

**\*\* THE EXPANDED DIGITAL ENERGY MANAGER HAS BEEN UPDATED \*\***

## **12 Zones**

The 12 Zone Expanded Digital Energy Manager replaces the 10 and 15 Zone Managers (10 & 15 Zone Remanufactured Digital Managers are still available).

## **MultiPurge™**

Optional – must be turned ON. Any zones finishing in the prior 20 minute period will purge with the last zone satisfied. Setting purge time to 5 minutes prevents that zone from multi-purging.

## **SmartBoost™**

Optional – must be turned ON. The Digital Manager has been upgraded to include Smart Boost. If a zone has been calling for heat for 25 minutes (optionally 45 minutes), then Smart Boost kicks in to help satisfy that zone sooner by boosting the maximum return temperature to be 190°F/175°F from the standard 170°F/155°F.

## **Thermostat Short Cycle Protection**

Automatically detects a thermostat short cycle condition and prevents the burner from short cycling. When a thermostat turns off, the Manager starts a 25 second count down timer, during that period, if the same thermostat turns on again, the Manager will ignore that thermostat and will not turn on B1-B2, the circ, or the inducer outputs until the count is over. It will allow any non-short cycling thermostats to continue to operate the burner normally during the count down.

## **Injection zones with Loop circulator.**

Optional – Must be turned ON The 12 Zone Digital Manager option replaces ERC and uses zone 10 and 11 outputs for injection zone and loop circulator control. See attached drawings SYS-05-002A-12 & SYS-05-002B-12 for Installation information.

## **Eleven zones of heat, or Twelve.**

Optional – Must be turned ON The Digital Manager now has an option switch setting that will allow the hot water zone to be turned into a heating zone with 20 minutes of thermal purge. This change will allow the hot water zone to become a twelfth heating zone, for those cases where domestic hot water isn't required.

## **Power sharing thermostat enabled.**

No resistor needed, the 12 Zone Digital Energy Manager is now fully compatible with almost all power sharing thermostats (Nest, etc.).

## **Classic Manager Mode:**

If the digital sensor is not functioning, the Manager will act the same as before, flashing the 100 light and maintaining temperature, but only for ten minutes. After ten minutes, the 12 Zone Digital Manager will go into Classic Manager Mode alternately flashing the 100 light and 190 light. In Classic Manager Mode, the boiler will sit cold and off, until there is a thermostat call, once the thermostat call has been satisfied, the burner will shut off and the Manager will post purge to the last zone that called based on time only (the option switch time selected for the zone).

<b><u>PART NUMBERS:</u></b>	<b><u>DESCRIPTION:</u></b>
10-0155-12	<b>Option: 12 Zone Digital Manager</b> (Available at time of Boiler purchase only).
10-0418DM-12	<b>12 Zone Digital Manager</b> (New, Manager Only, 5 year full warranty)
10-0418D-RM12	<b>12 Zone Remanufactured Digital Manager</b> (Remanufactured, Manager Only, 3 year full warranty)
10-0418D-12	<b>Upgrade to 12 Zone Digital Manager from 5 Zone Digital Manager</b> <b>Each Kit Include the Following Items:</b> <ul style="list-style-type: none"> <li>1 12 Zone Expanded Digital Energy Manager</li> <li>1 Expanded Manager Back Plate</li> <li>2 Transformers 50VA 120/24VAC with 12 Zone Kit</li> <li>30 Zone Labels with a 12 Zone Kit</li> <li>2 Manager Quick Connectors</li> </ul>
10-0121-12	<b>Service Board for 12 Managers</b>

