

# Aquastat Controllers

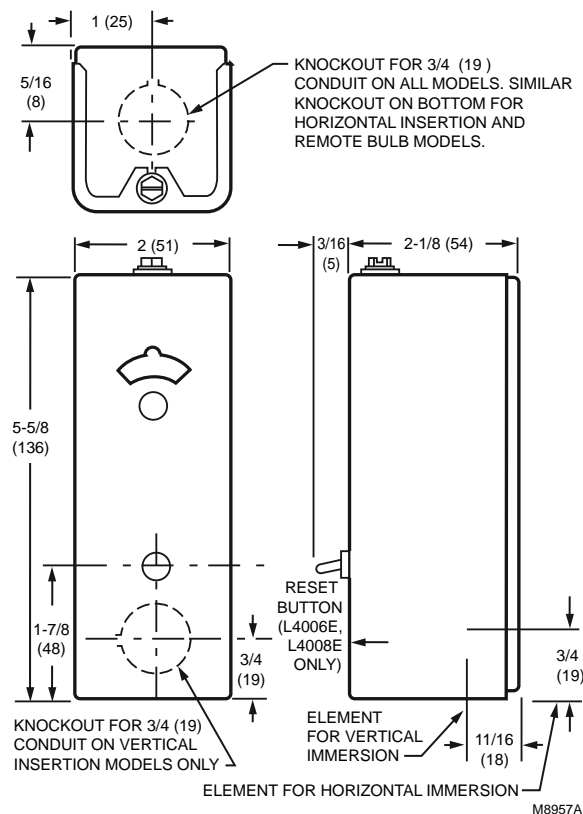
## L4006; L6006 Aquastat® Controller



Aquastat® Controllers are immersion type devices for limiting or regulating the temperature of liquids in boilers, storage tanks, and other applications where temperature control is required.

- Totally enclosed Micro Switch® snap-acting switches operate on temperature rise to setpoint.
- Visible control point scale and external adjustment screw permit easy setting.
- Horizontal or vertical insertion of the sensing element.
- Direct or well immersion of the sensing element.
- Models available for strap-on mounting.
- Remote bulb model may be used to sense air temperature in ducts and in outside air sensing applications.
- TRADELINE models include heat-conductive compound.
- Select models have wells.

### Dimensions in inches (millimeters)



**Case Dimensions:** 5 5/8 in. high x 2 in. wide x 2 1/8 in. deep

(143 mm high x 51 mm wide x 54 mm deep)

**Bulb Size:** 3/8 in. x 2 7/8 in. (10 mm x 73 mm) copper

**Maximum Ambient Temperature:** 150 F (66 C)

### Approvals:

**American Gas Association IAS:** AGA Certified

**Canadian Standards Association:** Certified: File No. LR95329-1

**Underwriters Laboratories, Inc.** UL Component Recognized: File No. MP466, Vol. 6, Sec.1, Guide No. MBPR2

Product Number	Electrical Ratings		
	(Full Load)	(Locked Rotor)	(Millivolt)
L4006A1009	8A @ 120 Vac;	48A @ 120 Vac;	0.25 A @ 0.25 to 12 Vdc
L4006A1017	5.1A @ 240 Vac	30.6A @ 240 Vac	
L4006A1132			
L4006A1678			
L4006A1959	2.6A @ 120 Vac;	15.6A @ 120 Vac;	—
	1.3A @ 240 Vac	7.8A @ 240 Vac	
L4006A1967	8A @ 120 Vac;	48A @ 120 Vac;	0.25 A @ 0.25 to 12 Vdc
L4006A2007	5.1A @ 240 Vac	30.6A @ 240 Vac	
L4006B1007			
L4006B1155			
L4006B1163			
L4006E1067	8A @ 120 Vac;	48A @ 120 Vac;	—
L4006E1091	1.3A @ 240 Vac	30.6A @ 240 Vac	
L4006E1109			
L4006E1117			
L4006E1125	8A @ 120 Vac;	48A @ 120 Vac;	0.25 A @ 0.25 to 12 Vdc
L4006H1004	1.3A @ 240 Vac	30.6A @ 240 Vac	
L6006A1004	8A @ 120 Vac;	48A @ 120 Vac;	0.25 A @ 0.25 to 12 Vdc
L6006A1012	5.1A @ 240 Vac	30.6A @ 240 Vac	
L6006A1145			
L6006A1244			
L6006C1018			
L6006C1059			

Product Number	Application	Operating Temperature Range		Differential Temperature		Well Spud Size		Capillary Length		Switching Action	Mounting	Includes
		(F)	(C)	(F)	(C)	(inch)	(mm)	(inch)	(mm)			
L4006A1009	High or Low limit	100 F to 240 F	38 C to 116 C	5 F Fixed	3 C fixed	1/2 in. NPT	13 mm NPT	1 1/2 in.	38 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	1/2 in. well - 123869A
L4006A1017	High or Low limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	1/2 in. NPT	13 mm NPT	1 1/2 in.	38 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	1/2 in. well - 123869A
L4006A1132	High or Low limit	100 F to 240 F	38 C to 116 C	5 F Fixed	3 C fixed	3/4 in. NPT	19 mm NPT	3 in.	76 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	Stop factory-set at 160 F (71 C); 3/4 in. well - 123871A

\* TRADELINE models • SUPER TRADELINE models

# Aquastat Controllers

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Product Number	Application	Operating Temperature Range		Differential Temperature		Well Spud Size		Capillary Length		Switching Action	Mounting	Includes
		(F)	(C)	(F)	(C)	(inch)	(mm)	(inch)	(mm)			
* L4006A1678	High or Low limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	3 in.	76 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	Heat-conductive compound; Stop factory-set at 240 F (116 C)
* L4006A1959	High or Low limit	40 F to 180 F	4 C to 82 C	5 F Fixed	3 C fixed	—	—	3 in.	76 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	Heat-conductive compound
* L4006A1967	High or Low limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	1/2 in.	13 mm	1 1/2 in.	38 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	Stop factory-set at 240 F (116 C); 1/2 in. well - 123869A
L4006A2007	High or Low limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	3 in.	76 mm	SPST, contacts break on temperature rise.	Horizontal	—
L4006B1007	Circulator	100 F to 240 F	38 C to 116 C	5 F Fixed	3 C fixed	1/2 in.	13 mm	1 1/2 in.	38 mm	SPST, contacts make on temperature rise.	Horizontal or Vertical	1/2 in. well - 123869A
* L4006B1155	Circulator	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	3 in.	76 mm	SPST, contacts make on temperature rise.	Horizontal or Vertical	Heat-conductive compound; Stop factory-set at 240 F (116 C)
L4006B1163	Circulator	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	3 in.	76 mm	SPST, contacts make on temperature rise.	Horizontal or Vertical	—
* L4006E1067	High Limit; Manual Reset	130 F to 270 F	54 C to 132 C	Manual Reset	Manual Reset	—	—	3 in.	76 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	Well adapter; Stop factory-set at 250 F (121 C); Heat-conductive compound
L4006E1091	High Limit; Manual Reset	130 F to 270 F	54 C to 132 C	Manual Reset	Manual Reset	—	—	3 in.	76 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	—
L4006E1109	High Limit; Manual Reset	130 F to 270 F	54 C to 132 C	Manual Reset	Manual Reset	—	—	1 1/2 in. to 3 in.	38 mm to 76 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	—
L4006E1117	High Limit; Manual Reset	100 F to 240 F	38 C to 116 C	Manual Reset	Manual Reset	3/4 in. - 14 NPT	19 mm - 14 NPT	1 1/2 in.	38 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	3/4 in. well - 123870A
L4006E1125	High Limit; Manual Reset	100 F to 200 F	38 C to 93 C	Manual Reset	Manual Reset	—	—	3 in.	76 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	—
* L4006H1004	High Limit; strap-on mounting on well mount.	100 F to 240 F	38 C to 116 C	Manual Reset	Manual Reset	—	—	1 1/2 in.	38 mm	SPST, contacts break on temperature rise.	Horizontal or Vertical	Bracket for strap-on mounting; Heat-conductive compound; Stop factory-set at 240 F (116 C)
L6006A1004	Circulator Control and High Limit or Low Limit	100 F to 240 F	38 C to 116 C	5 F	3 C	1/2 in.	13 mm	1 1/2 in.	38 mm	SPDT	Horizontal or Vertical	1/2 in. well - 123869A
L6006A1012	Circulator Control and High Limit or Low Limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	1/2 in.	13 mm	1 1/2 in.	38 mm	SPDT	Horizontal or Vertical	1/2 in. well - 123869A
• L6006A1145	Circulator Control and High Limit or Low Limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	3 in.	76 mm	SPDT	Horizontal	Heat-conductive compound; Stop factory-set at 240 F (116 C)
L6006A1244	Circulator Control and High Limit or Low Limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	3 in.	76 mm	SPDT	Horizontal or Vertical	—
* L6006C1018	Circulator Control and High Limit or Low Limit	65 F to 200 F	18 C to 93 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	—	—	SPDT	Horizontal or Vertical or Strap-on-mounting	Stop factory-set at 200 F (93 C)
L6006C1059	Circulator Control and High Limit or Low Limit	65 F to 200 F	18 C to 93 C	5 F to 30 F adj.	3 C to 17 C adj.	—	—	—	—	SPDT	Horizontal or Vertical	Stop factory-set at 200 F (93 C)

\* TRADELINE models • SUPER TRADELINE models

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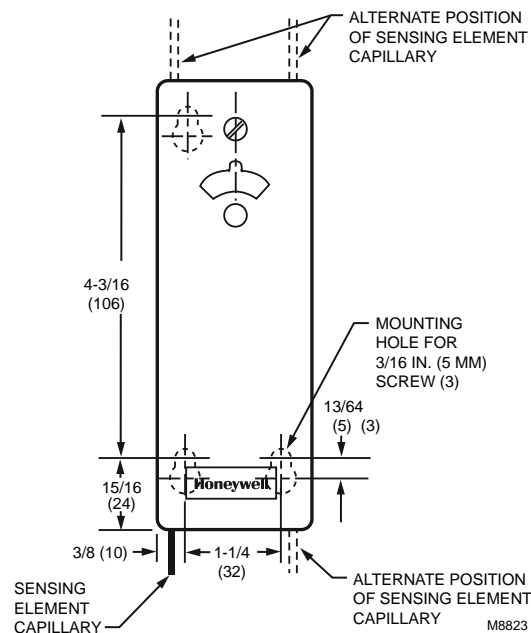
## L4008; L6008 Remote Bulb Controller



Aquastat® Controllers are immersion type devices for limiting or regulating the temperature of liquids in boilers, storage tanks, and other applications where temperature control is required.

- Remote temperature sensing element detects and responds rapidly to temperature changes.
- Totally enclosed Micro Switch® snap-acting switch.
- Visible control point scale and external adjustment screw permit easy setting.
- Horizontal or vertical mounting of the remote element into boiler, tank, or other container.
- Case mounts to a vertical surface.

### Dimensions in inches (millimeters)



**Case Dimensions:** 5 5/8 in. high x 2 in. wide x 2 1/8 in. deep  
(143 mm high x 51 mm wide x 54 mm deep)

**Bulb Size:** 3/8 in. x 2 7/8 in. (10 mm x 73 mm) copper

**Mounting:** Horizontal or Vertical

**Maximum Ambient Temperature:** 150 F (66 C)

### Electrical Ratings

**Full Load:** 8A @ 120 Vac; 5.1A @ 240 Vac

**Locked Rotor:** 48A @ 120 Vac; 30.6A @ 240 Vac

**Millivolt:** 0.25 A @ 0.25 to 12 Vdc

### Approvals:

**Canadian Standards Association:** Certified: File No. LR95329-1

**Underwriters Laboratories, Inc.** UL Component Recognized: File No. MP466, Vol. 6, Sec.1, Guide No. MBPR2

Product Number	Application	Operating Temperature Range		Differential Temperature		Capillary Length (inch)	Switching Action	Includes
		(F)	(C)	(F)	(C)			
L4008A1015	High or Low limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	66 in.	SPST, contacts break on temperature rise.	5 1/2 ft (1.7 m) capillary
L4008A1130	High or Low limit	130 F to 270 F	54 C to 132 C	5 F to 30 F adj.	3 C to 17 C adj.	120 in.	SPST, contacts break on temperature rise.	Stop factory-set at 200 F (93 C); 10 ft (3.04 m) capillary
L4008B1013	Circulator	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	66 in.	SPST, contacts make on temperature rise.	5 1/2 ft (1.7 m) capillary
* L4008E1156	High Limit; Manual Reset	130 F to 270 F	54 C to 132 C	Manual Reset	Manual Reset	66 in.	SPST, contacts break on temperature rise.	5 1/2 ft (1.7 m) capillary; Stop factory-set at 250 F (121 C); Heat-conductive compound
* L4008E1305	High Limit; Manual Reset	100 F to 240 F	38 C to 116 C	Manual Reset	Manual Reset	66 in.	SPST, contacts break on temperature rise.	Stop factory-set at 240 F (116 C)
L4008E1313	High Limit; Manual Reset	100 F to 200 F	38 C to 116 C	Manual Reset	Manual Reset	66 in.	SPST, contacts break on temperature rise.	—
* L6008A1192	Circulator Control and Low Limit	100 F to 240 F	38 C to 116 C	5 F to 30 F adj.	3 C to 17 C adj.	—	SPDT	66 in. capillary; Stop factory-set at 240 F (116 C)
L6008A1242	Circulator Control and Low Limit	100 F to 200 F	38 C to 93 C	5 F to 30 F adj.	3 C to 17 C adj.	—	SPDT	66 in. capillary

