

Radiant Components Catalogue



RADIANT HEATING SYSTEMS

WarmRite Floor
IPEX RADIANT SYSTEMS

RADIANT COMPONENTS CATALOGUE 2ND EDITION

- Radiant Pipe, Tubing & Accessories
- Chrome Manifolds
- Valves & Actuators
- Thermostats
- Heating Controls
- Pre-assembled Control Panels



IPEX
Committed to Excellence



WarmRite Floor
IPEX RADIANT SYSTEMS



Kitec® XPA Pipe &
PEX Tubing from One Source



Unique Pre-Assembled Control Panels
Save Time and Money



Expert Advice from
IPEX Professionals



New State-of-the-Art
Design Software



Complete Offering of Heating Manifolds and Components

IPEX Radiant Systems

The path to take for all your radiant system needs

More and more the route people are taking to meet their residential, industrial and commercial heating requirements is hydronic radiant systems. As a result more and more contractors are relying on IPEX Radiant Systems.

Established over 50 years ago, IPEX is the world leader in piping systems, providing a range of radiant heating products and solutions that is second to none. In fact, millions upon millions of feet of our radiant piping systems have been installed. But there's more to IPEX than pipe and tubing.

IPEX is your complete one-stop radiant system source, offering an extensive choice of professional chrome manifolds, heating accessories and controls. To save you precious time and money we carry a unique selection of pre-assembled control panels, each housing all of the components you need to complete your radiant installation.

To assist you at the design stage, we created new state-of-the-art software. It performs detailed heat loss calculations. Lets you mix and match our famed Kitec® XPA (X-linked polyethylene aluminum) pipe or our new barrier PEX tubing. It also selects the appropriate control panel for your project or provides a materials list of the individual manifolds and accessories you'll need. Plus, it tracks your project's status.

At IPEX we have the software and the products to help you do the job right. And if you ever have a question, the radiant experts at IPEX are always available to provide you with answers and project insight.

Ensure your next radiant system project is on the path to success. Call your IPEX representative today, your complete source for radiant system solutions.

Get on the path to a successful radiant installation.



Table of Contents

KITEC XPA PIPE & PEX TUBING	2 - 3
Kitec XPA Pipe	2
PEX Tubing	3
CHROME MANIFOLD SYSTEM	4 - 8
1" Manifolds	4 - 5
1¼" Manifolds	6 - 7
Manifold Sets	8
MANIFOLD COMPONENTS	9 - 12
VALVES & ACTUATORS	13 - 17
PIPE ACCESSORIES	18 - 22
THERMOSTATS	23 - 28
HEATING CONTROLS	29 - 40
CONTROL PANELS	41 - 51
NOTES	52



Kitec® XPA™ Pipe

WarmRite Floor Features Unique Kitec® XPA™ Pipe



IPEX's WarmRite Floor Radiant Heating System has set new standards in the radiant heating industry and has rapidly become the premier choice for radiant heating applications throughout Canada and the United States. The core of WarmRite Floor systems is Kitec XPA (X-linked Polyethylene Aluminum) pipe. Manufactured exclusively by IPEX, Kitec is a unique blend of metal and plastic pipe all in one. Its aluminum core is a permanent oxygen barrier that provides lifelong protection for the key mechanical components of your heating system. Plastic inner and outer layers provide smooth flow and the best chemical and corrosion resistance for long service life. Kitec is quickly and easily installed, shaped by hand and maintains its shape once bent—reducing time on the job.

Size	Product Code	Coil Length
3/8"	011678	200
3/8"	011679	400
3/8"	011682	600
1/2"	011600	100
1/2"	011601	250
1/2"	011602	300
1/2"	011603	500
1/2"	011604	600
1/2"	011605	900
1/2"	011606	1,000
5/8"	011610	250
5/8"	011615	300
5/8"	011611	400
5/8"	011612	500
5/8"	011613	600
5/8"	011614	1,000

Size	Product Code	Coil Length
3/4"	011620	100
3/4"	011621	300
3/4"	011622	500
3/4"	011623	1,000
1"	011628	100
1"	011629	200
1"	011630	300
1"	011631	400
1"	011632	500

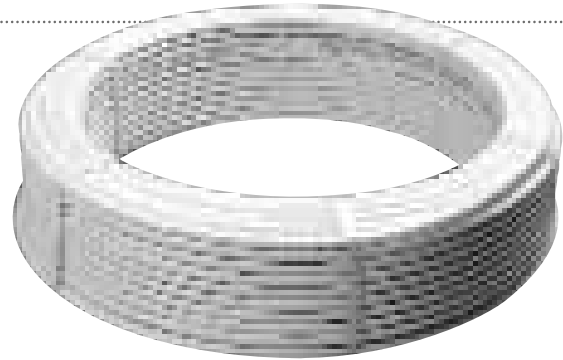


PEX Tubing

PEX Tubing

IPEX offers a complete package of radiant heating products including the two leading pipe and tubing materials – Kitec XPA and PEX tubing. IPEX brand PEX tubing with EVOH oxygen barrier is available in a number of sizes and various coil lengths designed to complement your radiant project.

IPEX brand PEX tubing is easily connected to WarmRite Floor chrome manifolds and our unique pre-assembled control panels. Simply select the appropriate PEX tube fitting shown on page 11 of this catalogue.

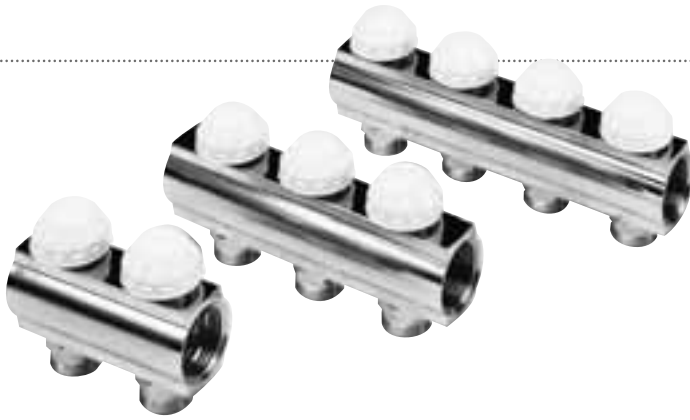


Size	Product Code	Coil Length
1/2"	111093	250
1/2"	111094	300
1/2"	111095	500
1/2"	111096	1,000
3/4"	111097	300
3/4"	111098	500

Certified to Canadian Heating Standards.

1" Manifolds

Supply Manifold



Nickel-plated brass extruded bar, 1" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. Fitted with on/off valves to provide loop control with electrical actuators. Connecting thread M30 x 1.5 supplied with plastic cover caps. The caps are also used to shut the valve or to adjust the flow rate through the loop. The outlet will accept all pipe fittings.

Description	Product Code
1" x 2 outlets	488351
1" x 3 outlets	488352
1" x 4 outlets	488353

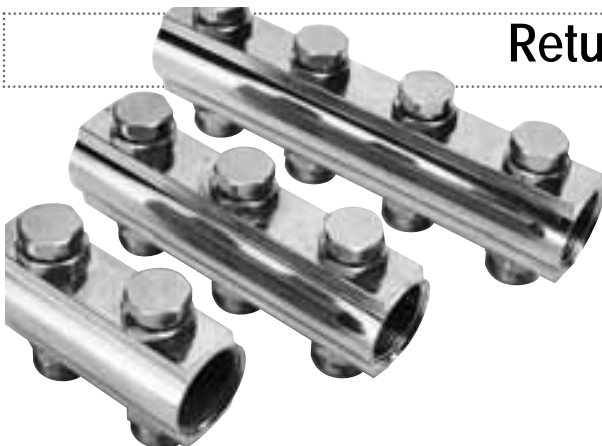
Return Manifold with Balancing Valves and Flow Meters



Nickel-plated brass extruded bar, 1" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. Fitted with balancing valves combined with flow meter to adjust and measure the flow rate in the loop. Calibrated in l/m (liters per minute). The conversion to gpm is the reading divided by 3.89, for practical purposes use 4. The visual feedback makes it very easy and convenient to adjust the system. The outlet will accept all pipe fittings.

Description	Product Code
1" x 2 outlets	488354
1" x 3 outlets	488355
1" x 4 outlets	488356

Return Manifold with Balancing Valve



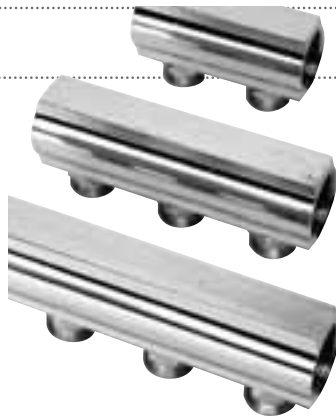
Nickel-plated brass extruded bar, 1" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. Fitted with balancing valves to adjust the flow rate. After removing the cover cap a 6mm Allen key is used to turn the valve insert. The outlet will accept all pipe fittings. There is an end stop screw inside the valve to set the flow rate.

Description	Product Code
1" x 2 outlets	488377
1" x 3 outlets	488378
1" x 4 outlets	488379



1" Plain Manifold

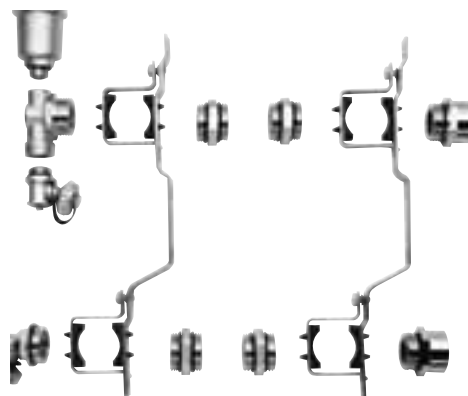
Nickel-plated brass extruded bar, 1" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. No flow rate adjustment. The loop length and pump head will define the flow rate in the system. The outlet will accept all pipe fittings.



Description	Product Code
1" x 2 outlets	488368
1" x 3 outlets	488369
1" x 4 outlets	488370

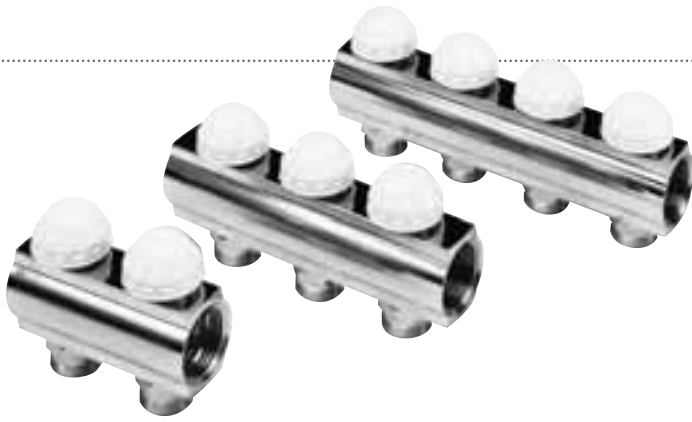
1" Accessory Kit

The kit contains additional components to build a basic manifold set. All kits provide an automatic air vent to fit on top of the manifold, 2 drain/fill valves to fill or purge the manifold, a 1" - 1/2" plug, an end piece, a pair of brackets to mount the set on the wall and two 1" BSP - 1" MPT male adapters to connect to the North American Pipe thread. The BSP side is sealed with an "o" ring. Kit 24 is used with 2, 3 or 4 outlet manifolds with no manifold connector in it, Kit 58 with 5, 6, 7 or 8 outlets with 2 manifold connectors included and Kit 912 is used with 9, 10 or 11 loop outlet manifolds with four manifold connectors included in the package.



