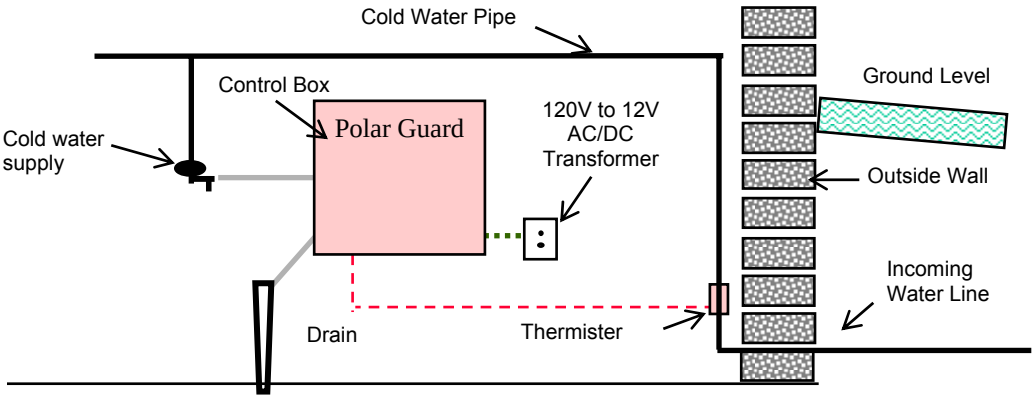
# HOW TO INSTALL THE POLAR GUARD DEVICE

## Easy to Install

- Turn off cold water
- Mount Polar Guard temperature sensing "Thermistor"
- Mount control box.
- Install cold water supply connection and drain line connection.
- Complete 12 V connections and plug in 120 V power supply.
- Turn water back on.
- Set up bleed duration based on the lowest temperature displayed.




## List of Supplied Parts

1. Polar Guard Control Box (Cct.board controller, normally open 2w solenoid valve) Qty 1
2. Power Supply Transformer (12 v 500ma. Dc plug in type) Qty 1
3. Thermistor Sensor Qty 1

## List of Supplies and Tools That May Be Needed for Install

1. 1/4 inch copper pipe (sufficient length to connect Polar Guard to water input and to water drain)
2. 2 conductor low voltage wiring (enough to extend thermister wiring and power transformer wiring to Polar Guard)
3. Electrical Tape (for electrical connections)
4. Wire connectors (to use transformer and thermister wire extensions)
5. Thermal conducting gel (used for better thermal transfer to the thermistor)
6. Emery Paper (to clean the water line where thermistor is attached)
7. Necessary water couplers (suggest a 3/4 inch hose "Y" connector with a 1/4 inch compression fitting coupler on one side or saddle clamp with waterline piercing valve installed on a cold water)
8. Water Hammer Suppressor (if water hammer is an issue, install a suppressor ahead of the Polar Guard valve. These should be available from your hardware store.)
9. Closed Cell Foam Pipe Insulation
10. Duct Tape (for foam pipe insulation)
11. Necessary wall anchors and screws (use 2 #8 wood screws at least 1 inch long with appropriate anchors)
12. Clean dry rags (to clean and dry water pipe at thermistor connection and clean up after)

## Installation Method:

### *Step 1. Mount Computer Control Box*

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Mount the control box within 3 feet of a 120 volt AC electrical outlet. Ensure that it is securely fastened to the wall. An acceptable installation involves using all mounting holes on the control box. Appropriate wood, metal or masonry fasteners should be used.

### *Step 2. Mount Temperature Sensing Thermistor*

Care must be taken to ensure an integral connection between the thermistor and the copper pipe surface that it is attached to.

1. The attachment of the thermistor to the incoming cold water line is carried out no further than 12" from the point of entry of the water line into the residence.
2. Thoroughly sand the water pipe surface with emery paper and cleaning with a dry cloth to ensure that the mounting surface of the pipe at the point of attachment is free of all contaminants.
3. Apply a thermal conductivity gel on the pipe surface. Place the brass encased thermistor unit on the pipe and secure it in place on the conductive gel and for further security completely wrap the thermistor tightly to the pipe with electric tape.
4. The pipe must be insulated from its point of entry into the building to the thermistor and a minimum of 24 inches beyond the attachment. Insulate the water pipe and thermistor using a 1 meter (3 ft) section of flexible closed cell foam insulating pipe wrap and then duct tape.

