

**INSTALLATION AND OPERATING INSTRUCTIONS****APPLICATION**

The **i-Link** series multi-zone zone valve controller is operated by low voltage thermostats or any other low voltage controllers having an SPST switching action. The **i-Link** controller provides intermediate switching to permit up to six zone valves and a boiler operating control in a multi-zone hydronic heating system.

Intelligent Linking System (**i-Link**) allows unlimited zone expansion with additional **i-Link** controllers. Field selectable priority with protection timer prevents freeze-ups in the event of a priority zone failure. The three-minute delay timer let the two wire type zone valve fully open before turning on the circulator.

The panel provides EZ screwless terminal blocks for connections to the thermostats and zone valves. LED indicators on the front panel provides functional status and easy troubleshooting.

**FEATURES**

- Front panel indicator lights
- Field selectable Priority
- Priority timer for protection of a priority zone malfunction and prevention of freeze-ups in the heating zones
- Unlimited zone expansion
- Isolated End Switch and Priority End Switch
- Three-minute End Switch delay timer for two wire type zone valve applications. Circulator will start only after the zone valve is fully opened.
- DIP switch for easy setup of two wire type zone valve applications. No need to hook up wire jumper on the third and fourth terminals on each zone
- Works with two, three or four wire type zone valves and thermostats
- Compact and modern design
- Fuse protection
- Simplified wiring
- Contractor friendly PCB layout
- Easy-Connect Screwless Terminals
- 24VAC transformer output with common terminal provides compatibility with electronic thermostats
- Universal thermostat compatibility
- Pre-wired terminals for circulator
- SPDT Priority zone 1 relay switch (N/O Com N/C). Capable of prioritizing DHW pump in a 2-pump system
- 50VA replaceable transformer
- 100% Factory Tested
- RoHS compliance & Environmental Friendly - Do Not Contain hazardous substances (heavy metals such as lead, mercury, cadmium etc).
- Extended three year warranty

**SPECIFICATIONS**

Model:	SZ-V4 4 Zone Valve Control SZ-V6 6 Zone Valve Control
Power Supply:	120VAC, 50/60Hz
Transformer:	50VA
Dimensions:	11.25"(W) x 6.5"(H) x 3"(D)
Electrical Switch Rating:	10 A 1/3 HP @ 120VAC
Thermostat Anticipator Setting:	0.18 A
Shipping Weight:	4.5 lbs.

**CAUTION!**

1. Improper installation and operation of this control could result damage to the equipment and possibly even personal injury. All wiring must comply with national and local electrical codes, ordinances, and regulations. Use Copper wires only. 120 VAC wiring must have a minimum temperature rating of 75 C. 12-22 gauge wire is recommended for thermostat and 24 VAC source connections. 12-18 gauge wire is recommended for 120 VAC connections.  
Never connect the load terminals to a load that takes more current than the amount listed for the relay in the electrical ratings.
2. To prevent electrical shock hazard, disconnect power supply before installing.
3. Azel Technologies is not liable for an special, incidental, indirect or consequential damages resulting from the use of its products.
4. This literature is provided for informational purposes only.

**OPERATION**

When any zone (thermostat) calls for heat, the corresponding yellow light turns on and zone valve is energized. When zone valve is fully opened, the red light turns on and End Switches (X-X) is closed (to start boiler) while 120VAC power is supplied to start the circulator through "CIRC" terminals. When zone 1 calls for heat, two additional End Switches (Zone 1/NC COM NO and X1-X1) are also energized.

**DOMESTIC HOT WATER PRIORITY OPERATION**

When zone 1 priority switch is set to **ON**, zone 1 (domestic hot water zone) has priority control over zone 2 to 6 (heating zones). If zone 1 is calling for heat, zone valves 2 to 6 are disabled until zone 1 domestic hot water demand is satisfied.

When zone 1 priority switch is set to **OFF** (factory setting), all zones operate independently of each other.

When zone 1 priority switch is set to **TIMER** (Priority Protection Timer mode), if the priority zone calls for domestic hot water for more than one hour (eg. In case of a priority zone failure such as a faulty indirect water heater controller keeps calling for heat or leaking situation), all the heating zones (2 to 6) are released from locking out and they are returned to normal operation. This features helps prevent freeze-ups in the event of zone 1 failure. Once the priority zone 1 is satisfied, the priority timer is reset to allow priority for another one hour.