### **12 ZONE MANAGER INSTALLATION INSTRUCTIONS**

1. Remove cover from junction box.  
 Use a free knockout on the top of the junction box to mount a second and third transformer, wire black lead to "XFMR" and white lead to "NEUTRAL" on relay board in box. (Use sections marked "120 VOLTS" only.) A second junction box is not needed for the expanded Digital Manager. Wire additional transformers in parallel with first transformer. To wire in parallel, wire terminal "A" on one transformer to "A" on the other. Repeat with other low voltage terminal "B". Verify 24VAC output from all transformers BEFORE reconnecting the Manager.
2. Mount long panel on top of box cover with long screws provided in lower 4 holes with spacers down.
3. Mount expanded Digital Manager to cover plate over 4 long screws and 2 wide bolts (top 2 holes).
4. Wire the expanded manager following the label. For top half, attach one thermostat lead to a zone and the other to A1 on lower half of manager. Attach one lead from zone valve or relay to corresponding zone output and the other lead to 24VAC on lower half (See **NOTES** on back of this sheet).
5. Option switches control energy recovery for extra zone outputs (see Location of Switches on back of this sheet)

### **DIGITAL MANAGER OPTION SWITCH SETTINGS** **(Switches are located on bottom of Digital Manager)**



<b>Option Switch Settings</b>			
<b>Option Switch</b>	<b>Description</b>	<b>Function ( OFF is the factory default for all switches)</b>	
		<b>OFF = Slide to Front</b>	<b>ON = Slide to Rear</b>
1	Low Return Temp	120F/140F (Oil).	130F/150F (Gas).
2	Inducer/Chimney	Chimney venting	Inducer venting
3	SmartBoost™ Delay	If enabled, SmartBoost™ will delay boost function for 25 minutes.	If enabled, SmartBoost™ will delay boost function for 45 minutes.
4	Zone HW purge time	Domestic Hot Water zone controls the Smart Pump, with 5 minutes max energy recovery.	THW/ZHW becomes another heat zone with 20 minutes max energy recovery with SmartBoost™.
5	Zone 1 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
6	Zone 2 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
7	Zone 3 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
8	Zone 4 purge time	5 minutes max energy recovery, also disables MultiPurge™ for all heat zones.	20 minutes max energy recovery, also enables MultiPurge™ for all heat zones. See Note 1.
9	Return Temperature, B1-B2: Opens on rise/ Closes on fall	Fixed at 170F/155F, SmartBoost™ is disabled for all heating zones.	SmartBoost™ is on, will change from 170F/155F to 190F/175F as needed for heating.
10	DHW priority.	DHW priority is turned off.	DHW priority for twenty minutes is active.

Option Switch Settings, 12 Zone Expanded Manager			
Option Switch	Description	Function ( OFF is the factory default for all switches)	
		OFF = Slide to Front	ON = Slide to Rear
11	Zone 5 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
12	Zone 6 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
13	Zone 7 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
14	Zone 8 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
15	Zone 9 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
16	Zone 10 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
17	Zone 11 purge time	20 minutes max energy recovery.	5 minutes max energy recovery. See Note 2.
18	Zones 1 & 2, Normal or Loop Control.	Normal heating zone outputs.	Loop Control enabled for zones 1 & 2, See Note 3.
19	Zones 3, 4, & 5, Normal or Loop Control.	Normal heating zone outputs.	Loop Control enabled for zones 3, 4, & 5, See Note 3.
20	Zones 6, 7, 8, & 9, Normal or Loop Control.	Normal heating zone outputs.	Loop Control enabled for zones 6, 7, 8, & 9, See Note 3.

Note 1: If dip switch 8 is turned on, then Multi-Purge will be enabled for all heating zones, for both the 5 zone and 12 zone Managers.

Note 2: Any zone that is set to 5 minutes max energy recovery time will have SmartBoost™ disabled and MultiPurge™ disabled for that one zone.

Note 3: When Loop Control is enabled on the 12 Zone Digital Manager, then for each selected heating zone on the primary/secondary loop, Zone 10 output will be the IZ injection zone valve output, and Zone 11 will be the Loop circ output.

## **OPERATION WITHOUT the DIGITAL MANAGER**

### **SERVICE BOARD MODE:**

The Digital Manager can be placed into "SERVICE BOARD MODE" by turning off the system switch and removing the RED temperature sensor lead from the left side input connector, and turning power back on. Removing the RED lead does exactly the same thing as inserting the traditional green "Service Board". The traditional service board may still be used if desired. SERVICE BOARD MODE allows the boiler to run like a conventional boiler. The burner is controlled by the high limit aquastat and the circulator runs continuously. If this mode is used, *temporarily reset high limit aquastat to 165°/180° F.*

### **TEMPORARY OPERATION WITH JUMPERS:** (With partially functional Manager still in place and without service board)

If a particular function of the Manager fails, use appropriate jumper action below with Manager in place.

