Leveraging cutting-edge wireless communication and sensing technologies, Toro’s line of Sentinel® central control products offers maximum flexibility and control in an easy-to-use package for sites both large and small.
## Powerful, Reliable & Versatile

<table>
<thead>
<tr>
<th>Model</th>
<th>Conventional Output Boards</th>
<th>Wireless Output Boards</th>
<th>DC Two-Wire</th>
<th>AC Two-Wire</th>
<th>No Keypad Option</th>
<th>Maximum Stations</th>
<th>Dimensions</th>
<th>Warranty</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS1 Small Powder-Coated Wall-Mount Enclosure</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>48</td>
<td>10 ¾” W x 15 ¾” H x 5 ¾” D</td>
<td>Five years</td>
</tr>
<tr>
<td>WS5 Large Stainless Steel Wall-Mount Enclosure</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>48</td>
<td>17 1/8” W x 30 ¾” H x 8 5/8” D</td>
<td>Five years</td>
</tr>
<tr>
<td>PS1 Stainless Steel Pedestal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>48</td>
<td>17 1/8” W x 34 ½” H x 8 5/8” D</td>
<td>Five years</td>
</tr>
<tr>
<td>PP1 Plastic Pedestal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>48</td>
<td>17” W x 40” H x 16” D</td>
<td>Five years</td>
</tr>
<tr>
<td>WS3 Small Stainless Steel Wall-Mount Enclosure</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>18</td>
<td>10 ¾” W x 9 ⅝” H x 3 ½” D</td>
<td>Five years</td>
</tr>
<tr>
<td>WS2 Medium Powder-Coated Wall-Mount Enclosure</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>204 two-wire</td>
<td>14” W x 13” H x 6” D</td>
<td>Five years</td>
</tr>
</tbody>
</table>
Sentinel Central Control from Toro® is a powerful system that literally “stands guard” over irrigation sites. With the ability to control up to 999 field satellites from one location, users have a water management tool that provides ultimate customizability and reliability.

**FEATURES & BENEFITS**

**Simple To Use**
Microsoft® Windows-based software – daily operations and scheduling are made quick and easy.

**Features For Water Management**
ET-based watering, flow sensing and optimization, water usage report with historical comparison maximize system efficiency.

**Smartphone and Tablet Connectivity**
The new Sentinel WMS software package also includes iPhone® and iPad® connectivity for remote programming and alerts on ALL new systems.

**Multiple Communication Options**
Communication options like radio, Wi-Fi, cellular, and Ethernet can be mixed and matched to meet system requirements.

**Distributed Programming**
Stores irrigation programs in the computer while allowing irrigation control at the satellite level, ensuring the loss of a component does not result in the loss of irrigation across the system.

**Toro NSN® Support**
All centrals come with a minimum of two years of NSN support – unlimited 24-hour toll-free support with 24/7/365 emergency paging.
Water Management Highlights

Specifications

Electrical
- Control up to 999 field satellites
- Group controllers into “systems” for system-wide adjustments:
  - Rain Days
  - Percent Adjust
  - ET-Adjustment from shared weather source
- Field changes to controller programs can be uploaded to computer
- Support for the System Administration
  - Set system, program and satellite descriptions
  - Map valve positions on site maps
  - Mark special dates on on-screen calendar
- Alarm reporting of any system component failure, including communications, over/under-flow conditions, electrical problems or power failure
- Extensive reporting features:
  - Run time reports
  - Water usage
  - Alarms
  - Logging of system changes

Warranty
- Two year extendable by continuous NSN subscription

Additional Features

- Flow optimizing to maintain optimum flow and shorten water window
- Ability to redefine valve sequence without physically changing wire terminations in field satellite
- Information overview by group and satellite
- System status indications for individual field satellite
- On-line help screens
- Map-based feedback on system status
- Standard internet connection allows for remote access to central software via NSN® Connect

Sentinel Central Model List

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGIS-1-T</td>
<td>Software Only with 2 years of NSN Support</td>
</tr>
<tr>
<td>SGIS-0-1</td>
<td>Software, Peripheral Hardware with 2 years of NSN Support</td>
</tr>
<tr>
<td>SGIS-1-0</td>
<td>Software, Computer Equip, Peripheral Hardware with 2 years of NSN Support</td>
</tr>
</tbody>
</table>

