperature control in an easy-to-use two button format. One zone is controlled by a touchscreen tekmarNet® Thermostat 552. The 552 provides a setback schedule that can be followed by all of the thermostats. A User Switch 479 is installed to allow one-touch setback of all thermostats. Turning down heating setpoints when the space is unoccupied saves money and energy.

Application Settings

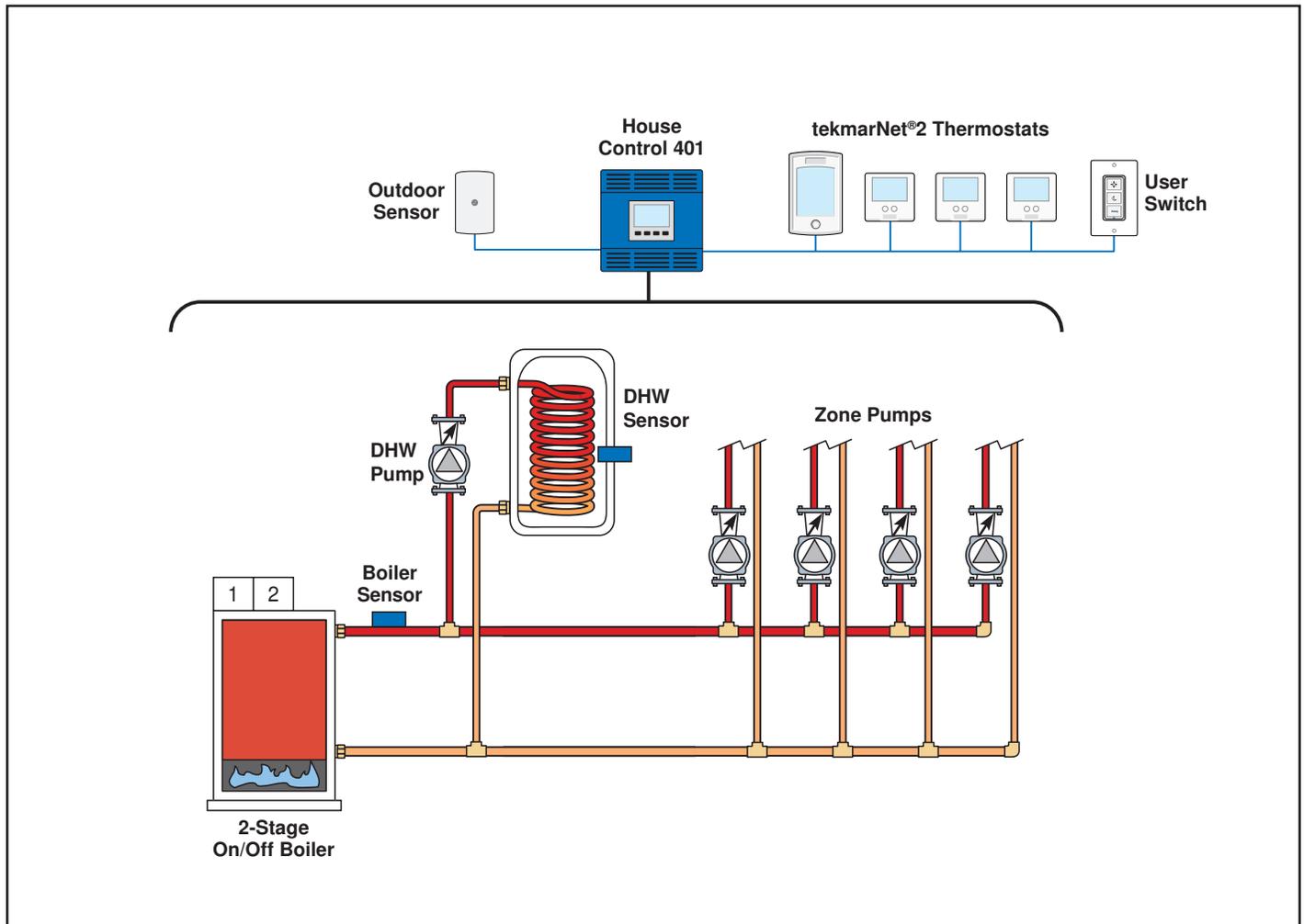
Outdoor Design	Typical coldest day of year
Boil Type	1 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

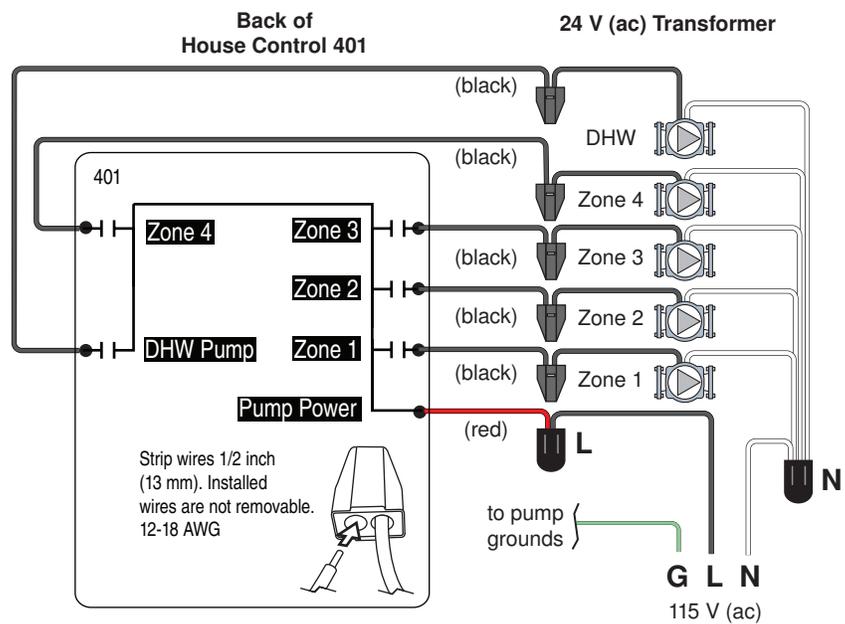
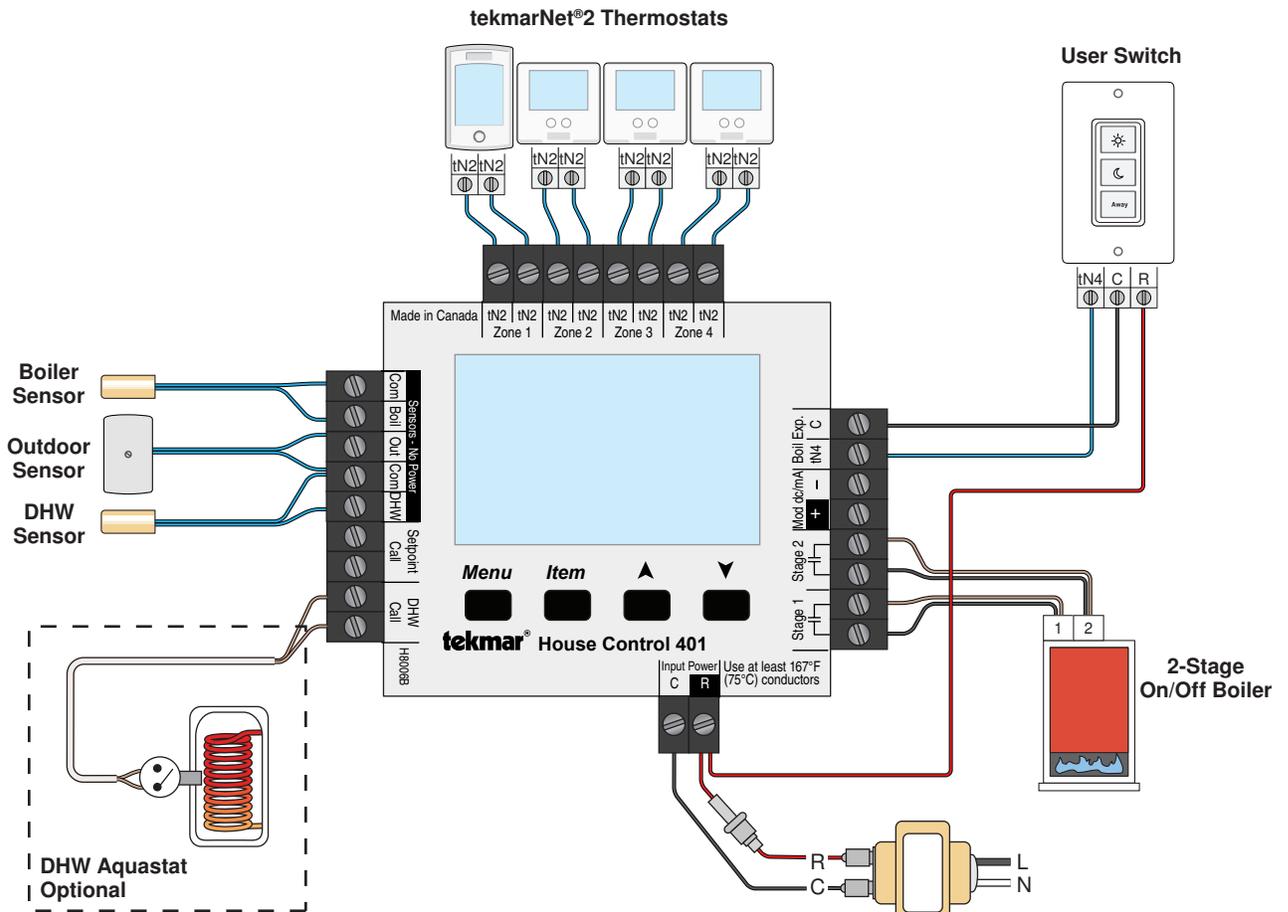
Suggested Controls

Product Name	Part Number
tN2 House Control	401
3 x Thermostat	527
1 x Thermostat	552
User Switch	479
Transformer Kit	009K