Description	Product Code
1" Accessory Kit 24	488004
1" Accessory Kit 58	488005
1" Accessory Kit 912	488006

1 1/4" Manifolds



Supply Manifold

Nickel-plated brass extruded bar, 1 1/4" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. Fitted with on/off valves to provide loop control with electrical actuators. Connecting thread M30 x 1.5 supplied with plastic cover caps. The caps are also used to shut the valve or to adjust the flow rate through the loop. The outlet will accept all pipe

Description	Product Code
1 1/4" x 2 outlets	488410
1 1/4" x 3 outlets	488411
1 1/4" x 4 outlets	488412

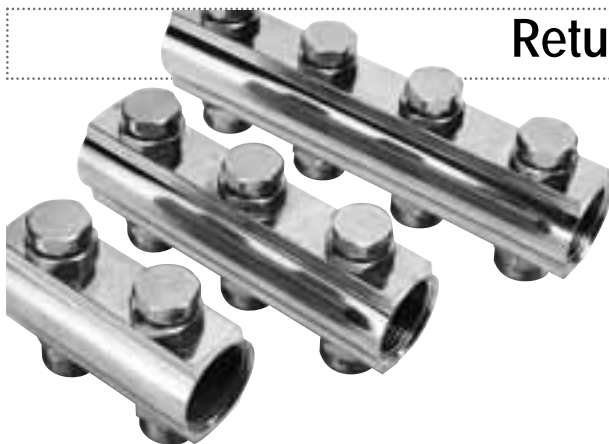
Return Manifold with Balancing Valves and Flow Meters



Nickel-plated brass extruded bar, 1 1/4" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. Fitted with balancing valves combined with flow meter to adjust and measure the flow rate in the loop. Calibrated in l/m (liters per minute), the conversion to gpm is the reading divided by 3.89, for practical purposes use 4. The visual feedback makes it very easy and convenient to adjust the system. The outlet will accept all pipe fittings.

Description	Product Code
1 1/4" x 2 outlets	488419
1 1/4" x 3 outlets	488420
1 1/4" x 4 outlets	488421

Return Manifold with Balancing Valve



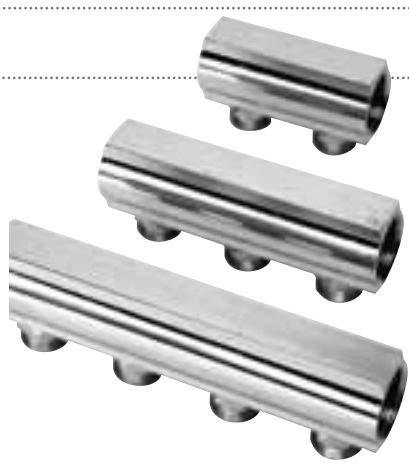
Nickel-plated brass extruded bar, 1 1/4" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. Fitted with balancing valves to adjust the flow rate. After removing the cover cap a 6mm Allen key is used to turn the valve insert. The outlet will accept all pipe fittings. There is an end stop screw in the valve to set the flow rate.

Description	Product Code
1 1/4" x 2 outlets	488413
1 1/4" x 3 outlets	488414
1 1/4" x 4 outlets	488415



1 1/4" Plain Manifold

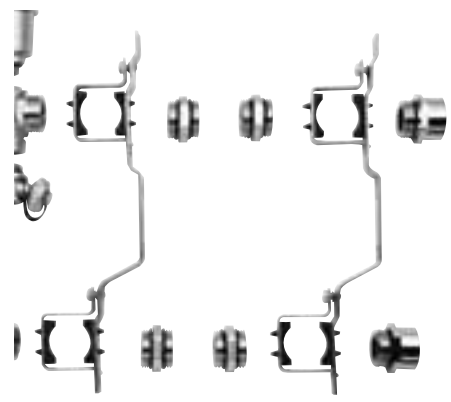
Nickel-plated brass extruded bar, 1" inside diameter, 1/2" outlets, 1" BSP female thread on the ends. No flow rate adjustment. The loop length and pump head will define the flow rate in the system. The outlet will accept all pipe fittings.



Description	Product Code
1 1/4" x 2 outlets	488416
1 1/4" x 3 outlets	488417
1 1/4" x 4 outlets	488418

1 1/4" Accessory Kit

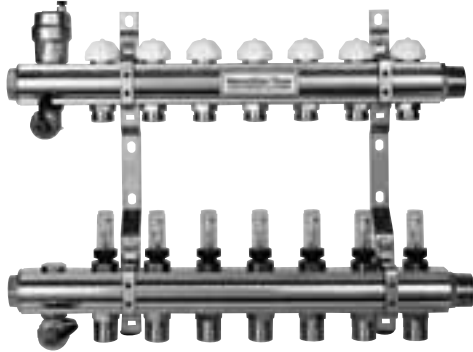
The kit contains the components to build a basic manifold set. All kits provide an automatic air vent to fit on top of the manifold, 2 drain/fill valves to fill or purge the manifold, a 1 1/4" - 1/2" plug, an end piece, 1 1/4" plug with 1" tap, a pair of brackets to mount the set on the wall and two 1 1/4" BSP - 1 1/4" MPT male adapter to connect to the North American Pipe thread. The BSP side is sealed with an "o" ring. Kit 24 is used with 2, 3 or 4 outlet manifolds with no manifold connector. Kit 58 with 5, 6, 7 or 8 outlets with 2 manifold connectors are included and Kit 912 is used with 9, 10 or 11 loop outlet manifolds with four manifold connectors included in the package.



Description	Product Code
1 1/4" Accessory Kit 24	488007
1 1/4" Accessory Kit 58	488008
1 1/4" Accessory Kit 912	488009

Manifold Sets

1" Manifold Sets

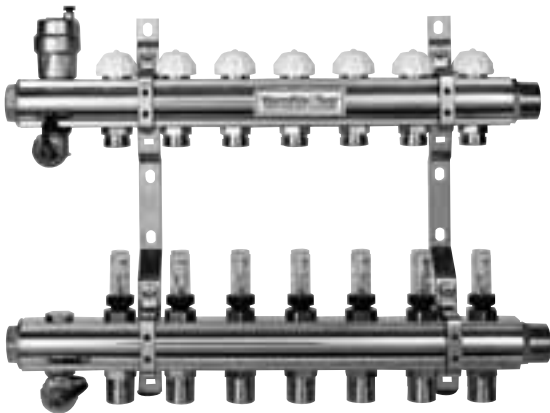


Complete manifold sets are preassembled for you and conveniently packaged under one product code. The set includes supply manifold with actuators, return manifold with balancing valves, flow rate indicators, and all of the appropriate accessories.

Simply order one part number according to the number of pipe loops on your project and receive a manifold set ready to be fitted on the wall.

Description	Product Code
2 loop	488510
3 loop	488511
4 loop	488512
5 loop	488513
6 loop	488514
7 loop	488515
8 loop	488516
9 loop	488517

1 1/4" Manifold Sets



Complete manifold sets are preassembled for you and conveniently packaged under one product code. The set includes supply manifold with actuators, return manifold with balancing valves, flow rate indicators, and all of the appropriate accessories.

Simply order one part number according to the number of pipe loops on your project and receive a manifold set ready to be fitted on the wall.

Description	Product Code
10 loop	488519
11 loop	488520
12 loop	488521



Manifold Components

Composite Pipe Fitting

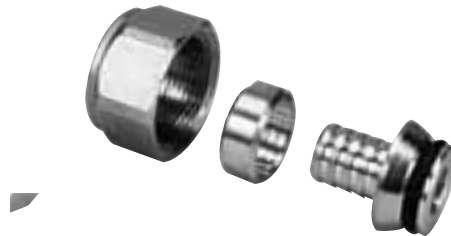
The pipe fitting is a brass insert fitting with "o" ring for composite pipe. It consists of an insert, split ring and back nut. The connecting thread on the nut is uniform for all sizes. The insert, split ring and nut are specific to the sizes and packaged in pairs. The insert fits the manifold connection with an "o" ring seal. If the loop has to be removed from the manifold the insert conveniently slides out of the manifold and stays in the pipe.



Size	Product Code
3/8"	488371
1/2"	488363
5/8"	488364
3/4"	488438

PEX Tube Fitting

The pipe fitting is a brass insert with a profile designed for PEX tubing. It consists of an insert, split ring and back nut. The connecting thread on the nut is uniform for all four sizes 3/8", 1/2", 5/8" 3/4". The insert, split ring and nut are specific to the sizes and packaged in pairs. The insert fits the manifold connection with an "o" ring seal. If the loop has to be removed from the manifold the insert conveniently slides out of the manifold and stays in the tube.



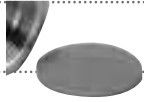
Size	Product Code
3/8"	488430
1/2"	488429
5/8"	488437
3/4"	488435

Universal Coupling

The universal coupling is a multi-purpose connector with 24 x 19 male threads common to all WarmRite manifold pipe fittings. This allows connection of any size or type of pipe (Kitec or PEX) to each other using the pipe fitting and the universal coupling. It may be used as a universal reducing coupling, repair coupling or pipe termination with an end cap. It replaces all Kitec K1 repair and reducing couplings.

Size	Product Code
24 x 19	488428

Manifold Components (cont'd)

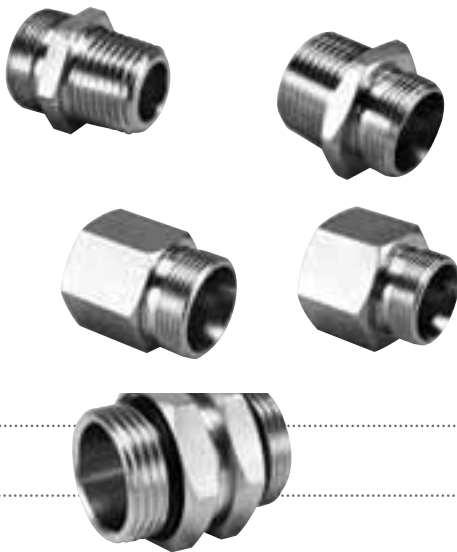


Cap

The cap has a 24 x 19 female thread. It fits the universal coupling to create a pipe termination and fits the manifold outlet to cap the outlets not used. Used with a universal coupling, it replaces all Kitec caps.

Size	Product Code
24 x 19	488427

Universal Thread Adapter Fittings



Following the same universal concept four thread adapters were designed to allow connection of Kitec and PEX to standard pipe threads. One side is the common 24 x 19 male thread accepting all Kitec and PEX fittings. The other side is 1/2" male, female or 3/4" male, female pipe thread.

Size	Product Code
1/2" Male Adapter	488431
1/2" Female Adapter	488433
3/4" Male Adapter	488432
3/4" Female Adapter	488434

Manifold Connector

Chrome manifolds are available in modules of 2, 3, 4. To build a larger manifold, a combination of the modules must be used. The maximum length recommended is 11 loops. The manifold connector has a BSP male thread on each end with an "o" ring seal.

Size	Product Code
1"	488359
1 1/4"	488423



BSP Male - NPT Male Adapter

The adapter is necessary to connect the manifold to the NPT supply system. The BSP end has an "o" ring seal.

Size	Product Code
1"	488400
1 1/4"	488402

BSP Male - NPT Female Adapter

The adapter is necessary to connect the manifold to the NPT supply pipe system. The BSP end has an "o" ring seal.



Size	Product Code
1"	488401
1 1/4"	488403

Kitec Adapter

Size	Product Code
1" BSP - 3/4" K1 Kitec	088460
1" BSP - 1" K1 Kitec	088461



Manifold Plug

The plug is used to terminate the end of the manifold when no additional parts are connected to it. The male thread has an "o" ring seal on it.



Size	Product Code
3/8" BSP	488341
1/2" BSP	488362
1" BSP	488360
1 1/4" BSP	488424

Manifold Plug with 1/2" Tapping

The plug is used to terminate the end of the manifold when additional parts are connected to it. A 1/2" BSP female thread is cut into the plug. The male thread has an "o" ring seal on it.



Size	Product Code
1" x 1/2" Tap BSP	488361
1 1/4" x 1/2" Tap BSP	488425

Manifold Components (cont'd)

1" Manifold Plug with 3/4" Tapping



The plug is used to terminate the end of the manifold when additional parts are connected to it. A 1" BSP female thread is cut into the plug. The male thread has an "o" ring seal on it.

Size	Product Code
1" x 3/4" Tap BSP	488350

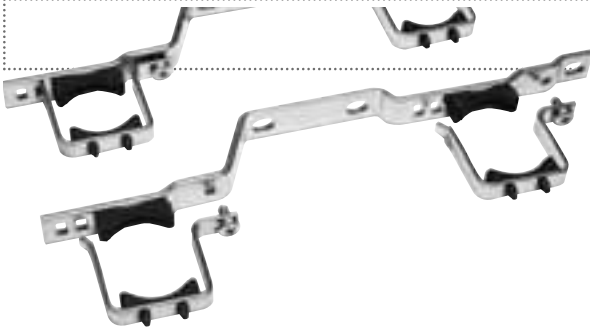
1 1/4" Manifold Plug with 1" Tapping



The plug is used to terminate the end of the 1 1/4" manifold when additional parts are connected to it. A 1" BSP female thread is cut into the plug. The male thread has an "o" ring seal on it.