NSN Support Extension Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSE-T-1</td>
<td>1 year Extension for SGIS-0-1 of SGIS-1-T</td>
</tr>
<tr>
<td>SSE-T-3</td>
<td>3 year Extension for SGIS-0-1 of SGIS-1-T</td>
</tr>
<tr>
<td>SSE-C-1</td>
<td>1 year Extension for SGIS-1-0 (with computer warranty)</td>
</tr>
<tr>
<td>SSE-C-3</td>
<td>3 year Extension for SGIS-1-0 (with computer warranty)</td>
</tr>
</tbody>
</table>

Specifying Information—Sentinel Central Control

<table>
<thead>
<tr>
<th>Description</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGIS</td>
<td>X-X</td>
</tr>
</tbody>
</table>

SGIS—Sentinel Central Control Irrigation System

- 1-T—Software Only with 2 Years of NSN Telephone Support for Software
- 0-1—Software, Peripheral Hardware with 2 Years of NSN Telephone Support
- 1-0—Software, Computer Equipment, Peripheral Hardware with 2 Years of NSN Telephone Support (with computer warranty)
Toro® Sentinel field satellites are commercial grade, modular units that do the irrigation control work in the field designed to operate in both stand-alone and central mode.

### FEATURES & BENEFITS

**Flow Sensing**
Reads, displays and reacts to under and over flow situations and tracks water usage. No additional circuit boards are required.

**Expanded Wireless Connectivity**
Sentinel offers true two-way communication via several different connectivity options that can be mixed and matched to meet system requirements.

**Firmware Updating**
Firmware is now easier than ever to update or upgrade by simply inserting a USB thumb drive.

**Weather-Based Irrigation**
Sentinel waters according to ET values by using one or a number of onsite weather stations.

**Advanced Troubleshooting**
The new satellite controller has significantly more internal memory, allowing for extensive event logging and data storage, making it easier to diagnose issues in the field.

**Pro Series™ Soil Sensor**
The new satellite controller can easily be upgraded to operate with the new Toro Pro Series™ Soil Sensor, communicating directly with up to 16 sensors per controller (1 per program), continually measuring moisture levels in the soil, and adjusting irrigation as needed. See page 89 for more details.
**SPECIFICATIONS**

### Operational
- 16 programs
- Eight start times per program
- 6-week scheduling calendar
- Station runtimes from one minute to 4 hours and 15 minutes
- Global adjustment from 0-255%
- Handheld remote ready
- ET and Soil Sensing options
- Two sensor inputs included for rain sensors or other switch sensors
- Operating temperature: 14° to 140°F
- Two flow sensor inputs
- Lower cost “faceless” controller option without faceplate (handheld and central programming only)

### Dimensions
- Small wall-mount: 10 1/4” W x 15 1/4” H x 5 1/4” D
- Stainless steel wall-mount: 17 1/4” W x 30 1/2” H x 8 1/2” D
- Stainless steel pedestal-mount: 17 1/4” W x 34 1/2” H x 8 1/2” D
- Plastic Pedestal-mount: 17” W x 40” H x 16” D
- Weight:
  - Small Metal Wall-mount: 21 lbs
  - Stainless steel wall-mount: 47 lbs
  - Stainless steel pedestal-mount: 64 lbs
  - Plastic Pedestal: 60 lbs

### Electrical
- Input power:
  - 120 VAC, 60 Hz
- Station output power:
  - 24 VAC
  - 1.0 amps per station maximum
  - 2.0 amps total load
- Surge protection: 24 V output boards, 20 KV @ 10 KVA

### Optional Accessories
- TRS – Wired RainSensor
- TWR5/TWRFS – Wireless RainSensor or Wireless Rain/Freeze Sensor
- TFS Flow Sensors
- SHHR – Handheld Remote
- TPS-RX – Toro Pro Series™ Soil Sensor Receiver
- TPS-SS – Toro Pro Series Soil Sensor

### Warranty
- Five years

### Additional Features
- ✅ Upgrade to a central computer system without additional field satellite hardware or costs
- ✅ Program single or multiple stations to operate sequentially or start a program or multiple programs with just a few keystrokes
- ✅ Ability to read open- or closed-contact switches in any station count configuration
- ✅ Current monitor will disable a station if excessive amp draw is detected
- ✅ Non-volatile memory will retain all programming and real-time data for ten years
- ✅ Multi-language display: English, Spanish, French, and Italian