\* TRADELINE models • SUPER TRADELINE models

## L4103 Combination Aquastat® and High Limit Controller

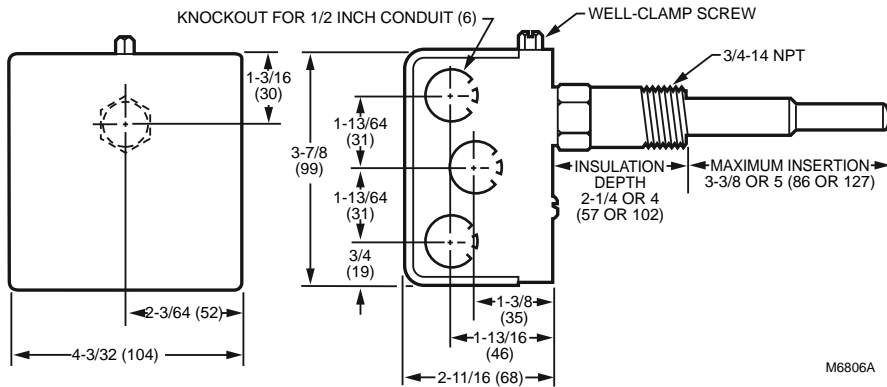


The L4103A,B is an immersion-type controller for oil-fired water heaters. The Aquastat® Controller senses water temperature and cycles the burner through the oil primary. The high-limit controller breaks the circuit to the burner on a temperature rise past the factory-set setpoint. The L4103C is an immersion-type controller for gas systems that provides water temperature regulation. The high-limit controller breaks the circuit to the burner on a temperature rise past the factory-set setpoint.

- L4103A,B,C have a sensing element and a high limit sensor with automatic reset.
- Mounts on a horizontal immersion well in water heater wall.
- Adjustable temperature setting scale.
- Fluid-filled element operates SPST, Micro Switch™ snap-acting switch.
- Integral, nonadjustable high limit. L4103C is an immersion controller for gas systems.
- L4103A,B is an immersion controller for oil systems.

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### Dimensions in inches (millimeters)



**Case Dimensions:** 4 3/32 in. wide x 3 7/8 in. high x 2 11/16 in. deep  
(104 mm wide x 99 mm high x 68 mm deep.)

**Operating Temperature Range:** 100 F to 240 F stop set at 150 F  
(Scale marked- Hot-Normal-Warm) (38 C to 116 C stop set at 66 C  
(Scale marked- Hot-Normal-Warm))

### Electrical Ratings:

**Full Load:** 5A @ 240 Vac; 8A @ 120 Vac

**Locked Rotor:** 30A @ 240 Vac; 48A @ 120 Vac

### Approvals:

**Underwriters Laboratories, Inc.** UL Component Recognized: File No. MP466, Guide No. MBPR2.

Product Number	Application	Differential Temperature		Well Spud Size		Insulation Depth		Switching Action	Mounting
		(F)	(F)	(inch)	(mm)	(inch)	(mm)		
L4103A1019	High Limit	7 F ± 4 F	3.9 C ± 2 C	3/4 in. NPT	19 mm NPT	4 in.	102 mm	SPST, contacts break on temperature rise.	Mounts on a horizontal immersion well in water heater wall.
L4103A1100	High Limit	7 F ± 4 F	3.9 C ± 2 C	3/4 in. NPT	19 mm NPT	2 1/4 in.	57 mm	SPST, contacts break on temperature rise.	Mounts on a horizontal immersion well in water heater wall.

# Aquastat Controllers

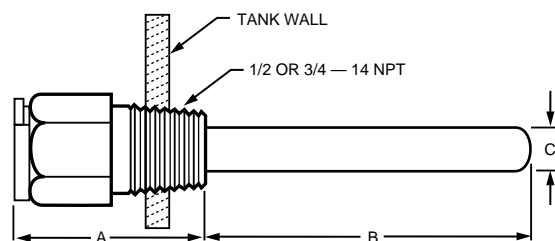
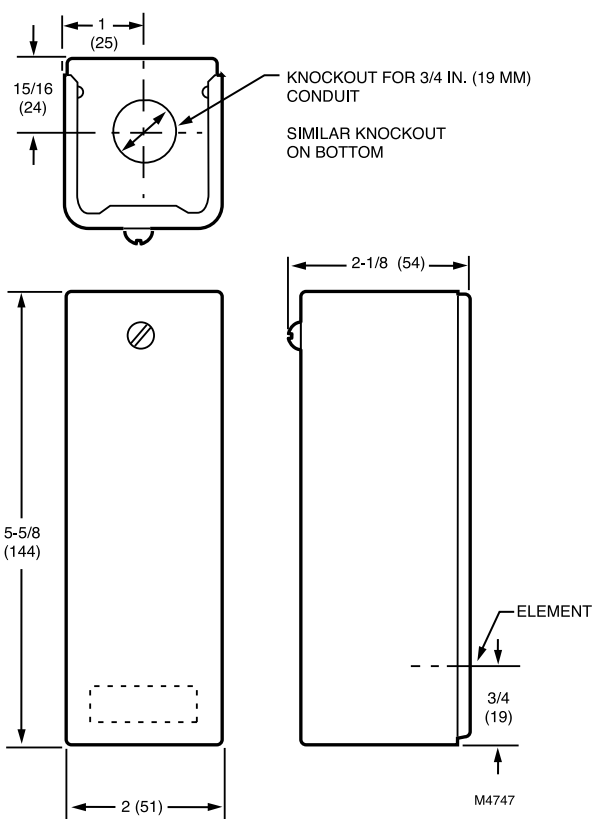
## L8100 Aquastat® Controller



L8100A,B, and C are immersion type controllers for regulating and limiting the tank temperature in water heaters. As the water temperature rises past the setpoint, the controller switches off the gas valve.

- Regulates temperature and provides energy cutoff (ECO) action on a temperature rise past the setpoint.
- Includes a second sensing element that senses average water temperature to minimize stacking.
- Fluid-filled element operates Micro Switch™ SPST snap-acting switch.
- ECO switch interrupts the thermocouple circuit or main valve before tank reaches 210 F (99 C) maximum temperature.
- Includes factory-installed immersion well on controller.
- Internal adjustment screw.
- Special switch terminal provides three-wire hookup from Aquastat® controller to gas valve.

Dimensions in inches (millimeters)



	CONTROLLER WELL		REMOTE WELL	
	IN.	MM	IN.	MM
A INSULATION DEPTH	2-1/4	57	1-1/2 OR 2-1/2	38 OR 64
B INSERTION DEPTH	5	127	3	76
C WELL DIAMETER	7/16	11	7/16	11

M4746

**Bulb Size:** 3/8 in. (10 mm)

**Differential Temperature:** Controller: 5 F, fixed. Energy Cutoff Switch: 20 F, fixed. (Controller: 3 C fixed; Energy Cutoff Switch: 11 C fixed.)

**Temperature Rating (ECO) Energy Cutoff:** 190 F

**Maximum Ambient Temperature:** Maximum Tank: 210 F (Maximum Tank: 99 C)

**Operating Temperature Range:** 100 F to 180 F (38 C to 82 C)

**Electrical Ratings:**

**Millivolt:** 2A maximum at 24 Vac.

**Approvals:**

**American Gas Association IAS:** Design Certified: Report Number 23-11B

**Underwriters Laboratories, Inc.** UL Component Recognized: File No. MP466, Guide No. MBPR2

Product Number	Application	Capillary Length	Insulation Depth		Switching Action	Mounting	Includes
		(inch)	(inch)	(mm)			
L8100B1037	High Limit	42 in.	controller well: 2 1/4 in. remote well: 1 1/2 or 2 1/2 in.	controller well: 57 mm, remote well: 38 mm or 64 mm	SPST, contacts break on temperature rise.	Immersion Well	—
L8100B1094	High Limit	54 in.	controller well: 2 1/4 in. remote well: 1 1/2 or 2 1/2 in.	controller well: 57 mm, remote well: 38 mm or 64 mm	SPST, contacts break on temperature rise.	Immersion Well	Two zinc plated wells and one well clamp for remote well.
L8100B1128	High Limit	39 in.	1 1/2 in.	38 mm	SPST, contacts break on temperature rise.	Immersion Well	—

## L4081; L6081 Multiple Aquastat® Controllers



Cover



Controller

High limit, low limit and/or circulator controllers used to regulate boiler water temperature in gas- or oil-fired hydronic heating systems.

- An immersion type liquid-filled sensing element actuates two snap switches.
- One switch operates as a high limit control.
- The other switch operates as a low limit and/or circulator control, depending on the model.
- Controller may be mounted in any positioning and needs no leveling.
- Separate, easy-to-read, calibrated dial and setpoint adjustments for each switch.
- Differential adjustment on low limit or circulator switch.
- All adjustments accessible inside front cover.
- Push-in terminals for quick connecting.
- Single sensing element for easy installation.
- One SPST and one SPDT snap switches act independently at respective temperature settings.

**Maximum Ambient Temperature:** 150 F at switches; 265 F at sensing element (66 C at switches; 129 C at sensing element)

**Operating Range, High Limit:** 130 F to 240 F (54 C to 116 C)

**Operating Range, Low Limit:** 110 F to 220 F (43 C to 104 C)

**Operating Humidity Range (% RH):** 0 to 95% RH, non-condensing

### Electrical Ratings

**Ignition:** Transformer Load: 360 VA

**Full Load:** 5.1A @ 240 Vac; 8A @ 120 Vac

**Locked Rotor:** 30.6A @ 240 Vac; 48A @ 120 Vac

**Millivolt:** 0.25 A @ 0.25 to 12 Vdc

### Approvals:

**Canadian Standards Association:** Certified: File No. LR95329-1

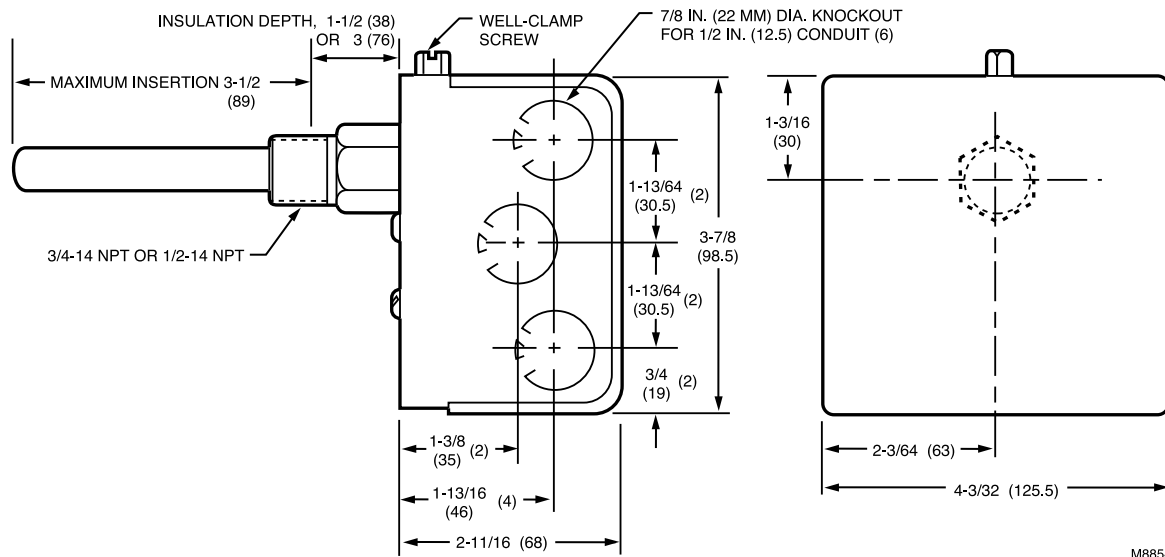
**Underwriters Laboratories, Inc.** UL Listed: File No. MP466, Vol. 12, Sec. 4, Guide No. MBPR2