**BURNER:** Jumper BB or TT on burner control. Burner will run on limit whenever Manager calls circulator. The boiler may overheat slightly during energy recovery. Temporarily reset limit aquastat to 165°/180° F.

**MAIN CIRCULATOR:** Remove blue CIRC lead from right side and connect to A2 on the left side, using an extension lead. The circulator will run constantly and the burner runs on Manager call.

**ZONE/HOT WATER CONTROL:** Remove zone valve and thermostat leads for zone. Connect a thermostat lead to A1. Connect a zone valve lead to A2. Wire the remaining thermostat and zone valve leads together. Zone valves will open whenever the Thermostat calls but it will not activate manager. If system is active, zone will receive heat when another calls or run system with high limit aquastat set to 165°/180° F and zone will get heat on call.

**IF A PLUG-IN RELAY FAILS:** Replace with spare relay. If spare is not available, temporarily install a relay with 24VAC coil and 120VAC contacts. Contact Energy Kinetics for connection details.

**SERVICE DISPLAYS USED ON THE DIGITAL MANGER**

**100 FLASH - Lack of a boiler temperature reading (Service Board Mode).**

- Turns on Burner, Circ, and Inducer and operates off the high limit. For any thermostat call, turn on the zone output.

**100/190 FLASH\* - Lack of a boiler temperature reading (Classic Manager Mode).**

- After ten minutes of 100 flash, flash alternately the 100 & 190 bar. latch into Classic Manager mode, run the burner and circulator only if there is a thermostat call and run zone outputs based on timers only.

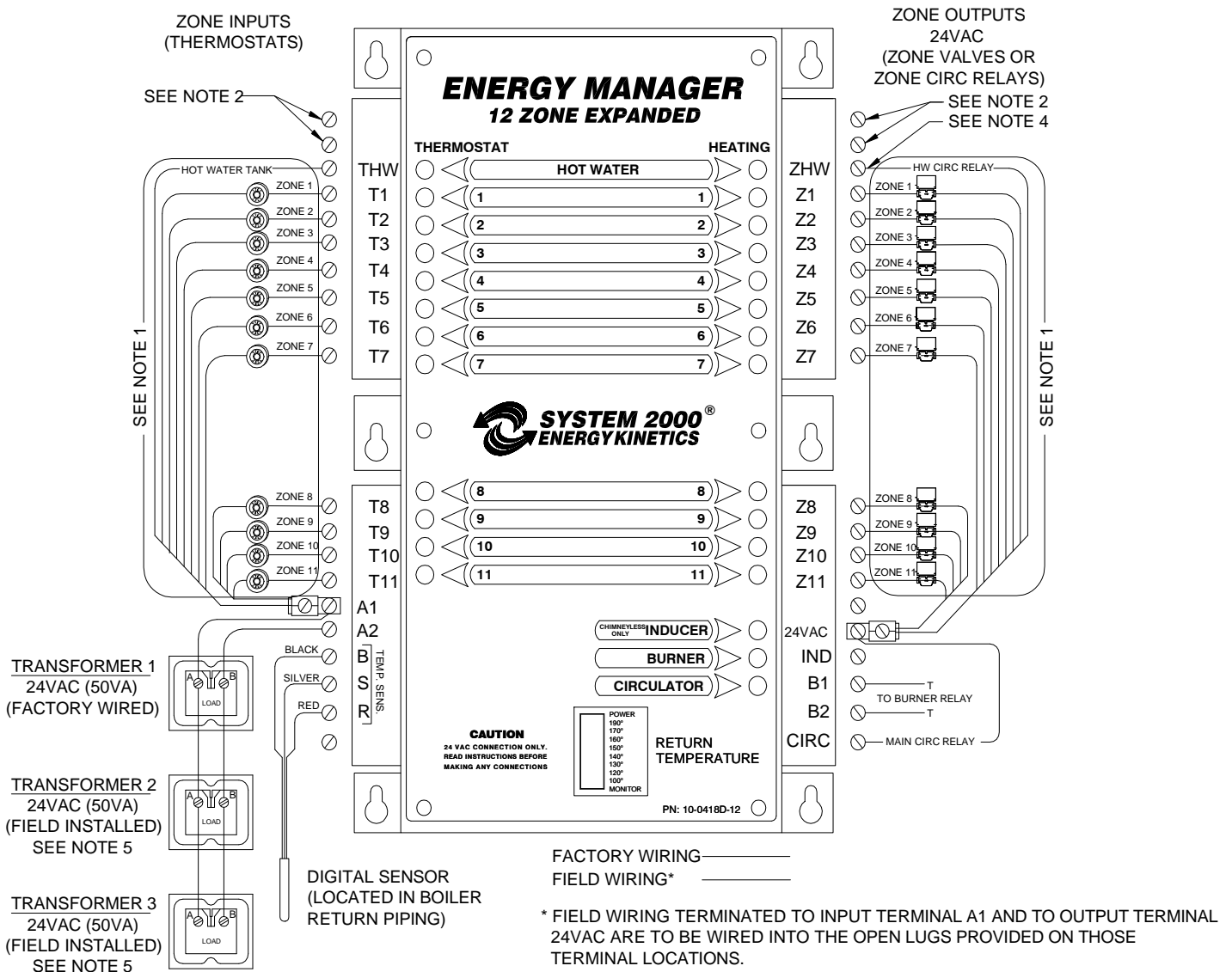
**140 FLASH - Burner lockout protection (Burner Lockout or Circulator Failure).**