---

**Specifying Information—Sentinel**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Station Count</th>
<th>Enclosure</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-Conventional Wired</td>
<td>12—12-station</td>
<td>WS1—Powder-coated Wall Mount (Small)</td>
<td>U-UHF radio</td>
</tr>
<tr>
<td>SBW-Short-range Wireless</td>
<td>24—24-station</td>
<td>WS5—Stainless Steel Wall Mount (Large)</td>
<td></td>
</tr>
<tr>
<td>SBN—No Keypad (WS1 Conventional)</td>
<td>36—36-station</td>
<td>PP1—Plastic Pedestal Mount (Large)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>48—48-station</td>
<td>PS1—Stainless Steel Pedestal Mount (Large)</td>
<td></td>
</tr>
</tbody>
</table>

Example: A 24-station Sentinel conventional controller in a small powder-coated wall-mount enclosure with UHF communication would be specified as: **SB24WS1U**

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**CABINET CHOICES**

- **WS1**
  - Powder-coated, wall-mount enclosure
- **WS5 Stainless Steel Wall Mount**
  - 16-gauge stainless steel, front-entry, wall-mount enclosure with backplate and junction box
- **PP1 Plastic Pedestal**
  - Double-sided, plastic, top-entry pedestal-mount enclosure with dual backplates and junction box
- **PS1 Stainless Steel Pedestal**
  - 16-gauge stainless steel, top-entry, pedestal-mount enclosure with backplate and junction box
Sentinel Wireless Output Boards utilize spread spectrum radio communication between the control module and the output boards, allowing nearly unlimited installation flexibility while virtually eliminating surge damage to the control module. Retrofits and remote flow sensing are a snap as hardscape crossing issues are eliminated.

Sentinel Custom Control satellites are built to fit your needs and to avoid overkill on small sites. These satellites ship without manual interface keypad or display, minimizing expense without sacrificing capabilities. All the features expected of a Sentinel controller, but cost-effective for your small site needs.
Easy to install and expand – a highly cost-effective field controller for large central control installations. Using a two-wire path to communicate to decoders, the Sentinel Two-Wire controller eliminates high costs associated with traditional valve wiring.

### Specifications

**Operational**
- Up to 204 stations
- Operates Valves with DC-Latching Solenoids
- 16 programs, eight start times per program
- 6-week or 365-day scheduling calendar
- Station runtimes from one minute to 4 hours and 15 minutes
- Global adjustment from 0-255%
- Handheld remote ready
- Two sensor inputs included for rain sensors or other switch sensors
- Multi-language display: English, Spanish, French and Italian
- Operating Temperature: 14° to 140° F

**Dimensions**
- Small wall-mount: 14” W x 13” H X 6” D
- Stainless steel wall-mount: 17 1/8” W x 30 3/4” H x 8 5/8” D
- Stainless steel pedestal-mount: 17 1/8” W x 34 1/2” H x 8 5/8” D
- Plastic pedestal-mount: 17” W x 40” H x 16” D
- Weight:
  - Small metal wall-mount: 21 lbs
  - Stainless steel wall-mount: 47 lbs
  - Stainless steel pedestal-mount: 64 lbs
  - Plastic Pedestal: 60 lbs

**Electrical (AC Models)**
- Input power:
  - 120 VAC (60 Hz)
- Output power:
  - Up to 2 standard solenoids per station
  - Up to 4 standard solenoids per decoder
  - Up to 8 simultaneous standard solenoids per system
- Two-wire path wiring (jacketed, twisted pair):
  - 14 AWG: 5,000 ft max, 10,000 looped
  - 12 AWG: to 8,000 ft max, 16,000 looped
- Decoder-to-solenoid wiring:
  - 14 AWG: 150 ft max

**Electrical (DC Models)**
- Input power:
  - 120 VAC or 220/240 VAC (50/60 Hz)
- Output power:
  - Up to 2 DC solenoids per station
  - Up to 16 simultaneous DC solenoids
- Two-wire path wiring (jacketed, twisted pair):
  - 14 AWG: 15,000 ft max
  - 16 AWG to 8,450 ft max
- Decoder-to-solenoid wiring:
  - 14 AWG: 400 ft max

**Optional Accessories**
- TRS – Wired RainSensor
- TWRS/TWRFS – Wireless RainSensor or Wireless Rain/Freeze Sensor
- TFS – Flow Sensors
- SHHR – Handheld Remote
- TPS-RX – Toro Pro Series™ Soil Sensor Receiver Base Station Module for Sentinel Satellite Connectivity
- TPS-SS – Toro Pro Series Soil Sensor

**Warranty**
- Five years

### AC Sentinel Two-Wire Station Decoders*

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-DAC-1</td>
<td>1-station AC decoder</td>
</tr>
<tr>
<td>SB-DAC-2</td>
<td>2-station AC decoder</td>
</tr>
<tr>
<td>SB-DAC-4</td>
<td>4-station AC decoder</td>
</tr>
<tr>
<td>SB-BLA</td>
<td>AC in-line surge protection</td>
</tr>
</tbody>
</table>

*Decoders only compatible with new “SBA” Sentinel controller models.