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Combustion Controls

Product Number	Application	Differential Temperature	Insulation Depth		Well Spud Size	Switching Action	Mounting	Includes
		(F)	(inch)	(mm)	(inch)			
L4081A1023	High and Low limit	High limit: 10 F fixed; low limit: 10-25 F adj.	1 1/2 in.	38 mm	3/4 in. - 14 NPT	SPST: High & Low Limit	Horizontal	—
L4081B1013	High Limit and Circulator	10 F fixed	3 in.	76 mm	3/4 in. - 14 NPT	SPST: High Limit & Circulator	Horizontal	—
L4081B1047	High Limit and Circulator	High limit: 10 F fixed; low limit: 10-25 F adj.	1 1/2 in.	38 mm	3/4 in. - 14 NPT	SPST: High Limit & Circulator	Horizontal	—
L4081B1096	High Limit and Circulator	10 F fixed	3 in.	76 mm	—	SPST: High Limit & Circulator	Horizontal	—
* L6081A1010	High and Low limit	10 F fixed	3 in.	76 mm	3/4 in. - 14 NPT	—	Horizontal	3 in. insertion well.
* L6081A1036	High and Low limit	High limit: 10 F fixed; low limit: 10-25 F adj.	1 1/2 in. to 4 in.	38 mm	3/4 in. - 14 NPT	—	Horizontal	—

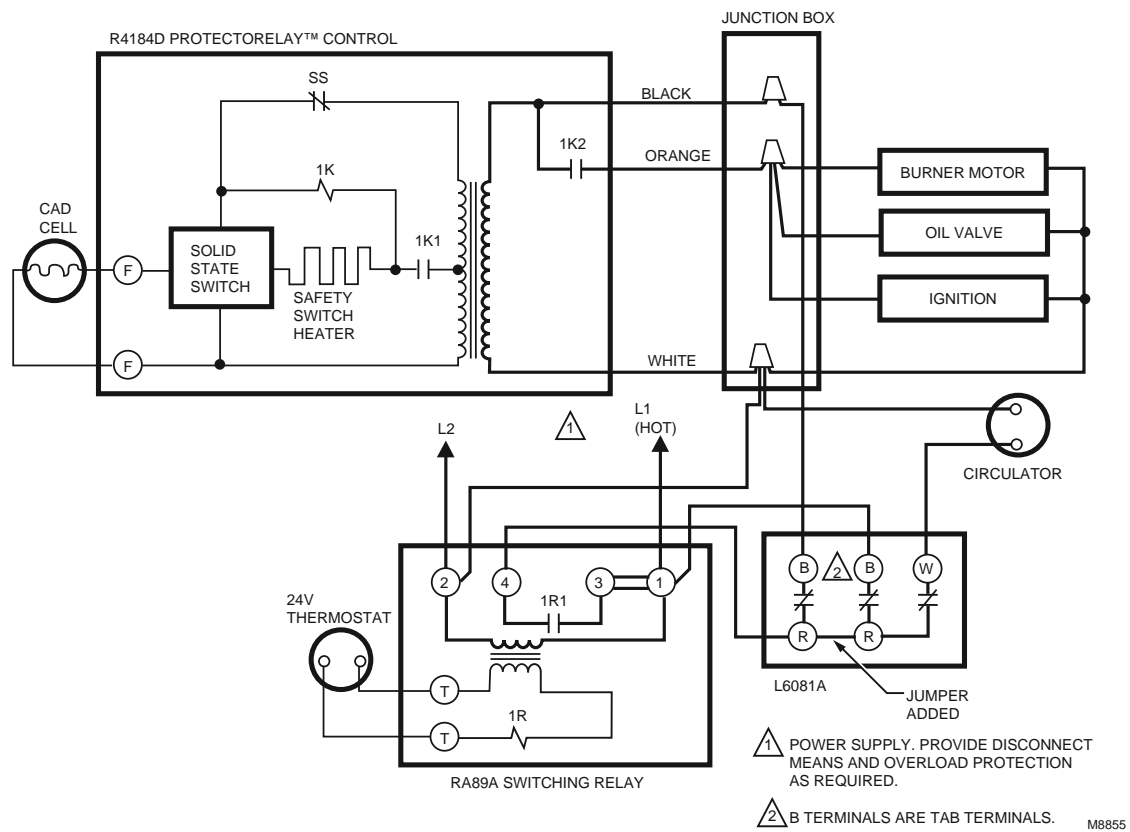
\* TRADELINE models • SUPER TRADELINE models

### Dimensions in inches (millimeters)



M8854

# Aquastat Controllers



## L8124 Triple Aquastat® Relay



Immersion-type controllers that combine high limit protection with low limit and circulator control in forced hydronic heating systems, including domestic hot water service.

- Immersion-type controllers that combine high limit protection with low limit and circulator control in forced hydronic heating systems.
- Provide multizone control by using a separate circulator and R845 Relay for each zone.
- Include diaphragm powerhead and Micro Switch™ assembly that respond to temperature changes in boiler water.
- Mount directly to boiler.
- Select models include large transformers and extra terminals for supplying power to low voltage zone valves.
- Require 24 Vac thermostat with heat anticipator set at 0.2 A (plus current draw of gas valve on L8124E).
- TRADELINE models include tube of heat conductive compound and range stops.

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**Voltage:** 120 Vac

**Maximum Ambient Temperature:** 150 F at switches, 265 F at sensing element. (66 C at switches, 129 C at sensing element.)

**Operating Range, High Limit:** 130 F to 240 F adj. (54 C to 116 C adj.)

**Operating Range, Low Limit:** 110 F to 220 F adj. (43 C to 104 C adj.)

**Maximum Operating Pressure:** 200 psi on outside of immersion well, 100 psi on capsule if inserted directly. (1378 kPa on outside of immersion well, 690 kPa on capsule if inserted directly.)

**Operating Humidity Range (% RH):** 0 to 95% RH, non-condensing

**Approvals:**

**Canadian Standards Association:** Certified: File No. LR1620, Guide No. 400-E-O

**Underwriters Laboratories, Inc.** UL Listed (models with well): File No. MP466, Guide No. MBPR; UL Component Recognized (models without well): File No. MP466, Guide No. MBPR2

	Electrical Ratings			
	burner		circulator	
	AFL	ALR	AFL	ALR
<b>L8124A</b>	3.7 A @ 240 Vac; 7.4 A @ 120 Vac	22.2 A @ 240 Vac; 44.4 A @ 120 Vac	3.7 A @ 240 Vac; 7.4 A @ 120 Vac	22.2 A @ 240 Vac; 44.4 A @ 120 Vac
<b>L8124B, C, E, G, L</b>	Line Voltage: 7.4 A @ 120 Vac; 3.7 A @ 240 Vac	Line Voltage: 44.4 A @ 120 Vac; 22.7 A @ 240 Vac	3.7 A @ 240 Vac; 7.4 A @ 120 Vac	22.7 A @ 240 Vac; 44.4 A @ 120 Vac

### Replacement Parts:

**L7224U1002** 120 Vac Oil Electronic Aquastat® Controller with Enviracom communication and troubleshooting Leds

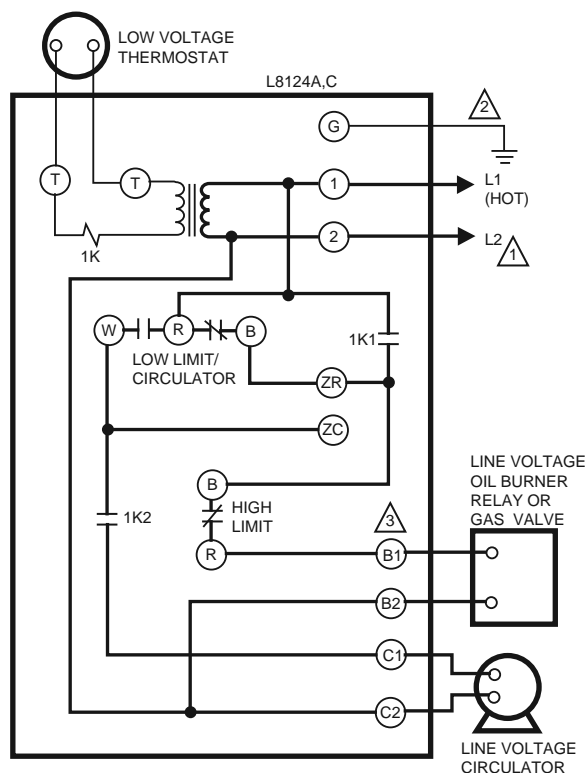
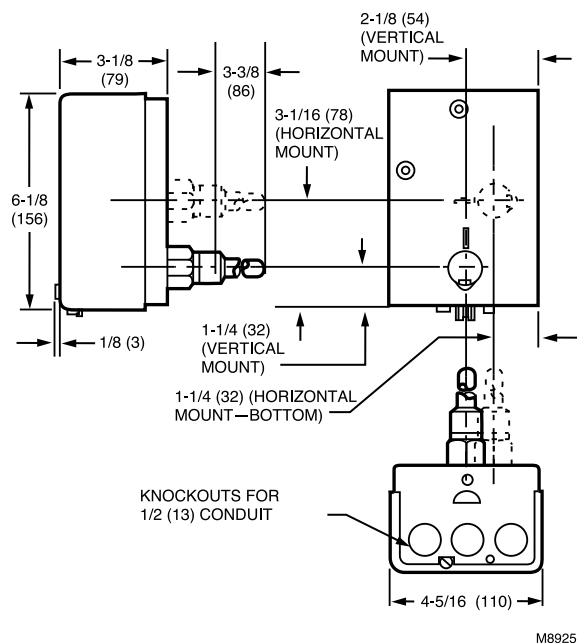
Product Number	Application	Differential Temperature	Insulation Depth		Switching Action	Mounting	Includes
		(F)	(inch)	(mm)			
<b>L8124A1007</b>	High Limit Protection, Low Limit and Circulation Control	High limit: 10 F fixed; low limit: 10-25 F adj.	1 1/2 in.	38 mm	—	Vertical Mount	3 in. insertion well.
<b>L8124A1015</b>	High Limit Protection, Low Limit and Circulation Control	High limit: 10 F fixed; low limit: 10-25 F adj.	3 in.	76 mm	—	Vertical Mount	3 in. insertion well and ground screw.
* <b>L8124B1039</b>	Triple Aquastat Relay with High limit	High limit: 10 F fixed; low limit: 10-25 F adj.	—	—	SPST: High & Low Limit	Vertical Mount	—
<b>L8124C1003</b>	Triple Aquastat Relay with High limit	High limit: 10 F fixed; low limit: 10-25 F adj.	—	—	SPST: High & Low Limit	Horizontal	—
<b>L8124C1102</b>	High Limit Protection, Low Limit and Circulation Control	High limit: 10 F fixed; low limit: 10-25 F adj.	1 1/2 in. to 3 in. less well.	38 mm to 76 mm less well	—	Horizontal	—
* <b>L8124E1016</b>	Triple Aquastat Relay with High limit	High limit: 10 F fixed; low limit: 10-25 F adj.	—	—	SPST: High & Low Limit	Vertical Mount	—
<b>L8124G1020</b>	Triple Aquastat Relay with High limit	High limit: 10 F fixed; low limit: 10-25 F adj.	—	—	SPST: High & Low Limit	Vertical Mount	—
<b>L8124L1011</b>	Triple Aquastat Relay with High limit	High limit: 10 F fixed; low limit: 10-25 F adj.	—	—	SPST: High & Low Limit	Horizontal	—

\* TRADELINE models • SUPER TRADELINE models



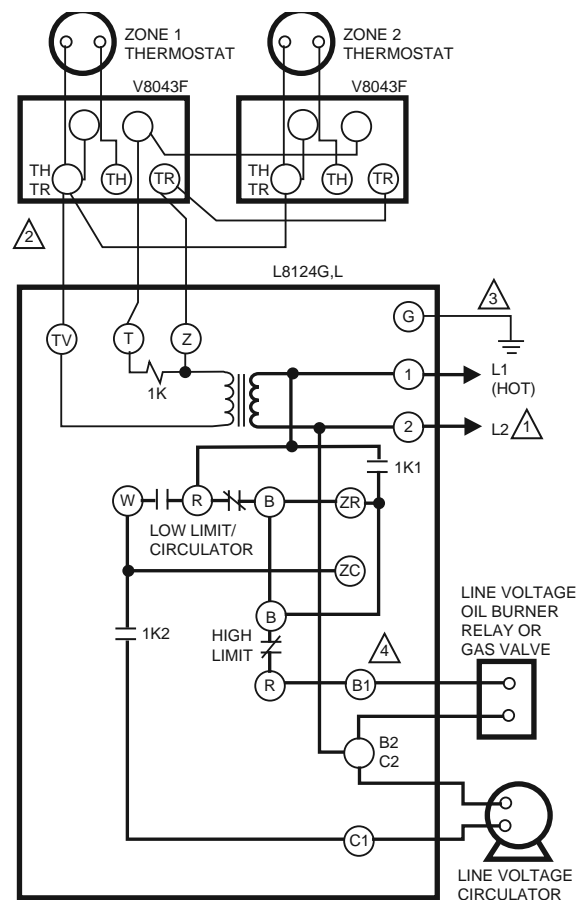
# Aquastat Controllers

Dimensions in inches (millimeters)



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 CONTROL CASE MUST BE CONNECTED TO EARTH GROUND. USE GROUNDING SCREW PROVIDED.
- 3 B1 IS 1/4 IN. TAB TERMINAL.