### *Step 3. Install Water Supply and Drain Lines*

1. Copper tubing with compression fittings are recommended for the water supply and drain line connections.
2. Use water line dampening shock suppressors if water hammer becomes an issue when the valve engages or disengages,

### *Step 4. Final Electrical Connections*

1. Ensure that all of the low voltage electrical connections are properly connected at the terminal block inside the control box. A diagram is attached to the control box.
2. Only the Plugin Transformer wire leads are polarity sensitive. The positive wire lead is tagged on the transformer leads. Connect this to the + connector terminal on the Polar Guard controller cct board and the other lead to the - terminal.
3. The thermistor wire leads are not polarity sensitive and therefore can be connected in either of the allocated connection slots on the terminal block.

4. Plug in the 12 volt transformer wall plug and watch the display. The unit should be operational, and the control box will display a temperature reading. And also start a bleed cycle. If there is no display reading then unplug the transformer and check the connections as per the diagram in the box. Make changes and plug in again. If there is still not a display call the Enviro Energy help line.

### *Step 5. Setting up the Bleed Duration Table*

1. After the initial setup of the Polar Guard everything is automatic. When the unit is turned on a temperature value will be displayed. Consideration for adequate bleed duration must be established as the first step.
2. All of the mode settings are pre set at the factory. There is no need to modify any settings with the exception of the bleed duration (Mode 1). See attached mode sheet to identify mode descriptions.
3. To establish the appropriate time required for a bleed duration you need to do a test bleed cycle. Run your cold water slowly by turning on a tap. Time how long it takes for the temperature to stop dropping and stabilize at a constant value. This will probably occur in a 3 minute time period depending on the length of the incoming water line. The setting for a bleed duration in this condition should normally be 5 minutes.
4. If the time for the temperature to stabilize is longer than 3 minutes then you can increase the bleed duration up to 15 minutes long. For services that have a history of frequent freezes, or are longer than 75 feet, or where the water service line runs under the basement slab a longer bleed duration may be required. During the winter months especially during extreme cold periods the bleed duration should be checked and adjusted if necessary to better protect the water service line.
5. To change the bleed duration setting - Push the Mode button until you read a "1" on the left side of the display. This is the Mode function that sets the duration of the bleed cycle every time that the Polar Guard runs through a bleed cycle. Hold the function button down for 3 seconds and repeat until the display reads "1" on the left and "5" on the right side. This means that you have selected a 5-minute bleed duration.
6. Check to ensure that there is a consistent flow of water to the drain.
7. Please call the Enviro Energy service center in Vancouver BC (1-604-556-0133) to verify that the installation settings are adequate to protect the water service line throughout the complete winter.

# Polar Guard™ - Take Away the Guess Work

Market Studies reveal that 59% of Canadian municipalities operate manual “run water” bleeders to protect water service lines and mains from freezing.
A manual bleeder uses 3000 ltrs. of water per day.
The Polar Guard uses 30 ltrs.of water per day.

**Big Savings with Peace of Mind**
A Water Saver solution that reduces “run water” bleeder waste by 99%, is available. The Smart Bleeder is called the Polar Guard™.
The Polar Guard™ saves water because it “bleeds only when there is a need”.

## Polar Guard™ Features:

* **quick payback**
* **easy to install**
* **quiet operation**
* **meters water use**
* **automatic operation**
* **power outage protection**

**Proven in Municipal Pilot Projects**
*Pilot projects have verified water savings as high as 99%
For example:

A manual bleeder used 280,000 ltrs. of water for a complete winter of operation. Water cost @ .80 per cubic meter was $270.00

Polar Guard™ used 3000 ltrs of water to protect the same water service for a complete winter of operation. The water cost @ .80 per cubic meter was $2.70.

**Polar Guard™ is available from:**
**Water Savers** a division of Enviro Energy International Inc.

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