### DC Sentinel Two-Wire Station Decoders

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-DDC-1</td>
<td>1-station with integrated surge protection (Operates up to two DC)</td>
</tr>
<tr>
<td>SB-DDC-2</td>
<td>2-station with integrated surge protection (Operates up to four DC)</td>
</tr>
<tr>
<td>SB-DDC-4</td>
<td>4-station with integrated surge protection (Operates up to eight DC)</td>
</tr>
<tr>
<td>SB-TWD-ISP</td>
<td>Sentinel two wire DC inline surge protection</td>
</tr>
</tbody>
</table>

**Specifying Information—Sentinel 2-Wire Controller**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Station Count</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBA – Sentinel AC Decoder Controller</td>
<td>WS1—Powder-coated Wall-mount (Medium) AC Only</td>
<td>U – UHF Radio</td>
</tr>
<tr>
<td>SBD – Sentinel DC Decoder (two-wire) Controller</td>
<td>WS2—Powder-coated Wall-mount (Medium) DC Only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WS5—Stainless Steel Wall-mount (Large) DC Only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PP1—Plastic Pedestal-mount (Large)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PS1—Stainless Steel Pedestal-mount (Large)</td>
<td></td>
</tr>
</tbody>
</table>

*Example: A Sentinel DC two-wire controller in a medium powder-coated wall-mount enclosure with UHF communication would be specified as: SBDWS52PU*

Refer to page 99 for enclosure compatibility.
Maximize efficiency on your Sentinel system by using ET-Based watering. ET-Based watering automatically schedules irrigation based on individual landscape needs and local weather conditions. The result is higher property values, lower water bills and a healthier environment. Unlike competitive systems, Sentinel works in conjunction with multiple weather sources including on-site weather stations and Toro’s wireless, web-based Precision™ ET.

**FEATURES & BENEFITS**

**Precision™ ET**
Precision™ ET is a web-based ET source that users subscribe to through the Toro National Support Network. Virtual Weather Stations are assigned based on latitude and longitude coordinates. Each “location” will require a yearly fee, however, unlimited controllers may be assigned to any latitude and longitude.

**On-Site Weather Stations***
Choose from a number of manufacturer’s weather stations to meet your customer’s needs. Choose wired or wireless versions to best suit the installation method needed.

---

*CIMIS (CA Only)*
Freely access a network of over 120 automated weather stations in the State of California managed by the California Department of Water Resources (DWR).

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**SPECIFICATIONS**

**Recommendation On-Site Weather Station**
- Davis Vantage Pro 2 Plus™ - Cabled (6162C)
- Less Expensive
- 100’ feet of cable provided
- 1000’ possible
  - Wireless (6162)
- No cable necessary
- Repeaters can be used
  - Wireless Repeaters (7654)
- AC powered
- Solar
- Used with 6162 Davis Station
- WeatherLink® Software (6510 SER)

**Supported Weather Sources:**
- Precision™ ET (Virtual)
- CIMIS (Free CA only)
- Davis Instruments™ - Vantage Pro 2 Plus™ - Grow Weather™
- Campbell Scientific™
  - ET 106
  - Turf Weather
- Irrisoft™
  - Weather Reach™

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**SENTINEL SMART IRRIGATION MODEL LIST**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-PREC-ET</td>
<td>Precision™ ET Renewal</td>
</tr>
</tbody>
</table>

On-site weather stations ordered separately.
Using either the new wireless Toro® Pro Series™ Soil Sensor or the full-featured Turf Guard® soil sensor, Sentinel users can set upper and lower moisture level “trip points” in the software to regulate when irrigation is allowed, as well as view the trends over time on an at-a-glance dashboard.

