

WIRSBO®

PEX RADIANT SYSTEMS GUIDE WIRSBO



| Project | Commercial | Snow Melt | Warehouse | Car Wash | Residential |
|------------------------|---------------|-----------|-----------|----------|-------------|
| Tubing Size (in.) | 1/2, 5/8, 3/4 | 5/8, 3/4 | 5/8, 3/4 | 5/8 | 3/8, 1/2 |
| Loop Length (ft.) | 300-500 | 200-500 | 300-500 | 200-250 | 200-333 |
| Temperature Drop | 20 | 25 | 20 | 25 | 10-20 |
| Heat BTU/Sq Ft. | 12-24 | 80-150 | 7-17 | 50-90 | 17-42 |
| Center Distance | 12-18 | 6-10 | 18-24 | 10 | 6-12 |
| Room Temperature °F | 60-70 | 30 | 45-60 | 40-55 | 65-72 |
| Water Temperature °F | 85-105 | 95-130 | 70-90 | 100-130 | 95-165 |
| Surface Temperature °F | 75 | 38 | 70 | 65 | 75-87 |
| Flow GPM/Loop | 1 | 2 | 0.7 | 1.5 | 0.7 |

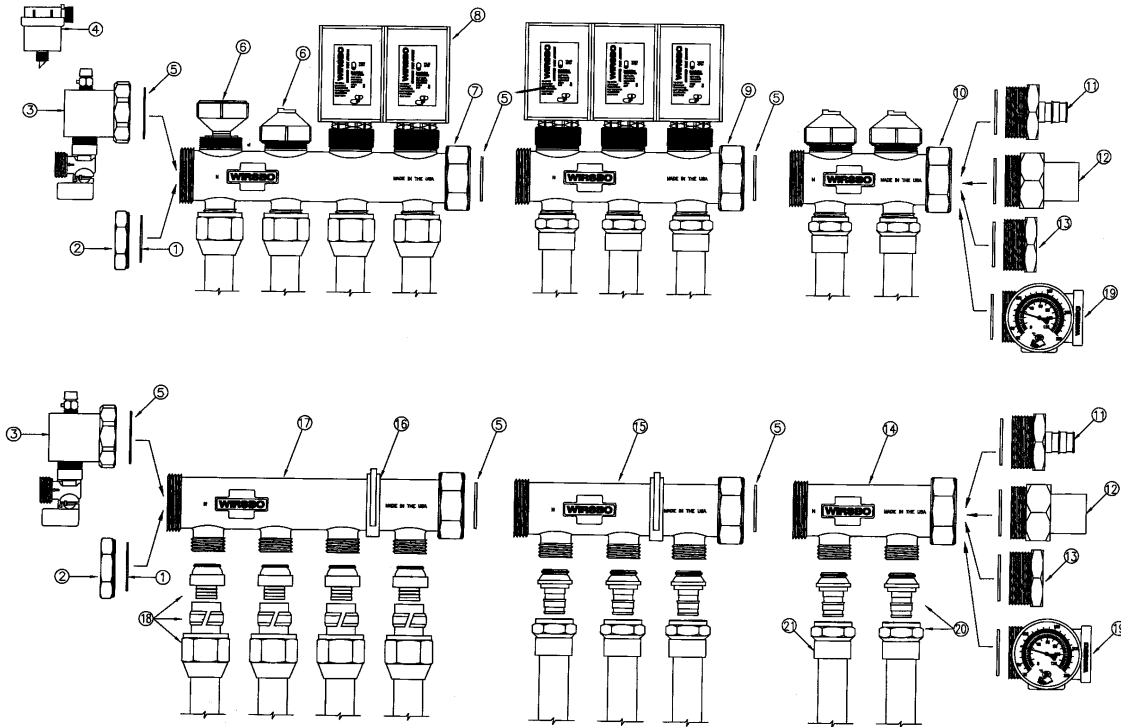
he PEX RADIANT HEATING WIRSBO

Wirsbo hePex™ plus:

- Is manufactured to ASTM F876 and F877 for use in closed loop hydronic heating applications
- Is rated at: 160 PSI at 73.4°, 100 PSI at 180° and 80 PSI at 200°

| Part# | Description | ID (in.) | OD (in.) | Water Content | Bend Radius (in.) | Available Lengths (ft.) |
|----------|------------------|----------|----------|---------------|-------------------|-------------------------|
| A12*0375 | 3/8" hePex™ plus | .360 | .500 | .49 gal/100' | 3.00 | 400, 1000 |
| A12*0500 | 1/2" hePex™ plus | .475 | .625 | .92 gal/100' | 3.75 | 300, 1000 |
| A12*0625 | 5/8" hePex™ plus | .584 | .750 | 1.39 gal/100' | 4.50 | 300, 1000 |
| A12*0750 | 3/4" hePex™ plus | .670 | .875 | 1.89 gal/100' | 5.25 | 300, 500 |
| A12*1000 | 1" hePex™ plus | .860 | 1.125 | 2.01 gal/100' | 6.75 | 500, 300 |

* - Size Code for Roll Length: 1 = 400', 2 = 1000', 4 = 500', 5 = 300'



1. Basic End Cap Gasket A2400032
2. Basic End Cap A2080032
3. End Cap w/Air Vent A2893250
4. Automatic Air Vent A2130417
5. End Cap w/Vent Gasket A240332
6. Flow Balancing Cap
7. 4 Loop Valved Manifold A2553220
8. MVA Telestat II (4 wire) A3020522
9. 3 Loop Valved Manifold A2533220

10. 2 Loop Valved Manifold A2513220
11. R32 x 3/4" Adapter/1" Fitting Adapter A4143210
12. R32 x 1" Bushing A2123210
13. R32 x 1" Adapter/1/4" Fitting Adpt A4133210
14. 2 Loop Valveless Manifold A2503220
15. 3 Loop Valveless Manifold A2523220
16. Manifold Mounting Bracket A2071500

17. 4 Loop Valveless Manifold A2543220
18. QS20 Ftg. Assembly 5/16"-A4020625, 3/8"-A4020375, 1/2"-A4020500, 5/8"-A4020625
19. Adapter Ass'y w/Thermometer A2913219
20. ProPEX® Fitting Assembly 3/8"-Q4020375, 1/2"-Q4020500, 5/8"-Q4020625
21. ProPEX® Ring 3/8"- Q4690302, 1/2"-Q4690502, 5/8"-Q4680625

BOILERS & ACCESSORIES



WIRSBO®

AQUAPEX TUBING / SUPPLIES

| AQUAPEX® Potable Water Tubing | | | | Water | Bend | Available |
|-------------------------------|----------------|----------|----------|---------------|--------------|---------------|
| Part# | Description | ID (in.) | OD (in.) | Content | Radius (in.) | Lengths (ft.) |
| F1*0375 | 3/8 AQUAPEX® | .360 | .500 | .49 gal/100' | 3 | 400,1000 |
| F1*0500 | 1/2 AQUAPEX® | .475 | .625 | .92 gal/100' | 3 3/4 | 300,1000 |
| F1*0625 | 5/8 AQUAPEX® | .584 | .750 | 1.39 gal/100' | 4 1/2 | 300,1000 |
| F1*0750 | 3/4 AQUAPEX® | .670 | .875 | 1.89 gal/100' | 5 1/4 | 100,300,500 |
| F1*1000 | 1 AQUAPEX® | .860 | 1.125 | 3.01 gal/100' | 6 3/4 | 300,500 |
| F1*1250 | 1 1/4 AQUAPEX® | 1.069 | 1.375 | 4.65 gal/100' | | 100 |

* - Size Code for Roll Length: 04 = 100', 06 = 300', 09 = 400', 10 = 500', 12 = 1000'



AQUAPEX® Stainless Compr. Insert



Compr. Angle Stop



Metal Bend Suppt.