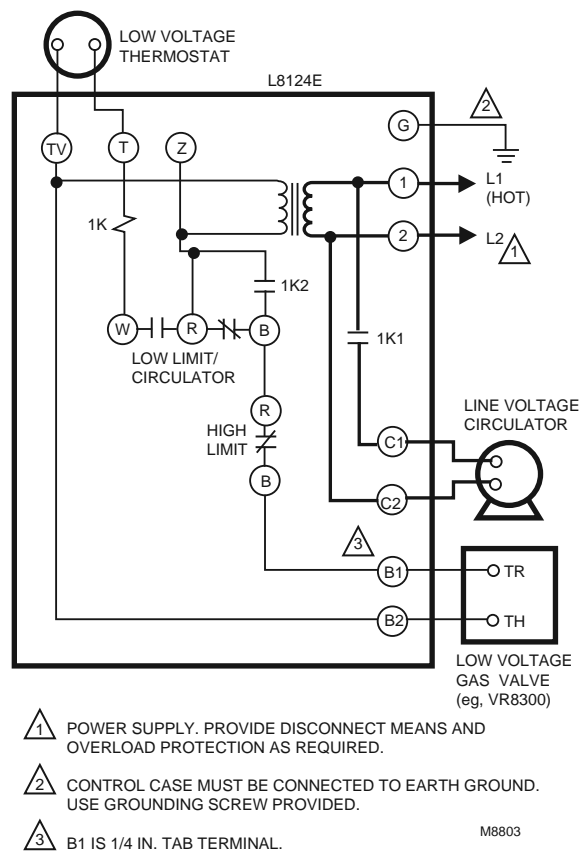
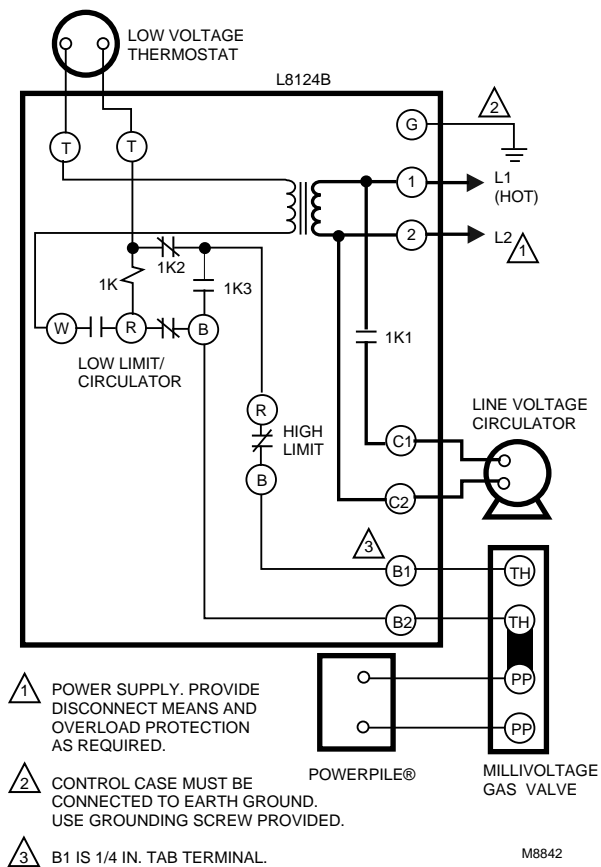
M8802



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 UP TO TWO V8043F ZONE VALVES CAN BE POWERED WITH L8124G,L. ADD ADDITIONAL TRANSFORMER FOR EVERY TWO OR LESS VALVES.
- 3 CONTROL CASE MUST BE CONNECTED TO EARTH GROUND. USE GROUNDING SCREW PROVIDED.
- 4 B1 IS 1/4 IN. TAB TERMINAL.

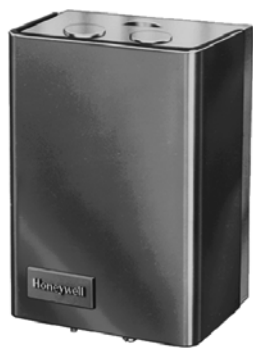
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Residential  
Combustion Controls



# Aquastat Controllers

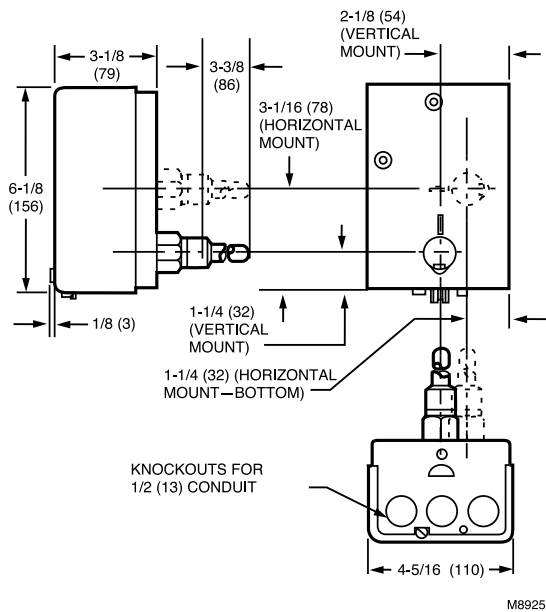
## L8148 Aquastat® Relay



Immersion-type controllers that combine high limit protection with switching relay control of burner and circulator motors.

- High limit opens burner circuit only.
- Include transformer and accessory terminals for adding a remote low limit controller.
- Case available for horizontal or vertical mounting.
- Requires a 24 Vac thermostat with heat anticipator set at 0.2A.
- TRADELINE models include well adapter, tube of heat conductive compound and range stops.

Dimensions in inches (millimeters)



Anticipator Setting: 0.2 A

Voltage: 120 Vac

Frequency: 60 Hz

Electrical Connections: Quick-Connect/Screw

Maximum Ambient Temperature: 150 F with 1.2 A 24 V load; 77 F with 1.4 A 24 V load (66 C with 1.2 A 24 V load; 25 C with 1.4 A 24 V load)

Setpoint Temperature Range: 240 F (116 C)

Operating Range, High Limit: 120 F to 240 F (54 C to 116 C)

Maximum Operating Pressure: Immersion Well: 255 psi (Immersion Well: 1757 kPa)

Operating Humidity Range (% RH): 0 to 95% RH, non-condensing

Approvals:

Canadian Standards Association: Certified: File No. LR1620, Guide No. 400-E-O

Underwriters Laboratories, Inc. UL Listed: File No. MP466, Vol. 13, Sec. 2, Guide No. MBPR2.

Electrical Ratings							
		(AFL)	(burner AFL)	(burner ALR)	(burner millivolt)	(circulator AFL)	(circulator ALR)
L8148A	—	—	Line Voltage: 7.4 A @ 120 Vac; 3.7 A @ 240 Vac	Line Voltage: 44.4 A @ 120 Vac; 22.7 A @ 240 Vac	0.25 A @ 1/4 to 12 Vdc	3.7 A @ 240 Vac; 7.4 A @ 120 Vac	22.2 A @ 240 Vac; 44.4 A @ 120 Vac
L8148E	0.25 A @ 0.25 to 12 Vdc	22.2A @ 240 Vac; 44.4A @ 120 Vac	Low Voltage: 0.8 A max. @ 24 Vac; Line Voltage: 7.4 A @ 120 Vac; 3.7 A @ 240 Vac	Line Voltage: 44.4 A @ 120 Vac; 22.7 A @ 240 Vac	0.25 A @ 1/4 to 12 Vdc	3.7 A @ 240 Vac; 7.4 A @ 120 Vac	22.7 A @ 240 Vac; 44.4 A @ 120 Vac
L8148J	—	—	3.7 A @ 240 Vac; 7.4 A @ 120 Vac	22.2 A @ 240 Vac; 44.4 A @ 120 Vac	0.25 A @ 1/4 to 12 Vdc	3.7 A @ 240 Vac; 7.4 A @ 120 Vac	22.2 A @ 240 Vac; 44.4 A @ 120 Vac

Product Number	Application	Differential Temperature	Capillary Length		Insulation Depth		Switching Action	Mounting	Includes
		(F)	(inch)	(mm)	(inch)	(mm)			
* L8148A1017	High Limit	8 F fixed	4 1/2 in.	114 mm	1 1/2 in. to 3 in. less well	38 mm to 76 mm less well	SPST: High Limit & Circulator	Horizontal	—
* L8148E1265	High Limit	15 F fixed	4 1/2 in.	114 mm	1 1/2 in. to 3 in. less well	38 mm to 76 mm less well	SPST: High Limit & Circulator	Vertical Mount	Molex® plug for use with vent damper, includes heat-conductive compound. Molex® plug for use with vent damper, includes heat-conductive compound.

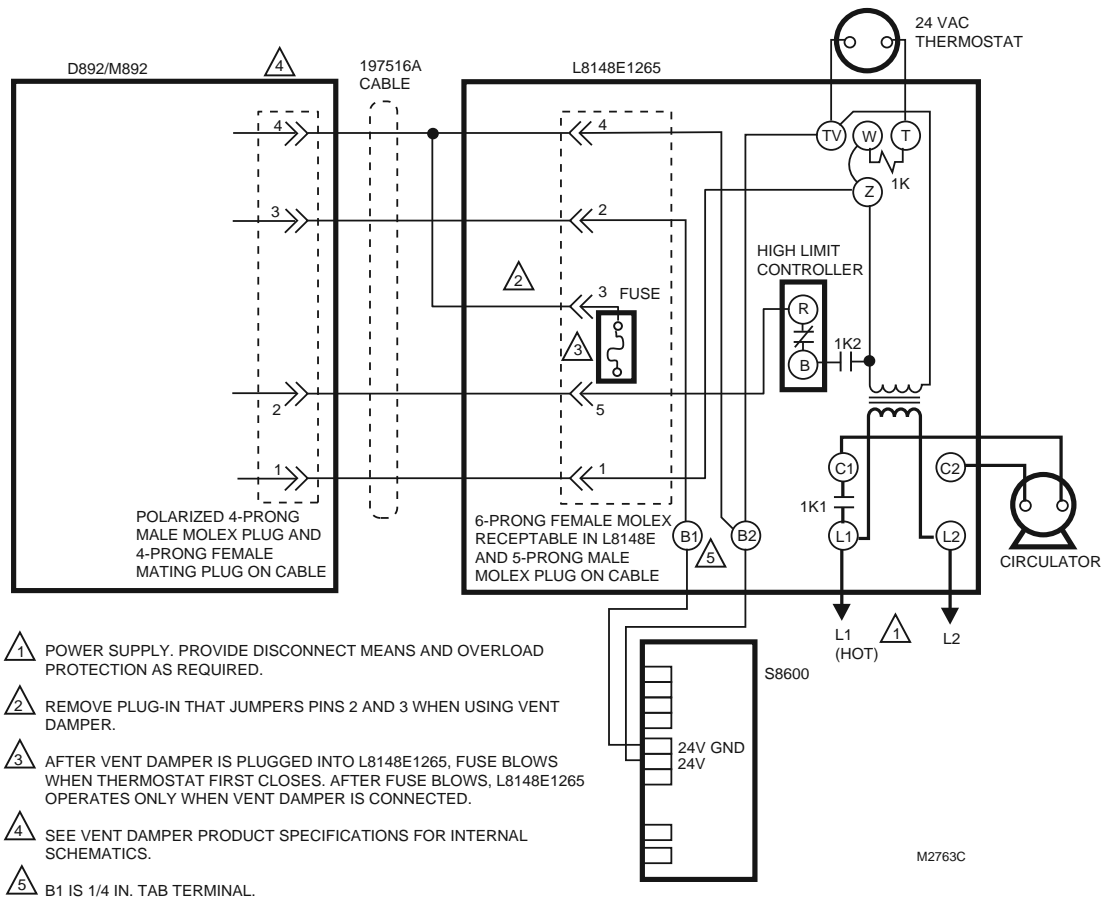
\* TRADELINE models • SUPER TRADELINE models

# Aquastat Controllers

Product Number	Application	Differential Temperature	Capillary Length		Insulation Depth		Switching Action	Mounting	Includes
		(F)	(inch)	(mm)	(inch)	(mm)			
L8148E1299	High Limit	15 F fixed	4 1/2 in.	114 mm	1 1/2 in. to 3 in. less well	38 mm to 76 mm less well	SPST: High Limit & Circulator	Vertical Mount	50 VA transformer and heat conductive compound.
* L8148J1009	Aquastat Relay	8 F fixed	4 1/2 in.	114 mm	1 1/2 in. to 3 in. less well	38 mm to 76 mm less well	SPST: High Limit & Circulator	Horizontal or Vertical	—

\* TRADELINE models • SUPER TRADELINE models

Residential  
Combustion Controls



## 202



L7224U Oil Electronic Aquastat® Controller



The L7224U Oil Electronic Aquastat® Controller provides electronic temperature sensing in a UL limit-rated controller with a single sensing probe. The L7224U controls the circulator, oil burner and boiler temperature. The L7224U replaces the L8124A, L8124C, L7124U, L7148A, L7248A,C, L7224A,C, and L8148A Controllers. The Aquastat Controller is intended for use in residential-type applications. The L7224U provides status and diagnostic information through an LED display combined with LED lights to enhance the diagnostic process.

