



Introduction

VSM™ (Variable-Speed Module) is a self-contained package for radiant floor heating of up to three zones. It can provide floor warming or room heating for an entire building or anywhere that requires extra comfort through radiant floor heating. It is suitable for new construction or for renovations – commercial, industrial, agricultural or residential. The injection pump provides the precise amount of hot water needed based upon heating load.

A pump for each zone, a variable speed injection pump, and electronic controls are contained in an attractive cabinet that can be mounted anywhere and in any orientation: up, down or horizontally. The unit comes pre-assembled to save time and simplify installation.

Physical Properties

Model	Cabinet dimensions			Water Connections*		Shipping Weight
	height	width	depth	Heat source	Radiant loops	
VSM80-I, II, III	24"	14 ¼"	8"	3/4"	3/4"	40 lb.

- Copper sweat is standard. Any alternate plumbing connection is available by special order: barb, compression, NPT.
- High capacity systems may have 1" connections (special order).

Mounting

The VSM™ may be mounted in a mechanical room or basement wall or in a closet. It may be surface mounted or recessed into the wall. It may be mounted in any orientation: up, down or horizontally.

For **surface mounting**, use anchors suitable for the wall surface (concrete, drywall or wood screws). The cabinet should be screwed using the flanges on the top and bottom of the cabinet.

For **recessed installations**, the cabinet may be screwed from the inside through the sides of the cabinet into the wall stud. The cabinet is designed to fit between wall studs that are 16 inches on centre. Additional wood blocking may be necessary to support both sides of the cabinet. It is recommended that the VSM™ be recessed at least 3-1/2" in order to hide all plumbing connections.

Note: for recessed installations, all plumbing connections must be completed before the drywall is installed around the cabinet.

Piping Layout

Each zone has its own pump. Note that some custom systems may use multiple pumps for higher capacity but should be connected as a single zone. Each zone should have its own supply manifold of one or more loops of radiant heating pipe. All the heating loops may be brought back to a common return manifold.

Contact Ecologix for assistance with your radiant heating system design.

Plumbing Connections

All connections to the VSM are sweat copper and may be adapted to crimp PEX, compression PEX or NPT. Note: PEX with an oxygen barrier is required for closed loop (boiler) systems. The oxygen barrier is not required for open (water heater) systems, iron-free boiler systems or boiler systems isolated with a heat exchanger. Many options are available for circuiting the in-floor loop layout including remote manifolds and common return.

Connect supply and return from the heat source to the connections on the VSM™ as shown in the diagram and labeled inside the cabinet.

Electrical Connections

Plug the electrical cord into a standard 120VAC/60Hz/1Ph grounded outlet. This device draws less than 3 amps and does not need to be on a separate circuit. The cord can be removed and the unit hard wired by a qualified electrician. Follow all local electrical codes.

The VSM™ includes a pre-wired 24VAC power supply for the controls. Each zone pump has its own room thermostat. Connect low voltage thermostat wire to the terminal strip provided.

Dry contacts are provided to switch on a boiler, primary pump or motorized zone valve. Dry contacts close on a call for heat from any zone. Connect low voltage wires to the terminal strip provided. If line voltage is being switched or this connection is used for a load, an isolating relay should be used. 120 VAC connections must be inside an electrical enclosure

The boiler return sensor can be used as domestic hot water priority. Install the sensor on the return water line from the indirect water heater.

Install the optional outdoor sensor.

Start up

Ensure all plumbing connections are complete.

Purge all air from the plumbing or hydronic system. To purge air from the heating loop, open both heat source isolation valves and close the valve on the return leg of the radiant floor heating loop. Connect a garden hose to the return leg purge valve or use a bucket. Open the return leg purge valve and purge all air from the system. Close the return leg purge valve and open the valve on the return leg of the radiant floor-heating loop.

Start the boiler or water heater according to manufacturer's instructions.

Once the heat source is up to temperature, plug in the VSM™ and set the room thermostat at the desired setting.

Troubleshooting

No heat -- check the following:

- heat source (boiler or water heater) is on
- heat source supply and return are not reversed
- all required valves are open.
- power available
- pump is running (a screwdriver held to the pump can work like a stethoscope)

Noisy Pump

- repeat purge procedure

Insufficient Heat

- Refer to the manufacturer's instructions for the injection pump.

Overheating (Large Temperature Swings)

- Adjust room thermostat anticipator according to manufacturer's instructions. It should be set to provide 3-4 on cycles per hour during the heating season.
- Refer to the manufacturer's instructions for the injection pump – especially outside air sensor.