ProPEX® Drop Ear El. PEX to Female NTP



ProPEX® MIP Elbow to Male NPT



Straight Stop Valve



Plastic Bend Support



ProPEX® Straight Stop Valve



Copper Stub Elbow



Tube Talon



Hand Expander Tool



Metal Drop Ear Bend Support



Copper 1" Manifold w/ 1/2" Outlets



Copper 1" Manifold w/ 3/8" ProPEX® Outlets



ProPEX® Brass Coupling



ProPEX® Red Brass Elbow



ProPEX® Red Brass Copper Adapter



ProPEX® Red Brass PEX to Male NPT



ProPEX® Red Brass PEX to Female NPT



BOILERS & ACCESSORIES

TURBONICS

KICKSTER UNDER COUNTER KICKSPACE HEATER TURBONICS

KICKSTER

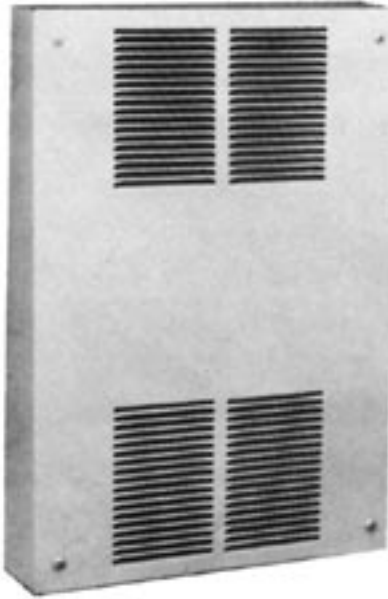


| Model | Flow GPM | Press Drop | Amps Hi-Lo | Size HxWxD | Output 140° Hi-Lo | Output 160° Hi-Lo | Output 180° Hi-Lo |
|--------|----------|------------|------------|---|-------------------|-------------------|-------------------|
| K3-J | 2 | 1.0 | 0.6-0.4 | 3 ³ / ₄ x 12 ³ / ₄ x 13 ¹ / ₄ | 2300-1900 | 3000-2600 | 3600-3200 |
| K4-J | 2 | 1.0 | 0.6-0.4 | 3 ³ / ₄ x 12 ³ / ₄ x 13 ¹ / ₄ | 2800-2400 | 3700-3200 | 4500-4000 |
| T13-HA | 2 | 1.8 | 0.6-0.4 | 4 x 23 x 17 ¹ / ₂ | 8200-6200 | 10900-8800 | 13200-10900 |
| T16-HA | 2 | 1.0 | 0.6-0.4 | 4 x 23 x 17 ¹ / ₂ | 9900-7500 | 13250-10600 | 16200-14000 |

Pipe Connections 1/2" SWT

TOESTER WALL MOUNT HEATER TURBONICS

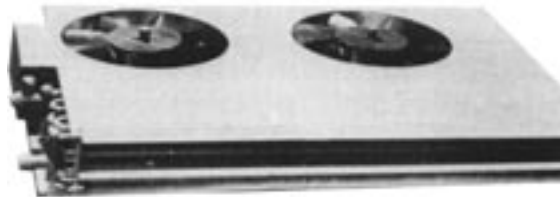
TOESTERS



| Model | Flow GPM | Press Drop | Amps Hi-Lo | Size HxWxD | Output 140° Hi-Lo MBtuH | Output 160° Hi-Lo MBtuH | Output 180° Hi-Lo |
|-----------|----------|------------|------------|-------------|-------------------------|-------------------------|-------------------|
| T45-WM-AR | 2 | 2 | 0.6-0.3 | 19 x 16 x 4 | 4.0-3.3 | 4.9-4.1 | 5.8-4.9 |
| T45-WM-AS | 2 | 2 | 0.6-0.2 | 19 x 16 x 4 | 4.0-3.2 | 4.9-4.1 | 5.8-4.9 |
| T68-WM-AR | 2 | 2 | 0.6-0.2 | 19 X 16 X 4 | 5.7-4.6 | 7.2-5.8 | 8.6-7.0 |
| T13-WM-AR | 2 | 2 | 1.2-0.4 | 24 x 16 x 4 | 8.2-6.2 | 10.9-8.8 | 13.2-10.9 |
| T13-WM-AS | 2 | 2 | 1.2-0.4 | 24x 16 x 4 | 8.2-6.2 | 10.9-8.8 | 13.2-10.9 |

1AR: Recessed Unit; AS: Surface Mount Pipe Connections 1/2" SWT

- Warranty: 5 Years Limited



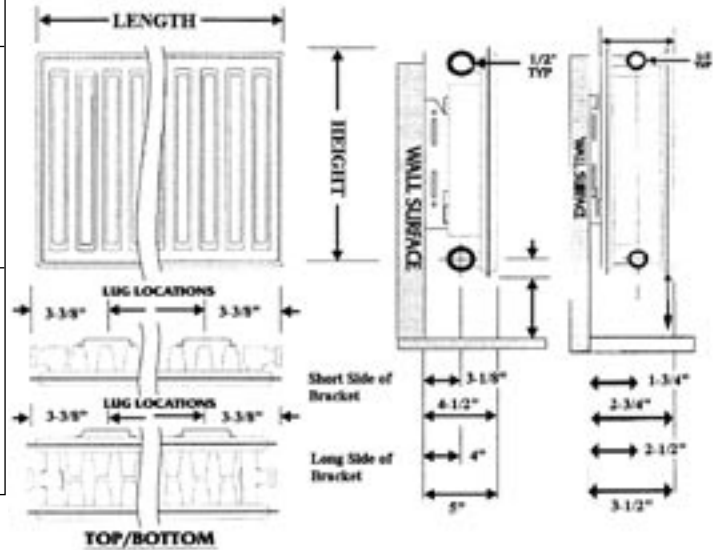
RADIANT PANELS BIASI

Features:

- Convector fins welded directly to waterways
- Stove enamel finish for scratch and corrosion resistance
- Manufactured with 1.25mm cold roll steel

Warranty: 5 years

| Model | Hgt. | Width | Single Panel Output BtuH | DbI Panel Output BtuH |
|--------|------|-------|--------------------------|-----------------------|
| B12.12 | 12 | 12 | 700 | 1273 |
| B12.24 | 12 | 24 | 1403 | 2546 |
| B12.32 | 12 | 32 | 1871 | 3395 |
| B12.40 | 12 | 40 | 2239 | 4243 |
| B20.16 | 20 | 16 | 1444 | 2584 |
| B20.20 | 20 | 20 | 1804 | 3229 |
| B20.24 | 20 | 24 | 2165 | 3875 |
| B20.28 | 20 | 28 | 2526 | 4521 |
| B20.32 | 20 | 32 | 2887 | 5167 |
| B20.36 | 20 | 36 | 3248 | 5813 |
| B20.40 | 20 | 40 | 3609 | 6459 |
| B20.48 | 20 | 48 | 4331 | 7751 |
| B24.16 | 24 | 16 | 1688 | 2996 |
| B24.24 | 24 | 24 | 2532 | 4491 |
| B24.32 | 24 | 32 | 3377 | 5988 |
| B24.36 | 24 | 36 | 3799 | 6737 |
| B24.40 | 24 | 40 | 4221 | 7486 |
| B24.48 | 24 | 48 | 5065 | 8983 |
| B24.64 | 24 | 64 | 6763 | 11977 |
| B24.72 | 24 | 72 | 7597 | 13474 |



TOWEL WARMERS BIASI

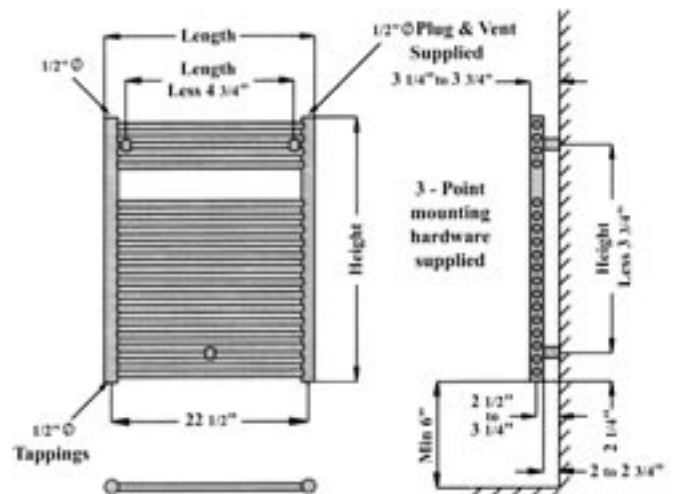
Features:

- Curved or straight ladder design
- Stove enamel finish for scratch and corrosion resistance
- Manufactured with 1.25mm cold roll steel