The L7224U is “Outdoor Temperature Reset” ready, which is enabled when connected to the 50022037-002 Outdoor Reset Module and C7089U Outdoor Temperature Sensor. The L7224U can also interface with the 50022037-005 Domestic Hot Water Module for prioritization of a domestic hot water call for heat. Ideal for indirect tank applications.

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**Dimensions, Approximate:** 7 1/8 in. high x 4 1/4 in. wide x 2 5/8 in. deep (181 mm high x 109 mm wide x 67 mm deep)  
**Maximum Power Consumption:** 2000 VA  
**Voltage:** 120 Vac  
**Frequency:** 60 Hz  
**Maximum Ambient Temperature:** 150 F (66 C)  
**Minimum Ambient Temperature:** -30 F (-9 C)  
**Operating Range, High Limit:** 130 F to 240 F (54 C to 116 C)  
**Operating Range, Low Limit:** 110 F to 220 F (43 C to 104 C)

**Operating Humidity Range (% RH):** 0 to 95% RH, non-condensing

**Electrical Ratings**  
**(burner AFL):** 7.4 A @ 120 Vac  
**(burner ALR):** 44.4 A inrush  
**(circulator AFL):** 7.4 A @ 120 Vac  
**(circulator ALR):** 44.4 A inrush

**Approvals:**  
**Underwriters Laboratories, Inc.** Recognized

Product Number	Application	Differential Temperature	Mounting	Includes
		(F)		
L7224R1000	Oil Aquastat Controller with Outdoor Reset Module	High limit: 5-20 F adj.; low limit: 10-25 F adj.	Well mount, horizontal or vertical position, or flush mounted remote from the well.	W8735S1000
L7224U1002	Oil Aquastat Controller	High limit: 5-20 F adj.; low limit: 10-25 F adj.	Well mount, horizontal or vertical position, or flush mounted remote from the well.	—

# Aquastat Controllers

## R8182 Combination Protectorelay® and Hydronic Heating Controllers

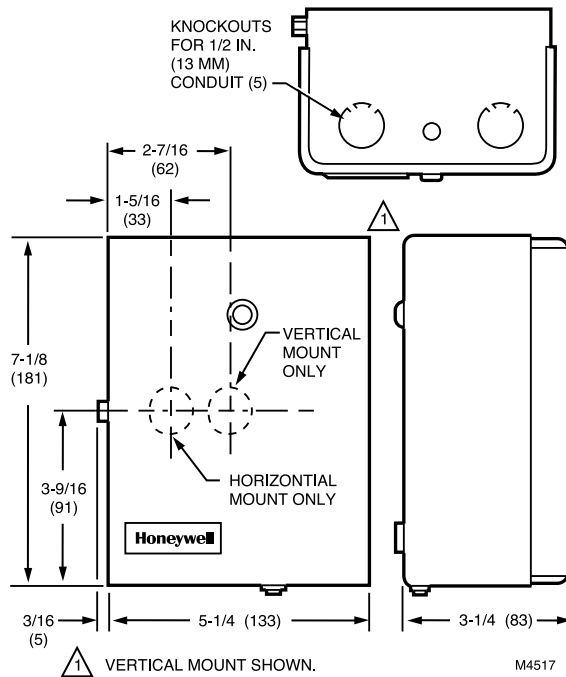


Junction Box Mount

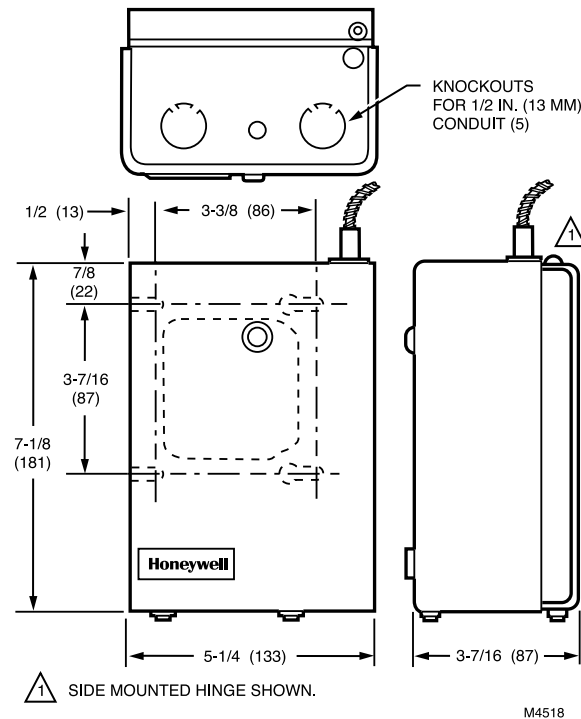
Immersion type Aquastat controller and oil burner primary control provides high limit and low limit/circulator control for oil-fired hydronic heating systems.

- Use in intermittent ignition applications.
- Capable of zone control with zone valves.
- Circulator zone control with ZC and ZR terminals on R8182D,E,H,J.
- 8\*Flame failure during the running cycle results in a 45 second attempt to restart.
- If unsuccessful, safety shutoff occurs, requiring manual reset before burner can be restarted.
- R8182D,E,F mount directly on burner; R8182H,J mount on 4 x 4 in. junction box and include 5 ft (1.5 m) armored capillary with remote sensor.
- C554A Cadmium Sulfide Flame Detector and a 24 Vac thermostat required.

### Dimensions in inches (millimeters)



**Anticipator Setting:** 0.2 A  
**Maximum Power Consumption:** 9 W  
**Voltage:** 120 Vac  
**Frequency:** 60 Hz  
**Timing Safety Switch:** 45 sec  
**Maximum Ambient Temperature:** 250 F at element (121 C at element)  
**Operating Range, High Limit:** 130 F to 240 F (54 C to 116 C)  
**Operating Range, Low Limit:** 110 F to 220 F (43 C to 104 C)  
**Maximum Operating Pressure:** 200 psi on immersion well; 100 psi direct immersion. (1378 kPa on immersion well; 90 kPa direct immersion.)



**Operating Humidity Range (% RH):** 0 to 95% RH, non-condensing

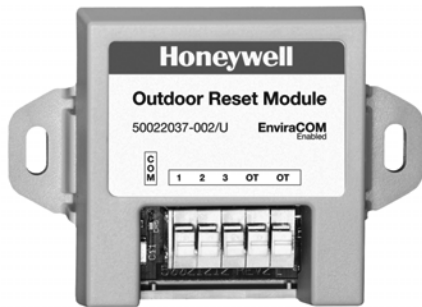
**Electrical Ratings**  
**(ignition):** 360 VA  
**(burner AFL):** 4.4 A @ 120 Vac  
**(burner ALR):** 26.4 A inrush

**Approvals:**  
**Canadian Standards Association:** Certified: File No. LR95329-1  
**Underwriters Laboratories, Inc.** UL Listed: File No. listed: MP268, Vol. 3, 4 (R8182D,E,F), Vol. 37 (R8182H,J), Sec. 1.

# Aquastat Controllers

	Product Number	Differential Temperature	Insulation Depth		Mounting	Includes
		(F)	(inch)	(mm)		
*	<b>R8182D1079</b>	High limit: 10 F fixed; Low limit/circulator: 10 F to 25 F adj.	1 1/2 in.	38 mm	Vertical Mount	Auxiliary ZC and ZR terminals may be used to provide circulator zone control through an R845A Switching Relay. Heat-conductive compound and vertical case.
*	<b>R8182D1111</b>	High limit: 10 F fixed; Low limit/circulator: 10 F to 25 F adj.	1 1/2 in.	38 mm	Horizontal	Auxiliary ZC and ZR terminals may be used to provide circulator zone control through an R845A Switching Relay. Heat-conductive compound and vertical case.
*	<b>R8182H1070</b>	High limit: 10 F fixed; Low limit/circulator: 10 F to 25 F adj.	1 1/2 in.	38 mm	Junction box mount	Auxiliary ZC and ZR terminals may be used to provide circulator zone control through an R845A Switching Relay. Heat-conductive compound and horizontal case.
* TRADELINE models • SUPER TRADELINE models						

## Outdoor Reset



The AquaReset™ Outdoor Reset Module, when connected to the C7089U Outdoor Sensor, works with any AquaReset enabled Aquastat® such as the L7224/48 via the EnviraCOM™ 3-wire bus to optimize boiler efficiency. The Outdoor Reset Module enables efficiency Aquastat functionality, such as Outdoor Temperature Reset, a Boost function, and a Warm Weather Shutdown function to generate average operational savings of up to 15%.

- Enables Boiler Outdoor Temperature Reset
- Enables Warm Weather Shutdown
- Enables Boost Override
- Easy push wire terminals that provide a secure lock with no need to screw in wires.
- Simple low-voltage, 5-wire installation (3 EnviraCOM, 2 temperature sensor)
- EnviraCOM™ Enabled

### Dimensions, Approximate:

2.410 in. high x 3.385 in. wide x .920 in. deep

Electrical Ratings: 24 Vac, 60 Hz

Maximum Ambient Temperature: 150 F (66 C)

Minimum Ambient Temperature: -30 F (-9 C)

Operating Humidity Range (% RH): 0 to 95% RH, non-condensing

Product Number	Mounting	Includes
<b>W8735S1000</b>	Wall Mounted in any orientation	C7089U1006 Outdoor Sensor, Outdoor Reset Module
<b>W8735S1008</b>	Wall Mounted in any orientation	Water Pipe Temperature Sensor, Domestic Hot Water Module

## Single and Multi-function Aquastat® Parts



Product Number	Type	Description	Bulb Diameter (inch)	Lead Length (inch)	Leadwire Ending	Leadwire Temperature	Used With
<b>120650</b>	—	Heat Conductive Grease 1/2 oz.	—	—	—	—	Well Assembly
<b>198799Z</b>	Sensor	Outdoor or Supply sensor with 42 in. lead for AQ475, AQ675 or AQ775	3/8 in.	42 in.	Strip & Retain	125 C	—
<b>32004955-005</b>	Sensor	Sensor Assembly for use with L71XX series of Electronic Aquastats	—	48 in.	—	—	—

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# Well Assemblies

## Well Assemblies

Product Number	Description	Materials	Insertion Length	Shell (internal diameter)	Spud Thread Size	Includes	
121371A	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 1 1/2 in. NPT. Includes mounting clamp.	Copper	1 1/2 in.	3/8 in.	1/2 in. x 14 NPT	121371 Mounting Clamp	
121371AA	Well clamp assembly with clamp capillary 21371 (1) screws 804644 and nuts 60156	—	—	—	—	121371 Mounting Clamp, Spud Set screw for armored capillary, Plug, and Nut.	
121371B	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 1 1/2 in. (38 mm) insulation, 3/4 in. NPT. Includes mounting clamp.	Copper	1 1/2 in.	3/8 in.	3/4 in. x 14 NPT	121371 Mounting Clamp	
121371E	Stainless steel. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 1 1/2 in. (38 mm) insulation, 1/2 in. (13 mm) NPT. Includes mounting clamp.	Stainless Steel	1 1/2 in.	3/8 in.	1/2 in. x 14 NPT	121371 Mounting Clamp	
121371L	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 3 in. (76 mm) insulation, 1/2 in. NPT. Includes mounting clamp.	Copper	3 in.	3/8 in.	1/2 in. x 14 NPT	121371 Mounting Clamp	
121371M	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 1 1/2 in. (38 mm) insulation, 3/4 in. NPT. Includes mounting clamp.	Copper	3 in.	3/8 in.	3/4 in. x 14 NPT	121371 Mounting Clamp	
123869A	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 1 1/2 in. (38 mm) insulation, 1/2 in. NPT.	Copper	1 1/2 in.	3/8 in.	1/2 in. x 14 NPT	—	
123870A	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 1 1/2 in. (38 mm) insulation, 3/4 in. NPT.	Copper	1 1/2 in.	3/8 in.	3/4 in. x 14 NPT	—	
123871A	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 3 in. (76 mm) insulation, 3/4 in. NPT.	Copper	3 in.	3/8 in.	3/4 in. x 14 NPT	—	
123872A	Copper. Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 3 in. (76 mm) insulation, 1/2 in. NPT.	Copper	3 in.	3/8 in.	1/2 in. NPT	—	
124299AA	Copper. Bulb size: 3/8 in. (10 mm). Well size: 3 in. (76 mm) insertion, 1 1/2 in. (38 mm) insulation, 3/4 in. NPT. Includes set screw with spud for armored capillary with plug.	Copper	1 1/2 in.	3/8 in.	3/4 in. x 14 NPT	Set screw in spud for armored capillary with plug	
138134B/0021	Bulb size: 3/8 in. x 3 in. (10 mm x 76 mm). Well size: 3 in. (76 mm) insertion, 3/4 in. NPT	Zinc plated	4 1/2 in.	—	3/4 in. x 14 NPT	—	

# AQUATROL Zoning System

## AQ250 Electronic Relay Boiler Control Panel for Hydronic Zoning System



**Application:** Boiler control for zoned hydronic systems  
**Dimensions, Approximate:** 13 in wide x 8 in. high x 3 3/8 in deep (33 cm wide x 20.3 cm high x 8.5 cm deep)  
**Power Supply:** 120V/60Hz  
**User Interface (Setting, Programming):** (DIP Switches)  
**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals  
**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)  
**Thermostat Compatibility:** AQ1000 Series 2-wire communicating thermostats and most digital thermostats  
**Zone Module Thermostat input:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating with power link to AQ1000 series thermostat.  
**Boiler Heat Post Purge:** 30 seconds (sent to DHW tank or Zone of Greatest Demand - selectable)  
**Boiler (T-T) Output Rating:** 24 Vac, 0.5A, 12VA  
**DHW Demand Input:** External dry contacts connection only  
**Pump/Valve exercise:** 30 seconds per 2 weeks of space heating inactivity

The AQ250 family of AQUATROL Boiler Controls provides simplified, energy-efficient control of single temperature, residential hydronic heating systems. The AQ250 easily converts a single zone heating system into a room-by-room comfort control system, or upgrades a basic, relay-logic zoning system to intelligent Zone of Greatest Demand control for increased energy efficiency with reduced boiler cycling. AQ250 boiler controls can ensure ample supply of hot water for both space heating and priority generation of domestic hot water for bathing, dishes and laundry.

