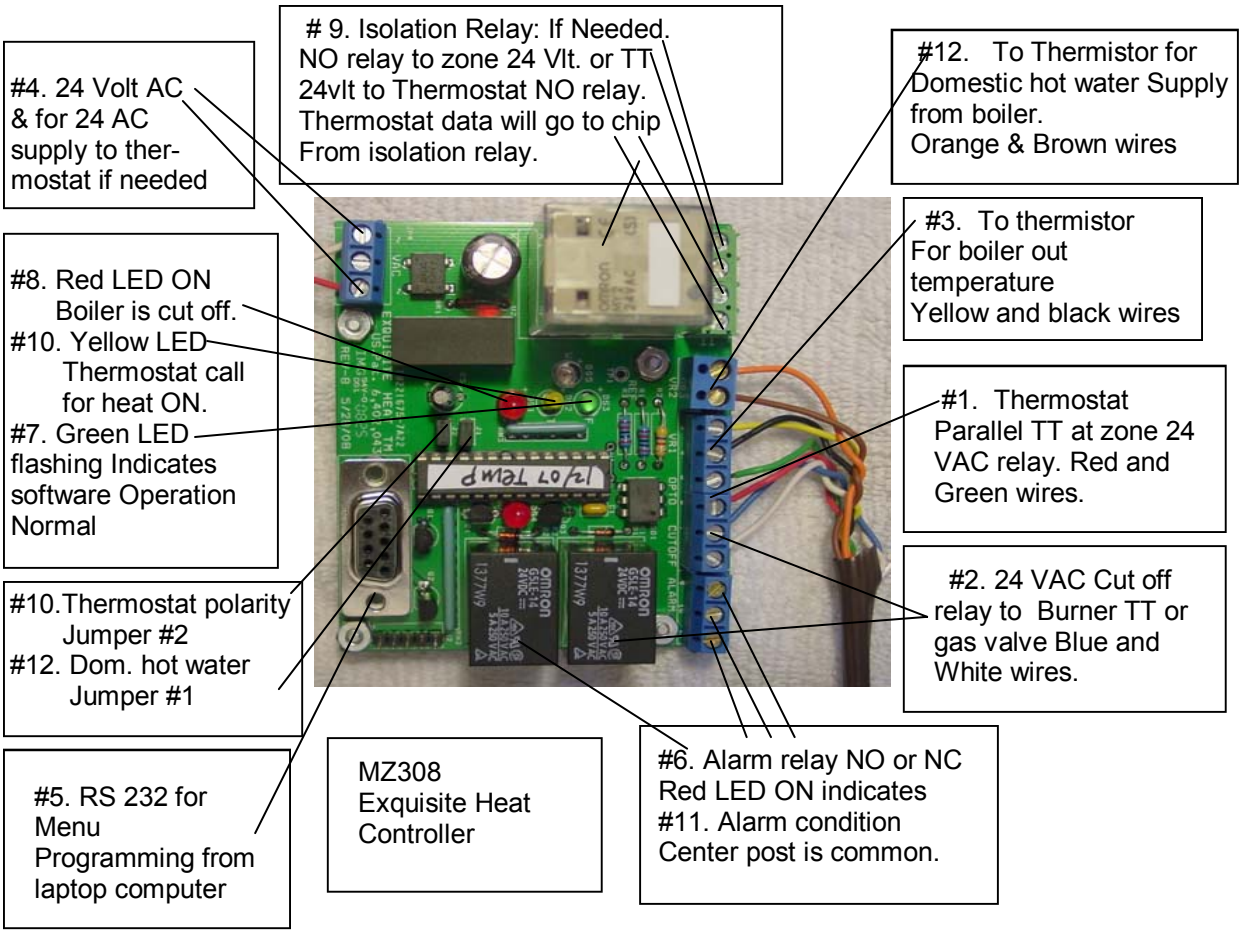



Materials: 8 wire thermostat cable according to location of points. Other 4 wire and 2 wire thermostat cable as needed. Pipe wrap insulation for sensors. Fasteners for wiring. Place the control box (supplied) on a wall near the boiler. Do not place control on boiler to avoid heat and water. Feed the wires through the control box holes provided. Any control box can be used according to local requirements. Metal boxes can be procured through the ADI supply house near you. Good plastic boxes can be purchased through Radio Shack outlets or on line at Radio Shack .com