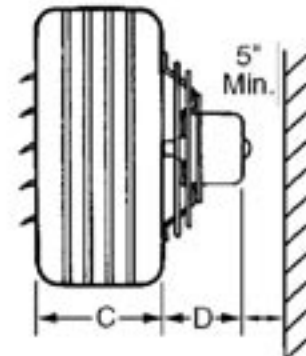
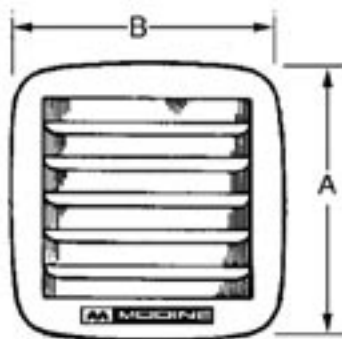
Warranty: 5 years

| Model | Hgt. | Water Content | Output BtuH @ 150° EWT | Output BtuH @ 180° EWT |
|-------------------------|------|---------------|------------------------|------------------------|
| B32.24STRG ¹ | 30 | 1.1 | 1603 | 1997 |
| B48.24STRG | 48 | 1.7 | 2403 | 2775 |
| B60.24STRG | 60 | 2.2 | 2969 | 3720 |
| B32.24CRVD | 32 | 1.2 | 1603 | 1997 |
| B48.24CRVD | 48 | 1.8 | 2403 | 2775 |
| B60.24CRVD | 60 | 2.3 | 2969 | 3720 |

¹*STRG: Straight Radiator; *CRVD: Curved Radiator



HORIZONTAL STEAM - HOT WATER UNIT HEATER MODINE



| Model | Steam MBtuH | Water MBtuH | Water Flow | Press Drop | CFM | HP | Pipe Conn. | Max Hgt. | "A" | "B" | "C" | "D" |
|--------|-------------|-------------|------------|------------|------|------|------------|----------|--------|--------|-------|-------|
| HS-24 | 24 | 16.6 | 1.7 | 0.8 | 370 | 1/25 | 3/4 | 9 | 12 1/2 | 12 1/2 | 6 | 6 |
| HS-33 | 33 | 21.6 | 2.2 | 0.2 | 360 | 1/25 | 1 3/4 | 10 | 17 1/2 | 17 1/2 | 8 3/4 | 6 1/2 |
| HS-47 | 47 | 30.8 | 3.2 | 0.3 | 730 | 1/12 | 1 3/4 | 12 | 17 1/2 | 17 1/2 | 8 3/4 | 8 |
| HS-63 | 63 | 44.8 | 4.6 | 0.8 | 1120 | 1/12 | 1 3/4 | 14 | 22 | 22 | 8 3/4 | 8 |
| HS-86 | 86 | 62.6 | 6.5 | 1.4 | 1340 | 1/8 | 1 3/4 | 15 | 22 | 22 | 8 3/4 | 8 |
| HS-108 | 108 | 81 | 8.4 | 3.2 | 2010 | 1/8 | 1 3/4 | 17 | 27 1/4 | 27 1/4 | 9 3/4 | 7 1/2 |
| HS-121 | 121 | 91.9 | 9.5 | 4 | 1775 | 1/6 | 1 3/4 | 16 | 27 1/4 | 27 1/4 | 9 3/4 | 7 1/2 |
| HS-165 | 165 | 131.9 | 13.7 | 7.9 | 3240 | 1/3 | 1 3/4 | 19 | 30 1/2 | 30 1/2 | 9 3/4 | 9 1/2 |
| HS-193 | 193 | 145.2 | 15.1 | 2 | 2900 | 1/3 | 1 3/4 | 18 | 38 1/2 | 38 1/2 | 9 3/4 | 9 1/2 |



ESP ZONE VALVE TACO

Features:

- Actuator Head can be mounted in either direction
- Can serve as a Normally Open or Normally Closed valve
- Blowout proof stem
- 125 PSI Shutoff Pressure
- 3 way valve option
- Bi-Directional Flow
- Plug-in connectors, external LED
- Universal actuator, fits all sizes of valves

| Valve Size | 2-Way CV ft of pipe. | Close-Off PSI | Weight |
|------------|----------------------|---------------|--------|
| 1/2 | 2.9/27 | 0-125psi | 1.15 |
| 3/4 | 9.5/10 | 0-125psi | 1.20 |
| 1 | 8.4/53 | 0-125psi | 1.55 |



BOILERS & ACCESSORIES



CIRCULATOR PUMPS & ACCESSORIES TACO

Features:

- Iron or Brass
- Pressure Max 125 PSI
- Temperature Max 240°F

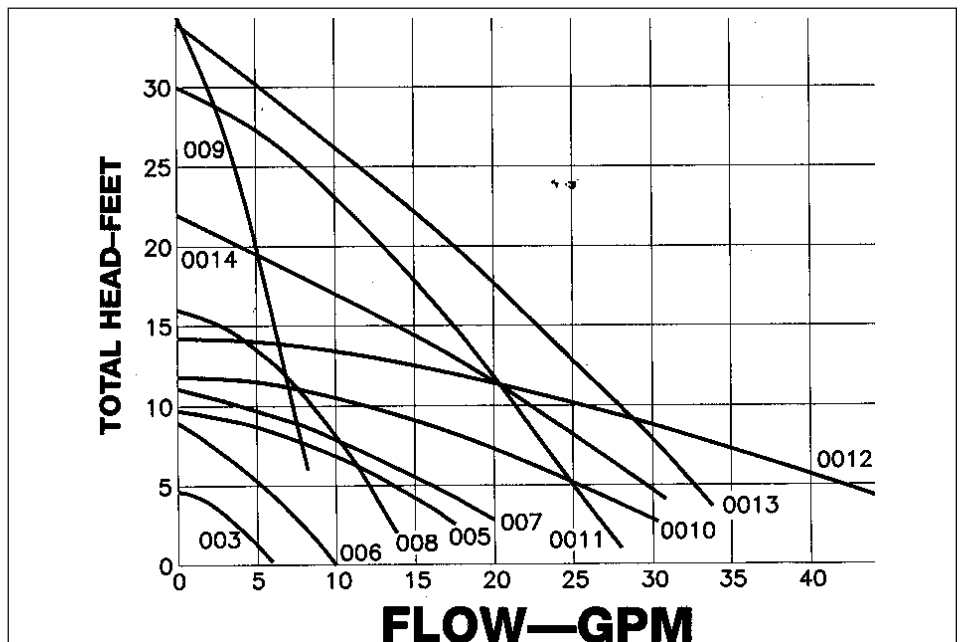
| Part# ¹ | Description | Cast Iron | Bronze |
|--------------------|-------------------------|-----------|--------|
| T005 | 1/35 HP Circulator | ** | ** |
| T006 | 1/25 HP Circulator | | ** |
| T007 | 1/25 HP Circulator | ** | ** |
| T008 | 1/25 HP Circulator | ** | ** |
| T009 | 1/25 HP Circulator | ** | ** |
| T0010 | 1/15 HP Circulator | ** | ** |
| TFF | 3/4" Flanges | ** | ** |
| TFG | 1" Flanges | ** | ** |
| TFH | 1 1/4" Flanges | ** | ** |
| TFI | 1 1/2" Flanges | ** | ** |
| TIFF | 3/4" Shut Off Flanges | | ** |
| TIFG | 1" Shut Off Flanges | | ** |
| TIFH | 1 1/4" Shut Off Flanges | | ** |
| TRC | Replacement Cartridge | | |

¹ To order bronze, add "B" to the end of the part #

| Part# | Description |
|---------|-------------------------------|
| T571 | 3/4" SWT Zone Valve |
| T572 | 1" SWT Zone Valve |
| T573 | 1-1/4" SWT Zone Valve |
| T569-2 | 24V 40va. Transformer |
| T434 | 2" Air Scoop |
| T400 | Auto Air Vent |
| T219 | 3/4" SWT Flocheck |
| T241 | 1" SWT Flocheck |
| T218 | 3/4" IPC CI 3 Way Flowcheck |
| T220 | 1" IPC CI 3 Way Flowcheck |
| T221 | 1-1/4" IPC CI 3 Way Flowcheck |
| T222 | 1-1/2" IPC CI 3 Way Flowcheck |
| T223 | 2" IPC CI 3 Way Flowcheck |
| VRTX075 | 3/4" VortecAir Separator |
| VRTX100 | 1" VortecAir Separator |
| VRTX125 | 1 1/4" VortecAir Separator |
| VRTX150 | 1 1/2" VortecAir Separator |
| VRTX200 | 2" VortecAir Separator |



