

THE WATER SAVER URINAL TANK CONTROLLER

OPERATING MANUAL

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INTRODUCTION AND DESCRIPTION

The greatest water waster in washrooms in Canada is a manually controlled urinal tank. These 3-5 gallon per flush tanks are used to flush water through banks of urinal fixtures. Urinal tanks typically cycle 10 - 20 times per hour, 24 hours per day, 365 days per year, even if the urinals are not being used.

The **Water Saver Urinal Tank Controller** will substantially reduce urinal tank water consumption through smart monitoring of the activity around the urinal stalls. A proprietary software program combined with state of the art motion sensors has been designed to determine whether the urinal is in use and must be flushed. Instead of flushing constantly, the **Water Saver Urinal Tank Controller** waits for users in order to flush. This means there is a tremendous amount of water that is saved, especially in washrooms that are in low use. The sensitivity of the sensors can be programmed to ensure that a flush cycle can not be activated in error by traffic walking past the sensor. This provides for the most effective flushing method for efficient water use for the urinal fixtures.

The **Water Saver Urinal Tank Controller** package is composed of a urinal tank controller box with programmable board, a motion sensor with mounting bracket, a 12 volt DC solenoid valve, and a 12 volt DC transformer for power. To ensure that the products work effectively, Enviro Energy International Inc. (EEI) undergoes an extensive testing process of all parts.

The urinal controller has been used as a major water savings product in large-scale projects. EEI installed 300 urinal controllers at the University of British Columbia in what was the largest institutional and commercial water retrofit in the history of Canada. The end result was an overall water reduction of 40% for urinal tanks.



FEATURES AND BENEFITS

FEATURES

Enviro Energy International Inc. has designed a state-of-the-art product that maximizes the water savings potential in washrooms. Accompanying the product are several built-in features including:

- Easy to use programmability - the urinal tank controller is programmed by a set of dip switches. These dipswitches determine tank fill and water saver pause times according to the frequency of washroom use. A label located in the controller box illustrates the various dip switch settings.
- LED light display - Four LED lights display the power and mode settings of the urinal controller.
- The urinal controller comes in a tough, metal box with a hinged door for easy access.
- Occupancy sensor activation – programmable sensitivity is designed to avoid ghost flush cycles
- Sanitary flush cycles – a sanitary cycle can be programmed at intervals to ensure that waste trap odours are minimized during infrequent flush cycles. The factory setting is once every 6 hours.
- Controls up to 2 sensors- to maximize savings by controlling individual flushing according to individual urinal stalls

BENEFITS

- Once it is installed, the **Water Saver Urinal Tank Controller** requires no additional upkeep or maintenance.
- It has a long, durable life. **Water Saver Urinal Tank Controllers** can last at least 15 years under constant operation.
- Low power use - 4 watt solenoid valve – costs only a few dollars per year to operate
- The Water Saver Urinal Tank Controller is aesthetically pleasing. In most cases, only the motion sensor is visible to the eye.
- It can be installed in multiple ways. The motion sensor can attach to the urinal control box via a bracket, or the sensor can attach by itself to a wall or ceiling.

HOW IT WORKS

The **Water Saver Urinal Tank Controller** system works through a combination of electrical currents and motion sensing to stop the flow of water to urinals when they are not in use.

Its simple:

- A motion sensor indicates when the urinals are in use, sending signals to the controller board to open the solenoid valve that is blocking the flow of water.
- The urinal tank then fills up during the Tank Fill Period, ensuring a full urinal flush, and continues to do so for a predetermined amount of time.

- After the Tank Fill Period, the controller then commands the valve to close for the Water Saver Pause Period.
- After the Water Saver Pause Period, the controller begins the Monitor Period, whereby the motion sensor is waiting for another user. The cycle starts over and the solenoid valve remains closed.
- The urinals are also ensured a sanitary flush every 6 hours to wash away any negative smells.