Size	Product Code
1 1/4" x 1" Tap BSP	488426

Manifold Mounting Bracket (Pair)



It's easy to fasten the manifold set on the wall using a pair of brackets. The lower manifold is spaced further out from the wall so the piping for the top manifold can pass under. The rubber inserts help to absorb any possible vibration from the pump.

Size	Product Code
1"	488357
1 1/4"	488422

Isolating Valve (half union)



It is very practical to isolate the manifold from the supply system. This valve connects directly to the manifold with a 1" "o" ring sealed connection. The manifold connection side is a union connection, so it is possible to remove the manifold set from the supply by shutting the valve and removing the union nut. There is no need to drain the supply system. The outlet connection is 1" BSP female so the BSP-NPT adapter must be used to connect the supply line.

Size	Product Code
1" BSP	488358

Valves & Actuators

Manual Air Vent

All hydronic systems have to be purged of air from time to time. The manual air vent is used to relieve the air when servicing the system.

Size	Product Code
1/8"	488160
1/4"	488161
1/2"	488162



Automatic Air Vent

The automatic air vent will gradually free the system of the air dissolved in the water. All hydronic systems should be equipped with an automatic air vent.

Size	Product Code
3/8" BSP	488365
1/2" BSP	488366



Drain/Filling Valve

The valve connects to the manifold with a 1/2" BSP thread and "o" ring. The capped connection is a 3/4" garden hose connection. The outlet swivels and the top of the end cap is used to open/close the valve.

Size	Product Code
1/2" BSP	488367



End Piece

This termination connects to the manifold with a 1" "o" ring sealed male thread. There are two outlets available - a 3/8" female at the top and a 1/2" BSP thread at the bottom. Generally a 3/8" air vent is fitted on the top and a 1/2" drain valve on the bottom connection.



Product Code
488376

Valves & Actuators (cont'd)

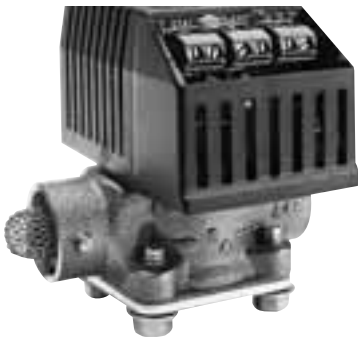


Tempering Valve

This 3-way valve is used to lower the supply temperature in a supply system. It has two inlet ports and one outlet port. The high temperature is connecting to the "hot" port, the cold or return connects to the "cold" port and the outlet is marked "mix". The valve accurately adjusts, maintains and limits the hot water temperature to a desired setting defined by the user. The temperature range is 110 - 145°F.

Size	Product Code
1/2" NPT CV 2.6	488342
3/4" NPT CV 3.2	488343
1" NPT CV 3.5	488344

Zone Valve 24V (Automag)



Automag residential hydronic heating systems offer unsurpassed reliability and comfort. We provide the only hydronic heating systems and products based on the patented Automag fail-safe valve; it is normally open, unlike all others which are normally closed.

This innovative replacement valve is reliable, fail-safe and easy to install. Simple two-wire connections make it quick operation to get quality Automag zone control. Like all Automag hydronic heating systems, this valve stays normally open... if the power goes off, the heat stays on.

Automag UR Valve features:

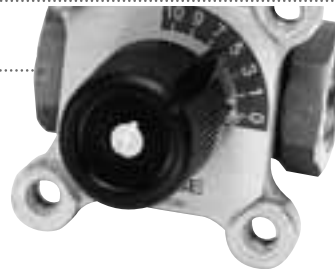
- Relay included on circuit board under valve cover
- LED's indicate power to valve and zone thermostat calling for heat
- Soft-close, filtered power circuit eliminates humming and water hammer
- Easy installation – AC to DC converter built into board

Size	Product Code
1/2" Solder Socket	488320
3/4" Solder Socket	488321
1" Solder Socket	488322



Mixing Valve 3-Way

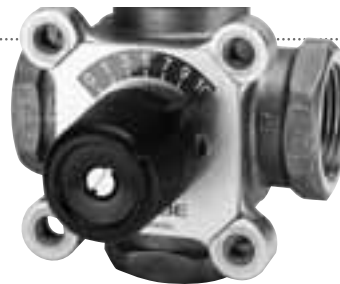
This valve is designed for use in hydronic heating systems to control the water temperature for different zones. This is achieved by mixing the return water with the warmer supply water. This can be done manually or with an actuator. The valve works equally well in mixing and diverting applications. The connections are NPT female threads.



Size	Product Code
3/4" NPT ESBE 3MG20-6.3 CV7.3	488347
1" NPT ESBE 3MG25-12 CV14	488346
1 1/4" NPT ESBE 3MG32-8 CV21	488324
1 1/2" NPT ESBE G138 CV35	488323

Mixing Valve 4-Way

This four-way valve has a double mixing function. As above, the system supply temperature can be lowered by mixing a portion of the return water to the high temperature supply. In the meantime some of the high temperature water is mixed with the system return elevating the water temperature returning to the boiler. The mixing can be set up manually or by using an actuating motor. The connections are NPT female threads.



Size	Product Code
3/4" NPT ESBE MG20-6.3 CV7.3	488348
1" NPT ESBE 4MG25-12 CV14	488349
1 1/4" NPT ESBE 4MG32-8 CV21	488325
1 1/2" NPT ESBE G438 CV35	488326

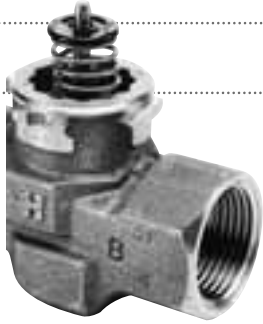
ESBE Control Motor

Size	Product Code
(0 - 10V)	488209

Note: use with 3 & 4 way mixing valve



Valves & Actuators (cont'd)



Control Valve Body (Honeywell)

These valves operate in only two possible positions, either fully open or fully closed. The two-way is a zone valve while the three-way is a diverting valve. The two inlets are marked "A" and "B" and the outlet is marked "AB". The default position of the diverting valve is "B" port open "A" port closed. When the actuator is powered "A" opens and "B" closes. Both valves must be used with the Control Valve Actuator. The 3-way modulating body is designed to provide continuous mixing and is always used with the Modulating Valve Actuator. The connections are 1" NPT female threads.

Description	Product Code
2 way, 1"	488381
3 way, 1"	488382
3 way modulating, 1"	488277



Control Valve Actuator (Honeywell)

The control valve actuator operates two-way or three-way control valves. When power is applied, the actuator changes the valve position. The two-way valve opens when power is applied and the three-way valve changes position as described above. The return is also motor controlled. The actuator is fitted with an independent end switch that can be used in the control system. The rating of this switch is 110V. Two types of actuators are available: 110V or 24V operating voltage.

Description	Product Code
24 volt	488383
110 volt	488384

Modulating Valve Actuator (H)

This actuator is always used with the modulating valve body. It provides precision flow control of hot water. It is driven by a 00-10 VDC or 2-10 VDC controller. The price list includes the Honeywell controller matching the application. (488756)



Description	Product Code
2 - 10 VDC	488278

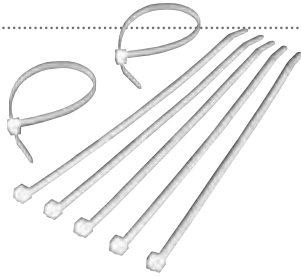
Valve Actuator

Loop valve actuators (telestats) are used on manifolds to open or close one loop. The supply manifold (088352-088354, 088855-088857) has a valve built in. The actuator is mounted on the valve. It operates with 24V. When power is applied, the actuator opens the valve and water flows through the loop. When the power is disconnected, the valve closes. The actuator is available with a built in end switch. This can be used in various control circuits to control other items of the system.



Description	Product Code
24 volt	488372
24 volt with end switch	488373

Pipe Accessories



Nylon Tube Tie

Size	Product Code
4"	488391



Polypropylene Pipe Hanger

Size	Product Code
1/2" Kitec XPA (3/8" I.P.S.)	088300
5/8" Kitec XPA (1/2" I.P.S.)	088301
3/4" Kitec XPA (3/4" I.P.S.)	088302
1" Kitec XPA (1" I.P.S.)	088303



Half Hanger

Size	Product Code
1/2" Kitec XPA Nail Clip	088304
5/8" Kitec XPA Nail Clip	088305
3/4" Kitec XPA Nail Clip	088306



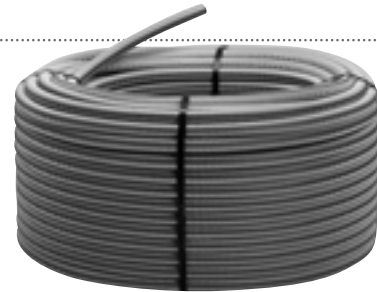
PVC Protective Sleeve

Size	Product Code
3/8", 1/2", 5/8" Kitec XPA (std. sleeve i.d. = 1.03")	088206



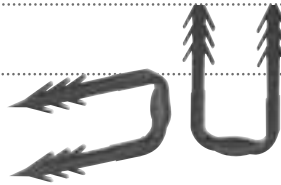
Flexible PVC Protective Sleeve

Description	Product Code
3/4" x 100' (use with Kitec 3/8 x 1/2")	012040
1" x 100' (use with Kitec XPA 5/8")	012041



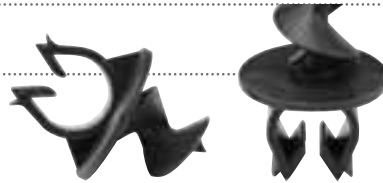
Plastic Staple

Size	Product Code
For 1/2" Pipe	488392



Insulation Screw Clip

Size	Product Code
For 1/2" Pipe	488393



Beveling Tool

Size	Product Code
5-in-1 Beveling Tool	088347

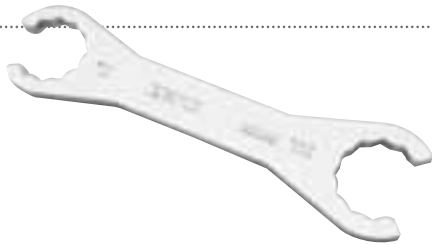


Pipe Accessories (cont'd)



Cutter

Description	Product Code
Cutter	088210
Replacement Blade	088211



Wrench

Size	Product Code
Manifold fitting nut, 1/2" Kitec XPA K1 nut	488398



Repair Coupling

Size	Product Code
3/8" Kitec XPA	088076
1/2" Kitec XPA	088090
5/8" Kitec XPA	088091
3/4" Kitec XPA	088092
1" Kitec XPA	088128



Reducing Coupling

Size	Product Code
1/2" x 5/8"	088125
1/2" x 3/4"	088119
5/8" x 3/4"	088126
3/4" x 1"	088255



Kitec XPA Cap

Size	Product Code
1/2"	088116
5/8"	088117
3/4"	088118
1"	088318



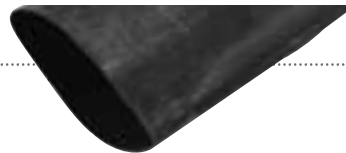
Heat Transmission Plate

Size	Product Code
For 3/8" XPA, 5" x 24"	488205
For 1/2" XPA, 5" x 24"	488395

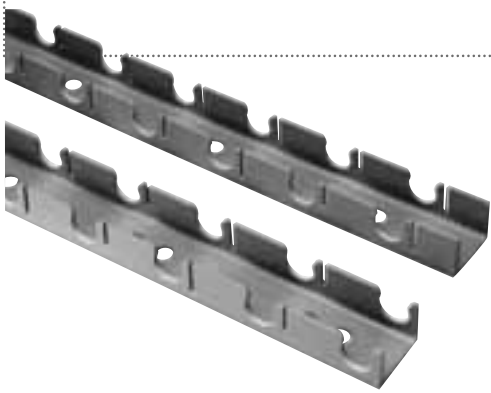


Protective Sleeving (Repair)

Description	Product Code
4" Heatshrink Sleeve for 3/8", 1/2", 5/8" Fittings	488207
4" Heatshrink Sleeve for 3/4", 1" Fittings	488206