BOILERS & ACCESSORIES





RELAYS AND FAN CONTROLS TACO



HYDRO AIR FAN CONTROL

Features:

- External indicator lights
- Works with 1 or 2 speed air handlers

- Snap-in PC board
- Automatic multi-speed switching
- Universal thermostat compatibility
- Extended 3 year warranty

| Model | No./Zones | Max. Output 24 VAC | Dimensions WxHxD | Thermostat Current |
|--------|-----------|--------------------|-----------------------|--------------------|
| HAF101 | 1 Zone | 24 VAC input | 4 1/4 x 5 3/4 x 2 3/4 | .18 |
| HAF102 | 1 Zone | 24 VAC input | 4 1/4 x 5 3/4 x 2 3/4 | .18 |

Fan controls are relay type DPDT and have a single phase motor rating per zone of 1/6 HP (5A) @ 120 VAC

Terminal Description

Thermostat

- C Optional: common side of transformer to power some styles of thermostats
- R Red - side of transformer used to switch all functions
- W White - heating signal
- Y Yellow - condenser signal
- G Green - fan signal

Water Coil Aquastat

- TT Remove factory installed jumper and connect to aquastat at air handler to control operation of fan when in heating mode

Pump Dry Contacts

- XX May switch pump directly by bringing in external line voltage or connect to TT on switching relay

Boiler Dry Contacts

- XX Connects to the boiler or TT terminals on a switching relay

Air Handler

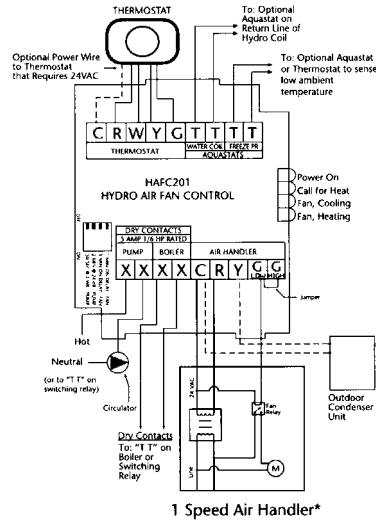
- C Common side of transformer to power the fan control
- R Red - side of transformer used to switch all functions
- Y Yellow - condenser signal

One Speed Motor

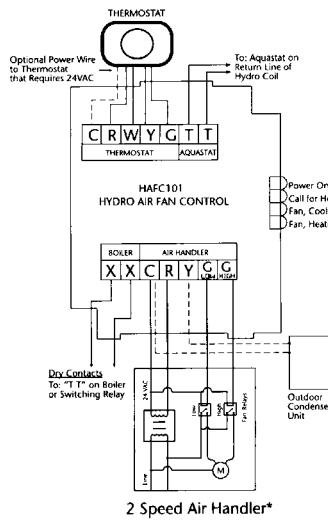
- G low Connect fan to relay keep jump connected to G high & G low

Two Speed Motor

- G high Remove jumper and connect G high to the high speed fan relay and connect G low to low speed fan relay

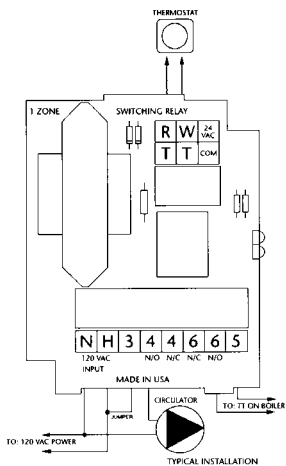


1 Speed Air Handler*



2 Speed Air Handler*

* Both HAF101 and HAF201 are capable of 1 and 2 speed applications



TERMINAL DESCRIPTION

- T & T Thermostat connection
- COM Common side of transformer, to power some setback thermostats.
- N Neutral wire of power input
- H Hot wire of power input
- 3 Common terminal for 4 n/o and 4 n/c
- 4 n/o Normally open terminal
- 4 n/c Normally closed terminal
- 6 n/c Normally closed terminal
- 6 n/o Normally open terminal
- 5 Common terminal for 6 n/o and 6 n/c

SR501 Single Switching Relay

Features:

- Snap-in PC board easily replaces other single zone relays without replacing entire box
- External indicator lights
- Fully enclosed snap-out relays
- Universal thermostat compatibility
- Extended 3 year warranty
- 1 Zone, 7.2 Amps, 4 1/4 x 5 3/4 x 2 3/4

All switching relays type DPDT and have a single phase motor rating per zone of 1/3 HP (7.2A) @ 120 VAC transformer voltage, thermostat current .18

TACO SR501 REPLACEMENT CROSS-REFERENCE

| Manufacturer | Model | Connections (See above diagram) | | | | | | | | | | |
|--------------|---------|---------------------------------|----|---|------|------|---|------|------|-----|-----|-----|
| Taco | SR501 | H | N | 3 | 4N/O | 4N/C | 5 | 6N/O | 6N/C | R/T | W/T | Com |
| Argo | AR821 | 1 | 2 | 3 | 4 | | 5 | 6 | T | T | | |
| | AR822 | L1 | L2 | 3 | 4NO | 4NC | 5 | 6NO | 6NC | R/T | G/T | C |
| Columbus | MR10 | L1 | L2 | 3 | 4NO | 4NC | 5 | 6NO | 6NC | R/T | G/T | C |
| Erie | SR100 | L1 | N | 3 | 4NO | 4NC | 5 | 6NO | 6NC | R/T | G/T | C |
| | | | | | | | | | | | | |
| Honeywell | RA89A | 1 | 2 | 3 | 4 | | | | | T | T | |
| | R845A | 1 | 2 | 3 | 4 | | 5 | 6 | | T | T | |
| White-Rogers | 889-189 | 1 | 2 | 3 | 4 | | | | | T | T | |
| | 829-845 | 1 | 2 | 3 | 4 | | 5 | 6 | | T | T | |



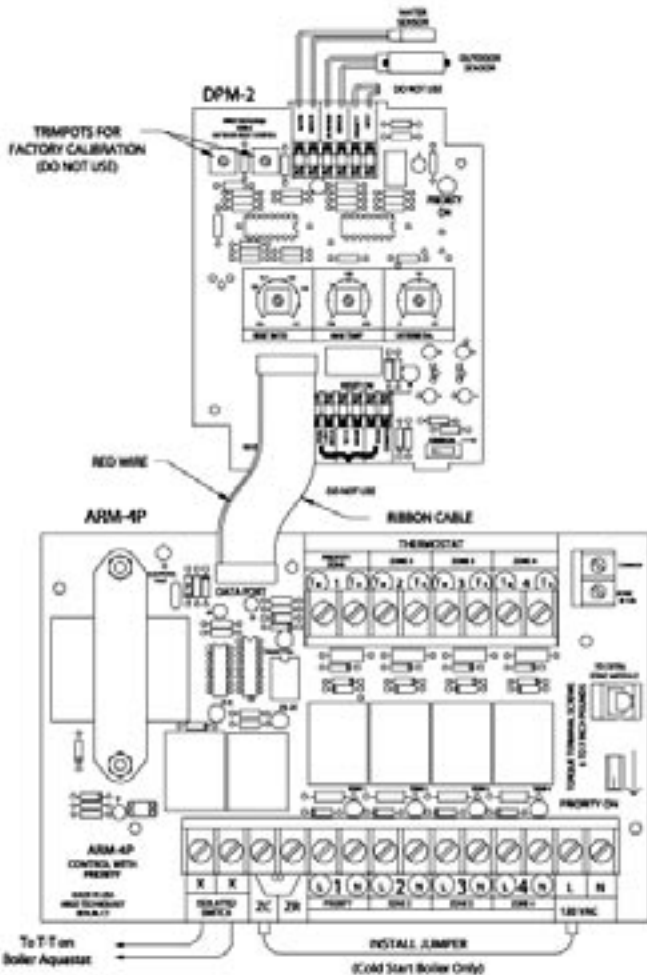
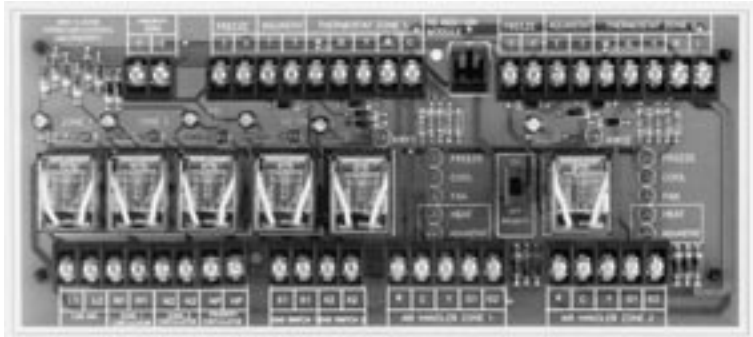
SWITCHING RELAYS ARGO