#1.Thermostat low voltage connection. A two wire thermostat cable (red and green) to thermostat parallel connection with the thermostat at TT on the 24 Vac side of zone relay ( see drawing at end of this document). If the circuit is a partial drain to digital or programmable thermostat or boiler control, you may isolate the thermostat circuit from the boiler with isolation relay #9. This isolation circuit is for Actual thermostat demand analysis. If the thermostat information is distorted the analysis will be inaccurate. This means that there are two sources of thermostat information. One from the opt coupler connections #1 or from the isolation relay #9 (red and green wires).

#2. In series to 24 VAC Control Circuit connection to TT on the Burner Control, from the zone control if one is available, or 24 VAC supply to gas valve. Two wire cable ( blue and white) to enter the boiler safety series circuit **in series**. **Caution: Do not by-pass or delete any safety device on the boiler.** This is a disconnect relay circuit to interrupt the boiler fire cycle at Exqheat calculated High Set Point temperature. Be careful not to defeat the safety circuit. You want to be in a low voltage 24 vac control circuit only. On gas valves attach in series with 24 volt going to the gas valve. When this relay is activated it will turn off the source, and the red light #8 will be on. Should the power to the control be disconnected, this relay will spring back to the ON state. This protects the ability to provide heat in the event of a control failure. Make sure to adjust high temp control to 180-190 F and test to avoid run away boiler operation. If this test fails change the High Temp Control. Be sure to turn off power to the boiler and check for stray 110 VAC current from poor wiring with meter.

#3. Two wire cable (yellow and black) for thermistor (supplied) to the top of the boiler against the supply hot water feed pipe, close to the boiler cabinet. Wrap with insulation and secure with fasteners. This will measure the temperature of the boiler water as it leaves the boiler, and enable the control to shut off at the calculated High Limit and turn the boiler on at Low limit. The differential is set in software at 20 F to avoid short cycling the burner.

#4. 24 VAC (Volt Alternating Current) input from 40 VA ( Voltage Amperes) transformer located on zone control , boiler, or independent transformer. A plug in 24VAC transformer may be used as well. This will power the Controller and any thermostat needing auxiliary 24 VAC power. Be sure to measure the total circuit draw against the total available transformer being used. If using a remote sensor programmable Thermostat you may well have to install additional 24 VAC power source.

#5. RS 232 connection to Laptop Computer for data. RS 232 adapter cables to UBS ports are available. Future models will come with UBS ports. The menu allows changing of variables to suit the installation. See the Programming sheet enclosed. This requires laptop training from local distributor or factory training. All variables in the control can be programmed at the factory. See details on the software settings order sheet word document on the www.Exqheat.com web page.