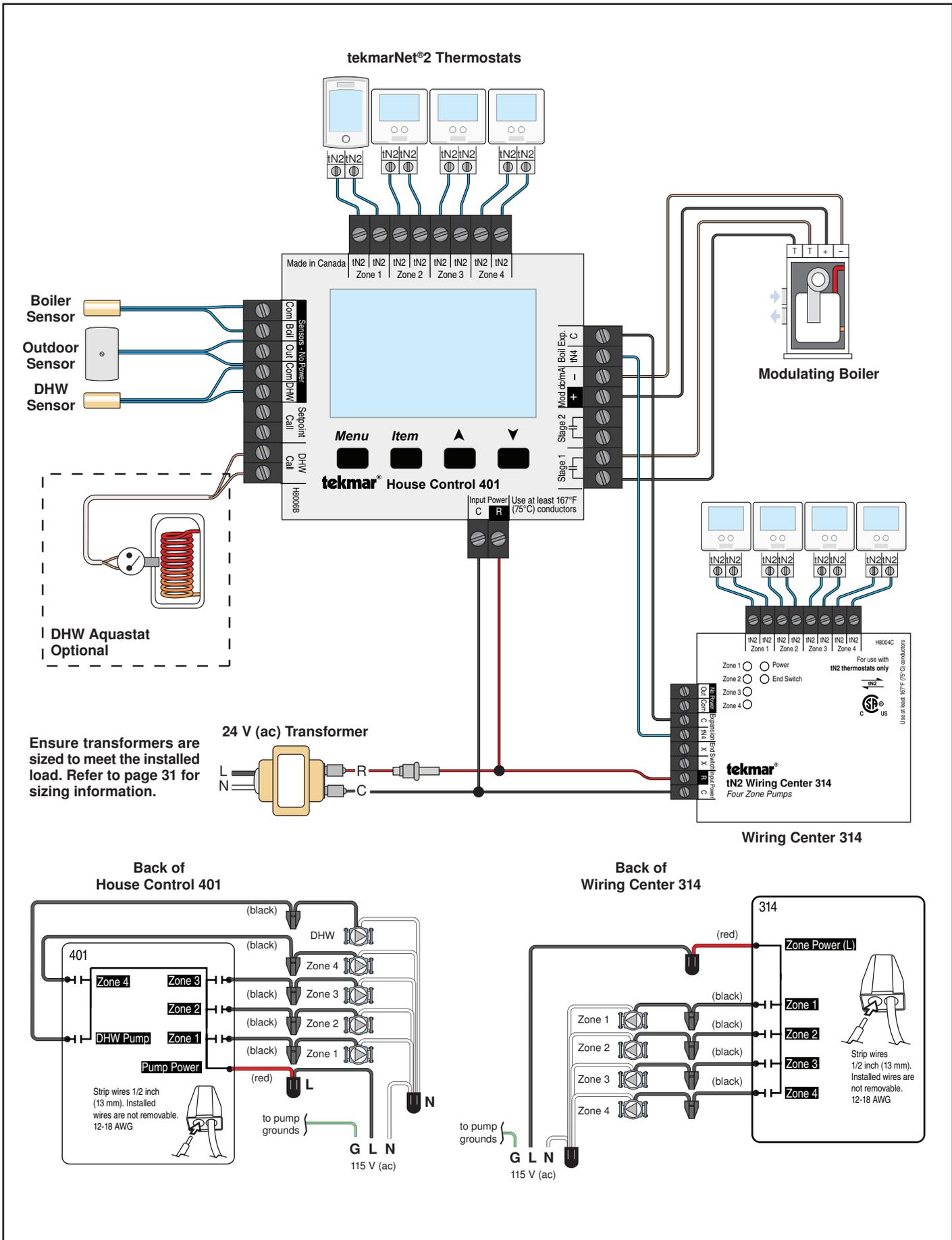
Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479





A401-2 Electrical



A402-1 Mechanical

This application is designed for a House Control 402 operating an On/Off boiler with indirect Domestic Hot Water. Mixing is performed with variable speed injection, which supplies an outdoor reset water temperature to four mix temperature hydronic zones. The four zones shown are operated directly from the 402, but additional zones can be added with a Wiring Center through the tN4 Expansion terminals. Four tekmarNet[®]2 thermostat 528's provide control over radiant floors and improve comfort through the use of 079 slab sensors. A tekmar Timer 033 provides multiple scheduling options in order to setback the temperature in the zones saving money and energy.

Application Settings

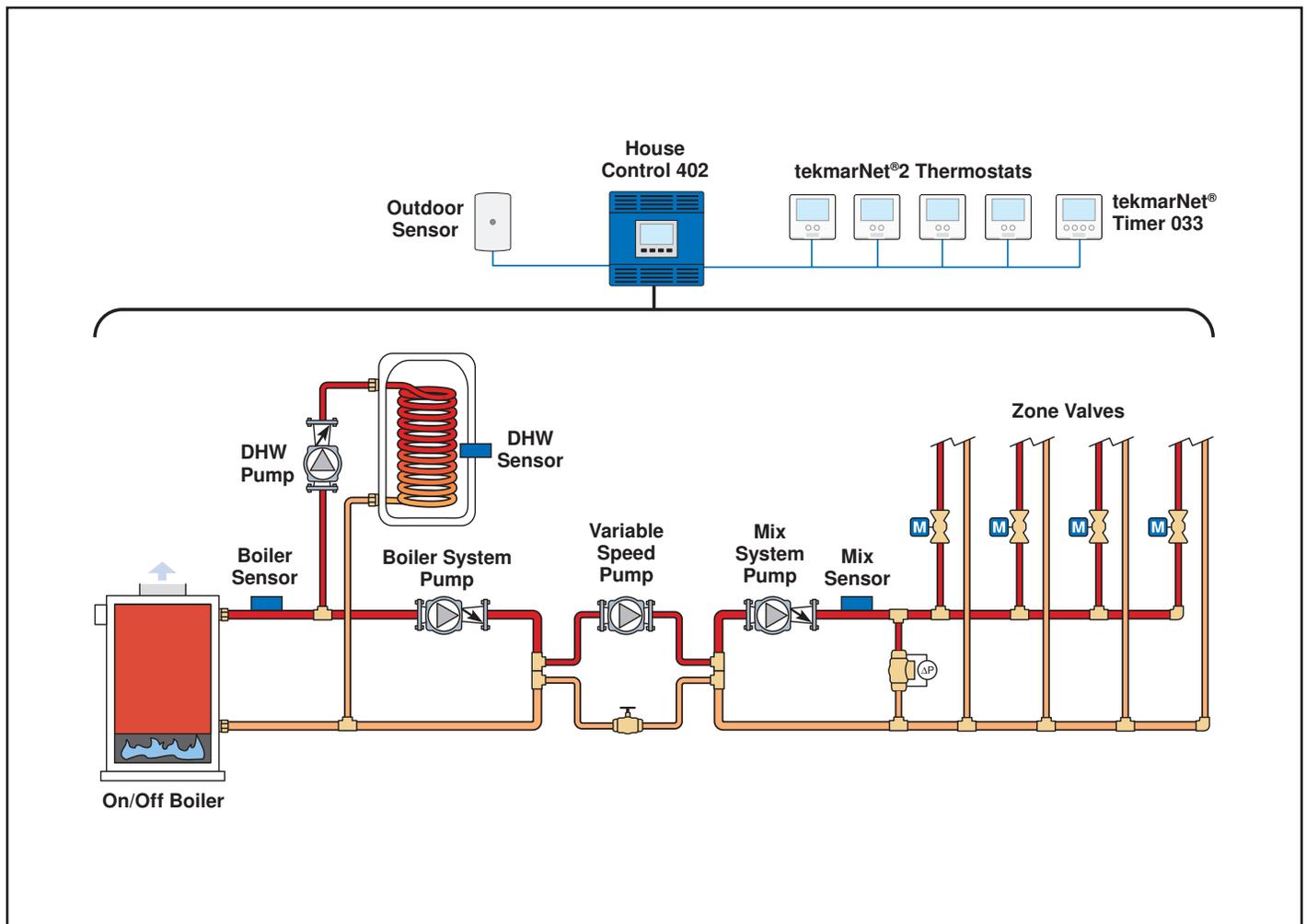
Outdoor Design	Typical coldest day of year
Mix Type	VAR
Boil Type	1 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

Suggested Controls

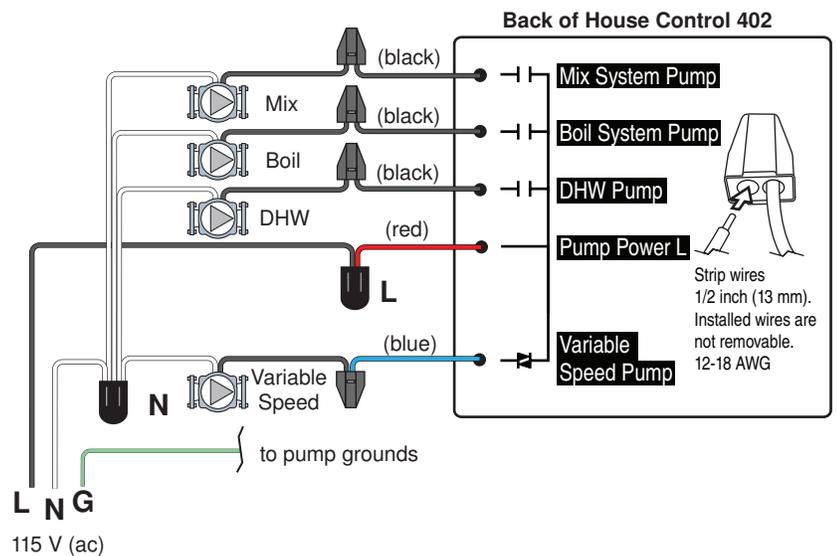
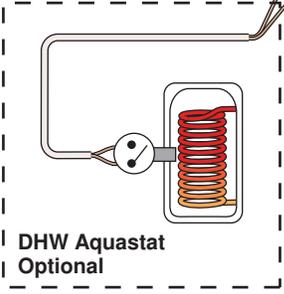
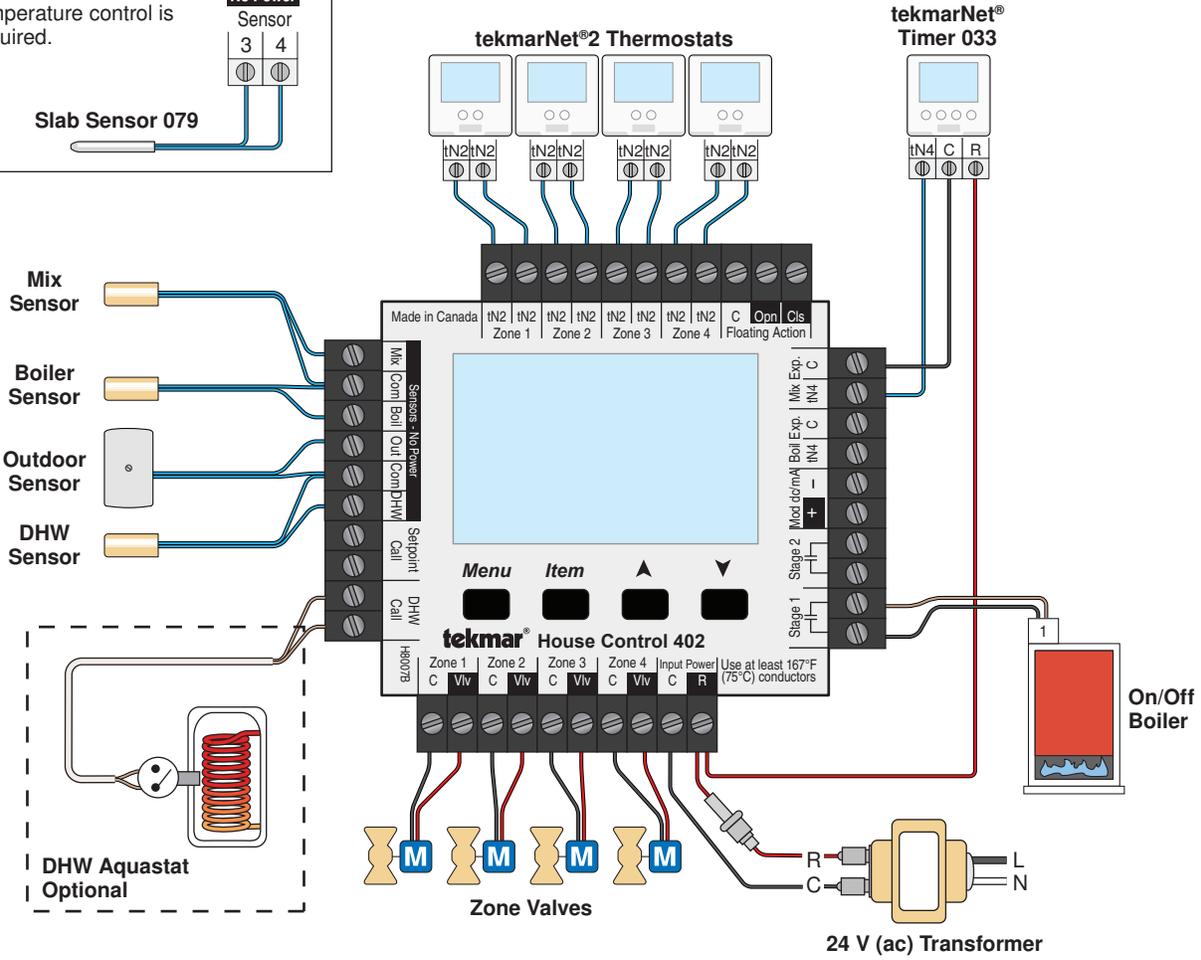
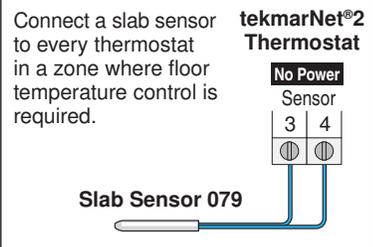
Product Name	Part Number
tN2 House Control	402
4 x Thermostat	528
4 x Slab Sensor	079
tN4 Timer	033
Transformer Kit	009K

Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479



A402-1 Electrical



A402-2 Mechanical

This application is designed for a House Control 402 operating an On/Off boiler with indirect Domestic Hot Water. Mixing is performed with a three-way floating action mixing valve, which supplies an outdoor reset water temperature to seven mix temperature hydronic zones. Four mix temperature zones shown are operated directly from the 402, an additional three mix zones are operated with a Wiring Center 313 connected through the tN4 Mix Expansion terminals. Two boiler temperature zones are operated with a second Wiring Center 313 connected to the tN4 Boiler Expansion terminals. One 552 and six 528's operate low temperature radiant floors maintaining superior comfort through the use of 079 slab sensors. The 552 provides a setback schedule that can be followed by all of the thermostats. Two high temperature baseboard zones are operated with tekmarNet®2 thermostat 527's.

Application Settings

Outdoor Design	Typical coldest day of year
Mix Type	FLOT
Boil Type	1 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

2 x 313 Wiring Center DIP Switch Settings

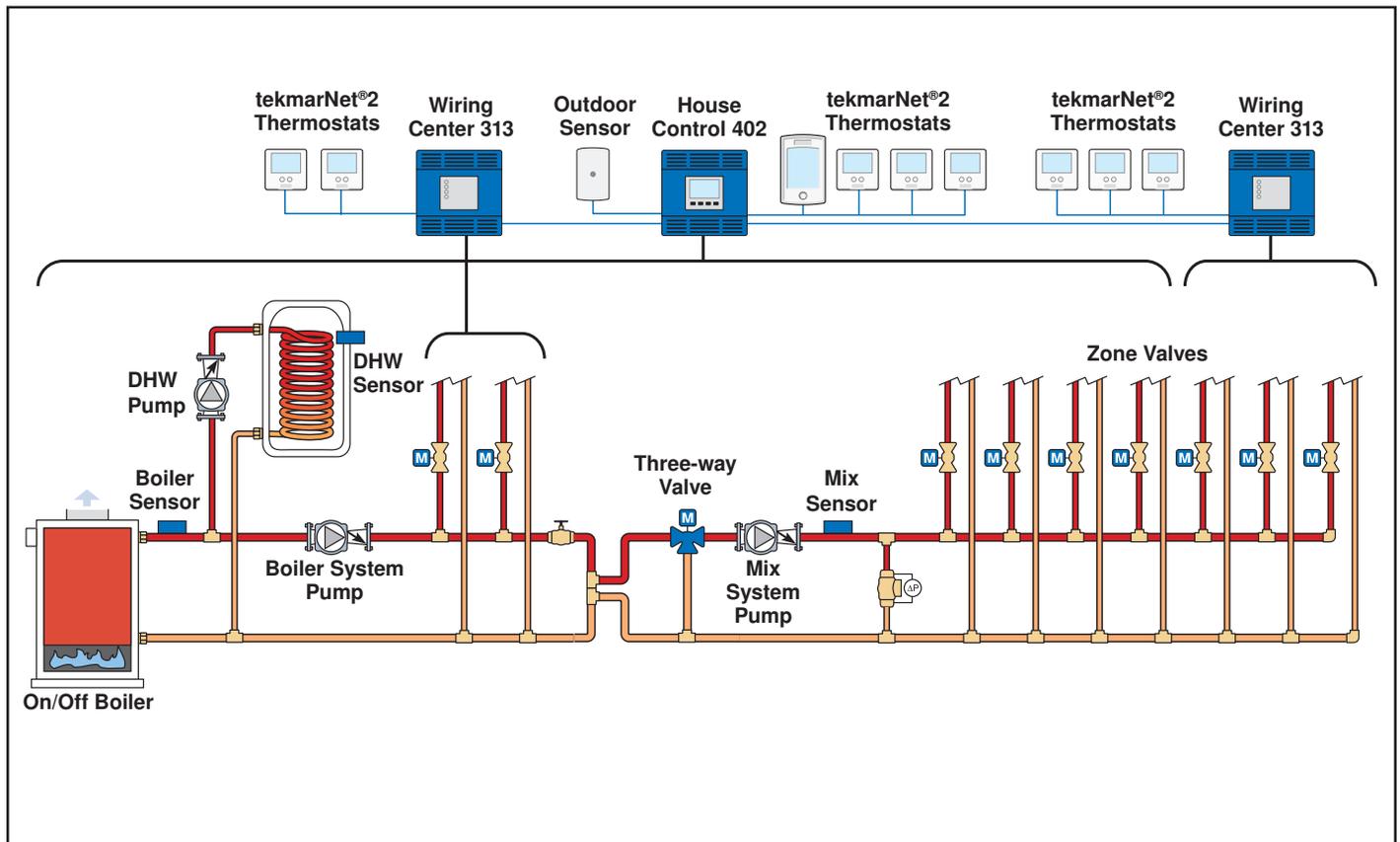
Zone Group Pump	
DIP 1	Off
DIP 2	Off
DIP 3	Off
DIP 4	Off

Suggested Controls

Product Name	Part Number
tN2 House Control	402
2 x tN2 Wiring Center	313
2 x Thermostat	527
6 x Thermostat	528
1 x Thermostat	552
7 x Slab Sensor	079
3 x Transformer Kit	009K
1 x Actuator	741
1 x Three Way Valve	710 - 714

Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479



A402-2 Electrical

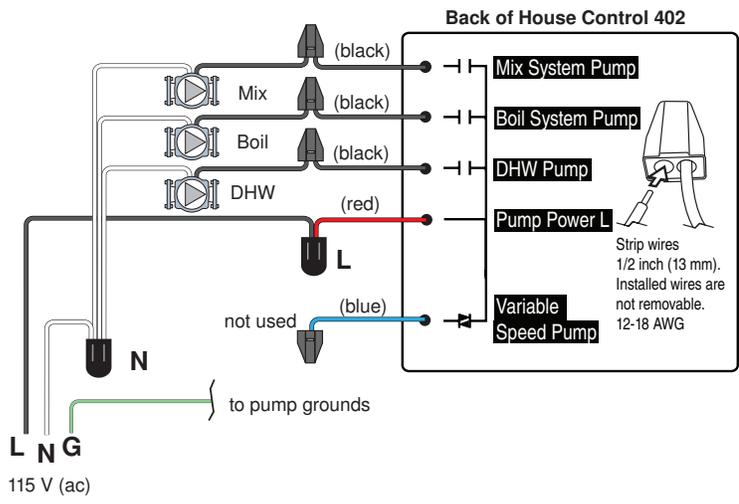
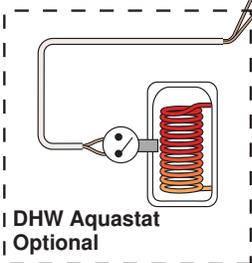
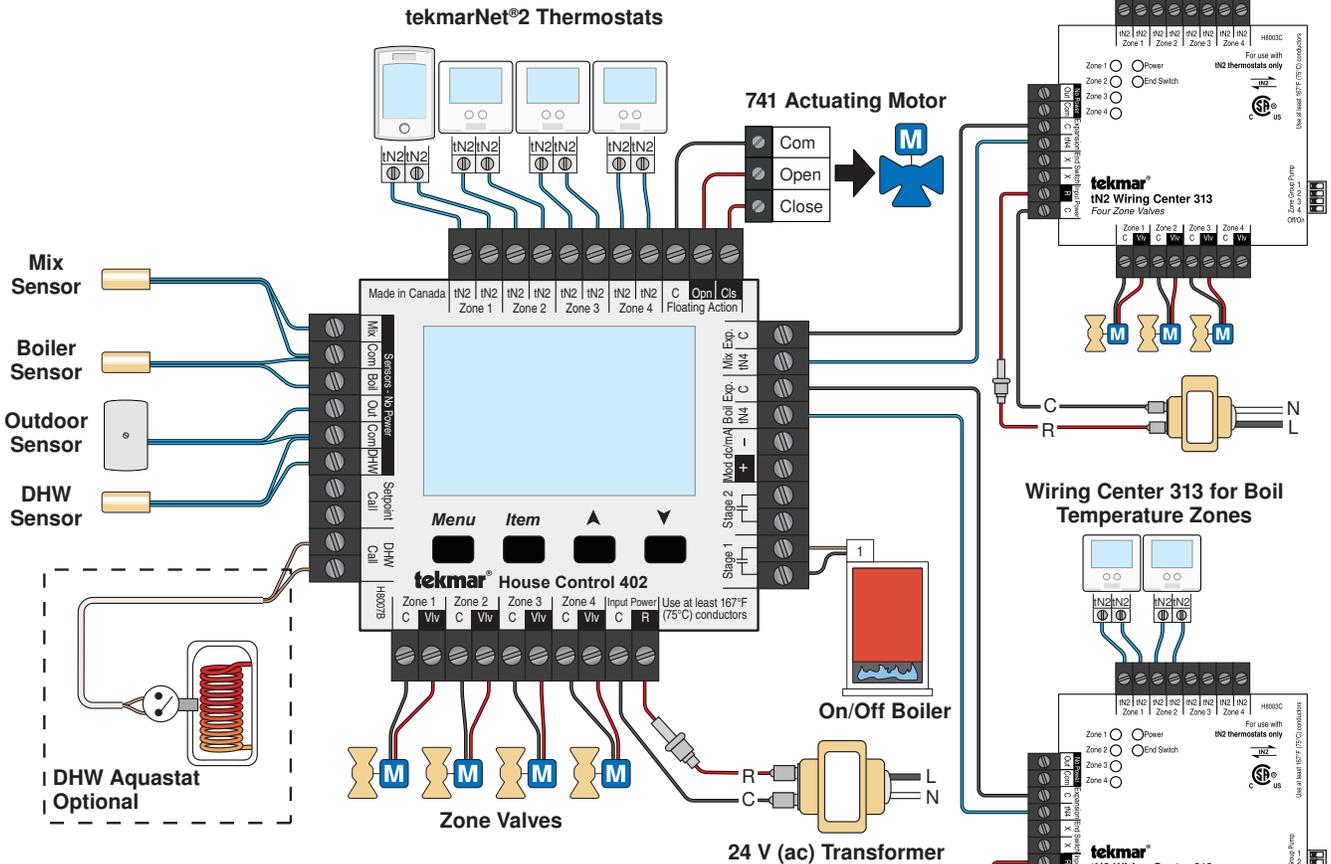
Connect a slab sensor to every thermostat in a zone where floor temperature control is required.

tekmarNet®2 Thermostat

No Power Sensor

3 4

Slab Sensor 079



A402-3 Mechanical

This application is designed for a House Control 402 operating a high-efficiency water heater to satisfy four low temperature space heating zones in addition to the DHW functionality. Potable water is circulated through the zones and the 402 uses a Flushing feature to ensure that the water is circulated daily to prevent stagnation of the potable water in the heating pipes. Four tekmarNet[®]2 thermostat 528's operate low temperature radiant floors maintaining superior comfort through the use of 079 slab sensors.

Application Settings

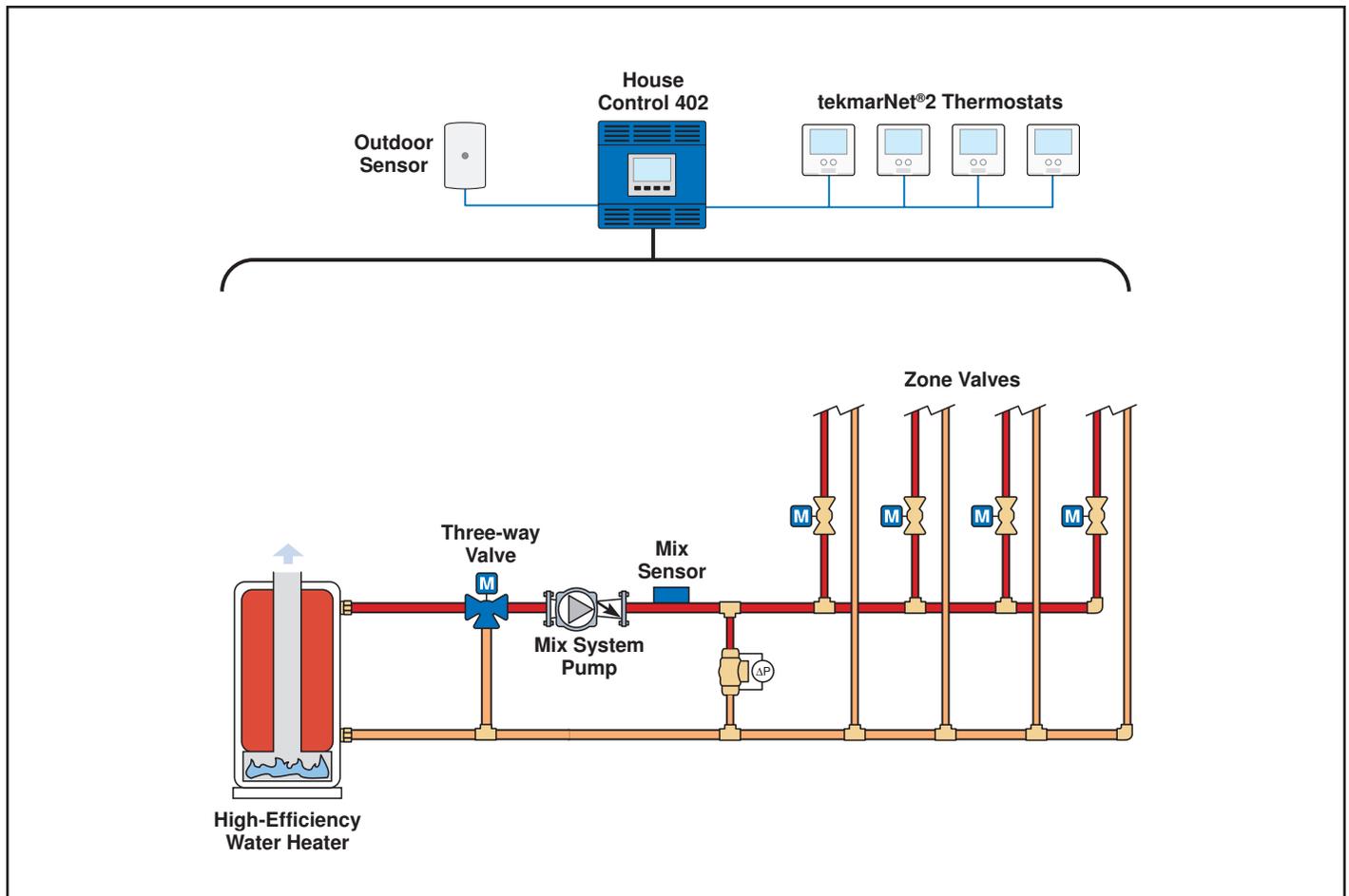
Outdoor Design	Typical coldest day of year
Mix Type	FLOT
Boil Type	1 STG
Boil Min	Off
Flushing	On

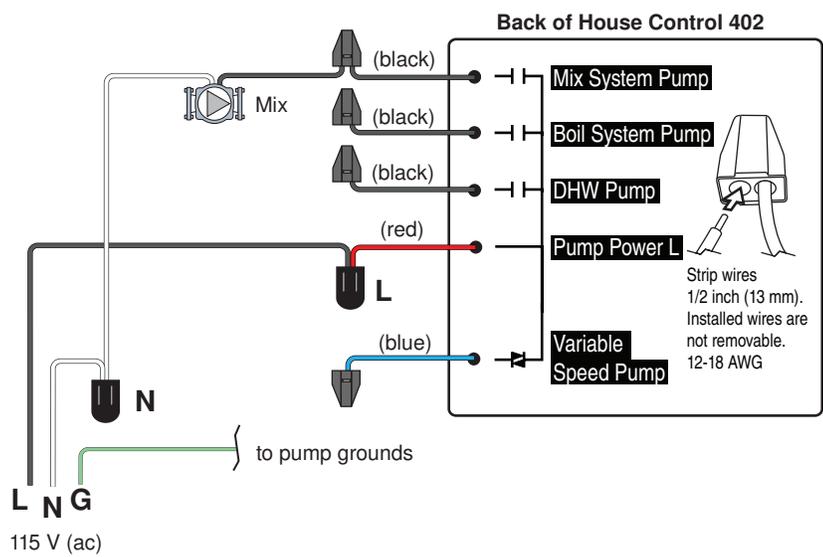
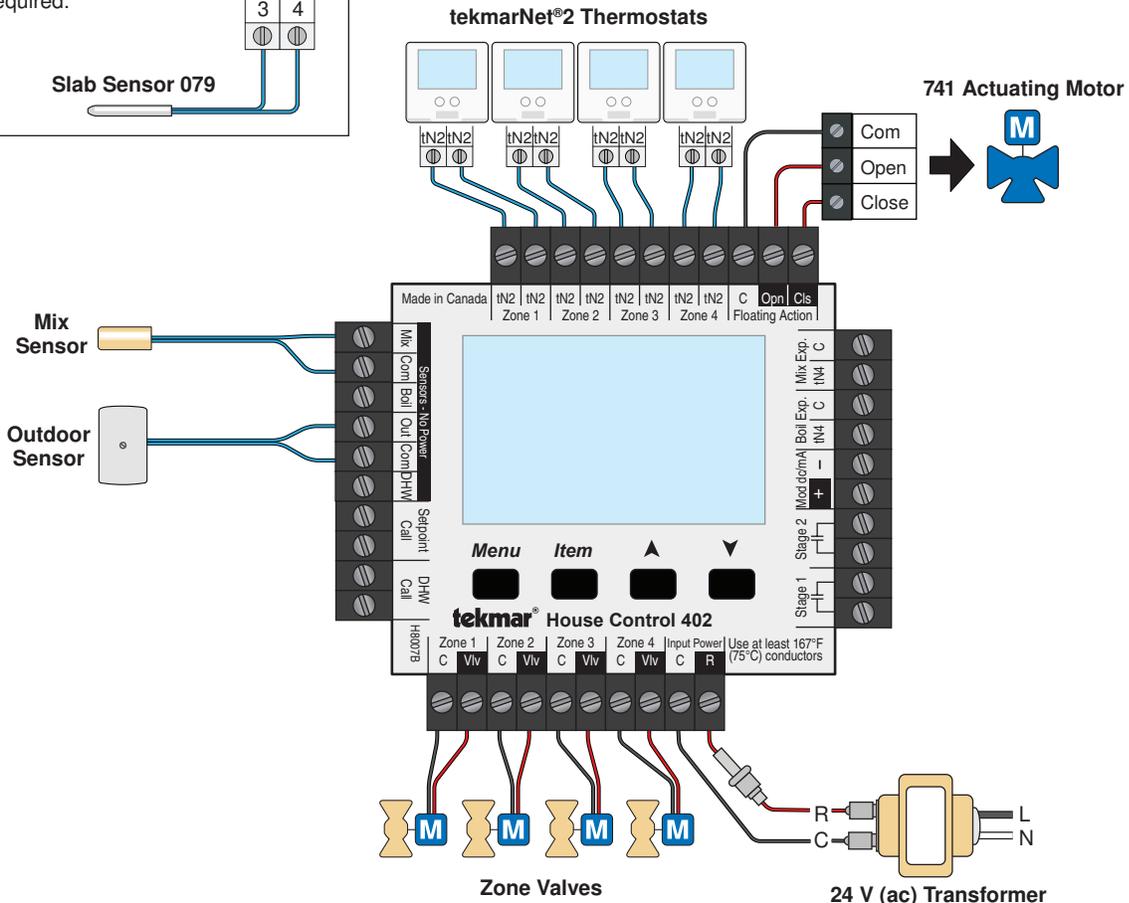
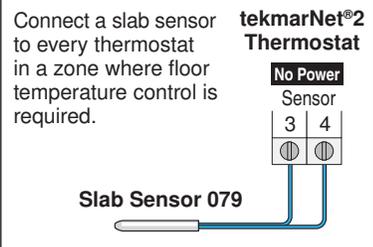
Suggested Controls