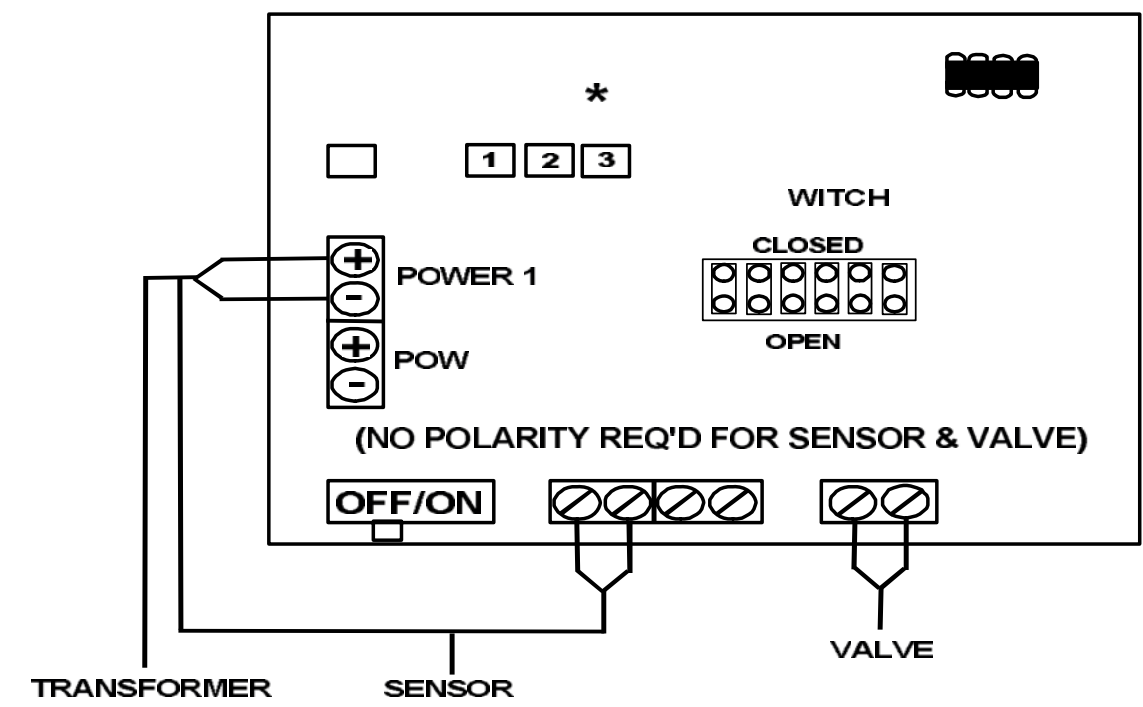
The **Water Saver Urinal Tank Controller** system is connected by a series of electrical wires. There are three wires:

1. Transformer Wire: two wires connecting the transformer (power source) to the urinal controller board to power up the system.
2. Sensor Wire: connecting the controller board to the motion sensor to relay any commands. The sensor wire has four connections: two running from the controller board to power up the sensor, and two running from the sensor to the controller board to relay commands
3. Valve Wire: two wires connecting the controller board to the solenoid valve to indicate when the valve should open or close.

A schematic wiring diagram of the controller board is located inside each urinal controller box.

Note: Only the power connections are polarity sensitive. These are the transformer wire connections and the two connections that power up the motion sensor.

: WIRING DIAGRAM OF CONTROLLER BOARD

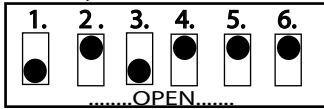


LED LIGHT SEQUENCE

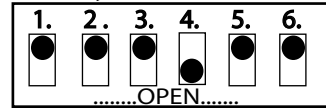
GREEN - LED _ POWER INDICATOR AMBER - LED'S - OPERATING SEQUENCE
 1, LIGHT ON - SENSOR 1 ACTIVATED * 3. LIGHT ON - TANK FILL MODE
 2. LIGHT ON - SENSOR 2 ACTIVATED LIGHT FLASHING - WATER SAVER PAUSE
 LIGHT OFF - MONITORING AREA

DIP SWITCH SETTINGS

Mensroom setup Modes
 Fill - 10 min.
 Water saver Pause - 4 min.
 Sanitary Flush - 12 hours

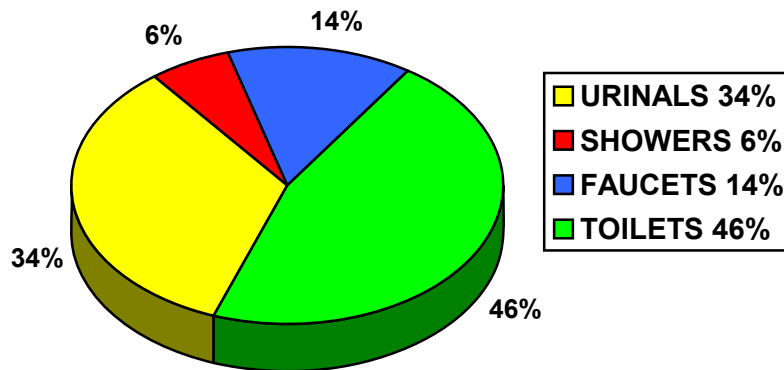


Womensroom Sanitary Fl. only Mode
 Sensors in the off position
 Fill - 15 min.
 Sanitary Flush - 12 hours



WATER SAVINGS POTENTIAL

Advances in water efficiency technology have highlighted the wasteful practices of water use in washrooms. Urinal tanks are particularly wasteful since they run constantly, 24 hours a day, 365 days a year. EEI found that urinals are the second highest user of water in washrooms, consuming 34% of the water used by domestic fixtures.