- Controls up to 2 stages of heat from a single thermostat.
- Use with AQ1000 2-wire communicating thermostats, or most dry contact digital thermostats.
- Zoning Control for up to 4 zones as shipped; can be expanded to a total of 16 zones with AQ255 or AQ257 expansion zoning panels and up to 64 zones when used with AQ254 Add-A-Temp panels.
- Line or low-voltage output for zoning equipment (pumps or valves).
- Zone synchronization through Zone or Greatest Demand control.
- Domestic hot water priority and priority override protection.
- Boiler short cycling protection.
- Boiler post purge.
- Freeze protection.
- Pump/valve exercise.
- Boiler shock prevention from cold water returning to boiler.
- Automated test feature for quick start-up and simplified troubleshooting.
- Integral 38 VA transformer with self-resetting electronic fuse.

**Auxiliary Pump Output Rating:** Dry contact output, 120 Vac/250 Vac 5A, 1/3 HP

**Zone Output Contact Rating:** Pumps: 120 Vac/250 Vac, 5A, 1/3 HP  
Valves: 24 Vac, 0.5 A, 12 VA

**ZR-ZC Contact Rating:** 120 to 240 Vac, 1/3 HP

**Sensor Temperature Rating:** -58 F to +230 F (-50 C to +110 C)

**Supply/Return Sensor:** Lead Length: 10 ft. (3050 mm). 10 kilohm NTC thermistor at 25 C (77 F)  $\pm 0.5F$  ( $\pm 0.3C$ ) up to 500 ft (150 M) using 18 AWG or larger wire

**Heat Demand (Thermostat R-W) Input:** External dry contacts connection only

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II

**R-C Output (on transformer):** 38 VA, 24 Vac Class II

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

**Weight:** 4.9 lbs (2.3 kg)

**Approvals:**

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

Hydronic Controls

Product Number	Type of Zoning Devices Controlled	Number of Zones Controlled	Boiler Pump Output Rating	DHW Pump/Valve Output Rating	Replacement Parts
AQ25042B	Zone pumps or 2-wire valves (line voltage)	4	120 Vac/250 Vac 5A, 1/3HP	120 Vac/250 Vac 5A, 1/3HP	AQ15000B boiler control module AQ12C11 supply/return/mixed loop sensor AQ10X38 24 Vac 38 VA transformer AQ15540B 4-zone pump expansion module
AQ25044B	Zone valves with end switches	4	120 Vac/250 Vac 5A, 1/3HP	120 Vac/250 Vac 5A, 1/3HP	AQ15000B boiler control module AQ15740B 4-zone valve with end switch expansion module AQ12C11 supply/return/mixed loop sensor AQ10X38 24 Vac 38 VA transformer

# AQUATROL Zoning System

## AQ25A Programmable Relay Control Panel for Hydronic Zoning System



The AQ25A family of AQUATROL Programmable Relay Boiler Controls provides simplified, energy-efficient control of single-temperature, residential hydronic heating systems. The AQ25A easily converts a single zone heating system into a room-by-room comfort control system, or upgrades a basic, relay-logic zoning system to intelligent Zone of Greatest Demand control for increased energy efficiency with reduced boiler cycling. AQ25A boiler controls can ensure ample supply of hot water for both space heating and priority generation of domestic hot water for bathing, dishes and laundry.

- Use with AQ1000 2-wire dry contact communicating thermostats and most digital thermostats.
- 0-10 Vdc modulating output for driving a modulating/condensing boiler.

**Application:** Boiler control for zoned hydronic systems

**Dimensions, Approximate:** 16 1/2 in wide x 8 in. high x 3 3/8 in deep (42 cm wide x 20.3 cm high x 8.5 cm deep)

**Power Supply:** 120V/60Hz

**User Interface (Setting, Programming):** (LCD Display and a 7 button Key Pad) (DIP Switches on zoning modules)

**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals

**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)

**Thermostat Compatibility:** AQ1000 Series 2-wire communicating thermostats and most digital thermostats

**Zone Module Thermostat input:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating with power link to AQ1000 series thermostat.

**Setback Program:** 7 day, up to 2 setback periods/day.

**Boiler Heat Post Purge:** Off, 10 seconds to 30 minutes (factory default is 30 seconds)

**Boiler (T-T) Output Rating:** 24 Vac, 0.5A, 12VA

**Boiler Differential:** 2F to 41F (1C to 23C), or Auto (minimum 2 minutes on time)

**DHW Demand Input:** External dry contacts connection only

**Pump/Valve exercise:** 30 seconds per 2 weeks of space heating inactivity

- Displays outdoor temperature on all AQ1000 Series thermostats when used with an AQ12C10 outdoor sensor (included).
- Intuitive programming interface and armchair programming (can be programmed at your desk and taken to the job site "ready-to-install").
- Customizable control settings and schedules allow for greater level of control and comfort.
- Controls up to 2 stages of heat from a single thermostat.
- Central programming of zone set points and setbacks
- Zoning Control for up to 4 zones as shipped; can be expanded to a total of 16 zones with AQ255 or AQ257 expansion zoning panels, and up to 64 zones when used with AQ254 Add-a-Temperature panels.
- Zone synchronization through Zone of Greatest Demand control.
- Domestic hot water priority and priority override protection.
- Line or low-voltage output for zoning equipment (pumps or valves).
- Boiler short cycling protection.
- Boiler post purge.
- Freeze protection.
- Pump/valve exercise.
- Boiler shock prevention from cold water returning to boiler.
- Automated test and purge feature for quick start-up and simplified troubleshooting.
- Integral 38 VA transformer with self resetting electronic fuse.
- 2 hour power supply (super-capacitor) to retain day and time settings during power outage.
- Non-volatile EPROM memory retains program settings during power outage.

**Auxiliary Pump Output Rating:** Dry contact output, 120 Vac/250 Vac 5A, 1/3 HP

**Auxiliary Low Voltage Output Rating:** 24 Vac, 0.5A, 12VA

**Auxiliary (Demand) Input:** External dry contacts connection only

**Zone Output Contact Rating:** Pumps: 120 Vac/250 Vac, 5A, 1/3 HP  
Valves: 24 Vac, 0.5 A, 12 VA

**Sensor Temperature Rating:** -58 F to +230 F (-50 C to +110 C)

**Supply/Return Sensor:** Lead Length: 10 ft. (3050 mm). 10 kilohm NTC thermistor at 25 C (77 F)  $\pm 0.5F$  ( $\pm 0.3C$ ) up to 500 ft (150 M) using 18 AWG or larger wire

**Heat Demand (Thermostat R-W) Input:** External dry contacts connection only

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II (input on Control and Zoning Modules)

**R-C Output (on transformer):** 38 VA, 24 Vac Class II

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

**Weight:** 5.7 lbs (2.6 kg)

**Approvals:**

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

Product Number	Type of Zoning Devices Controlled	Number of Zones Controlled	Boiler Pump Output Rating	DHW Pump/Valve Output Rating	Replacement Parts
AQ25A42B	Zone pumps or 2-wire valves (line voltage)	4	120 Vac/250 Vac 5A, 1/3HP	120 Vac/250 Vac 5A, 1/3HP	AQ15A00B boiler control module AQ12C11 supply/return/mixed loop sensor AQ12C10 outdoor sensor AQ10X38 24 Vac 38 VA transformer AQ15540B 4-zone pump expansion module
AQ25A44B	Zone valves with end switches	4	120 Vac/250 Vac 5A, 1/3HP	120 Vac/250 Vac 5A, 1/3HP	AQ15A00B boiler control module AQ15740B 4-zone valve with end switch expansion module AQ12C11 supply/return/mixed loop sensor AQ12C10 outdoor sensor AQ10X38 24 Vac 38 VA transformer

## AQ251 Electronic Boiler Reset Control Panel for Hydronic Zoning System



The AQ251 family of AQUATROL Boiler Reset Controls provides simplified, energy-efficient outdoor temperature compensated control of single temperature, residential hydronic heating systems. The AQ251 easily converts a single zone heating system into a room-by-room comfort control system, or upgrades a basic, relay-logic zoning system to intelligent Zone of Greatest Demand control with outdoor reset for in-creased energy efficiency with reduced boiler cycling. AQ251 boiler controls can ensure ample supply of hot water for both space heating and priority generation of domestic hot water for bathing, dishes and laundry.

**Application:** Boiler reset control for hydronic zoning system

**Dimensions, Approximate**

**AQ25110B:** 13 in wide x 8 in. high x 3 3/8 in deep  
(33 cm wide x 20.3 cm high x 8.5 cm deep)

**AQ25142B and AQ25144B:** 16 1/2 in wide x 8 in. high x 3 3/8 in deep  
(42 cm wide x 20.3 cm high x 8.5 cm deep)

**Power Supply:** 120V/60Hz

**User Interface (Setting, Programming):** (LCD Display and a 7 button Key Pad)

**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals

**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)

**Thermostat Compatibility:** AQ1000 Series 2-wire communicating thermostats and most digital thermostats

**Setback Program:** 7 day, up to 2 setback periods/day.

**Boiler Design Temperature:** 80F to 210F (26C to 99C)

**Boiler (Supply) Min. Control Temperature:** OFF, 59F to 180F (OFF, 15C to 82C)

**Boiler (Supply) Max. Control Temperature:** (OFF, 120F to 225 F)  
OFF, 49C to 107 C

**Boiler Heat Post Purge:** Off, 10 seconds to 30 minutes (factory default is 30 seconds)

**Boiler (T-T) Output Rating:** 24 Vac, 0.5A, 12VA

**Boiler Differential:** 2F to 41F (1C to 23C), or Auto (minimum 2 minutes on time)

**DHW Demand Input:** External dry contacts connection only

**Outdoor Low Design Control Temperature:** -60F to 32F  
(-51 C to 0 C)

- Use with AQ1000 2-wire communicating thermostats (AQ25142B and AQ25144B) or most digital dry contact thermostats (AQ25110B, AQ25142B, and AQ25144B).
- 0-10 Vdc modulating output for driving a modulating/condensing boiler.
- Displays outdoor temperature on all AQ1000 thermostats when used with an AQ12C10 outdoor sensor (included).
- Intuitive programming interface and armchair programming (can be programmed at your desk and taken to the job site "ready-to-install")
- Customizable control settings and schedules allow for greater level of control and comfort.
- Central programming of zone set points and setback.
- Controls up to 2 stages of heat from a single thermostat.
- Zoning Control for up to four zones as shipped; can be expanded to a total of 16 zones with AQ255 or AQ257 expansion zoning panels, and up to 64 zones by using AQ254 Add-a-Temperature expansion panels.
- Outdoor temperature compensation (reset), or Load reset based on indoor temperature feedback.
- Zone synchronization through Zone of Greatest Demand control.
- Domestic hot water priority and priority override protection.
- Line or low-voltage output for zoning equipment (pumps or valves).
- Boiler short cycling protection.
- Boiler post purge.
- Freeze protection.
- Pump/valve exercise.
- Boiler shock prevention from cold water returning to boiler.
- Automated test and purge feature for quick start-up and simplified troubleshooting.
- Integral 38 VA transformer with self resetting electronic fuse.
- 2 hour power supply (super-capacitor) to retain day and time settings during power outage.
- Non-volatile EPROM memory retains program settings during power outage.