- If the return doesn't heat up above 100F in 20 minutes.

**140/150 FLASH\* - Boiler side circulation failure.**

- The return doesn't heat up above 100F in 5 minutes, latch into classic mode and run the boiler based on timers.

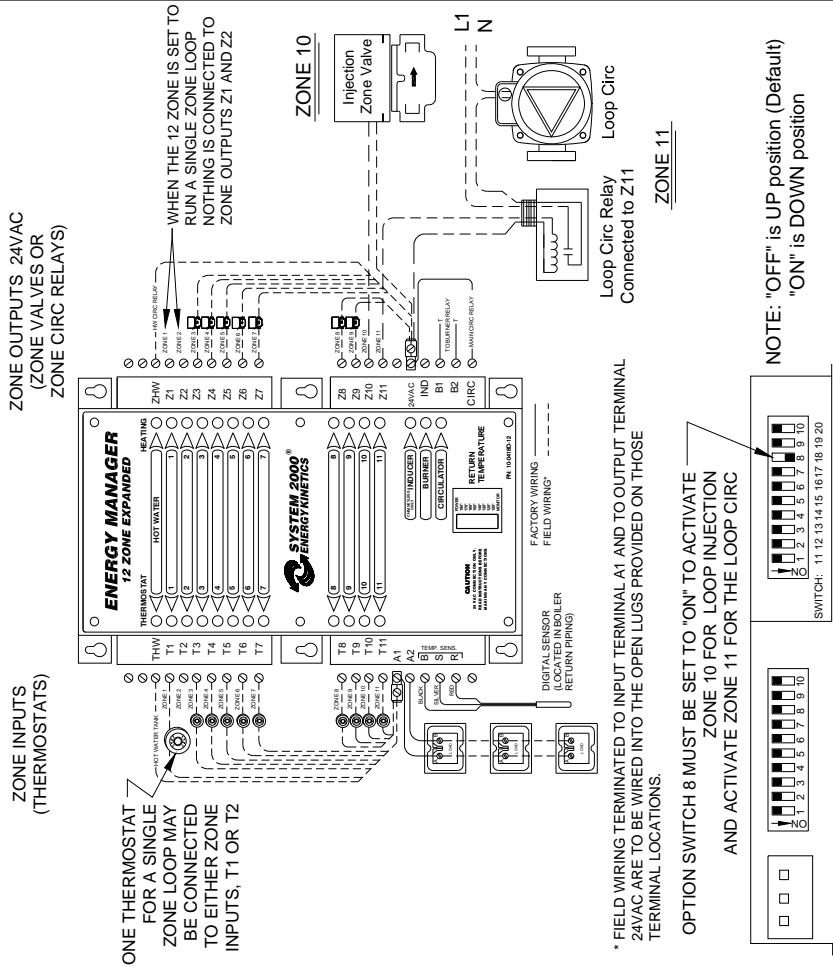
\*Indicates a new flash mode used on 12 zone digital managers.