Note: It is important to set the slide switch before turning on the power.

## i-Link ZONE EXPANSION

**i-Link zone valve** controller can be expanded to unlimited number of zones with additional **i-Link** zone valve controllers. Simply connect terminals "1 2 3" of the "Master" unit to terminals "1 2 3" of the "Slave" unit with 18AWG wires. More units can be connected in the similar manner. Use the Master/Slave Switch to define the unit as "Master" or "Slave". The priority zone of the "Master" unit (if zone 1 priority switch is set to **ON or Timer**) will turn off all other zones of the "Slave" units. After expansion, all the units will act as a single unit. This means only one set of X-X(End Switch) terminal is needed to connect to the "TT" on the boiler control. Also, only one circulator connection is needed. Factory default setting "Master".

Note: It is important to set the slide switch before turning on the power.

## L.E.D. SYSTEM STATUS INDICATION LIGHTS

**YELLOW** light (T1-T6) indicates that the thermostat is calling for heat and the corresponding zone valve is energized.

**RED** light (Z1-Z6) indicates zone valve (with an end switch) is fully opened and End Switch (X-X) is closed. In case of two wire type zone valve, the zone valve is energized. If the 3-minute XX delay timer is set to OFF, End Switch is closed. If the XX delay timer is set to ON, End Switch is closed three minutes after thermostat calls for heat.

**GREEN** Power light indicates presence of power supply.

**GREEN** solid Priority Timer light indicates that the one-hour timer is started. **GREEN** flashing light indicates one hour priority timer is expired and all heating zones are released from locking out. All zones can operate independently.

## TWO WIRE TYPE ZONE VALVE

When two wire type zone valve is used, JUMPER 3&4 DIP switch can be set to ON for each corresponding zone so that there is no need to put a wire jumper across terminal R-R. Also, XX (End Switch) Delay Timer can be set to ON. This allows a delay of three minutes on closing the X-X End Switches after thermostat calls for heat which gives sufficient time for zone valve to fully open.

## ELECTRONIC THERMOSTATS

ALL **i-Link** controls are compatible with 2, 3 or 4 wire type thermostats. 24VAC Out can be used to supply power to the thermostat. For thermostats requiring the 24VAC Common, simply connect C terminal from the thermostat to C terminal on the 24VAC output.

Azel D-135E thermostat is recommended for use with **i-Link** Controls.

## NOTE ON WIRING INSTRUCTIONS

SZ-V6 units are used as examples on the wiring diagrams. SZ-V4 units can be wired in the same manner.

If Azel D-135E digital thermostat is used, it can be powered by connecting terminal 4 & 5 of D-135E to 24VAC Out (R & C) of i-Link controls. For simplicity, this connection is not shown in all example.

## TERMINAL DESCRIPTIONS

### Dry Contact Terminals

X X/End Switch	Dry Contact End Switch
X1 X1/Zone 1	Zone 1 Dry Contact End Switch
NO COM NC/Zone 1	Zone 1 Dry Contact End Switch

### Line Voltage Terminals

N	120 VAC Neutral Terminal Input
L	120 VAC Hot Terminal Input
L N/CIRC	120VAC Circulator Power

### Low Voltage Terminals

24VAC OUT/R	24 VAC transformer hot output
24VAC OUT/C	24 VAC transformer common output
ZONE EXPANSION/1 2 3	ZONE expansion to additional <b>i-Link</b> zone valve controls

### THERMOSTATS

R/T1	Zone 1 24VAC Thermostat Hot Terminal
W/T1	Zone 1 Thermostat Switching Terminal
R/T2	Zone 2 24VAC Thermostat Hot Terminal
W/T2	Zone 2 Thermostat Switching Terminal
R/T3	Zone 3 24VAC Thermostat Hot Terminal
W/T3	Zone 3 Thermostat Switching Terminal
R/T4	Zone 4 24VAC Thermostat Hot Terminal
W/T4	Zone 4 Thermostat Switching Terminal
R/T5	Zone 5 24VAC Thermostat Hot Terminal
W/T5	Zone 5 Thermostat Switching Terminal
R/T6	Zone 6 24VAC Thermostat Hot Terminal
W/T6	Zone 6 Thermostat Switching Terminal