Product Name	Part Number
tN2 House Control	402
4 x Thermostat	528
4 x Slab Sensor	079
Transformer Kit	009K
1 x Actuator	741
1 x Three Way Valve	710 - 714

Recommended Accessories

Product Name	Part Number
Timer	033
User Switch	479





A402-4 Mechanical

This application is designed for a House Control 402 operating an On/Off boiler with indirect Domestic Hot Water. Mixing is performed with a variable speed injection pump, which supplies an outdoor reset water temperature to eight mix temperature hydronic zones. Four mix temperature zones shown are operated directly from the 402, an additional four mix zones are operated with a Wiring Center 313 connected through the tN4 Mix Expansion terminals. Each remote manifold has a pump that is either operated by the Zone Group Pump output on the 313 or the Mix System Pump output on the 402. One 522 and seven 528's operate low temperature radiant floors maintaining superior comfort through the use of 079 slab sensors. The 552 provides a setback schedule that can be followed by all of the thermostats.

402 Application Settings

Outdoor Design	Typical coldest day of year
Mix Type	VAR
Boil Type	1 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

313 Wiring Center DIP Switch Settings

Zone Group Pump	
DIP 1	On
DIP 2	On
DIP 3	On
DIP 4	On

Suggested Controls

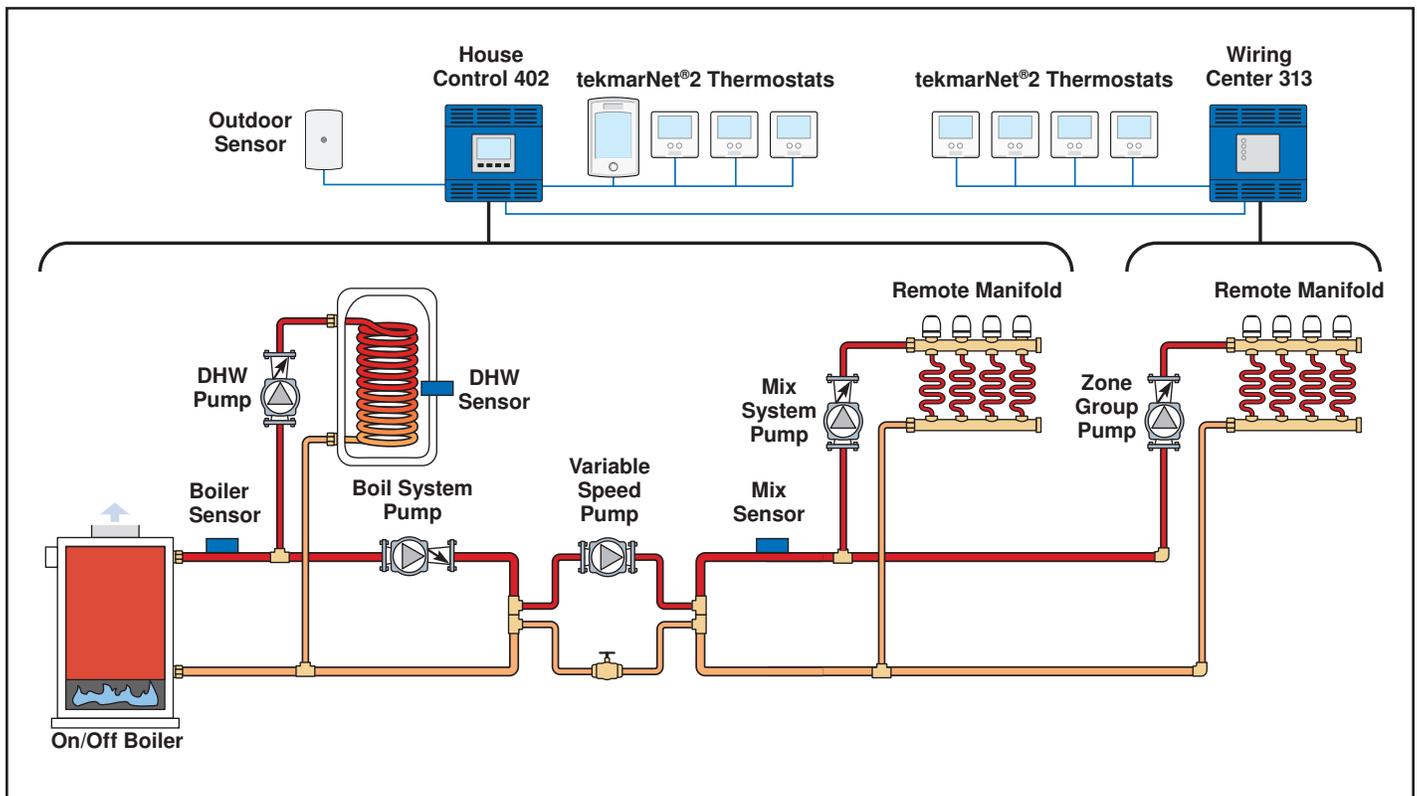
Product Name	Part Number
tN2 House Control	402
tN2 Wiring Center	313
7 x Thermostat	528
1 x Thermostat	552
8 x Slab Sensor	079
2 x Transformer Kit	009K

Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479

528 Thermostat Settings

On 402	Heating Supply Pump	On
On 313	Heating Supply Pump	Off



A402-4 Electrical

Connect a slab sensor to every thermostat in a zone where floor temperature control is required.

tekmarNet®2 Thermostat

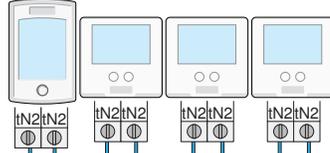
No Power



Slab Sensor 079



tekmarNet®2 Thermostats



Mix Sensor



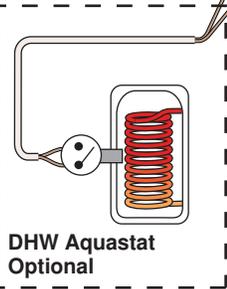
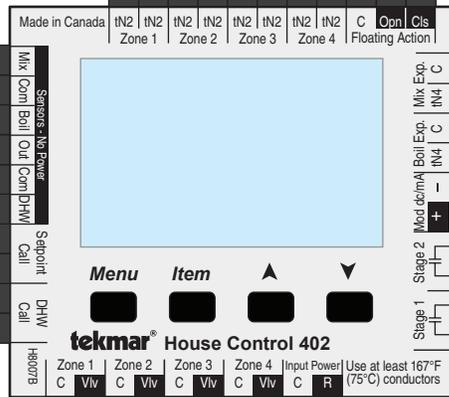
Boiler Sensor



Outdoor Sensor



DHW Sensor



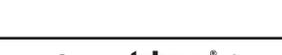
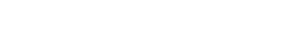
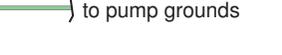
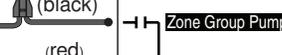
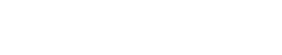
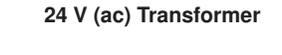
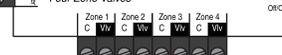
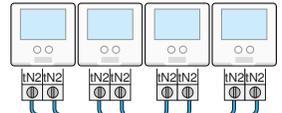
DHW Aquastat Optional

Zone Actuators

24 V (ac) Transformer

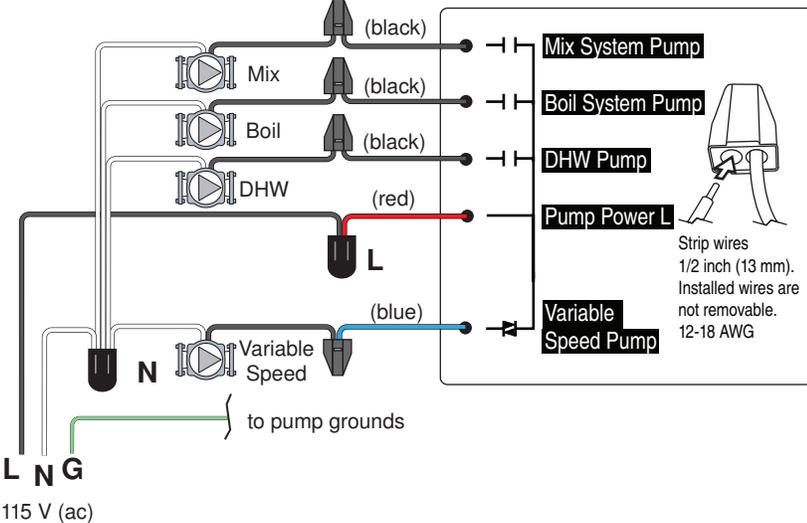
Wiring Center 313

tekmarNet®2 Thermostats



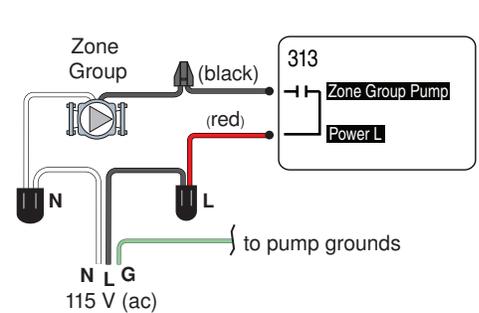
On/Off Boiler

Back of House Control 402



115 V (ac)

Back of Wiring Center 313



115 V (ac)

A403-1 Mechanical

This application is designed for a House Control 403 operating an On/Off boiler with indirect Domestic Hot Water. Mixing is performed with a variable speed injection pump which supplies an outdoor reset water temperature to four mix temperature hydronic zone pumps. Three tekmarNet[®]2 thermostat 528's operate low temperature radiant floors maintaining superior comfort through the use of 079 slab sensors. One zone is controlled by a touchscreen tekmarNet[®] Thermostat 552. The 552 provides a setback schedule that can be followed by all of the thermostats.

