

Turf Guard™
Wireless Soil Monitoring System

Toro® Turf Guard™ Wireless Soil Monitoring System helps you improve your turf, soil and water efficiency. The Turf Guard system is a revolutionary technology that lets you know what's going on beneath the surface of your course, so you can make timely, more-informed adjustments.

Turf Guard uses small, dual-layer sensors buried under a putting green, fairway or tee box. Installation is quick and easy without any wires or trenches, and golfers never know the sensors are there. Once in the ground, each sensor accurately measures moisture, temperature and salinity levels of your soil at two depths, in real time. That data is then collected and compiled into easy to view and understand tables, graphs and dashboards. This information can then be accessed from any Internet-connected computer by connecting to the system's Web-based interface. You can even access your sensor information from a Web-enabled cell phone.



Operational Features

- Immediately ready for play after installation
- Even remote canyon courses have complete coverage due to advanced MESH routing technology
- Repeater mounts in most Toro Irrigation satellite pedestals
- External repeater available for other models including non Toro pedestals
- Supports up to 500 sensors per course
- Expected sensor battery life of 3 years
- Sensor reading sent every 5 minutes
- Measures two distinct depths in the soil profile
- Automatic network configuration and failure recovery
- Graphical course overview displays sensor data at-a-glance
- Plots trends and compares historical and current readings
- Move quickly from course-wide averages to individual sensor readings

Warranty

- 1 Year (NSN plans available)

Electrical Specifications

- Input Power:
 - Repeater: <.02A @ 6 VDC
 - Base Station: <.1A @ 120 VAC, 50/60 Hz
- Dimensions:
 - Body: 2 in. x 3 in. x 5 in. (5 X 7,6 x 12,7 cm)
 - Spikes: 2.5 in. x 3/16 in. (6,4 x ,48 cm)
 - Installation Hole Diameter: 4.25 in. (10,8 cm)
- Temperature:
 - Operating: 0°C to 60°C (32°F to 140°F)
 - Storage: -30°C to 82°C (-22°F to 180°F)
- Sensing:
 - 0.1°F Temperature resolution
 - 0.1 % Volumetric soil moisture content resolution
 - 0.1 dS/m Soil conductivity resolution (Salinity)
- Communication:
 - Repeater Range: 5,000' (1524m) line-of-sight
 - Buried Sensor Range: 500' (152m) line-of-sight
 - 900 MHz ISM Band FHSS Communication
 - Additional licensing not required

How it works:



Wireless Sensor Measures Moisture, Temperature and Salinity Levels

- Three to five sensors buried in each green at critical root zone level
- Additional sensors buried in fairways, tee boxes and planters
- Above-ground relays installed on or in existing irrigation pedestals
- Wireless MESH networking links all sensors to central control system.
- Moisture, Temperature and Salinity readings displayed in your office



Base Station



Connects to Internet in the office.

Pedestal Repeater



- Mounts in most Toro Irrigation satellite pedestals.
- External mount available for other models including non-Toro pedestals.

Sensor



- Measures soil moisture, temperature, and salinity.
- Two distinct depths in the soil profile—Critical root zone level and a second 4.5 inches lower
- Independent measurements from each depth.

Product	Description	Pkg	Each
TURF GUARD			
TG-B	Turf Guard Base Station - For Internet Connecti	1	
TG-PS	Turf Guard Power Supply	1	
TG-R-EXT	Turf Guard Repeater (External mount)	1	
TG-R-INT	Turf Guard Pedestal Repeater (Internal mount)	1	
TG-S2	Turf Guard Sensor	1	