### ZONE VALVES (ZONE 1 - 6)

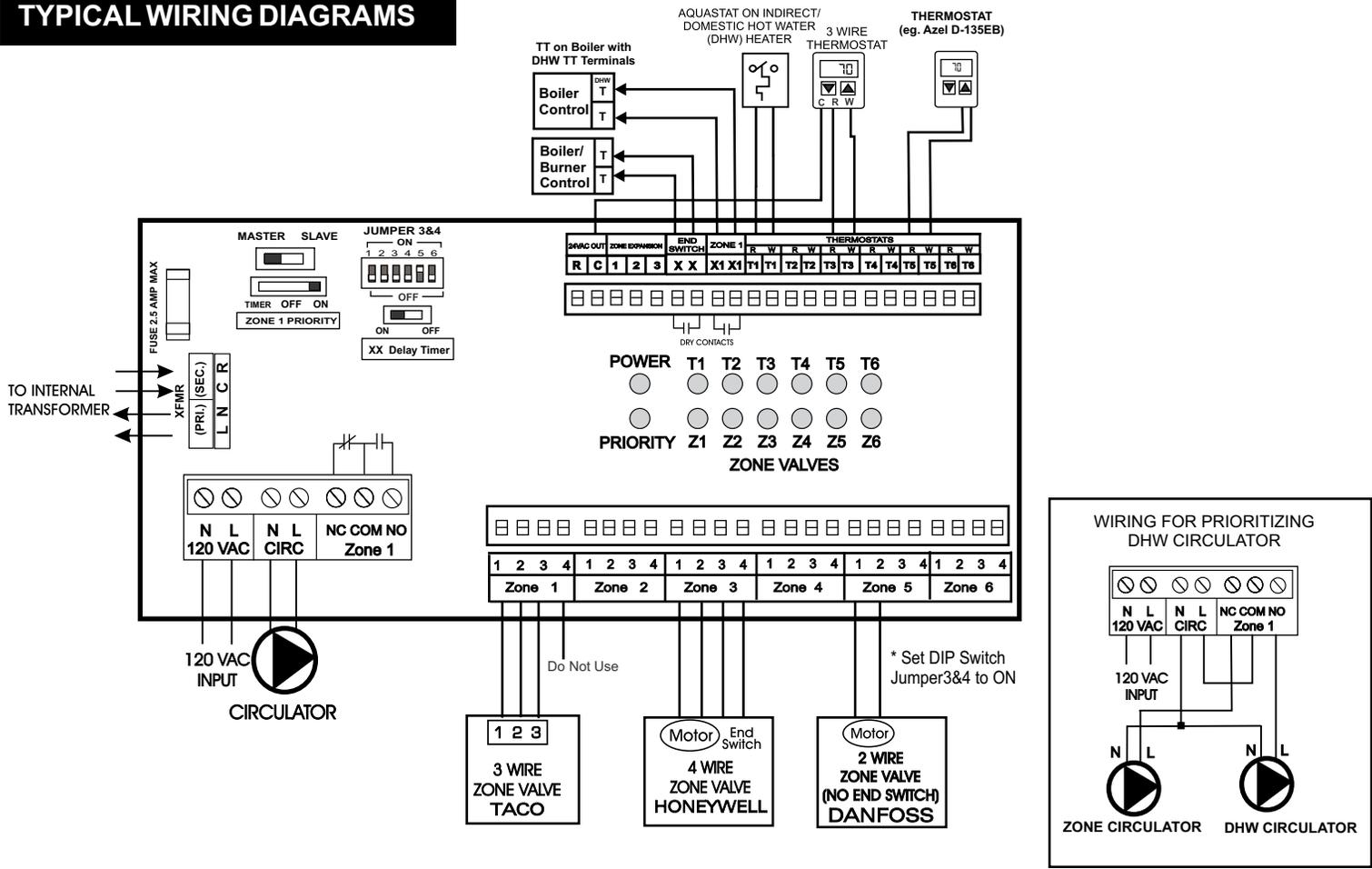
1 2	Terminals for zone valve motor connections
3 4	Terminals for zone valve end switch connections