**Notes:**

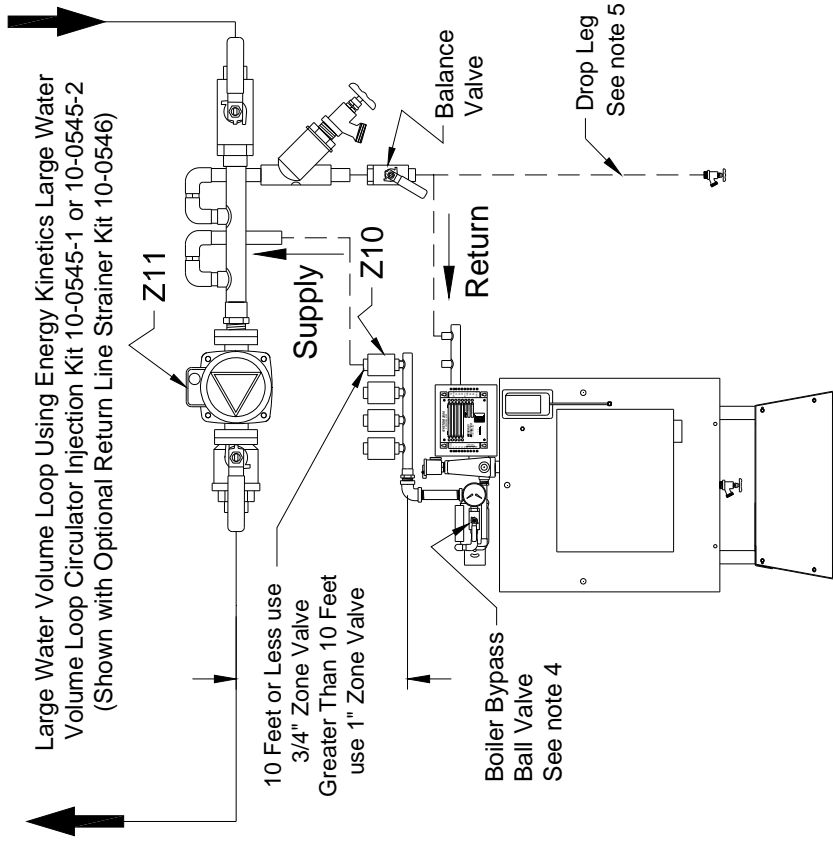
1. When upgrading to a 12 zone manager from a 5 zone (or any other Digital Manager), zone input wiring (Thermostats) and zone output wiring (zone valves or circ relays) must be removed and relocated to new terminal positions on the 12 zone manager
2. The first two (top most) terminals on the top/upper quick connects are not used.
3. Mark or tag each input and corresponding output before removing them from the existing manager.
4. The domestic hot water zone terminals, THW & ZHW are located on the first terminals to be used. Move the tank thermostat to THW on the top left quick connect (3<sup>rd</sup> terminal down) and move the orange wire up to the ZHW terminal on the top right quick connect (3<sup>rd</sup> terminal down) The orange wire may need to be extended.
5. The second and third transformer must be installed and wired in parallel to the factory installed transformer (A's to A & B's to B). **VERIFY 24VAC BEFORE CONNECTING POWER TO THE MANAGER.**