RM Series Switching Relay

- Switchable Priority
- Cold Start or Tankless Coil Applications
- 100% US Made
- Plug In Module Makes Adding a Zone Easy
- Electronic Fuse
- Priority Safety Timer Over-rides Priority After 30 Minutes
- Relay Diagnostic Light Turns On When Relay Contacts Are Closed
- LED Window in Cover
- 5 Second Time Delay for Burner Shut Down Prevents Short Cycling

Warranty: 5 Years

| Model | Zones | Description | Transformer | Amp Rating | Relay | 120V Motor | 240V Motor |
|-----------|-------|----------------------|--------------|------------|-------|------------|------------|
| AR822-II | 1 | Zone Relay | 15 VA | 10 | DPDT | | |
| AR861-2II | 2 | Zone Relay, Priority | 15 VA | | | 1/3HP | |
| AR861-3II | 3 | Zone Relay, Priority | 15 VA | | | 1/3HP | |
| ARM2P | 2 | Expandable Zone Rly | 20 VA | | SPST | 1/3HP | 1/2HP |
| ARM3P | 3 | Expandable Zone Rly | 30 VA | | SPST | 1/3HP | 1/2HP |
| ARM4P | 4 | Expandable Zone Rly | 30 VA | | SPST | 1/3HP | 1/2HP |
| ARM6P | 6 | Expandable Zone Rly | 30 VA | | SPST | 1/3HP | 1/2HP |
| AD-1 | 1 | Exp. Mod for ARM | | | SPST | 1/3HP | 1/2HP |
| AD-4 | 4 | Exp. Mod for ARM | | | SPST | 1/3HP | 1/2HP |
| DPM2 | | Outdoor Reset | Requires 24V | NA | SPST | NA | NA |



DPM-2 Outdoor Temperature Reset

- Automatically Modulates Boiler Water Temperature With Outdoor Temperature
- Controls Up To 15 Zones
- Priority Override Built In

BOILERS & ACCESSORIES

SETPOINT CONTROLS TEKMAR

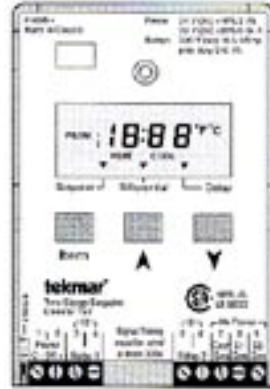


150 One Stage Setpoint Control

- Slab warming by a boiler
- Pool heating by a boiler
- DHW heating by a boiler
- Low or high temp warning
- Two position actuators
- Electric radiant floor systems
- SPDT output relay

Sensors included:

071 Universal sensor

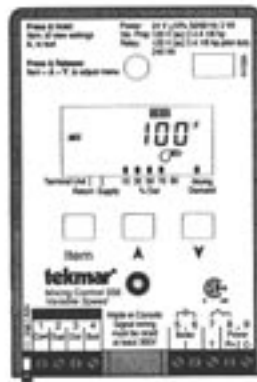


152 Two Stage Setpoint Control

- Two stage room temp. control
- Control of both a pool and spa
- DHW htg. by a two stage boiler
- Low or high temp warning
- Two position actuators
- Two stage heating or cooling
- One stage heat & one stage cooling with interlock

Sensors Included:

071 Universal sensor



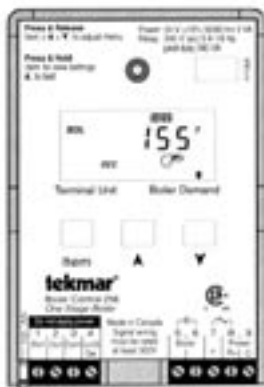
356 Variable Speed Mixing Control

- Outdoor reset control designed to operate a permanent capacitor, impedance protected or equivalent pump at varying speeds
- Provides for boiler minimum protection, system pump operation and boiler operation
- Includes outdoor sensor 070 and 2 universal sensors 071
- Indoor use only 32 to 122°F < 90% RH non-condensing

| Models | 150 | 152 | 356 |
|--------------------------------------|---------------------|---------------------|---------------------|
| Setpoint Operation | | | |
| Cycle Length | M | | |
| Heating Cooling Interlock | | F/M | |
| On/Off Differential | * | * | |
| On/Off Differential Output | M | M | |
| Proportional Staging | | * | |
| Time Delay | M | M | |
| Two Stage Heating or Cooling | | * | |
| Mixing Operation | | | |
| Variable Speed Output | | | * |
| Protection | | | |
| Boiler Minimum Return | | | F |
| Setback | | | |
| Water Temperature Setback | | | * |
| Display | | | |
| Temperature Display | * | * | |
| Other | | | |
| Autotest | | | * |
| Error Messages | * | * | * |
| Function Indicators | * | * | * |
| 120 or 240V (AC) rated relay outputs | * | * | 120V (AC) |
| Accuracy | +0.5% | +0.5% | +0.5% |
| Maximum Sensor Length | 500 | 500 | 500 |
| Size H x W x D" | 4 1/4 x 2 7/8 x 1 8 | 4 1/4 x 2 7/8 x 1 8 | 4 1/4 x 2 7/8 x 1 8 |

A= Automatic Adjustment F=Fixed M=Manual *= Offers This Feature

BOILER / DHW HEATING CONTROLS TEKMAR

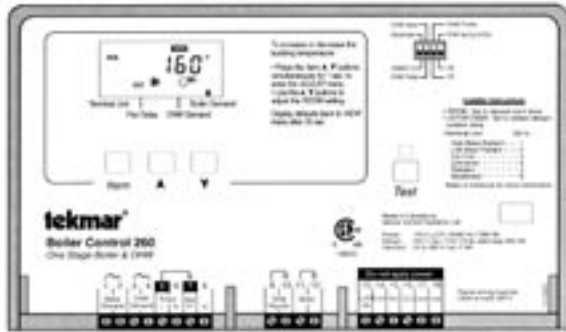


256 One Stage Boiler Control

- Regulates the supply water temperature from a single boiler based on outside temperature, as well as continuously adjusting the boiler differential
- Provides for boiler minimum protection, system pump operation and boiler operation
- Includes outdoor sensor 070, universal sensor 071, & NTC thermistor
- Indoor use only 32 to 122°F < 90% RH non-condensing

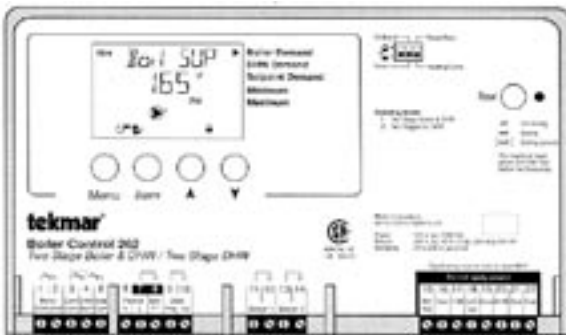
BOILERS & ACCESSORIES

BOILER/DHW & INTEGRATED HEATING CONTROLS TEKMAR



260 One Stage Boiler & DHW Control

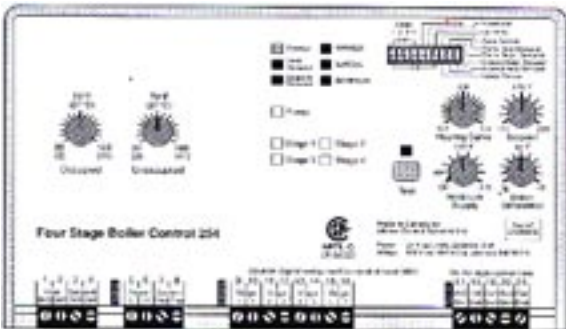
- Regulates the supply water temperature from a single boiler based on outside temperature or a DHW demand
- Can control either a DHW pump or valve and provide DHW priority
- Includes outdoor sensor 070, universal sensor 071, & NTC thermistor
- Indoor use only 32 to 122°F < 90% RH non-condensing