## TROUBLE SHOOTING

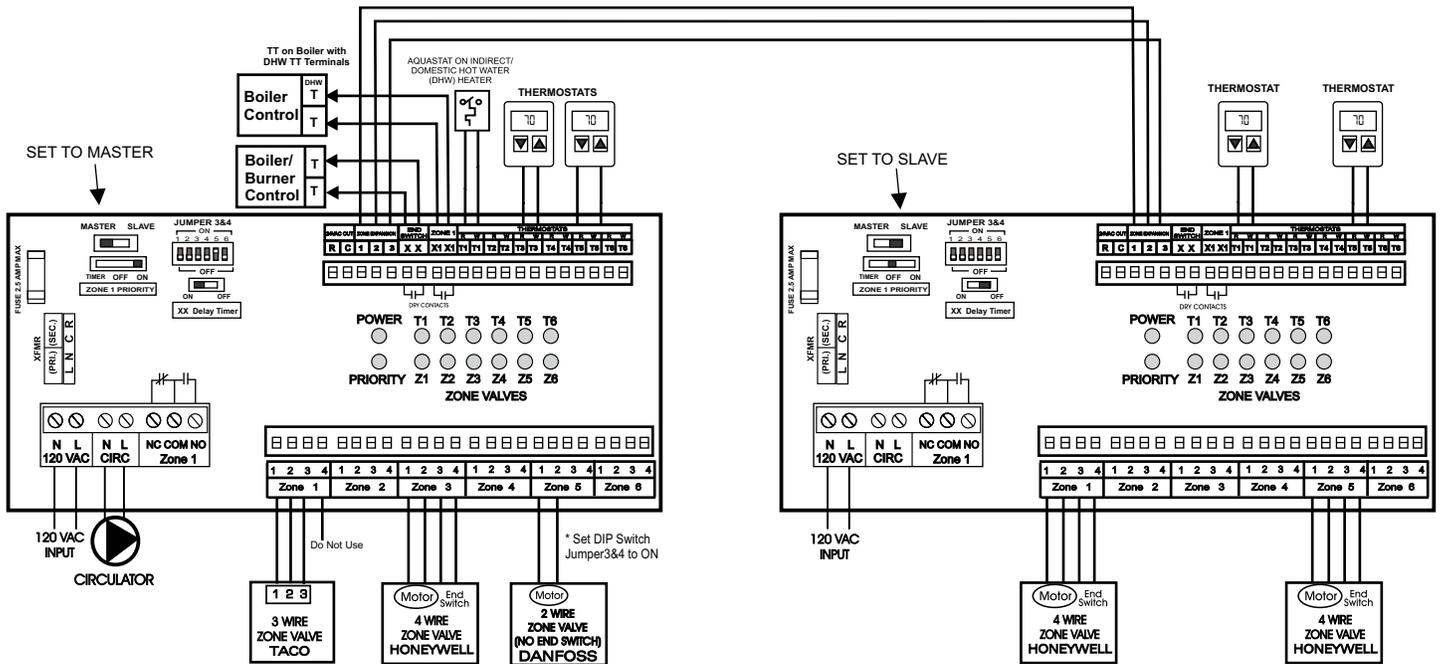
When 120VAC is supplied to **i-Link** controllers, the green power light should be on.

- If the thermostat is closed and yellow zone light is on, the power should be supplied to the zone valve. If the zone valve is not actuated or if the zone valve end switch is not closed (red light is not turning on), check the zone valve for functionality.
- **If yellow zone (1-6) light is on all the time**, check the thermostat for functionality. Remove the thermostat from the **i-Link** controller and put a piece of wire across R/T and W/T terminal to simulate the thermostat calling for heat. If everything works properly, then the thermostat is faulty.
- **If the green power light is off**, check the fuse and the presence of 120VAC power supply. If the fuse is fine and there is no power output on R C terminals of 24VAC OUTPUTS, the transformer(model: 5011F) needs to be replaced.

# TYPICAL WIRING DIAGRAMS



## TYPICAL APPLICATION OF TWO SZ-V6 CONTROLS CONNECTED TOGETHER



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