Pipe Accessories (cont'd)



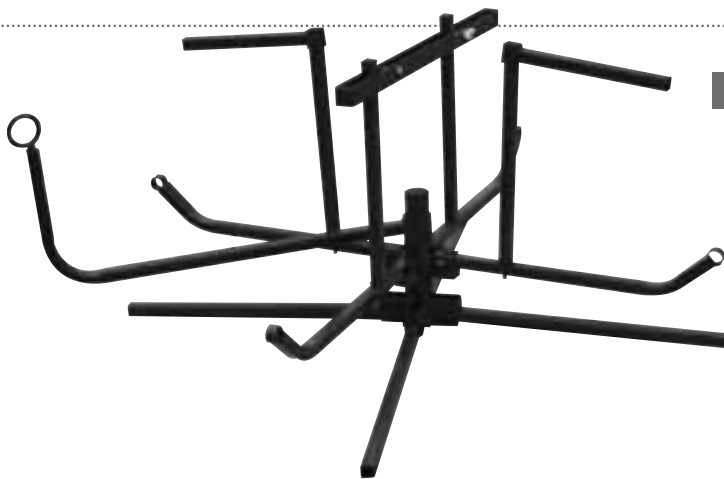
Rail Fix (Pipe Track)

Size	Product Code
1/2" K x 6.5 ft (2m)	488396
5/8" K x 6.5 ft. (2m)	488397



Pipe Bender Kit

Size	Product Code
1/2", 5/8", 3/4"	088088
1/2", 5/8", 3/4", 1"	088800



Uncoiler

Product Code
488999



Thermostats

Digital Room Thermostat

The Digital Room Thermostat can be used with most 24 volt gas, oil or electric heating systems or gas millivolt heating systems. It cannot be used with 120 volt heating systems or heat pumps. A large easy to read display shows you the current room temperature at all times. It has a built in digital control system to accurately control the temperature in your home. The PSD158 will learn the temperature characteristics of your home on a daily basis and customize the control to give you the best comfort possible from a digital thermostat. You can also select a tighter temperature control if you have forced hot water system or if closer comfort is preferred over energy savings.



Description	Product Code
24 volt, 7°C - 32°C, 45°F - 90°F	488380

Heating/Cooling Thermostat

The PSD 150 heating / cooling thermostat has the same features as the PSD 158 characterized above. The extra position of mode switch, changes the setup so the same thermostat operates the cooling system. Conveniently one device will control the heating and cooling in the building.



Description	Product Code
24 volt, 7°C - 32°C, 45°F - 90°F	488327

WarmRite Thermostat (Heating only)

The 276 thermostat is the latest generation of digital electronic thermostats. It senses the room temperature with a built-in air temperature sensor. When operating with the air sensor, the 'on' time for the "Heat" relay is calculated to satisfy the requirements of the room. This is an independent contact output rated for low voltage control. The unit can be set to display the temperature in °F or °C.



Description	Product Code
24 volt, 1.5°C - 38°C, 35°F - 100°F	488276

Thermostats (cont'd)

WarmRite Thermostat with Slab/Floor Sensor



The 273 thermostat is designed to operate in a number of different applications. It is supplied with a slab sensor to operate as a floor-sensing device. It also has a built-in air sensor. It can be programmed to sense the slab and air temperature at the same time.

When operating with only a slab sensor, the on-time of the "Heat" relay is calculated to satisfy the requirements of the slab sensor. The thermostat operates to maintain the set-slab temperature.

When operating with both air and slab sensors, the thermostat calculates an 'on' time for the "Heat" relay to satisfy the slab sensor's requirements and an 'on' time to satisfy the air sensor's requirements. The "Heat" relay operates for the longer of these two times.

The "Heat" relay has an independent contact output rated for low voltage control. The unit can be set to display the temperature in °F or °C.

Description	Product Code
24 volt, 1.5°C - 38°C, 35°F - 100°F	488273

WarmRite Programmable Thermostat



This unit includes all potential heating and cooling control features possible in a heating / cooling system. It is a two-stage device which can be programmed for two stage heating or single stage heating with cooling. It allows the connecting of an external sensor for slab or outdoor sensing.

To optimize the required heating load, the unit can be programmed to set single, two or four different temperatures during the day. If it is required, different patterns can be programmed for each day of the week.

Description	Product Code
24 volt, 1.5°C - 38°C, 35°F - 100°F	488274

Room Thermostat

The room thermostat is the device that senses temperature and converts it into the heat demand signal. This unit has an independent contact rated 24V which opens and closes on demand. The temperature differential is 3°F. These thermostats should have an unobstructed line of sight to the radiant floor to work sufficiently.



Description	Product Code
24 volt	488385

10°C - 30°C (50°F - 86°F)

Modulating Thermostat (Honeywell)

This is the controller for the modulating valve (488277) and actuator (488278). The three items together provide a continuous modulating control of the water temperature. The output is a 2-10VDC control signal. The controller can be mounted horizontally or vertically on the wall. The unit should have an unobstructed line of sight to the radiant floor to work sufficiently.



Description	Product Code
2 - 10VDC controller	488279

Room Thermostat Line Voltage

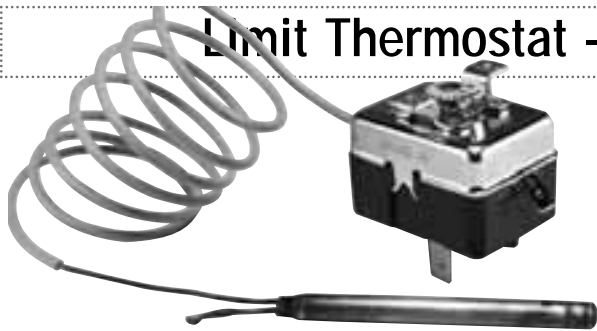
The room thermostat is the device that senses temperature and converts it into the heat demand signal. This unit has an independent contact rated 110V which opens and closes on demand. The differential is 1°C or 2°F. These thermostats should have an unobstructed line of sight to the radiant floor to work sufficiently.



Description	Product Code
110 volt, 10°C - 30°C	488387
110 volt, 50°F - 86°F	488388

Thermostats (cont'd)

Limit Thermostat - Screw Driver Adjustable (Aquastat)



Another often used name for this device is aquastat. The temperature is preset with a screw and when the temperature reaches the setting the independent contact makes or breaks. The normally closed and common contacts are used when closed contacts are needed to provide heat input. The range is from Off 5°C to 90°C. The dial is calibrated in °C, the length of the capillary tube is three feet. The switch is rated for 110V. The sensor is 0.25" (5mm) diameter, 2" (50 mm) long. A matching thermowell (488263) is included in the price list. It is very convenient to use as a limit device.

Range	Product Code
Off 40°F - 196°F (Off 5°C - 90°C)	488262
3 Foot Capillary Lead	

Limit Thermostat - Knob Adjustable (Aquastat)

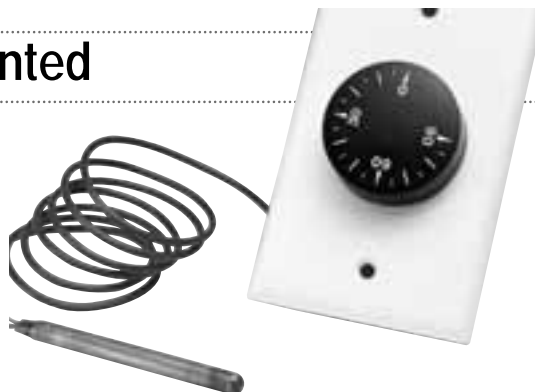


Another often used name for this device is aquastat. The temperature is preset with a knob and when the temperature reaches the setting the independent contact makes or breaks. The normally closed and common contacts are used when closed contacts are needed to provide heat input. The range is from Off 5°C to 90°C. The dial is calibrated in °C, the length of the capillary tube is three feet. The knob is rated for 110V. The sensor is 0.25" (5mm) diameter, 2" (50 mm) long. A matching thermowell (488263) is included in the price list. It is very convenient to use as a limit device.

Range	Product Code
Off 40°F - 196°F (Off 5°C - 90°C)	488260
3 Foot Capillary Lead	

Limit Thermostat - Wall Mounted

This knob adjustable limit thermostat is conveniently mounted on a standard electrical wall plate. It fits the usual electrical wall box allowing a professional installation into the wall cavity. Mount it one foot above the ground, run a three foot long conduit into the floor. The capillary sensor slides in the conduit measuring the floor temperature.



Range	Product Code
Off 40°F - 196°F (Off 5°C - 90°C)	488264

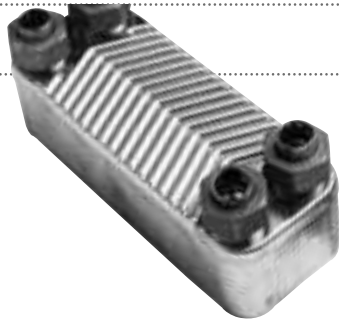
Thermowell

A thermowell is used to provide close contact between the water and the temperature sensor. The well is immersed into the water stream. The sensor is 0.27" (5mm) in diameter and 2" (50mm) long, connects to the piping with 1/2" male thread. The well is copper tube welded to a brass nut.



Size	Product Code
I.D.: 0.27", length 2", 1/2" MPT	488263

Thermostats (cont'd)



Heat Exchanger

When the supply water cannot be used directly to transfer the heat, a separate hydronic loop is used to heat the area. A heat exchanger is designed to transfer the heat from one loop to the other without mixing the liquids. The water flows in opposite directions in the two compartments. The capacity of the heat exchanger is defined and limited by its size. This model is recommended up to 50,000 Btu/hr heat loads. The unit is made of stainless steel and can be used for potable applications. The connections are 1/2" copper unions. The threads on the heat exchanger are 3/4" NPT. Always follow the recommended flow directions.

Description	Product Code
(Max. 50,000 BTU)	488345



Thermo-pressure Gauge

The gauge measures the pressure and temperature at the same time and displays it using two needles. The top part is the pressure ranging from 0 to 75 psi, the lower part is the temperature reading from 30°F to 240°F. The connection is 1/4" MPT male thread, the length of the probe is 2".

Range	Product Code
0 - 75 psi, 60 - 320°F	488404



Transformer

When low voltage control is used the line voltage (110V) needs to be converted to 24V. The transformer is rated to 40VA 24V. Grounding is not required because of the full plastic enclosure.

Description	Product Code
24 volt, 40VA	488390



Heating Controls

Timer

The tekmar Timer 031 is a microprocessor-based timer which can be programmed to provide up to two setback events per day for each day of the week. The 031 also provides temporary or permanent override options, 10 year memory backup of the programmed schedule, and an advanced signal for the Optimum Start/Stop function of certain controls.



Description	Product Code
tekmar 031	488290

Room Temperature Unit

The Room Temperature Unit 055 consists of a temperature sensor and an adjustable dial which is used to set the desired indoor temperature. The RTU 055 dial has a temperature range from 50 to 80°F (10 to 27°C). The RTU is designed to be mounted onto a standard 2" x 4" electrical box or to be surface mounted.



Description	Product Code
tekmar 055 10°C - 27°C (50°F - 80°F)	488296

Room Temperature Unit

The tekmar Room Temperature Unit (RTU) 060 consists of a temperature sensor, adjustable dial, push button, and indicator LED. The adjustable dial is used to set the desired indoor temperature during the occupied period. The push button is used to provide either a temporary occupied override or a permanent unoccupied override. The indicator LED is used to indicate the type of override that is currently in effect. The RTU 060 dial has a temperature range from 40 to 100°F (4 to 38°C). In cases where a restricted temperature range is required, the dial rotation can be limited using limit pins supplied with the RTU.



Description	Product Code
tekmar 060	488316

Heating Controls (cont'd)

Room Temperature Unit



The tekmar Room Temperature Unit (RTU) 062 consists of an air temperature sensor, a liquid crystal display (LCD) and four buttons. These buttons and the LCD are used to set and view the desired room temperature. The RTU's LCD displays the current room temperature, the outdoor air temperature and a number of other items.

Description	Product Code
tekmar 062	488317

Room Temperature Unit



The tekmar Room Temperature Unit (RTU) 063 consists of one internal air sensor, three remote temperature sensor inputs, a liquid crystal display (LCD) and four buttons. These buttons and the LCD are used to set and view the desired room temperature. The RTU's LCD displays the current room temperature, the outdoor air temperature, temperatures at the remote air or slab sensors, and a number of other items.