Application Settings

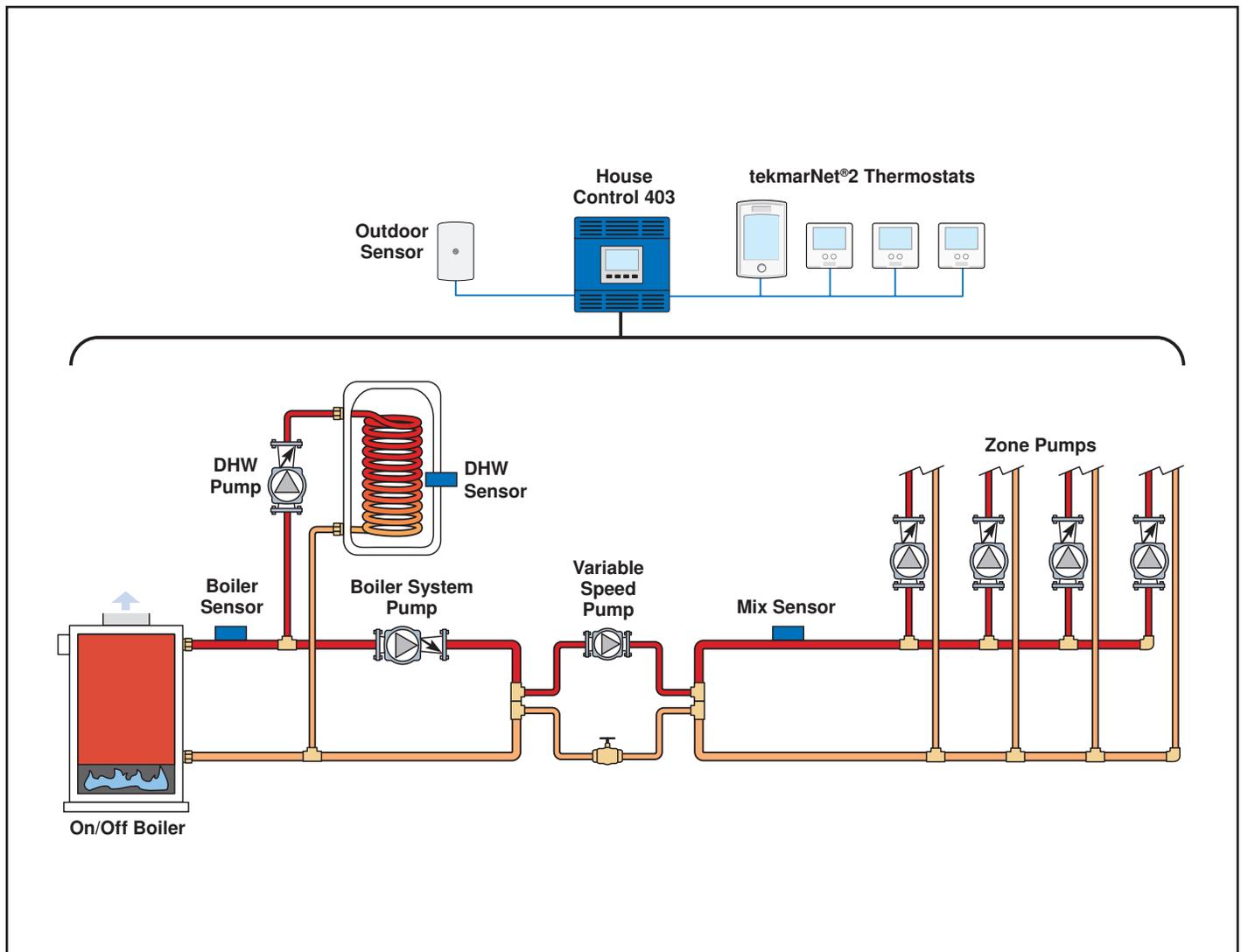
Outdoor Design	Typical coldest day of year
Mix Type	VAR
Boil Type	1 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

Suggested Controls

Product Name	Part Number
tN2 House Control	403
3 x Thermostat	528
1 x Thermostat	552
4 x Slab Sensor	079
Transformer Kit	009K

Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479



A403-2 Mechanical

This application is designed for a House Control 403 operating a 2-stage boiler with indirect Domestic Hot Water. Mixing is performed with a three-way floating action mixing valve, which supplies an outdoor reset water temperature to seven mix temperature hydronic zones. Four mix temperature zones shown are operated directly from the 403, an additional three mix zones are operated with a Wiring Center 314 connected through the tN4 Mix Expansion terminals. Three boiler temperature zones are operated with a second Wiring Center 314 connected to the tN4 Boiler Expansion terminals. One 552 and six 527's operate low temperature radiant floors maintaining superior comfort through the use of 079 slab sensors. Three high temperature baseboard zones are operated with tekmarNet[®]2 thermostat 527's. The 552 provides a setback schedule that can be followed by all of the thermostats.

Application Settings

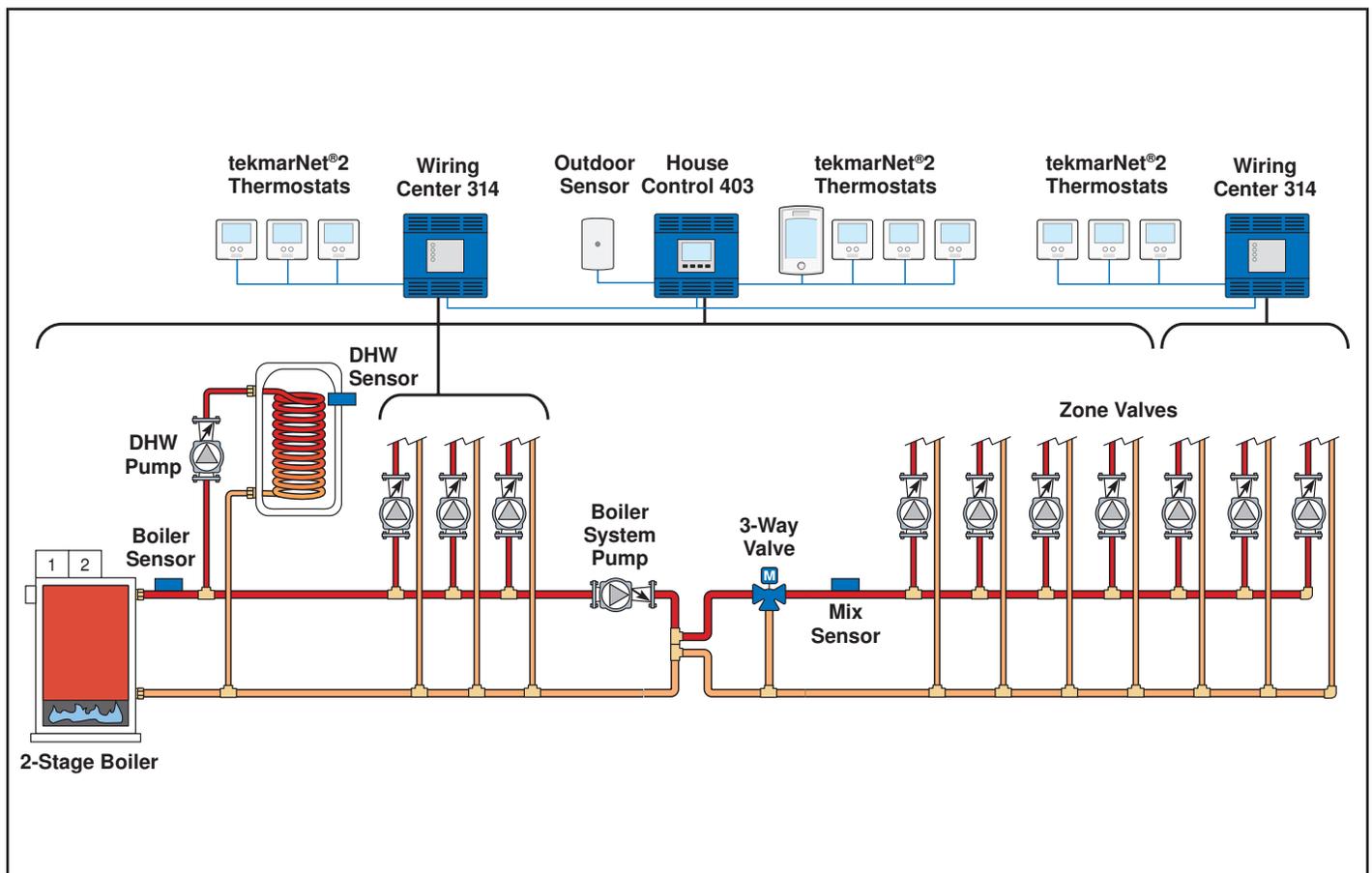
Outdoor Design	Typical coldest day of year
Mix Type	FLOT
Boil Type	2 STG
Boil Min	140°F
DHW Mode	1 (no priority) 2 (priority) Select to give DHW priority over the heating system

Suggested Controls

Product Name	Part Number
tN2 House Control	403
2 x tN2 Wiring Center	314
3 x Thermostat	527
6 x Thermostat	528
1 x Thermostat	552
7 x Slab Sensor	079
Transformer Kit	009K
1 x Actuator	741
1 x Three Way Valve	710 - 714

Recommended Accessories

Product Name	Part Number
Universal Sensor (DHW)	078
User Switch	479

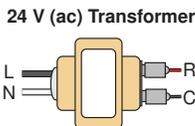
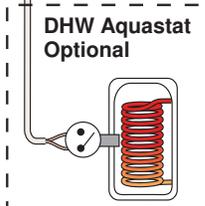


A403-2 Electrical

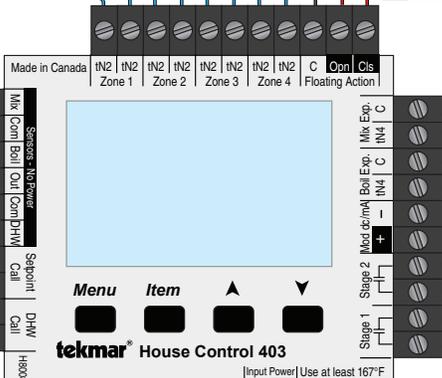
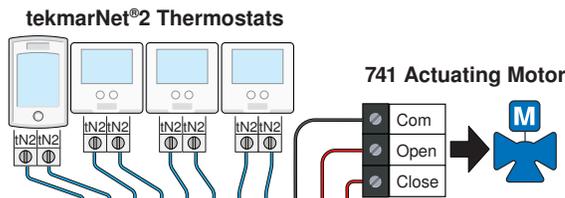
Connect a slab sensor to every thermostat in a zone where floor temperature control is required.