262 Two Stage Boiler & DHW Control

- Mode 1: Two Stage Boiler & DHW
- Mode 2: High / Lo Fire Boiler for DHW
- Outdoor Reset for Control of Two Boilers
- DHW Priority & Boiler Outdoor Reset

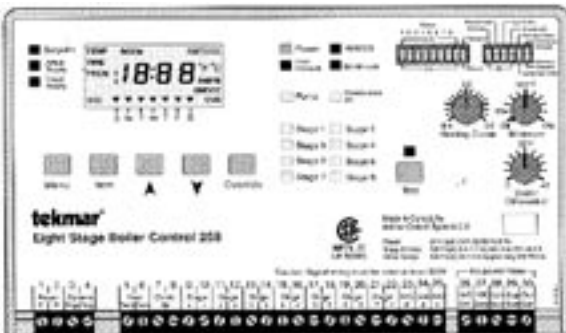
Optional Controls: 031, 040, 062, 063, 070, 071, 072, 073, 076, 077, 367, 368



264 Four Stage Boiler Control

- Hydronic Heating w/Outdoor Reset of Four Boilers
- RTU (Tekmar Indoor Sensor) Controlled Hydronic Heating Control
- Thermostat Controlled Zone Valves w/DHW Priority and Boiler Outdoor Reset
- Boiler Staging & Rotation, Pump Exerciser, & System Pump Control

Optional Controls: 031, 070, 072, 073, 076, 077, 367, 368



268 Eight Stage Boiler Control

- Eight Stage Boiler Outdoor Reset Controller w/Digital Display
- Combustion Air Relay for Control of Make-up Air Unit
- Night Setback and Warm Weather Shut Down Features
- Integrate Boilers w/ Separate DHW Heaters

Optional Controls: 031, 367, 368

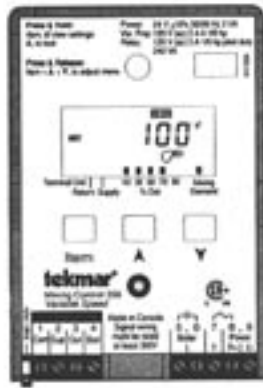
BOILERS & ACCESSORIES

BOILER/DHW HEATING CONTROLS TEKMAR

| | 256 | 260 | 262 Mode 1 | 264 | 268 |
|-----------------------------------|------------------------------------|---|---|---|---|
| Boiler Operation | | | | | |
| # of Stages | 1 | 1 | 2 | 4 | 8 |
| Boiler Differential | A/M | A/M | A/M | M | M |
| Boiler Minimum Supply | * | M | M | M | M |
| Boiler Outdoor Reset | | * | * | * | * |
| Boiler Post Purge | | F | M | F | F |
| Characterized Heating Curve | | * | M | | |
| Equal Run Time Rotation | | | | * | * |
| Fire Delay | F | M | M | | |
| Fixed Last | | | | | * |
| Fixed Lead | | | | * | * |
| Heating Curve | | M | | M | M |
| Heating Curve Shift | M | M/A | A/M | A/M | A/M |
| Indoor Temperature Feedback | | * | * | * | * |
| Interstage Delay | | | | A | A |
| Lo / Hi Fire Boiler Rotation | | | | * | * |
| PID Staging | | | | * | * |
| Reset Ratio | | | | | |
| Soft Start | | | | | |
| Starting Water Temperature | | | | | |
| Warm Weather Shut Down WWSD | * | M | * | M | M |
| Water Temperature Boost | | A | A | A | A |
| Domestic Hot Water Operation | | | | | |
| DHW Boiler Reset Override | | * | * | | |
| DHW Condensing Boiler | | * | * | | |
| DHW External Demand | | * | * | * | * |
| DHW Internal Demand Sensor | | | | | |
| DHW Post Purge | | * | * | F | F |
| DHW Priority | | * | * | | |
| DHW Setback | | * | * | * | * |
| Setpoint Operation | | | | | |
| Setpoint Boiler Reset Override | | | | * | |
| Setpoint Priority | | | | | |
| Protection | | | | | |
| Pump Exercising | | * | * | * | * |
| Setback | | | | | |
| 7 Day Timer | | | | | * |
| Water Temp. Boost Indoor Feedback | | * | * | * | * |
| Water Temp. Setback | * | * | * | * | * |
| Zone Temp. Setback | | * | * | * | * |
| Display | | | | | |
| Temperature Display | * | * | * | * | * |
| Usage Display | | | * | * | * |
| Other | | | | | |
| Auto Test | | * | * | * | * |
| Error Messages | | * | * | * | * |
| Function Indicators | | * | * | * | * |
| 120 or 240V(AC) related outputs | * | * | * | * | * |
| Accuracy | ±0.5° | ±0.5° | ±0.5° | ±0.5° | ±0.5° |
| Maximum Sensor Length | 500 | 500` | 500 | 500 | 500 |
| Size HxWxD | 4 ³ / ₄ x3x1 | 6 ³ / ₄ x7 ¹ / ₂ x2 ³ / ₄ | 6 ³ / ₄ x7 ¹ / ₂ x2 ³ / ₄ | 6 ³ / ₄ x7 ¹ / ₂ x2 ³ / ₄ | 6 ³ / ₄ x7 ¹ / ₂ x2 ³ / ₄ |
| Weight | 1 | 3 | 3 | 3 | 3 |
| Standard Sensors: | | | | | |
| 070 | * | * | * | * | * |
| 071 | * | * | * | * | * |
| 080 | | | | * | * |

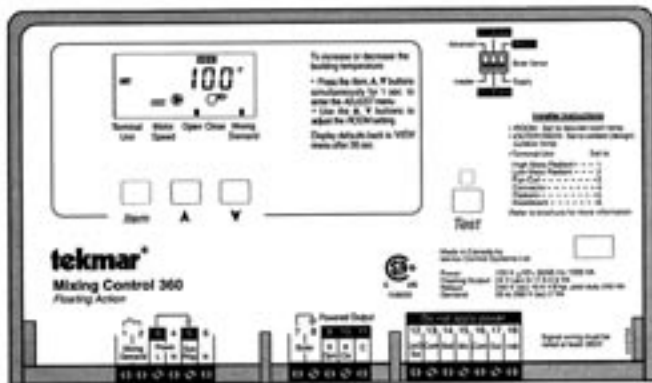
BOILERS & ACCESSORIES

STAND ALONE HEATING CONTROLS TEKMAR



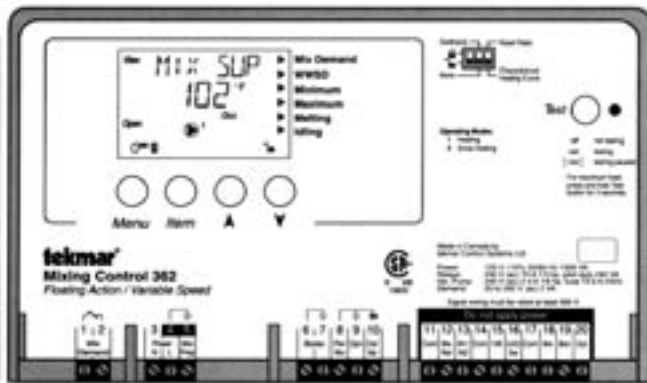
356 Variable Speed Mixing Control

- Outdoor reset control designed to operate a permanent capacitor, impedance protected or equivalent pump at varying speeds
- Provides for boiler minimum protection, system pump operation and boiler operation
- Includes outdoor sensor 070 and 2 universal sensors 071
- Indoor use only 32 to 122°F < 90% RH non-condensing