Description	Product Code
tekmar 063	488318

Set Point Controller



The 150 is a microprocessor-based control with a digital display and a remote sensor. The 150 has an extremely wide set point range and is accurate to within $\pm 0.5^{\circ}\text{F}$. Pulse width modulation control logic is provided for slow responding systems. Either heating or cooling systems can be controlled through the SPDT output relay.

Description	Product Code
tekmar 150	488299

Included: Supply Sensor

Difference Set Point Controller

The Difference Set point control 155 is a microprocessor-based control that allows the transfer of heat from a source to a storage tank whenever the temperature difference between the two is greater than the selected ΔT set point. Additional set points are also included to help prevent the storage tank from overheating or the source from freezing. Both drainback and draindown systems can be used with this control.



Description	Product Code
tekmar 155	488303
Included:	Source Sensor Storage Sensor

WarmRite Control (Variable

The WarmRite Control is a micro-processor control designed to control the supply water temperature to a heating system. The supply temperature may be controlled, based on a setpoint temperature or on an outdoor reset function. The control can be selected to control the water temperature via a variable speed injection pump or an on/off injection device (valve/pump). Boiler protection against flue gas condensation is possible when using variable speed injection mixing.



Description	Product Code
mixing control	488302
Included:	Outdoor Sensor Supply Sensor Boiler Sensor

Heating Controls (cont'd)



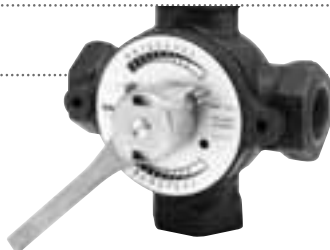
Four Way Valve Controller

The Mixing Control 360 is a microprocessor-based outdoor reset control designed to operate a 24V (ac) floating action 2, 3, or 4-way valve. The 360 also provides for boiler minimum protection, system pump operation, and boiler operation. As well, a tekmar indoor sensor can be connected to the control to provide indoor temperature feedback.

Description	Product Code
tekmar 360	488289

Included: Outdoor Sensor
Supply Sensor

Optional: RTUs (tekmar 055)



4 Way Valve - 1"

The 4-Way Mixing Valves 016 - 023 mix supply water from a source with water returning from a system. The valve can be automatically operated by utilizing a tekmar Actuating Motor and a floating action control signal. This precision valve is manufactured to the highest quality standards for a long trouble free service. It is designed for use in closed loop hydronic systems with properly treated water.

Description	Product Code
tekmar 016	488281



Actuating Motor

The tekmar Actuating Motor 010 is designed to operate any of the tekmar 4-way mixing valves from type 016 through to type 023. An isolated, auxiliary end switch is provided to turn on a boiler or other device. The cam for this end switch is adjustable. The Actuator Motor 010 can deliver 310 in•lbs (35 N•m) over a 90° stroke.



Description	Product Code
tekmar 010	488280

Mixing Control

The Mixing Control 362 is a microprocessor based control with two distinct operating modes.

MODE 1 - allows the control to provide a reset mixed supply water temperature to a heating system based on outdoor air temperature. Multiple zone temperature controls can be achieved by using either a conventional thermostat system or by using tekmar Zone Controls attached to the 362. For single zone heating applications, a single Room Temperature Unit (RTU) can be connected directly to the 362 for zone temperature control.

MODE 2 - allows the control to provide a single zone of snow melting. With the addition of a Snow melting Kit 092, the 362 can provide slab temperature control and slab ΔT protection. The melting mode is initiated manually either with a demand signal or from the Snow Melting Kit enabling device.



Description	Product Code
tekmar 362	488305

Included: Outdoor Sensor, Supply Sensor, Boiler Sensor

Optional: RTUs (tekmar 062, 063)

Use as snowmelt control with tekmar 092.

Heating Controls (cont'd)

Universal Reset Control



The Universal Reset Control 363 is a microprocessor based control designed to maximize the comfort and efficiency provided by a hydronic heating system. The control automatically adjusts the boiler and mixed loop water temperatures that are delivered to the heating system by using outdoor reset. For a mixing device, the 363 can use a variable speed driven wet-rotor circulator or a floating action driven mixing valve. The 363 is capable of controlling an indirect Domestic Hot Water (DHW) storage tank and/or a set point load. The temperature of individual zones can be controlled by connecting a conventional thermostat system or a tekmar Zone Control to the 363.

Description	Product Code
tekmar 363	488308

Included: Outdoor Sensor, Boiler Sensor

Optional: RTUs (tekmar 062, 063)

Zone Control



The Zone Control 369 is designed to control the temperature in up to six heating zones using Room Temperature Units (RTUs) or indoor sensors. The 369 allows one stage heating zones, two stage heating zones, or a combination of one stage and two stage heating zones. PID zoning logic allows for staggering and synchronization of multiple zones in order to minimize boiler short cycling. The 369 is capable of operating a single cooling output and can provide automatic or manual heat/cool change over. When the 369 is used with a tekmar Reset or House Control, the 369 provides indoor temperature feedback that automatically adjusts the supply water temperature in order to satisfy the zone with the highest heat load. A large Liquid Crystal Display (LCD) is incorporated in order to view system status and operating information. The LCD and user key pad are used to set the control's adjustments and to monitor zone running times, outdoor high and low temperatures, minimum zone temperatures, and many other useful items.

Description	Product Code
tekmar 369	488304

To be ordered separate: RTUs (tekmar 060, 062, 063)

Included: Outdoor Sensor (tekmar 070)



Snow Melt Kit for t362

The tekmar Remote Start/Stop Module 039 provides the user with the ability to start and stop a snow melting system. As well the 092 gives the user the ability to adjust the running time of their snow melting system. An indicator light on the face of the 092 provides visual indication as to the current operation of the snow melting system. The 092 is designed to work with specific tekmar snow melting controls.



Description	Product Code
tekmar 092	488306

Included: tekmar 039 Remote Start
tekmar 071 Universal Sensor, 1 Foot Lead
tekmar 072 Slab Sensor, 25 Foot Lead

Outdoor Sensor

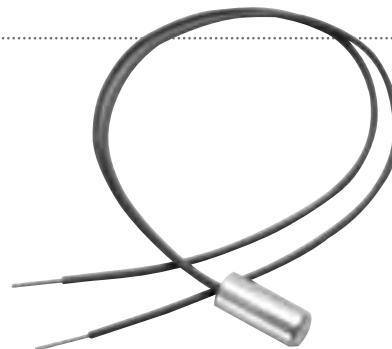
The 070 includes a 10k Ω thermistor which provides an accurate measurement of the outdoor temperature. The 070 sensor is protected by a white U.V. resistant PVC plastic enclosure.



Description	Product Code
tekmar 070	488297

Universal Sensor

The tekmar Universal Sensors have a zinc sleeve for fast response and a wide operating range. These sensors can be used in a multitude of applications. The 071 is supplied with 10 inches (250mm) of two conductor cable.



Description	Product Code
tekmar 071 1 Foot Lead	488307

Heating Controls (cont'd)

Slab Sensor



Slab Sensor 072 has a PVC plastic sleeve which is designed for use in soils or concrete. The 072 is supplied with 20 ft. (6m) of 2 conductor cable.

Description	Product Code
tekmar 072 25 Foot Lead	488298

Relay



The tekmar relays 003 and 004 are pin configured to all tekmar application drawings for ease of installation. The relays are easily serviced by unplugging them from their sockets without touching the wiring. Each relay comes with a mechanical test button for ease of troubleshooting.

Description	Product Code
tekmar 003 - 24 volt	488291
tekmar 004 - 110 volt	488292



Boiler Controller

The Boiler Control 260 is designed to control a single stage heat source in order to provide outdoor reset or Domestic Hot Water (DHW) operation. The control has a Liquid Crystal Display (LCD) to view system status and operating information. Additional function include:

- Quick setup for easy installation and programming of control
- Advanced settings to fine-tune building requirements
- Pump and valve exercising
- Optional indoor sensor for room air temperature control
- Powered boiler pump output
- DHW pump or valve operation
- Optional DHW priority
- Test sequence to ensure proper component operation
- Setback input for energy savings
- 120 V (ac) power supply
- CSA C US certified (approved to applicable UL standards)



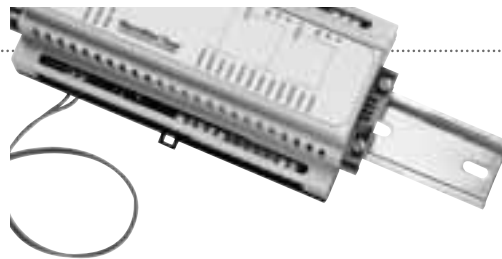
Description	Product Code
tekmar 260	488309

Included: Outdoor Sensor, Boiler Sensor

Optional: RTUs (tekmar 060, 062, 063)

Circulator Control Module

This module is the fundamental electrical connection unit for all control panels operating with power. It is designed to operate a line voltage circulator or valve with low voltage control. It includes the control relay, 24V transformer, high limit switch and high limit sensor. The unit also has provision to connect three loop control power heads and related thermostats.



Description	Product Code
Circulator Control Module	488250

Heating Controls (cont'd)



Actuator Control Module

This unit is always used as an extension to the Circulator Control Module 2. Each module extends the number of loops to be controlled with three more connections. The power head with or without end switch connects to one side, the thermostat to the other side. It provides power and delays to all connections required to operate the loop-by-loop control system. Loop numbers 2-3 will not need this unit, loop numbers 4-6 will need one, loop numbers 7-9 will need two and loop numbers 10-11 will need three units attached to the circulator control module.

Description	Product Code
3 Zones/Module	488251
Always used as extension to 488250	

Snow/Ice Sensor Kit



The tekmar Snow/Ice Sensor 090 and tekmar Sensor Socket 091 are used with all tekmar Snow/Ice Detectors except type 214.

The Snow/Ice Sensor is of rugged design and sits flush with the slab surface after being mounted into the Sensor Socket. The Socket is installed directly into the snowmelt slab halfway between the heating elements or pipes.

The Sensor measures the slab temperature, sensor surface temperature and sensor surface moisture level.

Description	Product Code
tekmar 093	488310
65 Foot Cable	
Includes: Sensor and Socket	

Manual Snow Melting Control

The 650 is a microprocessor-based manual start/stop control that maintains a set temperature in a snow melting slab. The 650 uses pulse width modulation (PWM) to operate an on/off injection valve, pump, boiler or contactor for electric cables. Other 650 features includes Slab Outdoor Reset, a Warm Weather Cut Off, Cold Weather Cut Off, Snow Melting Set point and Snow Idling Set point. The control also has a built-in timer for timed melting events.



Description	Product Code
tekmar 650	488285
Included:	Outdoor Sensor Slab Sensor Manual On/Off

Automatic Snow Detector & Melting Control

The 665, when combined with the tekmar Snow/Ice Sensor 090, provides automatic snow/ice detection and maintains a set temperature in a snow melting slab. The 665 uses pulse width modulation (PWM) to operate an on/off injection valve, pump, boiler or contactor for electric cables. Other 665 functions include Slab Outdoor Reset, a Warm Weather Cut Off, Cold Water Cut Off, Snow Melting Set point and Snow Idling Set point.



Description	Product Code
tekmar 665	488301
Included:	Outdoor Sensor
To be ordered separately:	Snow/Ice Sensor Kit (tekmar 093) Auto On/Off

Heating Controls (cont'd)

Automatic Snow Detector & Melting Control w Boiler Protection



The 664, when combined with the tekmar Snow/Ice Sensor 090, provides automatic snow/ice detection and maintains a set temperature in a snow melting slab. The 664 operates a floating action output, variable speed output or modulating output (4-20 mA) to provide several protection and control features including: Maximum System ΔT to prevent slab cracking, Boiler Minimum Return protection to prevent boiler shock or flue gas condensation, and Maximum System Supply for radiant tubing protection. The 664 also provides Viscosity Compensation to decrease slab pickup time.