Slab Sensor 079

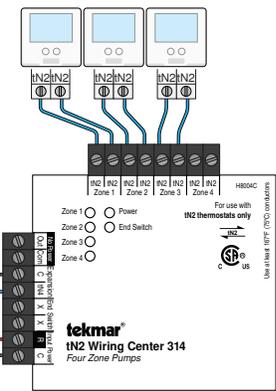
Mix Sensor
Boiler Sensor
Outdoor Sensor
DHW Sensor



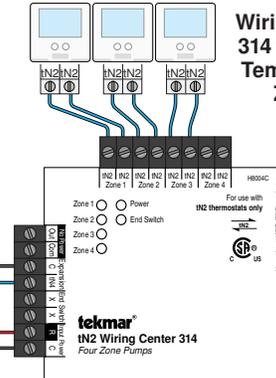
Ensure transformers are sized to meet the installed load. Refer to page 31 for sizing information.



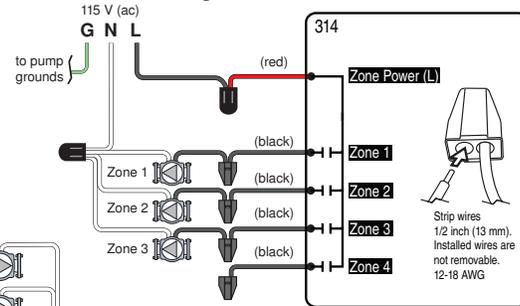
Wiring Center 314 for Mix Temperature Zones



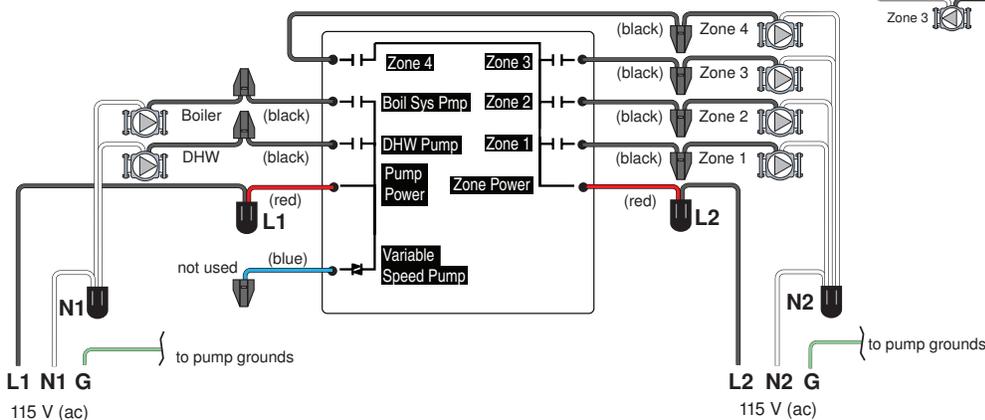
Wiring Center 314 for Boiler Temperature Zones



Back of Wiring Center 314's



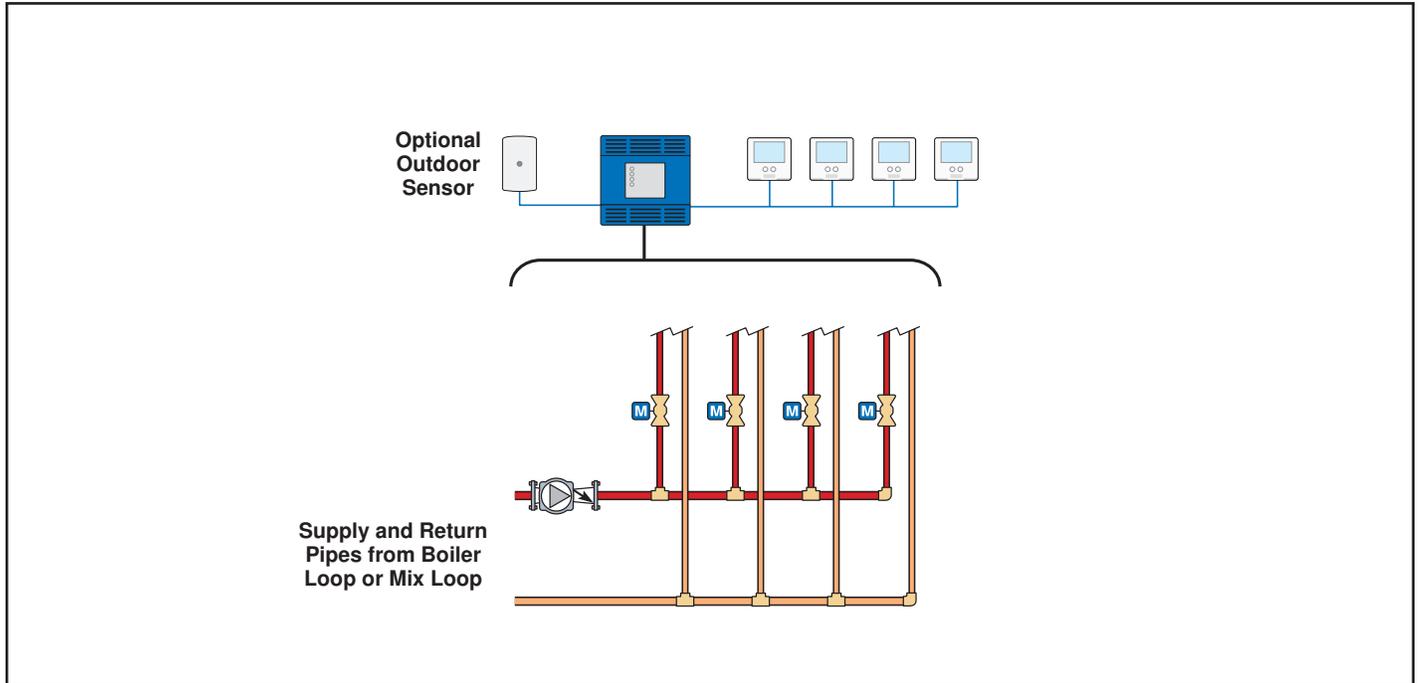
Back of House Control 403



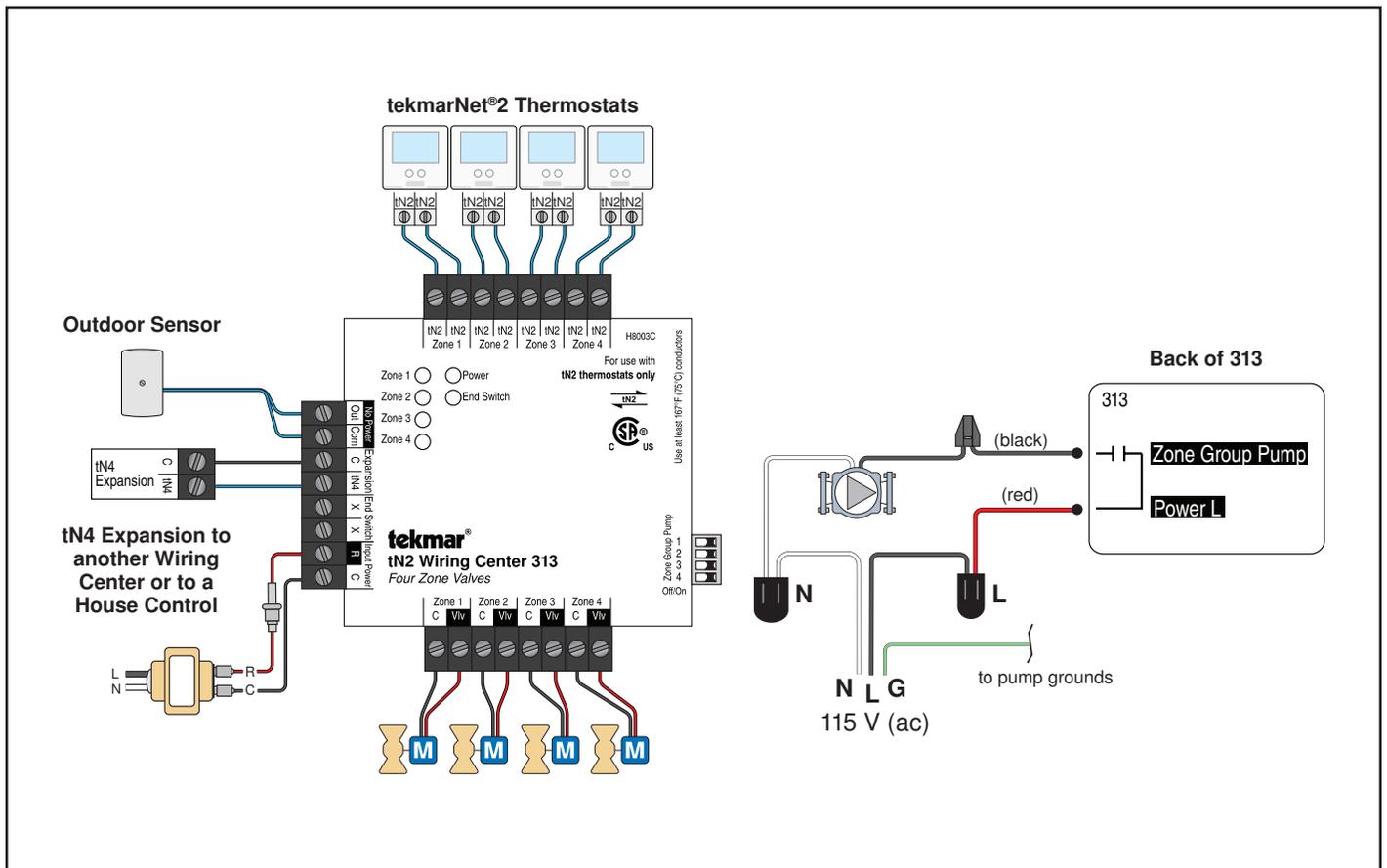
Expanding the Number of Zones in a House Control System

The tekmarNet[®]2 Wiring Centers 313 and 314 are designed to expand the number of zones available for House Control applications. Two communication wires (tN4 and C) connect to the House Control or to another Wiring Center to add these extra zones with the utmost simplicity. The Wiring Centers can be connected in series, or the wires from each may be pulled back to the House Control and joined there.