# WIRING



# Supply

# PIPING



**FOR USE IN LARGE WATER CONTENT LOOPS SUCH AS COMMONLY FOUND WITH CAST IRON RADIATION. MULTIPLE ZONE DESIGN.**

### DESCRIPTION OF OPERATION:

1. Thermostat calls the SystemManager for a heat call.
2. System Manager powers Z11 (Loop Relay & Circ) during the entire heat cycle.
3. System Manager preheats boiler then starts injecting hot water into the loop through the Z10 (Injection Zone Valve).
4. When the thermostat call is satisfied, the System Manager post purges the heat still in the boiler into the loop.
5. The System Manager holds the loop circulator during post purge.
6. SETUP: Set boiler bypass to full open and balance the return line to set the return to approx 130° on cold startup.
7. When connecting to an old potentially dirty system, the Injection piping should enter and exit the Loop Manifold from the top to prevent any contamination in the system from entering the boiler. If access to the top of the Loop Manifold is not possible, a drop leg with a drain valve for cleanout should be installed in the return leg.
8. An optional Boiler Protection Kit from Energy Kinetics may be installed to further prevent any contamination from entering the boiler.

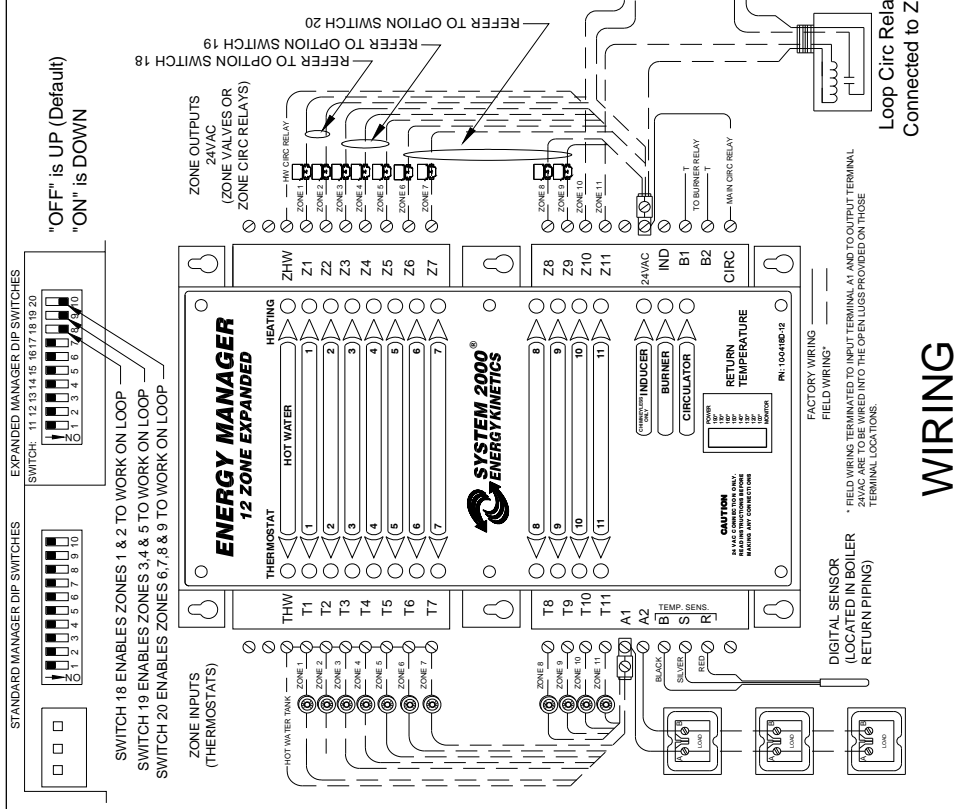
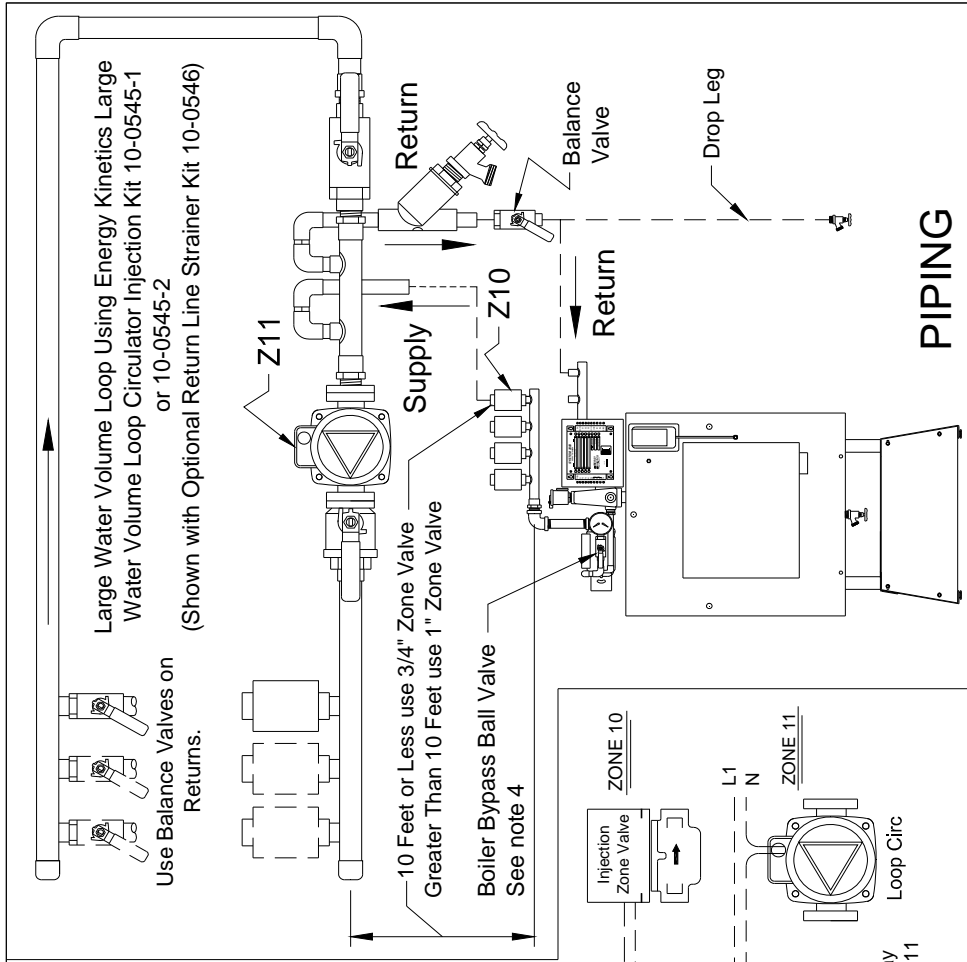
This drawing provided for reference only, design subject to change. Review application to determine suitability and compliance with code requirements.