Description	Product Code
tekmar 664	488312

Included: Outdoor Sensor

To be ordered separately:
Snow/Ice Sensor Kit (tekmar 093)
Auto On/Off



Control Panels

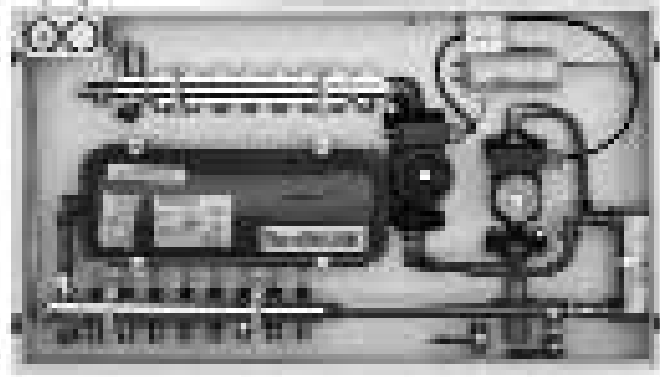
Control Panel with Heat Exchanger

This panel is designed to separate the secondary system fluid from the primary system fluid by utilizing a plate heat exchanger, and is recommended for applications that use an open loop system as the heat source or in applications where a water/glycol mixture is used in the secondary heating loop. The secondary system is filled during installation and operates as a closed loop circuit. The panel comes with an expansion tank and relief valve for the secondary side of the system. The design supply fluid temperature in the primary loop is set with a tempering valve.

The panel is operated as a single zone system by using a thermostat to activate the primary circulator. The secondary circulator operates continuously providing even heat distribution during the heat up and cool down cycles. The panel can also be operated as a multiple zone system. The on/off valves located on the supply manifold can be fitted with optional electrical valve actuators to control individual loops in the system. In this application, every actuator is connected to a thermostat located in the area served by the loop. When the thermostat calls for heat, the actuator opens the loop allowing flow. When all loops are satisfied, the primary and secondary circulators are shut down.

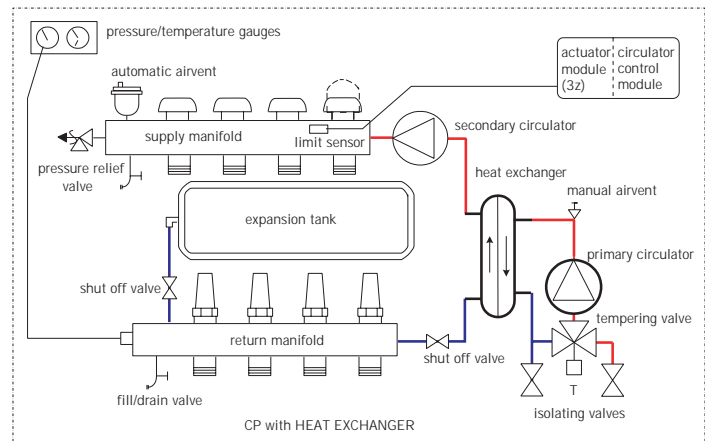
Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rate of each loop. The circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature. Valves on the supply and return manifolds allow each loop to be isolated when necessary. The optional actuators and thermostats must be ordered separately according to project specifications.

The panel operation is controlled by closure of a 24V dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, indoor/outdoor reset controls, integrated building controls, etc.



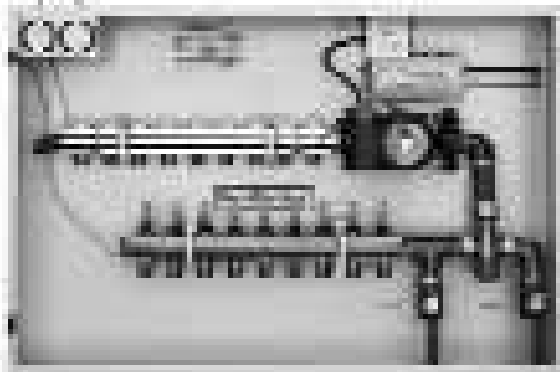
- 3 - 9 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- Tempering valve
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable, and high limit)
- Primary circulator (stainless steel)
- Secondary circulator
- Expansion tank for secondary circuit
- Plate heat exchanger
- Pressure and temperature gauges
- Fill/drain valves for secondary circuit
- Pressure relief valve for secondary circuit
- Isolating valves
- Automatic air vent for secondary circuit
- Manual air vent for primary circuit
- Steel cabinet

Description	Product Code
3L CP w Heat Exchanger	489030
4L CP w Heat Exchanger	489031
5L CP w Heat Exchanger	489032
6L CP w Heat Exchanger	489033
7L CP w Heat Exchanger	489034
8L CP w Heat Exchanger	489035
9L CP w Heat Exchanger	489036



Control Panels (cont'd)

Floor Warming Control Panel



- 3 - 9 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- Programmable thermostat
- Slab sensor
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Circulator (non-ferrous)
- Tempering valve
- Temperature gauges
- Fill/drain valves
- Isolating valves
- Steel Cabinet

This panel is designed to operate floor warming and basic heating systems. This panel incorporates non-ferrous components to allow use with the domestic water supply where permitted.

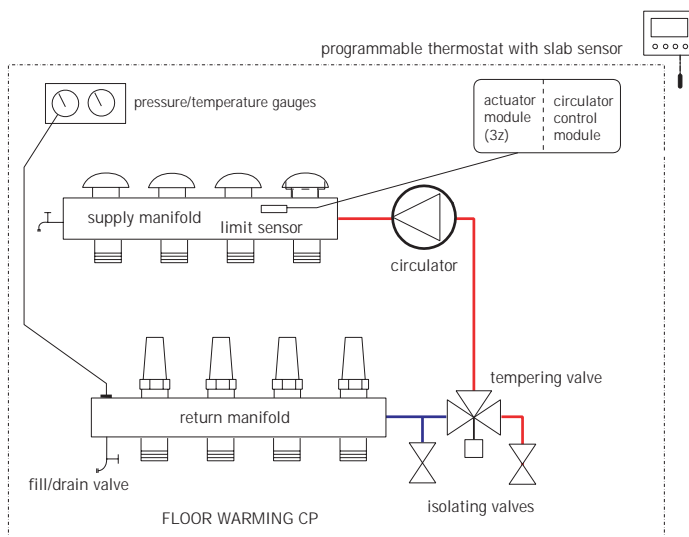
The panel is supplied with a programmable thermostat to sense slab temperature or air temperature depending on the application. In a floor warming application the thermostat is programmed to sense slab temperature. In a space heating application it is programmed to sense air temperature, or optionally air and slab temperature. The thermostat can be programmed to circulate the water throughout the year to prevent stagnation when utilizing a domestic water heat source. A built in tempering valve allows control of supply water temperature.

The panel is operated as a single zone system by using the thermostat to activate the circulator.

The panel can also be operated as a multiple zone system. The on/off valves located on the supply manifold can be fitted with optional electrical valve actuators to control individual loops in the system. In this application every actuator is connected to a thermostat located in the area served by the loop. If periodic circulation to avoid stagnation is required, all thermostats on the system must be programmable thermostats with timer capabilities.

Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rate of each loop. The circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit that prevents the supply water from exceeding the desired temperature. Valves on both the supply and return manifolds allow for isolation of the loop when necessary.

The panel operation is controlled by closure of a 24V dry contact. The panel comes complete with a programmable thermostat, but also may be controlled by devices such as: two and three wire room thermostats, set point controls, indoor/outdoor reset controls, integrated building controls, etc.



Description	Product Code
3L Floor Warming CP	489011
4L Floor Warming CP	489012
5L Floor Warming CP	489013
6L Floor Warming CP	489014
7L Floor Warming CP	489015
8L Floor Warming CP	489016
9L Floor Warming CP	489017



Injection Mixing Control Panel

This panel is designed to control supply fluid temperature by injection mixing. The WarmRite Control provides variable speed operation of an injection circulator based on outdoor air temperature. This panel is ideal when supply temperature control is required. The application of this panel is extended to control the return water temperature for conventional boilers by installing the return water temperature sensor.

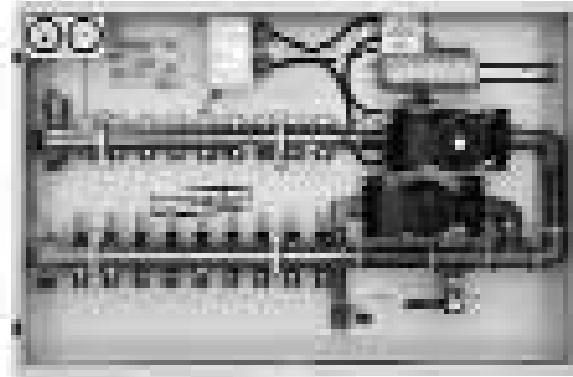
When the control is in the outdoor reset mode, the speed of the injection circulator is varied to maintain a target fluid temperature in the supply manifold based on outdoor air temperature. The control can alternately be used as a set point control. In this mode, the speed of the injection circulator is varied to maintain a user adjustable supply fluid temperature. A room thermostat monitors the desired room temperature and turns the mixing control off when the zone(s) is satisfied.

The panel is operated as a single zone system by using the thermostat to activate the control. The secondary circulator operates continuously providing even heat distribution during the heat up and cool down cycles. The panel can be operated with subzones set up on a single zone panel. The system thermostat is operating the main heat input while the subzone thermostats operate the loops fitted with valve actuators. The sub zoning should not exceed more than 50% of the loops. The panel can be operated as a multiple zone system. The on/off valves located on the supply manifold are fitted with optional electrical valve actuators to control individual loops in the system. In this application, every actuator is connected to a thermostat located in the area served by the loop. When the thermostat calls for heat, the actuator opens the loop allowing flow. When all loops are satisfied, the secondary circulator is shut down and the injection control is disabled.

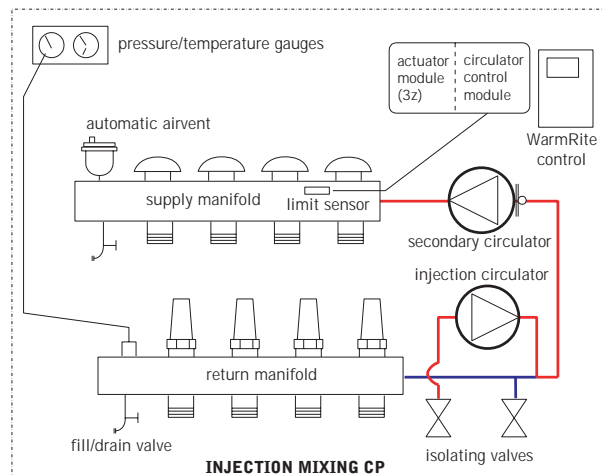
Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rates of each loop. A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature. Valves on the supply and return manifolds allow each loop to be isolated when necessary. The optional actuators and thermostats must be ordered separately according to the project specifications.

The panel operation is controlled by closure of a dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, integrated building controls, etc.

Description	Product Code
3L Injection Mixing CP	489050
4L Injection Mixing CP	489051
5L Injection Mixing CP	489052
6L Injection Mixing CP	489053
7L Injection Mixing CP	489054
8L Injection Mixing CP	489055
9L Injection Mixing CP	489056
10L Injection Mixing CP	489057
11L Injection Mixing CP	489058

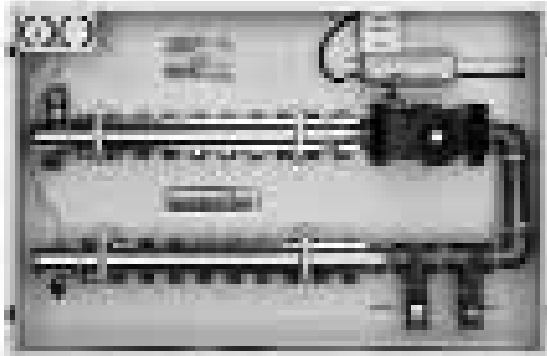


- 3 - 11 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- WarmRite control (includes outdoor sensor, two universal sensors)
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Secondary Circulator
- Injection Circulator
- Pressure and temperature gauges
- Fill/drain valves
- Isolating valves
- Automatic air vent
- Steel Cabinet



Control Panels (cont'd)

Injection Mixing Secondary Control Panel

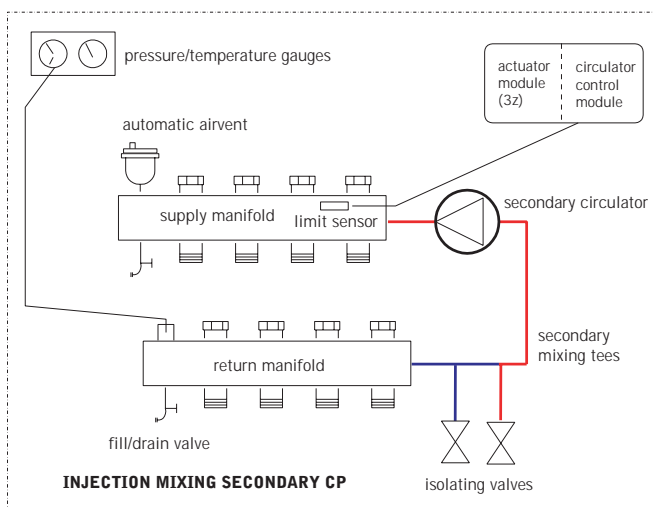


- 5 - 13 loops
- Supply and return manifold with balancing valves
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Secondary Circulator
- Pressure and temperature gauges
- Fill/drain valves
- Isolating valves
- Automatic air vent
- Steel Cabinet

This panel is designed to function as a remote secondary circuit of an injection mixing system to heat large commercial/industrial spaces. This design concept takes advantage of the high temperature drop across the injection bridge which allows for low flow rates. The reduced flow rates in turn allow the use of smaller pipe sizes from the boiler room to the remotely mounted panel. Large commercial/industrial spaces often require multiple remotely mounted manifolds. This panel allows a single WarmRite Control and injection circulator to provide the required temperature fluid to all panels, eliminating the need for multiple controls.