### Sentinel® Flow Sensing

#### Specifications
- Two flow inputs standard on all Sentinel controllers
- High, low, and zero flow detection by station or group of stations
- Unexpected flow detection outside of scheduled watering
- Volumetric flow shutdown option
- Projected and actual flow graphing
- Data exportable to customized Excel spreadsheets
- Each controller stores two years of flow data

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFS-100</td>
<td>1” sensor (5–50 gpm)</td>
</tr>
<tr>
<td>TFS-150</td>
<td>1.5” sensor (5–100 gpm)</td>
</tr>
<tr>
<td>TFS-200</td>
<td>2” sensor (10–200 gpm)</td>
</tr>
<tr>
<td>TFS-300</td>
<td>3” sensor (20–300 gpm)</td>
</tr>
<tr>
<td>TFS-400</td>
<td>4” sensor (40–500 gpm)</td>
</tr>
</tbody>
</table>

Toro Sentinel satellites have extensive flow reading, reaction, and reporting capabilities. All controllers come standard with two flow inputs and two alarm inputs, and are compatible with both standard flow sensors as well as most hydrometers, including reed-switch and 3-wire pulse-diode models.
The Sentinel® remote allows users to conduct irrigation checks, and fully operate the system without opening a field satellite enclosure or needing a second person. This remote also serves as a two-way voice radio, allowing easy communication with other crew members.

The Sentinel® Retro-Link assembly unit allows an existing Rain Bird® ESP-MC controller to be upgraded to a Sentinel field satellite. Retro-Link is 100% compatible with the Sentinel central control software.
SPECIFICATIONS
Support for the Sentinel Central Control
• Every Sentinel central package comes standard with 2-years NSN support
• Unlimited 24-hour toll-free support with 24/7/365 emergency paging
• Technical assistance by email with next business day response
• Remote PC assistance where connectivity is available
• Support of Microsoft operating system software when purchased from NSN
• NSN lab for field issue duplication and diagnostics
• Technical bulletins
• Remote data storage for duration of subscription period
• Extended warranty on central hardware components with continuous subscription
• User training both hardware and software
• For more information on products, services or training, contact:
  Toro NSN
  P.O. Box 3339, 
  Abilene, TX 79604
  Phone: 888-676-8676
  Website: toronsn.com

Isn’t it nice to know someone’s got you covered? Available day or night, you can count on the Toro National Support Network (NSN*) team for total operational confidence.

FEATURES & BENEFITS

24-Hour, Seven-Day, 365 Support
Worldwide, Toro NSN is always available to answer your questions, troubleshoot your system and solve your problems. And if needed, our 24-hour central computer and component replacement service ensures minimal disruption to the operation of your irrigation system (U.S.).

Industry-Best Training – Classroom and Internet-Based
Classroom instruction is available at regional locations and at the NSN Training Center—where classes feature hands-on computer training and the operation of Toro hardware. NSN’s new internet-based Training In Ten™ features critical instruction that can be learned in ten minutes or less and quickly applied right on-the-job!

The Confidence of Working with the Best in the Business
Toro NSN is a Microsoft® Certified Partner. Our support technicians are licensed irrigators. NSN has a diagnostic lab on-site for each irrigation platform, all field hardware, plus ancillary products. The lab is used to duplicate field issues and investigate causes and solutions as part of Toro’s commitment to continuous improvement. NSN is dedicated to irrigation—we know your business and expectations.

New System Support, Flexible Options to Renew
Every new Sentinel offering includes Toro NSN support. To protect your Toro investment long-term, choose a renewal option that gives you exactly what you need for continued reliable, cost-effective support and extended warranty, including equipment upgrades to keep your technology current and powerful.

Note: NSN Features vary based on the Sentinel product offering purchased. Contact Toro Sales for details.

<table>
<thead>
<tr>
<th>Specifying Information—NSN/Sentinel Support Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SSE-X-X</strong></td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>SSE—Toro NSN Support for Sentinel Subscription Extensions*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

*S1- and 3-year NSN extensions can be purchased up-front in conjunction with SGIS packages to provide the end-user with an additional one or three years of NSN support. For example, a customer can order the SGIS-1-0 and the SSE-C-3 which would equal five years of NSN support. These extensions are for original purchases only; existing plan renewals are still purchased through Toro NSN.

toro.com/irrigation  •  The Toro Company  •  Irrigation Division  •  5825 Jasmine St.  •  Riverside, CA  •  92504  •  877-345-8676
Specifications subject to change without notice. For more information, contact your local Toro distributor.
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