Expanding with Zone Valves



Wiring Zone Valve Expansion

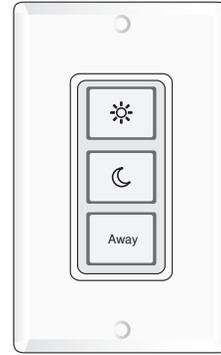


Network Accessories

Using a network of thermostats and House Controls to operate your system allows for the use of two extra devices which unlock additional functionality of a House Control system.

The User Switch 479 allows for one-touch setback. This feature allows a user to lower the temperature of all thermostats on the network with the simple push of a button. Additionally, the user switch lets users bring the system out of setback when they arrive ahead of schedule. Adding a User Switch to the system brings simplicity to any design.

The tekmarNet[®]4 Timer 033 provides up to four schedules which may be customized to the user's requirements, providing automatic setback of all the thermostats saving money and energy, without having to remember to turn the system down when you head out for the day.



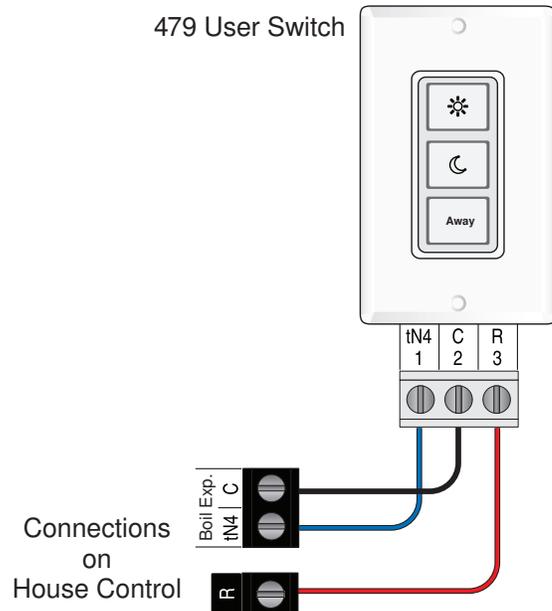
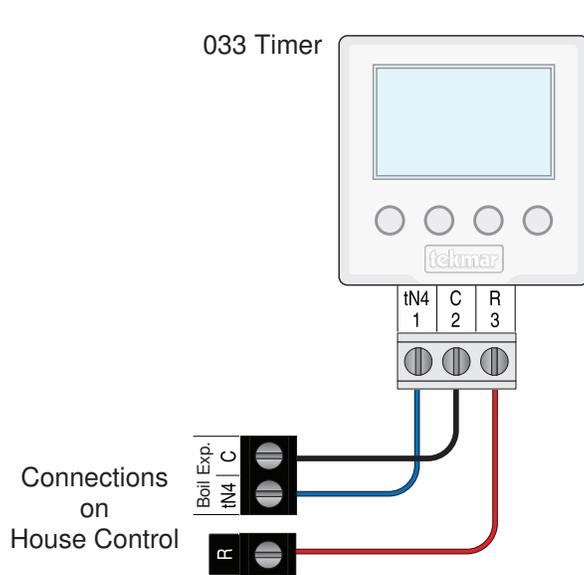
User Switch 479



tN4 Timer 033

Accessory Wiring

Adding a Timer or User Switch to a House Control is as easy as connecting three wires. Tie directly to the House Control or any other tN4 Expansion terminals in your system.



Auxiliary Sensors

tekmar offers a number of auxiliary sensors which can be used with House Controls and thermostats. These different sensors offer various casings which make them versatile enough for many different applications.



Outdoor Sensor 070



Universal Sensor 078



Slab Sensor 079



Universal Sensor 082



Indoor Sensor 084

Low Voltage Transformers

tekmar offers a high quality 40 VA 24 V (ac) transformer with a fuse to protect the transformer and control from current overload. Additionally, color coded wiring makes wiring multiple transformers together in phase to increase VA capacity a simple task. tekmar also offers a kit which includes the transformer and a deep junction box, providing you with everything you need to get the House Control up and running.

**Transformer Kit 009K
(Transformer-only: 009)**

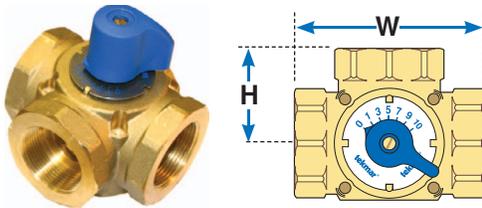


In order to correctly size the external transformer, all loads connected to the control must be taken into account. When adding up the loads, consider the following:

- tekmarNet®2 Thermostats, House Controls and Wiring Centers draw approximately 2 VA each.
- Each zone valve must be sized for peak load. This can be obtained by multiplying the peak current draw (in Amps) by 24 V (ac).
- Actuating Motors used for mixing add to the total VA required.

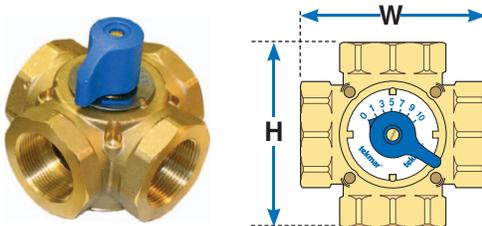
The total power capacity of the power supply should be larger than the total load of all the devices connected to the control. This total load must not exceed 100 VA.

Three-Way Mixing Valves



Type	Pipe Size	CV Value	Dimension H	Dimension W	Packaged Weight
710	3/4"	7	1-1/2" (38 mm)	3" (76 mm)	1.9 lbs (860 g)
711	1"	14	1-1/2" (38 mm)	3" (76 mm)	1.6 lbs (730 g)
712	1-1/4"	21	1-5/8" (41 mm)	3-1/4" (82 mm)	1.8 lbs (800 g)
713	1-1/2"	32	2-3/16" (56 mm)	4-3/8" (111 mm)	6.8 lbs (3084 g)
714	2"	51	2-5/16" (60 mm)	4-5/8" (119 mm)	5.7 lbs (2586 g)

Four-Way Mixing Valves



Type	Pipe Size	CV Value	Dimension H	Dimension W	Packaged Weight
720	3/4"	7	3" (76 mm)	3" (76 mm)	2.2 lbs (980 g)
721	1"	14	3" (76 mm)	3" (76 mm)	1.8 lbs (800 g)
722	1-1/4"	21	3-1/4" (82 mm)	3-1/4" (82 mm)	2.2 lbs (980 g)
723	1-1/2"	32	4-3/8" (111 mm)	4-3/8" (111 mm)	7.3 lbs (3320 g)
724	2"	51	4-5/8" (119 mm)	4-5/8" (119 mm)	5.8 lbs (2640 g)

Actuating Motor 741

If a mixed water temperature is required, use an Actuating Motor 741 to operate a 3 or 4-way mixing valve. The 741 connects directly to the House Control 402 on the floating action terminals.

- Fits tekmar three-way & four-way Brass Mixing Valves (710 - 714 & 720 - 724)
- Adaptor kit (M3048) to fit Danfoss and Esbe 3MG, 4MG, G1 & G4 series valves.



For complete details about tekmar products, visit tekmarcontrols.com.

tekmarNet® House Control Benefits



Outdoor Temperature monitoring allows the House Control to provide water temperatures that better match space heating requirements.



Indoor Feedback enables the House Control to fine tune water temperatures based on interior heat gains or losses. This results in greater energy savings & more constant room temperatures.



Cooling Groups provide a heat/cool interlock between thermostats, preventing conflicts between heating and cooling.



DHW Priority over space heating ensures an adequate supply during peak periods of demand.



Setback Schedules entered in a Timer 033 can be used by any tekmarNet® device to save energy.



One Touch adjustment with a User Switch 479 makes changing between occupied, unoccupied & away temperatures easy for any homeowner.



Saving Indicator is displayed when the House Control is using one of its many energy saving features.

Plus...

Zone Synchronization

Every tekmarNet® Thermostat communicates to agree on a common, or 'synchronized', start time. The result is a boiler that runs more efficiently and cycles less often.

Zone Post Purge

At the end of a cycle, the zones are held on while the boiler is off. This moves residual heat out of the boiler and into the zones where it belongs.

Automatic Boiler Differential

Automatically adjusting the boiler differential to changing conditions ensures longer running times and reduced boiler short cycling.

Simple Programming

House Controls are pre-programmed to suit most applications, setting up a House Control System is almost too easy. Once you are finished, access level adjustment helps ensure settings remain as you left them.

Monitoring

The House Control monitors everything from pump run times to outdoor temperature extremes to boiler usage, then organizes it in a simple menu for access at any time.

tekmar Offers the Classic, Performance & Designer Series to Support a Wide Range of Applications.



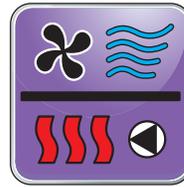
Classic Series controls operate as stand alone units. They include models for setpoint, boiler, zoning, domestic hot water, mixing or snow melting control.



Performance Series controls communicate to offer the highest level of comfort, efficiency and reliability in hydronic systems. House Controls, Wiring Centers and tekmarNet® Thermostats are performance series products.



Designer Series controls provide communication benefits with additional flexibility in their application. They are typically used in systems with multiple heat sources, cooling groups and/or water temperatures. Designer and performance products use tekmarNet® communication.



HVAC Systems

HVAC system controls maximize indoor comfort while operating the Heating, Ventilation & Air Conditioning components in unison.



Multi-Staging

tekmar staging controls improve overall efficiency by operating the number & type of devices required to meet the current loads.



Alternative Energy

Alternative energy sources such as solar panels, geothermal heat pumps & wood boilers require proper control to produce to their full potential.



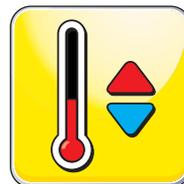
Zoning

Thermostats & zone controls regulate the air & floor temperatures in each zone by operating valves, pumps, fans & other equipment.



Snow Melting

tekmar has over 25 years of experience ensuring snow melting systems operate safely & efficiently through better temperature control.



Setpoint

Setpoint controls are used in a wide range of applications such as pool heating, slab warming & domestic hot water generation.



Accessories

From valves to sensors and timers, tekmar accessories expand the possibilities for great HVAC control.



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