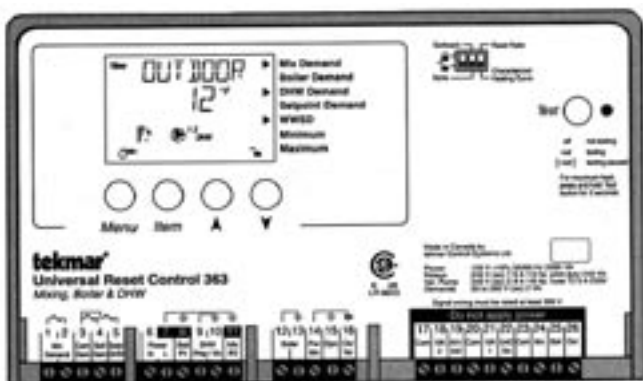
360 Floating Action Mixing Control

- Outdoor reset control designed to operate a 24V (AC) floating action 2, 3, 4 way valve
- Provides for boiler minimum protection, system pump operation and boiler operation
- Includes outdoor sensor 070 and 2 universal sensors 071
- Indoor use only 32 to 122°F < 90% RH non-condensing



362 Mode 1 Floating Action/ Variable Speed Mixing Control

- Mode 1 for heating application
- Outdoor reset control designed to operate a permanent capacitor, impedance protected or equivalent pump at varying speeds or a 24V (AC) floating action 2, 3, 4 way valve
- Provides for boiler minimum protection, system pump operation and boiler operation
- Includes outdoor sensor 070 and 2 universal sensors 071
- Indoor use only 32 to 122°F < 90% RH non-condensing
- Indoor Slab Sensor, Digital RTU or Zone Control use single or multiple zones



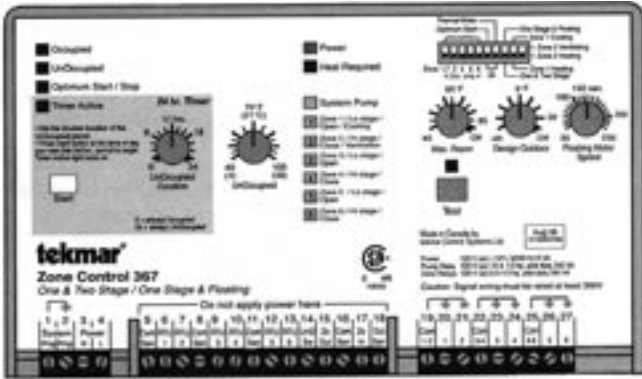
363 Universal Reset Control

- For mixing, boiler & DHW
- Resets boiler supply temperature and resets mixed supply temperature based on indoor temperature
- Use either a variable speed injection pump or a floating action mixing valve for mixing device
- Control of DHW storage tank and/or setpoint load
- Includes outdoor sensor 070 and 2 universal sensors 071
- Indoor use only 32 to 122°F < 90% RH non-condensing
- Indoor Slab Sensor, Digital RTU or Zone Control use single or multiple zones

BOILERS & ACCESSORIES

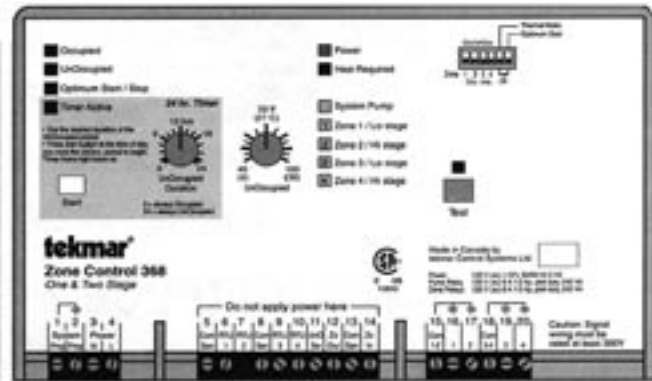
INTEGRATED HEATING CONTROLS TEKMAR

367 Zone Control



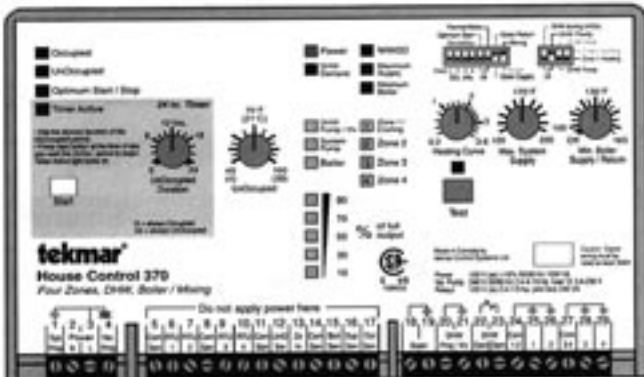
- One & Two Stage/ One Stage & Floating
- Indoor temperature feedback to boiler and mixing outdoor reset controls
- Six outputs for for single, two stage zones or floating action outputs
- Operate zone pumps, electric zone valves, thermal motor zone valves or floating action modulating units
- Night setback timer with recovery feature
- Indoor use only 32 to 122°F < 90% RH non-condensing

368 Zone Control



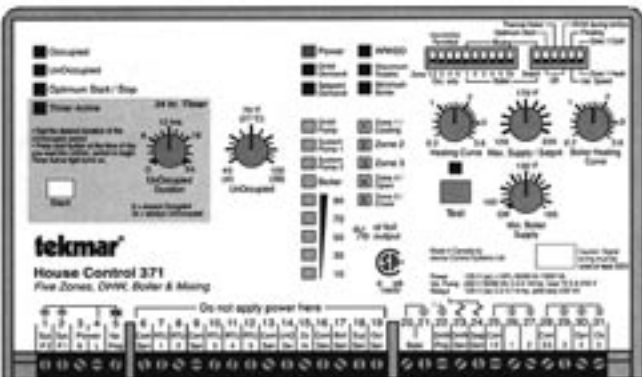
- One & Two Stage
- Indoor temperature feedback to boiler and mixing outdoor reset controls
- Four outputs for for single or two stage zones
- Operate zone pumps, electric zone valves or thermal motor zone valves
- Night setback timer with recovery feature
- Indoor use only 32 to 122°F < 90% RH non-condensing
- Requires RTU 054 or 055

370 House Control



- Four zones control, DHW, boiler/mixing
- Integrates boiler and mixing outdoor reset with DHW control and zone control
- 24 hour night setback, DHW priority
- Includes outdoor sensor 070 and 2 universal sensors 071
- Requires RTU 054 or 055
- Indoor use only 32 to 122°F < 90% RH non-condensing

371 House Control



- Five zones control, DHW, boiler/mixing
- Integrates boiler and mixing outdoor reset with DHW control, zone control and setpoint operation
- Interface with Snow Melt or Setpoint control
- 24 hour night setback with recovery feature
- Includes outdoor sensor 070 and 2 universal sensors 071
- Indoor use only 32 to 122°F < 90% RH non-condensing
- Requires RTU 054 or 055