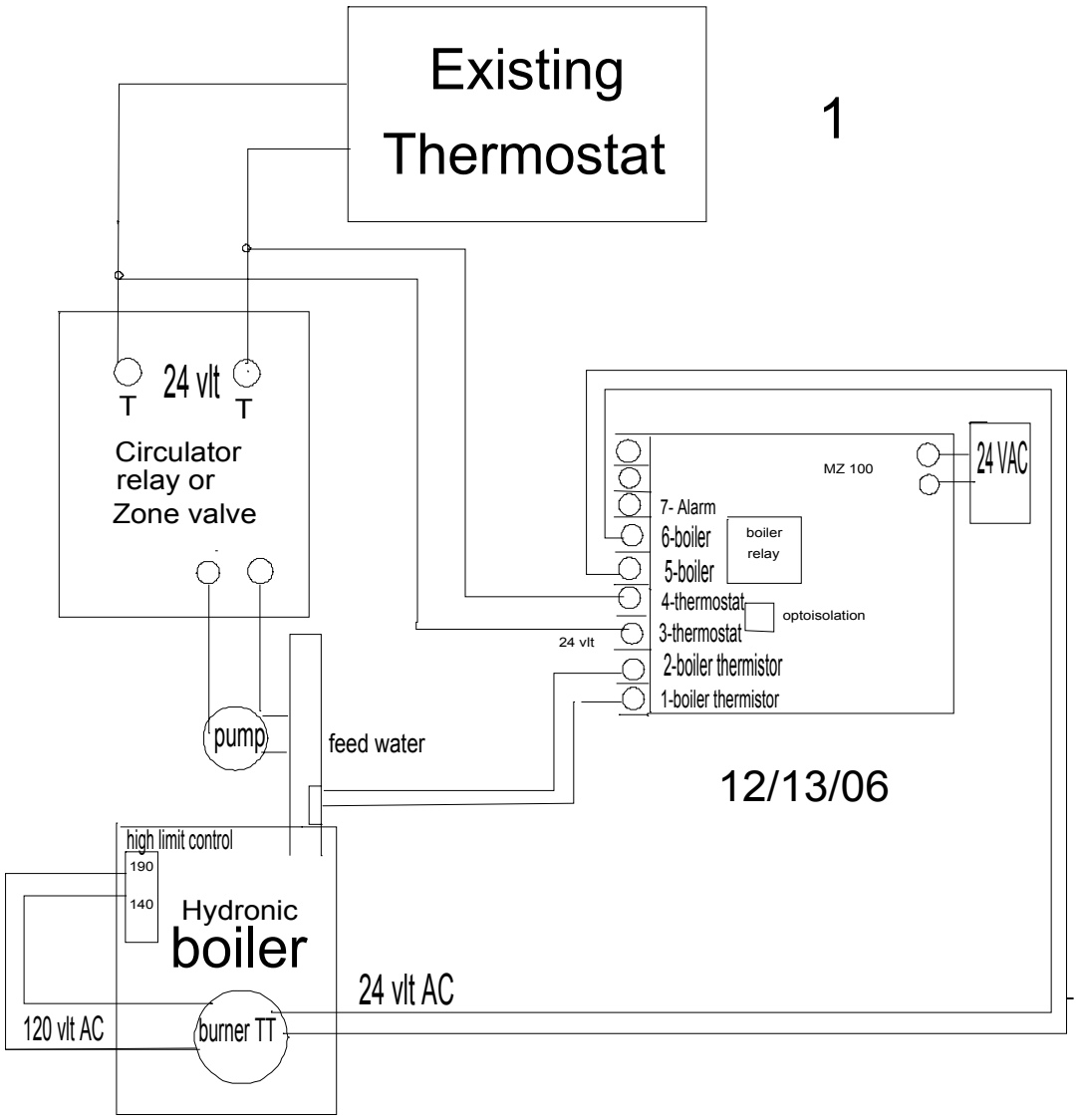
Be sure to conduct work according to all Local and National Codes.
Use Licensed Mechanical Contractors and Electricians where required.

#6 A normally open or closed relay is available for connection to security system zone, local bell, or telephone dialer. This alarm trigger is actuated when temperatures reach preset High 250 degrees F , or low safety 50 degrees F.. This has many applications. In the event of an alarm the control resets to start up temperature 150 F degrees. Alarm may be reset after service by disconnection power source and restarting controller.

#7. Computer software indicator (**green light**). Normally flashing green Led (Light emitting diode) on and off every second. This indicates that the computer software is in operating mode. At start up application of power a one minute delay is indicated by three rapid flash light sequence per second. This surge delay is provided in order to avoid start up after power outage. The delay avoids false starts from intermittent power surge and softens the load on the electrical grid. At the end of the delay the computer goes on line, the boiler should start, and the system will respond to thermostat activity and temperature demand. You should check temperature readings from all sensors, program menu settings, and jumper positions before leaving the control.