**Return Minimum Control Temperature:** 80 F to 180 F (27C to 82C)

**Pump/Valve exercise:** 30 seconds per 2 weeks of space heating inactivity

**Auxiliary Pump Output Rating:** Dry contact output, 120 Vac/250 Vac 5A, 1/3 HP

**Auxiliary Low Voltage Output Rating:** 24 Vac, 0.5A, 12VA

**Auxiliary (Demand) Input:** External dry contacts connection only

**WWSD (Warm Weather Shut Down) Temperature:** Off, 35 F to 100 F (Off, 1 C to 38 C)

**Sensor Temperature Rating:** -58 F to +230 F (-50 C to +110 C)

**Supply/Return Sensor:** Lead Length: 10 ft. (3050 mm). 10 kilohm NTC thermistor at 25 C (77 F)  $\pm 0.5F$  ( $\pm 0.3C$ ) up to 500 ft (150 M) using 18 AWG or larger wire

**Heat Demand (Thermostat R-W) Input:** External dry contacts connection only

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II (input on Control and Zoning Modules)

**R-C Output (on transformer):** 38 VA, 24 Vac Class II

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

**Weight**

**AQ25110B:** 4.9 lbs (2.3 kg)

**AQ25142B and AQ25144B:** 5.7 lbs (2.6 kg)

**Approvals:**

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

# AQUATROL Zoning System

Product Number	Type of Zoning Devices Controlled	Number of Zones Controlled	Boiler Pump Output Rating	DHW Pump/Valve Output Rating	Replacement Parts
AQ25110B	None	1 (Non-communicating)	120 Vac/250 Vac 5A, 1/3HP	120 Vac/250 Vac 5A, 1/3HP	AQ15100B boiler reset module AQ12C11 supply/return/mixed loop sensor AQ12C10 outdoor sensor AQ10X38 24 Vac 38 VA transformer
AQ25142B	Pumps or 2-wire valves	4	120 Vac/250 Vac 5A, 1/3HP	120 Vac/250 Vac 5A, 1/3HP	AQ15100B boiler reset module AQ12C11 supply/return/mixed loop sensor AQ12C10 outdoor sensor AQ10X38 24 Vac 38 VA transformer AQ15540B 4-zone pump expansion module
AQ25144B	Zone valves with end switches	4	120 Vac/250 Vac 5A, 1/3HP	120 Vac/250 Vac 5A, 1/3HP	AQ15100B boiler reset module AQ15740B 4-zone valve with end switch expansion module AQ12C11 supply/return/mixed loop sensor AQ12C10 outdoor sensor AQ10X38 24 Vac 38 VA transformer

## AQ252 Universal Injection/Mixing Boiler Reset Control Panel for Hydronic Zoning System



The AQ252 family of AQUATROL Universal Injection/Mixing Boiler Reset Controls provides simplified, energy-efficient outdoor temperature compensated control of single-temperature, residential hydronic heating systems. The AQ252 easily converts a single zone heating system into a room-by-room comfort control system, or upgrades a basic, relay-logic zoning system to intelligent Zone of Greatest Demand control with outdoor reset for increased energy efficiency with reduced boiler cycling. AQ252 boiler controls can ensure ample supply of hot water for both space heating and priority generation of domestic hot water for bathing, dishes and laundry.

**Application:** Controls one boiler and one mixing (either variable speed injection or floating valve mixing) loop in a hydronic zoning system.

**Dimensions, Approximate:** 16 1/2 in wide x 8 in. high x 3 3/8 in deep (42 cm wide x 20.3 cm high x 8.5 cm deep)

**Power Supply:** 120V/60Hz

**User Interface (Setting, Programming):** (LCD Display and a 7 button Key Pad)

**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals

**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)

**Thermostat Compatibility:** AQ1000 Series 2-wire communicating thermostats and most digital thermostats

**Zone Module Thermostat input:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating with power link to AQ1000 series thermostat.

**Setback Program:** 7 day, up to 2 setback periods/day.

**Boiler Design Temperature:** 80F to 210F (26C to 99C)

**Boiler (Supply) Min. Control Temperature:** OFF, 59F to 180F (OFF, 15C to 82C)

**Boiler (Supply) Max. Control Temperature:** (OFF, 120F to 225 F) OFF, 49C to 107 C

**Boiler Heat Post Purge:** Off, 10 seconds to 30 minutes (factory default is 30 seconds)

**Boiler (T-T) Output Rating:** 24 Vac, 0.5A, 12VA

**Boiler Differential:** 2F to 41F (1C to 23C), or Auto (minimum 2 minutes on time)

**DHW Demand Input:** External dry contacts connection only

**Outdoor Low Design Control Temperature:** -60F to 32F (-51 C to 0 C)

**Return Minimum Control Temperature:** 80 F to 180 F (27C to 82C)

**Variable Speed Injection Pump Output:** Triac modulated; 120 Vac, 2.1A, 1/6HP

**Pump/Valve exercise:** 30 seconds per 2 weeks of space heating inactivity

- Use with AQ1000 2-wire communicating thermostats or most digital dry contact thermostats.
- Controls one boiler loop and one mixed temperature loop.
- Use of variable speed injection pump or motorized mixing valve for mixed temperature loop control.
- 0-10 Vdc modulating output for driving a modulating/condensing boiler or a modulating mixing valve.
- Displays of outdoor temperature on all AQ1000 thermostats when used with an AQ12C10 outdoor sensor (included).
- Intuitive programming interface and armchair programming (can be programmed at your desk and taken to the job site "ready-to-install")
- Customizable control settings and schedules allow for greater level of control and comfort.
- Central programming of set points and setback.
- Controls up to 2 stages of heat from a single thermostat.
- Zoning Control for up to four zones as shipped; can be expanded to a total of 16 zones with AQ255 or AQ257 expansion zoning panels, and up to 64 zones by using AQ254 Add-a-Temperature expansion panels.
- Outdoor temperature compensation (reset), or Load reset based on indoor temperature feedback.
- Zone synchronization through Zone of Greatest Demand control.
- Domestic hot water priority and priority override protection.
- Line or low-voltage output for zoning equipment (pumps or valves).
- Boiler short cycling protection.
- Boiler post purge.
- Freeze protection.
- Pump/valve exercise.
- Boiler shock prevention from cold water returning to boiler.
- Automated test and purge feature for quick start-up and simplified troubleshooting.
- Integral 38 VA transformer with self resetting electronic fuse.
- 4 hours power supply (super capacitor) to retain day and time settings during power outage.
- Non-volatile EPROM memory retains program settings during power outage.

**Secondary Pump Output Rating:** 120 Vac 5A, 1/3HP

**Auxiliary Pump Output Rating:** Dry contact output, 120 Vac/250 Vac 5A, 1/3 HP

**Auxiliary Low Voltage Output Rating:** 24 Vac, 0.5A, 12VA

**Auxiliary (Demand) Input:** External dry contacts connection only

**WWSD (Warm Weather Shut Down) Temperature:** Off, 35 F to 100 F (Off, 1 C to 38 C)

**Zone Output Contact Rating:** Pumps: 120 Vac/250 Vac, 5A, 1/3 HP Valves: 24 Vac, 0.5 A, 12 VA

**Sensor Temperature Rating:** -58 F to +230 F (-50 C to +110 C)

**Supply/Return Sensor:** Lead Length: 10 ft. (3050 mm). 10 kilohm NTC thermistor at 25 C (77 F)  $\pm 0.5F$  ( $\pm 0.3C$ ) up to 500 ft (150 M) using 18 AWG or larger wire

**Heat Demand (Thermostat R-W) Input:** External dry contacts connection only

**Secondary Loop Mixing (Supply) Design Temp Range:** 70 F to 210 F (21 C to 99 C)

**Secondary Loop Mixing (Supply) Max Control Temp Range:** 80 F to 210 F (27 C to 99 C)

**Secondary Loop Return Min Control Temp Range:** 80 F to 180 F (27 C to 82 C)

**Secondary Loop Mixing (Supply) Min Control Temp Range:** 35 F to 150 F (2 C to 66 C)

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II (input on Control and Zoning Modules)

**R-C Output (on transformer):** 38 VA, 24 Vac Class II

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

**Weight:** 6.0 lbs (2.7 kg)

**Approvals:**

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

# AQUATROL Zoning System

Product Number	Type of Zoning Devices Controlled	Number of Zones Controlled	Mixing Valve Floating Output (Com,O,C)	Mixing Valve Modulating Output	Boiler Pump Output Rating	DHW Pump/ Valve Output Rating	Replacement Parts
AQ25242B	Zone pumps or 2-wire valves (line voltage)	4	24Vac rated dry contacts	0-10 Vdc	120 Vac/250 Vac 5A, 1/3HP	120 Vac 5A, 1/3HP	AQ15200B universal injection/mixing boiler reset module AQ12C11 supply/return/mixed loop sensor AQ12C10 outdoor sensor AQ10X38 24 Vac 38 VA transformer AQ15540B 4-zone pump expansion module
AQ25244B	Zone valves with end switches	4	24Vac rated dry contacts	0-10 Vdc	120 Vac/250 Vac 5A, 1/3HP	120 Vac 5A, 1/3HP	AQ15200B universal injection/mixing boiler reset module AQ15740B 4-zone valve with end switch expansion module AQ12C11 supply/return/mixed loop sensor AQ12C10 outdoor sensor AQ10X38 24 Vac 38 VA transformer

## AQ254 Add-a-Temperature Injection/Mixing Expansion Control Panel for Hydronic Zoning System



The AQ254 Add-a-Temperature Expansion Control Panel is used in conjunction with an AQ250, AQ25A, AQ251 or AQ252 Control Panel. It provides one additional loop temperature control capability for the AQ2000 control panel it is connected to and expands the total network capacity by up to 16 zones when used with AQ255 and/or AQ257 zoning panels.

**Application:** Expanded zone control and mixed loop temperature control in a hydronic zoning system  
Mixed loop target temperature is reset by either outdoor temperature or calculated system load based on indoor temperature feedback  
Mixing is target controlled by a variable speed injection pump or motorized mixing valve

**Dimensions, Approximate:** 9 1/2 in wide x 8 in. high x 3 3/8 in. deep (24 cm wide x 20.3 cm high x 8.5 cm deep)

**Power Supply:** 120V/60Hz

**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals

**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)

**Thermostat Compatibility:** AQ1000 Series 2-wire communicating thermostats and most digital thermostats

**Variable Speed Injection Pump Output:** Triac modulated; 120 Vac, 2.1A, 1/6HP

**Secondary Pump Output Rating:** 120 Vac 5A, 1/3HP

**Auxiliary Pump Output Rating:** Dry contact output, 120 Vac/250 Vac 5A, 1/3 HP

**Sensor Temperature Rating:** -58 F to +230 F (-50 C to +110 C)

- Acts as an add-on Control panel to the Main (AQ250, AQ25A, AQ251, AQ252) Control panel.
- Allows each of the 16 zones connected to it to be assigned to the system's primary or secondary loop.
- Up to 3 AQ254 panels can be added to a Main (AQ250, AQ25A, AQ251 or AQ252) Control panel.
- Mixed loop temperature is controlled by a variable speed injection pump or motorized mixing valve connected to the AQ254.
- Intuitive programming interface and armchair programming (can be programmed at your desk and taken to the job site "ready-to-install")
- Customizable mixing control settings allow for greater level of control and comfort.
- Zone synchronization through Zone of Greatest Demand control.
- Integral 38 VA transformer with self resetting electronic fuse.

**Secondary Loop Mixing (Supply) Design Temp Range:** 70 F to 210 F (21 C to 99 C)

**Secondary Loop Mixing (Supply) Max Control Temp Range:** 80 F to 210 F (27 C to 99 C)

**Secondary Loop Return Min Control Temp Range:** 80 F to 180 F (27 C to 82 C)

**Secondary Loop Mixing (Supply) Min Control Temp Range:** 35 F to 150 F (2 C to 66 C)

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II (input on Control and Zoning Modules)

**R-C Output (on transformer):** 38 VA, 24 Vac Class II

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

**Weight:** 3.9 lbs (1.8 kg)

**Approvals:**

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

Product Number	Mixing Valve Floating Output (Com,O,C)	User Interface (Setting, Programming)	Replacement Parts
AQ25400B	24Vac rated dry contacts	LCD Display and a 3 button Key Pad	AQ15400B Add-A-Temperature expansion control module; AQ12C11 supply/return/mixed loop sensor; AQ10X38 24 Vac 38 VA transformer

# AQUATROL Zoning System

## AQ255 and AQ257 Zoning Expansion Panel for Hydronic Zoning System



The AQ255 and AQ257 family of AQUATROL Expansion Zoning panels work with AQ2000 Boiler Control Panels and AQ1000 Communicating Thermostats to control up to 4 space heating zones (or 8, for the AQ25582B Panel). Can be combined with additional expansion zoning panels and an AQ2000 control panel for a total of 16 space heating zones.

- AQ257 for zoning with zone valves with end switches
- Auto test function to test zones at system start up. It allows for operator controlled testing of zones; includes pause/restart capability.
- LED lights for visual diagnostic of zone operation.
- Allows zoning with either "Normally Open" or "Normally Closed" zone valves.
- Adjacent zoning panels can operate different zone equipment - one panel may control 4 pumps while another may control 4 zone valves.
- Easily switch from zone valves to pumps with same zoning module - just flip one DIP switch. Ensure correct voltage is applied to all zone equipment on a panel (120 Vac for pumps, 24 Vac for valves)
- R-C transformer and B-B data bus terminal connections (network communication) for easy expansion.
- Zones can be set to energize a group pump via Aux Out dry contacts on main control panel (AQ250, AQ25A, AQ251, AQ252) or expansion control panel (AQ254).
- Zone synchronization through Zone of Greatest Demand control.
- 38 VA Transformer with self resetting electronic fuse.