The secondary circuit in the panel constantly circulates the fluid in the floor loops. The room thermostat provides a call for heat to the centrally located WarmRite control.

Balancing valves on the supply and return manifolds are used if flow rate compensation is required. They may also be used to isolate a loop when necessary. A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature.



Description	Product Code
5L Injection Mixing Secondary CP	489100
6L Injection Mixing Secondary CP	489101
7L Injection Mixing Secondary CP	489102
8L Injection Mixing Secondary CP	489103
9L Injection Mixing Secondary CP	489104
10L Injection Mixing Secondary CP	489105
11L Injection Mixing Secondary CP	489106
12L Injection Mixing Secondary CP	489107
13L Injection Mixing Secondary CP	489108



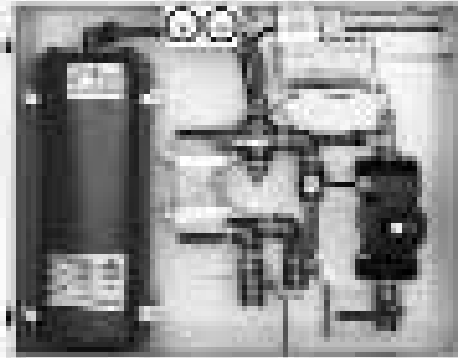
Isolation Module

This module is designed to isolate the liquid used in the heating loop from the liquid used in the heat source. For example, a snowmelt system operating with water-glycol mixture is connected to a heat source operating with water or separating a heating system from a domestic water heat source.

The primary side of the heat exchanger is connected to the heat source. The primary circulator and the isolating valves are included in the panel. The secondary side contains an expansion tank, pressure relief valve, and isolating valves. Each circuit is monitored with a pressure / temperature gauge.

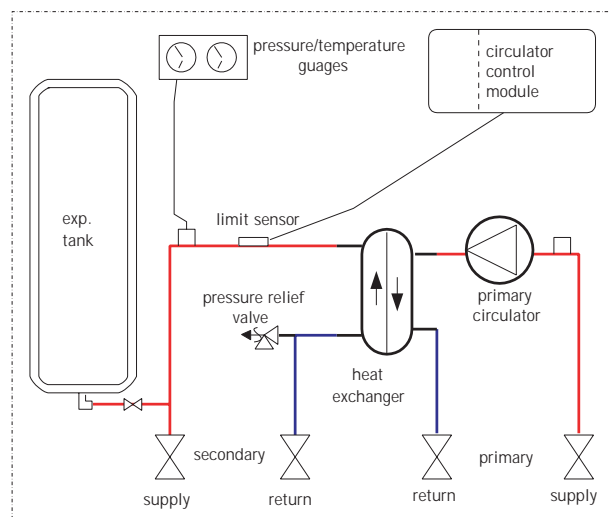
A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit that prevents the supply fluid from exceeding the desired temperature.

The panel operation is controlled by closure of a 24V dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, indoor/outdoor reset controls, integrated building controls, etc.



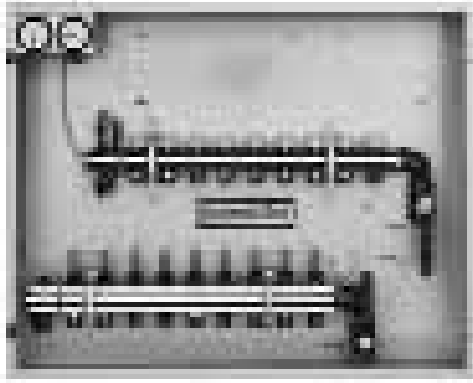
- Plate heat exchanger
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Primary Circulator (non-ferrous)
- Pressure and temperature gauges
- Fill/drain valves
- Isolating valves
- Expansion tank
- Pressure relief valve
- Steel Cabinet

Description	Product Code
90 Isolation Module	489120
150 Isolation Module	489121



Control Panels (cont'd)

Manifold Station



- 3 - 11 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- Pressure and temperature gauges
- Fill/drain valves
- Isolating valves
- Automatic air vent
- Steel Cabinet

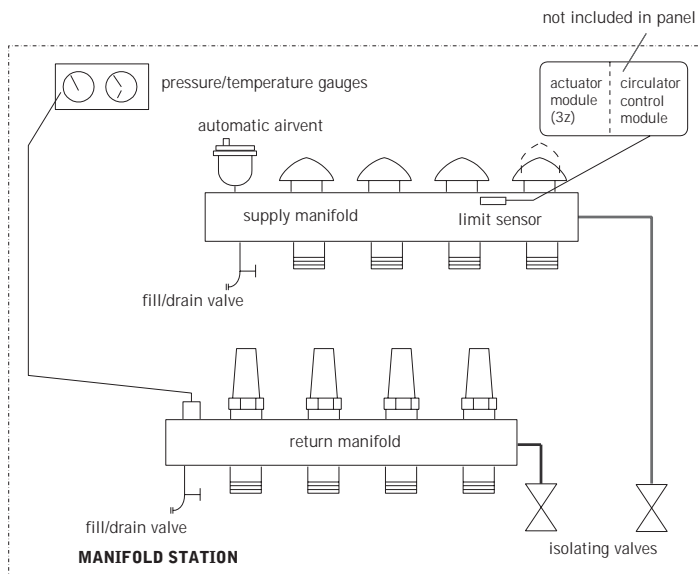
This panel is designed as a basic manifold station.

The panel is operated as a single zone system by using a thermostat to activate the external zone valve or a circulator.

The panel can also be used with limited number of subzones. The on/off valves located on the supply manifold can be fitted with optional electrical valve actuators to control individual loops in the system. In this application, every actuator is connected to a thermostat located in the area served by the loop. When the thermostat calls for heat, the actuator opens the loop allowing flow.

Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rates of each loop.

The unit has no integral zone control device. When a zone valve or circulator is attached to the manifold station a Circulator Control Module has to be fitted in the system. This controls the zone valve or circulator and the loop valve actuators for the subzones. The circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature. Valves on the supply and return manifolds allow each loop to be isolated when necessary. The optional actuators and thermostats must be ordered separately according to the project specifications.



Description	Product Code
3L Manifold Station	489060
4L Manifold Station	489061
5L Manifold Station	489062
6L Manifold Station	489063
7L Manifold Station	489064
8L Manifold Station	489065
9L Manifold Station	489066
10L Manifold Station	489067
11L Manifold Station	489068

Manifold Station with Circulator

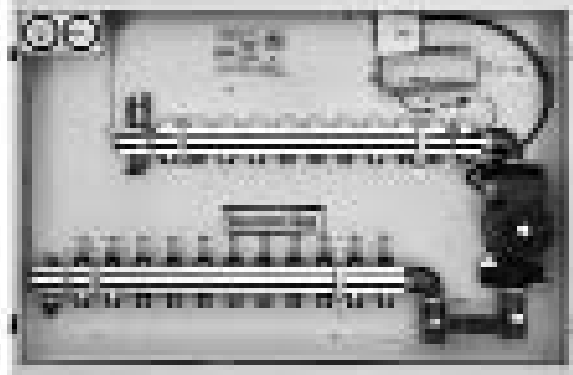
This panel is designed as a basic manifold station.

The panel is operated as a single zone system by using a thermostat to activate the circulator.

The panel can also be used as multiple zone system. The on/off valves located on the supply manifold can be fitted with optional electrical valve actuators to control individual loops in the system. In this application, every actuator is connected to a thermostat located in the area served by the loop. When the thermostat calls for heat, the actuator opens the loop allowing flow. When all loops are satisfied the circulator is shut down.

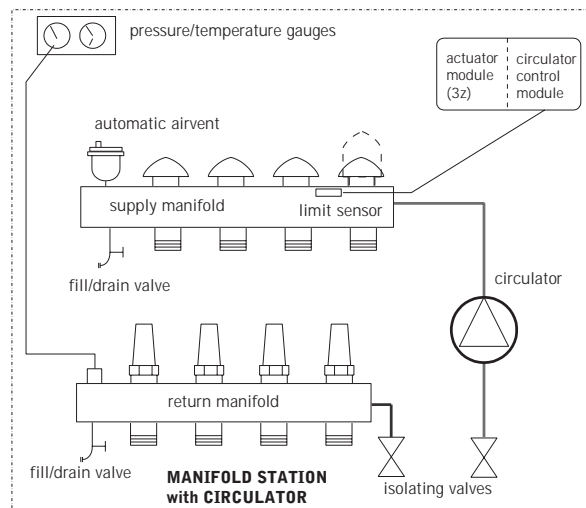
Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rates of each loop. A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature. Valves on the supply and return manifolds allow each loop to be isolated when necessary. The optional actuators and thermostats must be ordered separately according to the project specifications.

The panel operation is controlled by closure of a 24V dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, indoor/outdoor reset controls, integrated building controls, etc.



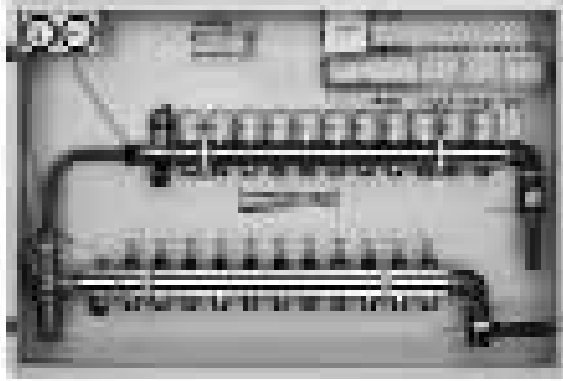
- 3 - 11 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Circulator
- Pressure and temperature gauges
- Fill/drain valves
- Isolating valves
- Automatic air vent
- Steel Cabinet

Description	Product Code
3L MS with Circulator	489080
4L MS with Circulator	489081
5L MS with Circulator	489082
6L MS with Circulator	489083
7L MS with Circulator	489084
8L MS with Circulator	489085
9L MS with Circulator	489086
10L MS with Circulator	489087
11L MS with Circulator	489088



Control Panels (cont'd)

Multi Zone Manifold Station

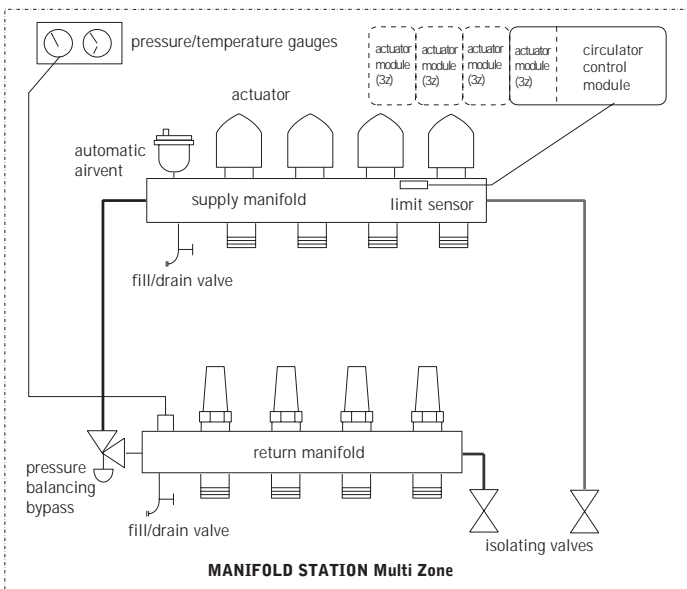


- 3 - 11 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Actuator modules (as required)
- Electrical valve actuators (one per loop)
- Pressure and temperature gauges
- Fill/drain valves
- Pressure balancing bypass valve
- Isolating valves
- Automatic air vent
- Steel Cabinet

This panel is used as multiple zone system. The on/off valves located on the supply manifold are fitted with electrical valve actuators to control individual loops in the system. Every actuator must be connected to a thermostat located in the area served by the loop(s). When the thermostat calls for heat, the actuator opens the loop allowing flow. The pressure balancing bypass valve equalizes the changing head loss conditions as various loops open and close. When all loops are satisfied the dry contact in the circulator control module opens.

Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rates of each loop. A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature. Valves on the supply and return manifolds allow each loop to be isolated when necessary. The thermostats must be ordered separately according to the project specifications.

Each actuator's operation is controlled by closure of a 24V dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, integrated building controls, etc.



Description	Product Code
3L MZ Manifold Station	489070
4L MZ Manifold Station	489071
5L MZ Manifold Station	489072
6L MZ Manifold Station	489073
7L MZ Manifold Station	489074
8L MZ Manifold Station	489075
9L MZ Manifold Station	489076
10L MZ Manifold Station	489077
11L MZ Manifold Station	489078



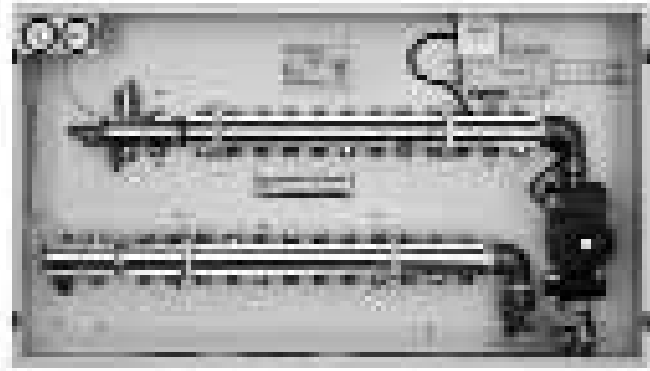
Snowmelt / Industrial Control Panel

This panel is designed to operate snowmelt or industrial heating systems, which are usually designed with pipe loops of equal length.

In these circumstances individual loop flow rate adjustment is not required, nor is recirculation necessary. An external control turns the circulator on when heat is required.

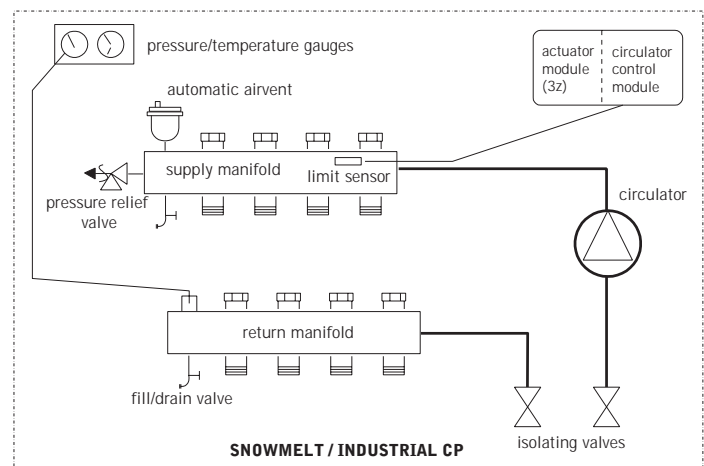
Valves on the supply and return manifolds are used if flow rate compensation is required. They may also be used to isolate each loop for installation and servicing ease. A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature.

The panel operation is controlled by closure of a 24V dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, indoor/outdoor reset controls, snow melt controls, integrated building controls, etc.



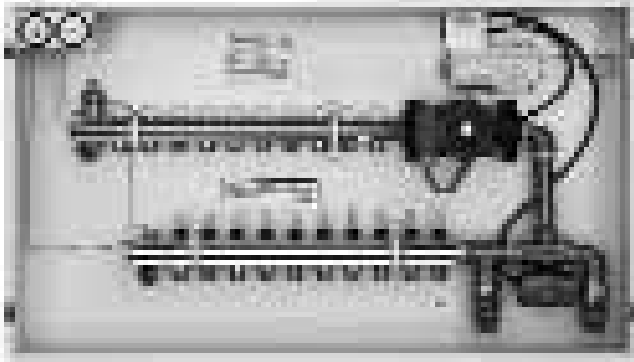
- 5 - 14 loops
- Supply and return manifold with balancing valves
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Circulator
- Pressure and temperature gauges
- Fill/drain valves
- Pressure relief valve
- Isolating valves
- Automatic air vent
- Steel Cabinet

Description	Product Code
3L Snow melt / Industrial CP	489037
4L Snow melt / Industrial CP	489038
5L Snow melt / Industrial CP	489039
6L Snow melt / Industrial CP	489040
7L Snow melt / Industrial CP	489041
8L Snow melt / Industrial CP	489042
9L Snow melt / Industrial CP	489043
10L Snow melt / Industrial CP	489044
11L Snow melt / Industrial CP	489045
12L Snow melt / Industrial CP	489046
13L Snow melt / Industrial CP	489047
14L Snow melt / Industrial CP	489048



Control Panels (cont'd)

Recirculating Zone Control Panel



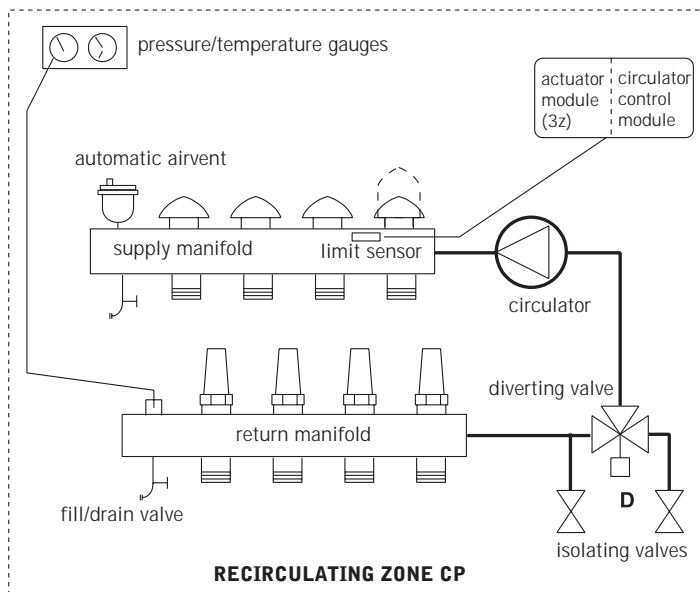
- 3 - 11 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Circulator
- Diverting valve
- Pressure and temperature gauges
- Fill/drain valves
- Isolating valves
- Automatic air vent
- Steel Cabinet

This panel is designed as a manifold station that provides constant circulation in the distribution system. There is no supply water temperature control in the panel.

The panel operates primarily as a single zone system maintaining the average space temperature. A thermostat and a diverting valve control the heat input. It cycles the heat-input on/off to match the average heat load requirement in the zone. Fluid circulates from the heat source to the panel and through the floor piping. When the zone is satisfied, the diverting valve closes the path to the heat source and removes the external enable signal. The fluid continuously circulates in the floor piping, providing even heat distribution both on heat up and cool down cycles.

Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rates of each loop. A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature. Valves on the supply and return manifolds allow each loop to be isolated when necessary.

The panel operation is controlled by closure of a 24V dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, indoor/outdoor reset controls, integrated building controls, etc.



Description	Product Code
3L Recirculating Zone CP	489020
4L Recirculating Zone CP	489021
5L Recirculating Zone CP	489022
6L Recirculating Zone CP	489023
7L Recirculating Zone CP	489024
8L Recirculating Zone CP	489025
9L Recirculating Zone CP	489026
10L Recirculating Zone CP	489027
11L Recirculating Zone CP	489028



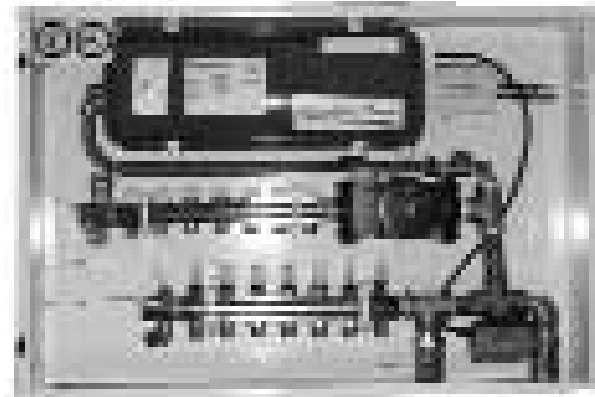
Recirculating Zone Control Panel with Expansion Tank

This panel is designed as a manifold station that provides constant circulation in the distribution system. There is no supply water temperature control in the panel.

The panel operates primarily as a single zone system maintaining the average space temperature. A thermostat and a diverting valve control the heat input. It cycles the heat-input on/off to match the average heat load requirement in the zone. Fluid circulates from the heat source to the panel and through the floor piping. When the zone is satisfied, the diverting valve closes the path to the heat source and removes the external enable signal. The fluid continuously circulates in the floor piping, providing even heat distribution both on heat up and cool down cycles.

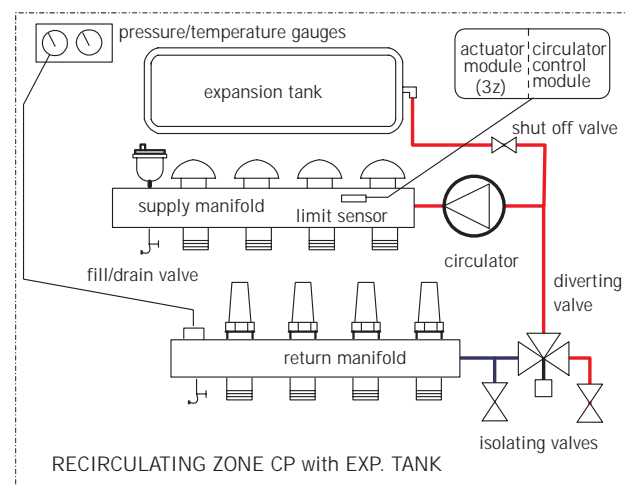
Balancing valves with flow indicators on the return manifold allow the user to adjust and visually monitor the flow rates of each loop. A circulator control module contains a 24V transformer, a circulator relay, a dry contact enable, and an adjustable high limit which prevents the supply fluid from exceeding the desired temperature. Valves on the supply and return manifolds allow each loop to be isolated when necessary.

The panel operation is controlled by closure of a 24V dry contact. An example of devices that can provide this are: two and three wire room thermostats, programmable thermostats, set point controls, indoor/outdoor reset controls, integrated building controls, etc.



- 3 - 11 loops
- Supply manifold with on/off valves
- Return manifold with balancing valves and flow rate indicators
- Circulator control module (includes 24V transformer, circulator relay, dry contact enable and high limit)
- Circulator
- Diverting valve
- Pressure and temperature gauges
- Fill/drain valves
- Isolating valves
- Automatic air vent
- Steel Cabinet
- Expansion tank

Description	Product Code
3L Recirculating Zone CP w Exp Tank	489820
4L Recirculating Zone CP w Exp Tank	489821
5L Recirculating Zone CP w Exp Tank	489822
6L Recirculating Zone CP w Exp Tank	489823
7L Recirculating Zone CP w Exp Tank	489824
8L Recirculating Zone CP w Exp Tank	489825
9L Recirculating Zone CP w Exp Tank	489826
10L Recirculating Zone CP w Exp Tank	489827
11L Recirculating Zone CP w Exp Tank	489828



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