WATER CONSUMPTION AT UBC CORE BUILDINGS
 2,825,000 M3 ANNUALLY

EEI found that the **Water Saver Urinal Tank Controller** can save up to 70% of the annual water consumption of urinal tanks. That dramatically reduces the water consumption for such a large user of domestic water.

HOW TO INSTALL

PARTS:

- 1 URINAL TANK BOARD WITH PROTECTIVE CASING
- 1 12 VDC TRANSFORMER
- 1 MOTION SENSOR WITH WALL OR CEILING BRACKET
- 1 SOLENOID VALVE WITH WIRING TERMINAL

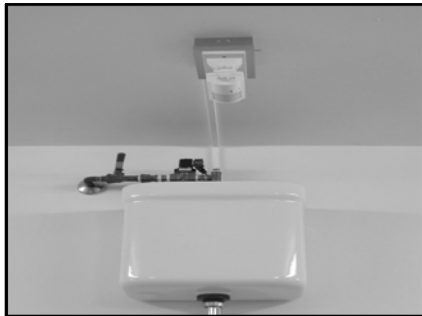
INSTALLATION INSTRUCTIONS

1. Determine the location of a 110 vac power outlet in or close to the washroom.
2. Determine the most appropriate location for the sensor to be mounted to provide total monitoring of all urinals.
3. Sensor may be mounted on the same wall as the urinal tank, or an adjacent or opposite wall, or even the ceiling.
4. The sensor can be mounted on the case and mounted separately if need be. All sensor wires will then of course need to be extended to the Urinal Tank Controller case location.
5. Next install the solenoid valve downstream of the existing urinal tank shutoff valve. Make sure the arrow on the solenoid valve is pointing in the direction of the water flow.
6. Insert the terminal with the solenoid valve wires onto the solenoid valve. Next feed the solenoid valve wires to the Urinal Tank Controller.
7. Insert the power wires from the transformer to the Urinal Tank Controller.
8. Make sure all of the wires from the transformer, sensor, and solenoid valve are inserted in the right connections in the controller board. Refer to the wiring diagram for the right connections. **Only the power connections from the transformer and the sensor are polarity sensitive.**
9. After the unit is mounted and powered up, turn on the Urinal Tank Controller by means of the switch located on the circuit board. This means that it is going into its startup mode which includes a fill cycle to the urinal tank.
10. The unit is now operational. The Urinal Tank Controller immediately enters FILL mode, so the urinal will start filling when activated.
11. A label of the wiring diagram, dip switch settings and LED light modes is located in the urinal tank box. Please contact Joe Pate at 647-226-8080 if you have any further questions.

SPECIAL SETUP

There are a number of ways to install the Water Saver Urinal Tank Controller:

1. Attaching the sensor to the urinal controller box:
2. Attaching the sensor to the wall and feeding the wires to the urinal controller box in another location:
3. Attaching the sensor to the ceiling:
4. Installing vandal proof grills:



TROUBLESHOOTING

If the Water Saver Urinal Tank Controller does not appear to be operating, there is a number of troubleshooting steps that can be implemented. There is a set of operating instructions located in the controller box.

Some troubleshooting examples:

- If the motion sensor light or power LED for the urinal controller board do not light up: the power may be disconnected. Locate the transformer to see if it is unplugged. If it is plugged in, check the power connections to the urinal controller board to see if they are loose.
- If the solenoid valve remains open or closed: there may be a connection failure from the controller to the valve. The wiring connections may need to be examined. Check the instructions located in the controller box to make sure the wires are in their right place. If the connections are correct and the valve remains open, there may be some debris preventing the solenoid valve from closing. Increase the water flow to the valve by suddenly turning up the shut off valve downstream. This is usually enough to dislodge the debris.
- If there continues to be a problem, contact your sales representative and a technician will come by immediately to remedy the situation.