BOILERS & ACCESSORIES

STAND ALONE & INTEGRATED HEATING CONTROLS TEKMAR

| | 356 | 360 | 362 Mode 1 | 363 | 352 Boiler | 370 Boiler | 371 | 367 | 368 |
|-------------------------------------|-----|-----|---------------|-----|---------------|---------------|-----|-----|-----|
| Boiler Operation | | | | | | | | | |
| Boiler Differential | A/M | A/M | A/M | A/M | A | A | A | | |
| Boiler Enable | * | | * | | | | | | |
| Boiler Load Reset | | | * | | | | | | |
| Boiler Minimum Supply | M | M | M | M | M | M | M | | |
| Boiler Outdoor Reset | | | | * | * | * | * | | |
| Boiler Purge | | | | | | A | A | | |
| Boiler Temperature Averaging | | | | | A | | | | |
| Characterized Heating Curve | | | | * | | | | | |
| Heating Curve | | A/M | | | M | M | M | | |
| Heating Curve Shift | | | | A/M | A/M | A | A | A | A |
| Reset Ratio | | | | M | | | | | |
| Warm Weather Shut Down | | A/M | M | A/M | A/M | A | A | A | A |
| Domestic Hot Water Operation | | | | | | | | | |
| DHW Boiler Reset Override | | | | * | | * | * | | |
| DHW External Demand | | | | * | | | | | |
| DHW Internal Demand Sensor | | | | * | | | | | |
| DHW Mixing Purge | | | | * | | * | * | | |
| DHW Optimum Start | | | | * | | * | * | | |
| DHW Post Purge | | | | * | | * | * | | |
| DHW Priority | | | | * | | * | * | | |
| DHW Priority Override | | | | * | | * | * | | |
| DHW Setback | | | | * | | * | * | | |
| Mixing Operation | | | | | | | | | |
| Characterized Heating Operation | | | M | M | | | | | |
| Floating Action Output | | * | * | * | | | * | | |
| Heating Curve | | | | | | | M | | |
| Heating Curve Shift | | A/M | A/M | A/M | | | A | A | A |
| Indoor Temperature Feedback | | * | * | * | | | | | |
| Injection Differential | | | | | | | | | |
| Mixing Outdoor Reset | * | * | | * | | | * | | |
| Mixing Setpoint | * | | | | | | | | |
| Modulating Output | | | | | | | | | |
| On / Off Injection Output | | | | | | | | | |
| Reset Ratio | | | M | M | | | | | |
| Variable Speed Output | * | | * | * | | | * | | |
| Zone Operation | | | | | | | | | |
| Number of Zones | | | | | 1 | 4 | 5 | 6 | 6 |
| 2 Stage Heating | | | | | | | | * | * |
| Adjustment Range Limit | | | | | | | | * | * |
| Indoor Temperature Feedback | | | | | * | * | * | * | * |
| PID Zone Temperature Control | | | | | | * | * | * | * |
| Zone Load Coordination | | | | | | * | * | * | * |
| Zone Post Purge | | | | | * | * | * | * | * |
| Protection | | | | | | | | | |
| Boiler Load Reduction | | | | * | | * | * | | |
| Boiler Minimum Return | * | * | * | * | | | * | | |
| Pump Exercising | | * | * | * | * | * | * | * | * |
| System Maximum Supply | * | * | * | * | | * | * | | |
| Setback | | | | | | | | | |
| 24 Hour Timer | | | | | | | * | * | * |
| Water Temp. Boost | | * | * | * | * | * | * | * | * |
| Water Temp. Setback | * | * | * | * | * | * | * | * | * |
| Zone Temp. Setback | | | | * | * | * | * | * | * |
| Display | | | | | | | | | |
| Temperature Display | | | | * | | | | | |
| Other | | | | | | | | | |
| Auto Test | * | * | | * | * | * | * | * | * |
| Error Messages | * | * | | * | * | * | * | * | * |
| Function Indicators | * | * | | * | * | * | * | * | * |

BOILERS & ACCESSORIES

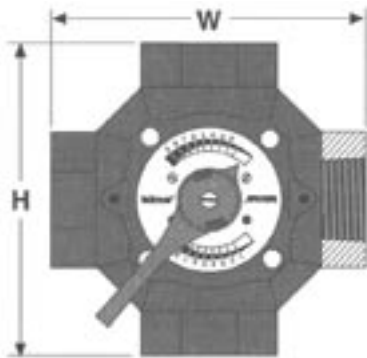
MISCELLANEOUS HEATING CONTROLS TEKMAR



011 Actuating Motor

011 Actuating Motor

- Operates all Tekmar 4 way mixing valves
- Auxiliary end switch to turn on boiler or other device, cam is adjustable
- 24V (AC) +- 10% 50/60 Hz. 5 VA
- Aux. switch: 240V (AC), 10A, 1/3 hp pilot duty 240VA 2A
- Indoor use only: 32° to 140°F < 90% RH non-condensing
- Running time: 160 sec.(60Hz.), 190 sec. (50Hz.)
- 24V (AC) floating action
- Angle of Rotation: 90° shaft rotation



H= 5 7/8
W= 5 7/8

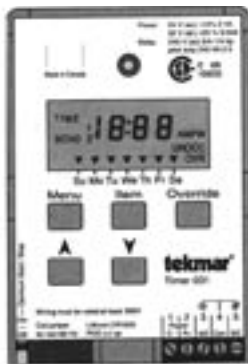
016 4 Way Mixing Valve

016 4 Way Mixing Valve

- Max. Operating Temp: 90 psi (600kPa)
- Operating Temperature Range: 32°F to 230°F (pure water)
- Cast iron body, stainless steel shaft and roller seals
- 1" female NPT pipe connections

031 Timer

- Microprocessor-based timer can be programmed for 2 setback events/day/week
- Temporary/permanent override options, 10 year memory backup of prog. schedule
- Indoor use only: 32° to 140°F < 90% RH non-condensing
- 24V (AC) 8A 1/4hp, pilot duty 240VA 2A
- Battery backup (CR1620 lithium non-recharge.) gives 60 events /24 hrs./ power down
- For use with all Tekmar controls



031 Timer

070 Outdoor Sensor & 076 Indoor Sensor

- Sensor: NTC thermistor, 10kΩ @ 77°F β=3892
- Operating range: -60°F to 140°F
- White PVC plastic enclosure

054 & 055 RTU (Room Temperature Unit)

- Sensor: NTC thermistor, 10kΩ @ 77°F β=3892
- Indoor use only: -15° to 120°F < 90% RH non-condensing
- Setpoint Range: **054** 40 to 100°F, **055** 50 to 80°F
- White PVC plastic enclosure

071 Universal Sensor

- Sensor: NTC thermistor, 10kΩ @ 77°F β=3892
- Operating range: -60°F to 255°F
- Optional devices: Tekmar 080
- Zinc sleeve enclosure, 10" 20AWG XPE wire

072 Slab Sensor

- Same as above except PVC sleeve 40' jacketed wire

080 Universal Sensor Enclosure

- Enclosure E, glass reinforced modified PET
- Operating range: -60°F to 255°F
- Sensor required: Tekmar type 071

090 Snow / Ice Sensor

- Silicon brass, 65 ft. jacketed cable
- Operating range: -60°F to 175°F
- Sensor: NTC thermistor, 10kΩ @ 77°F β=3892

091 Snow / Ice Sensor Socket

- Silicon brass
- 090 and 091 are used with Tekmar controls 661 and 662 are mounted between heating elements and pipes to automatically detect snow or ice on drive/walkway



054 Room Temperature Unit (RTU)

BOILERS & ACCESSORIES



NORMALLY OPEN HYDRONIC SYSTEMS AUTOMAG

Features:

- Normally open zone valve system: zones open during power failure
- Soft opening DC technology
- Simple 2 wire design saves time
- Operates with a sealed magnetic coil: no motors, end switches or packing rings to fail
- 'AB' models small enough to fit inside most baseboard cabinets
- Control panels equipped with transformer and LED operating indicator lights

Warranty:

- 2 Years on Controls
- 5 Years on Zone Valves or Coils

| Model | Description |
|---------|--|
| UR12 | 1/2 Universal replacement valve: 2 wire NO(circuit board included under cover) |
| UR34 | 3/4 Universal replacement valve: 2 wire NO(circuit board included under cover) |
| UR10 | 1 Universal replacement valve: 2 wire NO(circuit board included under cover) |
| AA12 | 1/2 Normally open DC zone valve 2 wire |
| AA34 | 3/4 Normally open DC zone valve 2 wire |
| AA10 | 1 Normally open DC zone valve 2 wire |
| AB12 | 1/2 Normally open low profile DC zone valve 2 wire |
| AB34 | 3/4 Normally open low profile DC zone valve 2 wire |
| AZC-40P | 4 Zone control panel for automag valves & 2 wire t-stats; includes 24v tfmr |
| AZC-60P | 6 Zone control panel for automag valves & 2 wire t-stats; includes 24v tfmr |



LOW WATER CUTOFFS SAFGARD

| Model | Description | Max Press | Max Water Temp | Volts |
|-------------|---|-----------|----------------|-------|
| 1100 Series | Interupts Power Immediately in Low Water Conditions | 50 psi | 250° | 24 |
| 1150 Series | Interupts Power Immediately in Low Water Conditions | 160 psi | 250° | 120 |



BOILERS & ACCESSORIES