#2. Boiler relay is a disconnect relay. When the boiler is to be **off** the Red Led (Light emitting Diode) is **on.** When the boiler reaches the calculated Exquisite Heat high limit the relay will disconnect the series circuit 24 VAC Burner circuit and the burner will stop firing. (red light on) When the temperature reaches the low limit ( High Limit—differential this relay will engage (red Led will go out). When Red Led is lit the boiler should be off. When the Red Led is out the boiler can fire. If power is withdrawn (off switch on the box or wall transformer disconnect) from the control the relay springs back to the ( closed ) position (red light off). This will allow the boiler to operate on boiler manufacturer controls. When service personnel are in doubt as to what the trouble would be in a no heat situation, they can turn off the power switch to the control or remove the wall transformer from the wall socket. The boiler should start. If the boiler does not start, burner operation and fuel supply should be checked. After the boiler runs properly, the power to the control can be switched back on which will take the boiler to start up temperature 150 F, after a one minute surge delay. (green light flashing three times per second)

#10. To insure good thermostat data from different thermostat configurations the middle **Yellow Led** will go on when the thermostat is calling for heat. If the light does not react to thermostat activation and deactivation, changes must be made by removing or replacing polarity jumper #2. If the control is not responding, then rewire for the use of the larger isolation relay #9. Stray LCD and battery charging voltages can affect the proper operation of the opto coupler at posts #1. Several activations and deactivations of the thermostat must be confirmed from the actual thermostat on the sample zone, in order to assure good thermostat data (green light on) for analysis at the end of the analysis period. If the light does not respond to both activation (on) and deactivation (off), there is stray voltage in the circuit and isolation of the thermostat must be made with rewiring to the isolation relay #9. Retest Yellow Led for light on when thermostat activated. Call tech support if this is a problem.


Existing
Thermostat
1
T
24 vlt
T
Circulator
relay or
Zone valve
MZ 100
24 VAC
7- Alarm
6-boiler
5-boiler
boiler
relay
4-thermostat
optoisolation
3-thermostat
24 vlt
2-boiler thermistor
1-boiler thermistor
pump
feed water
12/13/06
high limit control
190
140
Hydronic
boiler
24 vlt AC
120 vlt AC
burner TT

#12 Domestic hot water supervision is available at Jumper #1. If left **.ON.** the posts the domestic hot water will be maintained between 130 and 140 degrees at the supply pipe where the second thermistor 12 (orange and brown wires) is attached to the domestic hot water piping. This sensor location is usually on the return side to the boiler. Individual system requirements will determine the proper sensor location. Caution should be taken to avoid high scalding temperatures to the outlets, and Legionella risk from low temperatures below 120 degrees. This sensor is not needed if the Hot water storage system has its own circulation and boiler activation methods. Factory settings sheet is available on the web page. You can open a word document on the how it works page and then make changes and e-mail, or print and mail. Keep copies for your records. If Jumper #1 is taken **.OFF.** the posts the boiler will run in **cold start** mode. Further information is available at www.Exqheat.com or call 914-588-4791

**Limited Five-Year Warranty**

The seller warrants its product against defects in material or workmanship for a period of 5 years from the date of manufacture. The liability of the seller is limited, at its option, to repair, replace or issue a non-case credit for the purchase prices of the goods which are provided to be defective. The warranty and remedies set forth herein do not apply to any goods or parts thereof which have been subjected to misuse including any use or application in violation of the Seller.s instructions, neglect, tampering, improper storage, incorrect installation or servicing not performed by the Seller. In order to permit the Seller to properly administer the warranty, the Buyer shall: 1) Notify the Seller promptly of any claim, submitting date code information or any other pertinent data as requested by the Seller. 2) Permit the Seller to inspect and test the product claimed to be defective. Items claimed to be defective and are determined to by the Seller to be Non-defective are subject to a $60.00 per hour inspection fee. This warranty constitutes the Sellers sole liability hereunder and is in lieu of any other warranty expressed, implied or statutory. Unless otherwise stated in writing, Seller makes no warranty that the goods depicted or described herein are fit for any particular purpose.