**ENERGY KINETICS**

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Loop Circulator - Single Zone  
Using a 12 Zone Expanded Manager -Sheet 2 of 2

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CAD FILENAME: SYS-05-002a-rev10.dwg		DWG. NO. <b>SYS-05-002A-12</b>



**FOR USE IN LARGE WATER CONTENT LOOPS SUCH AS COMMONLY FOUND WITH CAST IRON RADIATION. MULTIPLE ZONE DESIGN.**

**DESCRIPTION OF OPERATION:**

1. Thermostat(s) calls the SystemManager for a heat call.
2. System Manager opens zone valve(s) on the loop, powers Z11 (Loop Relay & Circ) during the entire heat cycle.
3. System Manager preheats boiler then starts injecting hot water into the loop through the Z10 (Injection Zone Valve).
4. When the thermostat call is satisfied, the System Manager post purges the heat still in the boiler into the loop.
6. The System Manager holds the loop circulator while it post purges to the last zone or zones (if multipurge in enabled) calling.
7. SETUP: Set boiler bypass to full open and balance the return line to set the return to approx 130° on cold startup.
8. Injection piping should enter and exit the Loop Manifold from the top to prevent any contamination in the system from entering the boiler. If access to the top of the Loop Manifold is not possible, a drop leg with a drain valve for clean out should be installed in the return leg.
9. An optional Boiler Protection Kit from Energy Kinetics may be installed to further prevent any contamination from entering the boiler.

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**ENERGY KINETICS**

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Loop Circulator - Multiple Zone  
Using a 12 Zone Expanded Manager - Sheet 2 of 2

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**SYN-05-002B-12**