**Application:** Zoning control for hydronic zoning system

**Dimensions, Approximate:** 9 1/2 in wide x 8 in. high x 3 3/8 in. deep (24 cm wide x 20.3 cm high x 8.5 cm deep)

**User Interface (Setting, Programming):** (DIP Switches)

**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals

**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)

**Thermostat Compatibility:** AQ1000 Series 2-wire communicating thermostats and most digital thermostats

**Zone Module Thermostat input:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating with power link to AQ1000 series thermostat.

**Zone Output Contact Rating:** 120 Vac/250 Vac, 5A, 1/3 HP

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II (input on Control and Zoning Modules)

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing  
**Weight:** 2.1 lbs (1 kg)

**Approvals:**

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

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Product Number	Type of Zoning Devices Controlled	Number of Zones Controlled	Weight		Replacement Parts
			(kg)	(lb)	
AQ25542B	Zone pumps or 2-wire valves (line voltage)	4	1 kg	2.1 lbs	AQ15540B 4-zone pump expansion module
AQ25582B	Zone pumps or 2-wire valves (line voltage)	8	1.3 kg	2.6 lbs	AQ15540B 4-zone pump expansion module
AQ25742B	2-wire valve (24 Vac)	4	1.8 kg	3.9 lbs	AQ10X38 24 Vac 38 VA transformer; AQ15540B 4-zone pump expansion module
AQ25744B	Zone valves with end switches (24 Vac)	4	1.8 kg	3.9 lbs	AQ15740B 4-zone valve with end switch expansion module; AQ10X38 24 Vac 38 VA transformer



# AQUATROL Zoning System

## AQ2000 Series Replacement Control Modules



### Dimensions, Approximate

**AQ15000B and AQ15400B:** 3 1/2 in wide x 2 1/2 in high x 4 1/4 in wide  
(9 cm wide x 94 cm high x 10.09 cm deep)

### AQ15100B, AQ15200B and AQ15A00B:

7 1/8 in wide x 2 1/2 in high x 4 1/4 in deep  
(18 cm wide x 94 cm high x 10.09 cm deep)

**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals

**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)

**Boiler Heat Post Purge:** Off, 10 seconds to 30 minutes (factory default is 30 seconds)

**Boiler (T-T) Output Rating:** 24 Vac, 0.5A, 12VA

**Boiler Differential:** 2F to 41F (1C to 23C), or Auto (minimum 2 minutes on time)

**DHW Demand Input:** External dry contacts connection only

**Pump/Valve exercise:** 30 seconds per 2 weeks of space heating inactivity

**Slab/Floor Sensor: Heat Demand (Thermostat R-W) Input:** External dry contacts connection only

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II (input on Control and Zoning Modules)

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

### Weight

**AQ15000B:** 0.5 lbs (0.23 kg)

**AQ15400B:** 0.7 lbs (0.3 kg)

**AQ15100B, AQ15200B and AQ15A00B:** 1.0 lbs (0.5 kg)

### Approvals:

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

Product Number	Mixing Valve Floating Output (Com,O,C)	Mixing Valve Modulating Output	User Interface (Setting, Programming)
AQ15000B	—	—	DIP Switches
AQ15100B	—	0-10 Vdc to boiler	LCD Display and a 7 button Key Pad
AQ15200B	24Vac rated dry contacts	0-10 Vdc to boiler or mixing valve	LCD Display and a 7 button Key Pad
AQ15400B	24Vac rated dry contacts	0-10 Vdc to mixing valve	LCD Display and a 3 button Key Pad
AQ15A00B	—	0-10 Vdc to boiler	LCD Display and a 7 button Key Pad

## AQ2000 Series Replacement Zoning Modules



**Dimensions, Approximate:** 3 1/2 in wide x 2 1/2 in high x 4 1/4 in deep  
(9 cm wide x 94 cm high x 10.09 cm deep)

**Electrical Connections (Line Voltage):** Wire-clamp screw terminals, Maximum 2 x 14 AWG each on line voltage terminals

**Control and Zoning Panel Temperature Rating:** 32 F to 130 F (0 C to 55 C)

**Thermostat Compatibility:** AQ1000 Series 2-wire communicating thermostats and most digital thermostats

**Zone Module Thermostat input:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating with power link to AQ1000 series thermostat.

**Zone Output Contact Rating:** 120 Vac/250 Vac, 5A, 1/3 HP

**B-B Communication Bus Terminals:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

**R-C Input (on Control and Zoning Modules):** 24 Vac Class II (input on Control and Zoning Modules)

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

### Weight:

0.6 lbs (0.3 kg)






### Approvals:

**Canadian Standards Association:** CSA C/US Certified to CSA and UL Standards, File No. LR76030

Product Number	Type of Zoning Devices Controlled	Number of Zones Controlled	User Interface (Setting, Programming)
AQ15540B	Zone pumps or 2-wire valves (line voltage)	4 (Non-communicating)	DIP Switches
AQ15740B	Zone valves with end switches	4 (Non-communicating)	DIP Switches

# AQUATROL Zoning System

## AQ2000 Series Accessories and Replacement Parts

Product Number	Description	
<b>AQ10X38</b>	Replacement transformer module for AQ250, AQ25A, AQ251, AQ252, AQ254, AQ257 and AQ25742B series control and zoning panels. It can be used to add an additional 38 VA power per transformer to drive high VA devices.	
<b>AQ11D10</b>	Replacement enclosure for AQ25400B, AQ25542B, AQ25742B, AQ25744B, AQ25582B panels. Consists of case, cover, and DIN rail for mounting of transformer, control or zoning modules. It can be used to add extra AQ10X38 transformers or hide system wiring and component.	
<b>AQ11D15</b>	Replacement enclosure for AQ25042B, AQ25044B, AQ25110B panels. Consists of case, cover, and DIN rail for mounting of transformer, control or zoning modules. It can be used to add extra AQ10X38 transformers or hide system wiring and component.	
<b>AQ11D20</b>	Replacement enclosure for AQ25A42B, AQ25A44B, AQ25142B, AQ25144B, AQ25242B, and AQ25244B panels. Consists of case, cover, and DIN rail for mounting of transformer, control or zoning modules.; It can be used to add extra AQ10X38 transformers or hide system wiring and component.	
<b>AQ12C10</b>	Outdoor Sensor with 10 feet of lead wires and a plastic mounting bracket for use with AQ2000 Series Programmable Control Panels.	
<b>AQ12C11</b>	Supply/Return/Mixed Loop Pipe Sensor with 10 feet of lead wires for use with AQ2000 Series Control Panels.	
<b>AQ12C20</b>	Slab/Floor Sensor of 15 feet lead length. It is sold separately for use with AQ1000 Series Thermostats to control floor temperatures of in-floor radiant heating applications.	

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# AQUATROL Zoning System

## AQ1000TN2 Non-Programmable Communicating Thermostat



The AQ1000TN2 thermostat is used to control the ambient air temperature or floor temperature in hydronic heating applications. It communicates with and is powered by an AQ2000 series zoning module to provide zoning control.

- 2-wire polarity-insensitive non-programmable network communicating thermostat.
- Liquid crystal display with user buttons .
- Outdoor, indoor and floor temperature displays.
- Floor temperature sensing with minimum and maximum limits (when used with optional AQ12C20 Slab/Floor Sensor - sold separately)
- Selectable temporary and permanent backlight.

**Application:** Hydronic single-stage zoning heat

**Network Zoning:** Yes

**Zones:** Single or Multi-zone

**Dimensions, Approximate:** 2.8 in wide x 4.6 in high x 1.0 in deep  
(7 cm wide x 12 cm in high x 2.5 cm deep)

**Electrical Connections:** Wire-clamp screw terminals

**Network Bus:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to AQ2000 series zoning modules.

**User Interface (Programming):** LCD Display

**User Interface (System Configuration):** DIP Switches

**Thermostat Type:** 2-wire Communicating Thermostat

**Sensor Element:** Thermistor

**Sensors (Floor) Used:** 10 kilohm NTC thermistor at 25 C (77 F)  $\pm 0.5\text{F}$  ( $\pm 0.3\text{C}$ ) up to 500 ft (150 M) using 18 AWG or larger wire, beta=3892. Lead Length: 10 ft. (3050 mm).

**Mounting:** Vertical Mount

**Color:** Premier White®

**Temperature Control Mode Selections:** "A" for Ambient Air, "F" for Floor, "AF" for Ambient & Floor.

**Temperatures Displayed:** Indoor, Set Point, Outdoor

**Temperature Display Interval:**  $\pm 1.0\text{ F}$  ( $\pm 0.5\text{ C}$ )

**Floor Sensor Temperature Rating:** -58F to 230F (-50C to 110C)

**Floor Temperature Limit Range (AF Model):**  
40 F to 100 F (5 C to 38 C)

**Outdoor Temperature Display Range:** -58 F to 149 F (-50C to 65 C)

**Ambient Temperature Range:** 32 F to 158 F (0 C to 70 C)

**Temperature Range, Storage:** -20 F to 130 F (-30 C to 55 C)

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

**Weight:** 0.2 lb (0.1 kg)

Product Number	Setting Temperature Range		Differential Temperature		Terminal Designations	Type of Control Provided	LCD Icons Displayed (Mode)	Power Method
	(F)	(C)	(F)	(C)				
AQ1000TN2	40 F to 100 F	5 C to 38 C	$\pm 1\text{ F}$	$\pm 0.5\text{ C}$	TH, TH, Sensor, Sensor	Proportional Integral (PI)	Vacation Mode; Set point; Keypad Lock; Comfort/Unoccupied; Heat On	Powered (24 Vdc) by AQ zoning module

# AQUATROL Zoning System

## AQ1000TP2 Programmable Heat/Cool Thermostat



The AQ1000TP2 thermostat is used to control the ambient air temperature or floor temperature in hydronic heating applications. It communicates with and is powered by an AQ2000 series zoning module to provide zoning control.

- 2-wire polarity-insensitive programmable network communicating thermostat
- Liquid crystal display, with 7 user buttons for programming
- Floor temperature sensing with minimum and maximum limits (when used with optional AQ12C20 Slab/Floor Sensor - sold separately)
- 7-day programmable
- Single-stage Heating and Cooling
- Outdoor, indoor, and floor temperature display
- Selectable temporary and permanent backlight

**Application:** Hydronic single-stage zoning, heating and cooling

**Network Zoning:** Yes

**Zones:** Single or Multi-zone

**Dimensions, Approximate:** 3.0 in. wide x 4.9 in. high x 1.0 in. deep  
(7.8 cm wide x 12.5 cm high 2.5 cm deep)

**Electrical Connections:** Wire-clamp screw terminals

**Network Bus:** Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to AQ2000 series zoning modules.

**User Interface (Programming):** LCD Display and 7 user programming buttons

**User Interface (System Configuration):** DIP Switches

**Thermostat Type:** 2-wire Communicating Thermostat

**Sensor Element:** Thermistor

**Sensors (Floor) Used:** 10 kilohm NTC thermistor at 25 C (77 F)  
±0.5F (±0.3C) up to 500 ft (150 M) using 18 AWG or larger wire,  
beta=3892. Lead Length: 10 ft. (3050 mm).

**Mounting:** Vertical Mount

**Color:** Premier White®

**Temperature Control Mode Selections:** "Air" for Ambient Air, "Floor" for Floor, "Air/Floor" for Ambient & Floor limits

**Temperatures Displayed:** Indoor, Set Point, Outdoor

**Temperature Display Interval:** (±0.5 C)

**Floor Sensor Temperature Rating:** -58F to 230F (-50C to 110C)

**Floor Temperature Limit Range (Air/Floor Model):**

40 F to 100 F (5 C to 38 C)

**Outdoor Temperature Display Range:** -58 F to 149 F (-50C to 65 C)

**Ambient Temperature Range:** 32 F to 158 F (0 C to 70 C)

**Temperature Range, Storage:** -20 F to 130 F (-30 C to 55 C)

**Operating Humidity Range (% RH):** 5 to 90% RH, non-condensing

**Weight:** 0.3 lb (0.5 kg)

Hydronic Controls

Product Number	Setting Temperature Range		Differential Temperature		Terminal Designations	Programmability	Type of Control Provided	LCD Icons Displayed (Mode)	Power Method
	(F)	(C)	(F)	(C)					
AQ1000TP2	40 F to 100 F	5 C to 38 C	± 1 F	±0.5 C	TH, TH, Sensor, Sensor	7-day programmable	Proportional Integral (PI)	Fan On; Vacation Mode; Cool On; Set point; Keypad Lock; Comfort/Unoccupied; Heat On	Powered (24 Vdc) by AQ zoning module