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Rev 10/21/08 JC

Thermostat Isolation relay. This relay is used when powered thermostats are involved. This relay is used for direct thermostat to steam boiler connections. There are many creative applications for this relay in combination with series connection through the boiler cut off relay. Call for questions about these applications.


A, B — Open dry contacts that close on power for connection to Boiler TT

C, D — 24VAC available for Thermostat circuit. Attach a non powered thermostat hear. When the thermostat closes the 24VAC will flow indicating a call for heat. This closure will activate A & B. These connections can be used for a power draining thermostats.

The signal to indicate a call for heat will be transmitted through the board to the software for Actual Demand Analysis. There is no need to connect any wires to the #2 Opt-coupler when the data is coming from this relay.

This allows for a broad array of possibility for circuit design in several given boiler and Thermostat configurations. For direct control of steam boilers be sure to attach the cut off relay#2 in series with this TT circuit ( C & D) in order to allow the boiler to be shut down at the end of fire cycles and to assure the cycle break occurs.

Parallel 24 Volt AC Power to a remote sensor programmable thermostat is available at terminals #4.

Closure of 24 volt thermostat circuit at D & C will close relay contacts at A&B.
A&B can be used for 24 VAC low voltage TT at sample zone relay or circulator relay.
The thermostat activity signal to control will be sent to software directly through the circuit board from this isolation relay. When changing the sample zone move the red and green wires to the better zone relay on ther low side 24 VAC.

Thermostat circuits can be passed through this relay at D&C. 24 VAC is active from C&D and Boiler TT can be triggered from dry contacts A & B.

## Do not connect any terminals to high voltage circuits. Use separate High voltage relay modules for high voltage connections.

Technical Notes

Study all instructions and control theory on the website www.Exqheat.com before you go to the job site.
Bench test your control for the application. Call for technical support if their are questions.
We are dealing with the fire in folks basement. Be sure to remove ( Shut Off ) power and test for high voltage before the installation begins.

Hydronic Boilers:

Check that High Limit controls are shutting off the boiler at High limit. Set to below 200 F degrees.
Is the pressure in the boiler enough to reach to top of the building.
Is the expansion tank drained and half filled with water when in operation.
Are pumps lubricated. ( ten drops in each fill once per year)
Are there any unusual noises to indicate motor or pump failure is close to happening.
Check the proper firing rate of the burners. Clean the boilers if needed.
Check for proper operation of zone valves and pumps, by activating all thermostats and examining pumps and zone valves for proper operation.
Do a proper analysis of the burner operation for proper nozzle, air supply, smoke, CO2, NO2 etc.
Insulation on all heating and domestic hot water piping.
Check thermostats for proper operation and settings and change batteries once per year.

Steam Boilers.

Be sure with steam systems to correct and test all manufacturers safety controls: Low water cut off, Fill apparatus.
Water level before, during and after steam cycle operation
Fire cycle times to avoid short cycling.
Owner filler blow down routine.
Condensate return piping operation. Clean out annually.
Insulation on boiler and supply and return piping ( 1 inch at least )
Chimney operation, leaking, and CO2 detection.
Excess fresh water take on during after and before operation. Fresh water will ruin a steam boiler due to oxygen and metal content. If in doubt attach a water meter to the intake of fresh water line and keep a record.
Check thermostats for proper operation and settings and change batteries once per year.

HVAC: We can do it all. You be thorough and you will have fewer call backs. Don't be rushed!!

Copy these items onto your own inspection document. Use the document every time you visit a customer. It will make you a better service, sales and honest person. It will make you a better person. Your customer will appreciate your thorough approach. You will be rich some day. Charge for what you do.