



ServiceStationSentinel (WS-2000 Series)

Tank Inventory Management System
for service stations

Data Sheet

S-SES-1401-07-002 Rev.0

Description

The **ServiceStationSentinel** is a remote measurement and control solution that allows the management and control of tank inventory, in service stations for motor vehicles, providing an automated solution to said process. Being its main function the monitoring of the level values and the volume in the storage tanks.

The **ServiceStationSentinel** allows the user to measure their inventory before and after fuel dispatch and to identify its replacement in a timely manner, naturally reducing measurement error and allowing the detection and reporting of alarm conditions.

Characteristics

- High float product and water level sensors.
- Product temperature sensor included in the level measurement probe, to compensate the volume measurement.
- Options for wireless connection and battery operation of level/temperature sensors.
- Office monitoring software for PC and cell phone.
- Ability to report monitoring and report alarms through text messages.
- 85-240 VAC supply voltage with external adapter.
- LEDs to indicate the status of communications with the measurement probes and with the

cellular network, and to warn of system failures and alarms.

- Two-line LCD display for product and/or water level monitoring, configuration and diagnostic functions



Figure 1. Wireless Sentinel Cellular Device with local display.

Functions

- Read the value of the level and temperature of the product, and the water level, in each tank or compartment.
- Calculate the inventory of product in each tank, considering the calibration tables of the same, the water level, the base density of the product (optional) and the temperature of the product.
- Keep a record of the daily inventory of each tank.
- Report alarms by level in the tanks and send reports through SMS messages. The following messages are available:
 - Report of the level and volume of the product, the average temperature, the water level, the available volume and the useful volume available.



- History of alarms and losses by evaporation.
- Inventory control by work shifts.
- Detect and report leak conditions (leakage tests).
- Allow the change of configuration parameters.

- Output voltage: 24 VDC.
- Output current: 250 mA (Continuous or peak).
- Output power: 6W maximum.
- Isolation from input supply: 1500 V.

Architecture

Figure 2 shows the system architecture, which is made up of a **WirelessSentinel** device or controller (Figure 1), which receives level and temperature information from the probes in each tank, and performs volume calculations, detects and reports alarms, generating and storing shift change reports. The controller has the ability to connect wirelessly to a personal computer (optional), from where you can view, in real time, the product inventory in the tanks and record the history of alarms and variation of level and volume in the tanks. .

The **WirelessSentinel** controller also has the ability to manage a stop signal for all the service station pumps when an alarm condition is detected due to a low level of product in the tanks, or by order received from authorized users through SMS messages via cell phone (optional).

The wireless connectivity of the temperature and level measurement probes is an available option that saves large installation costs.

Specifications

Power supply

- Input voltage: 85-240 VAC with external adapter.
- Isolation from external energy: 1500 V.
- Power Consumption: 5W peak, 1W average transmitting over cellular radio.
- Power output to sensors:

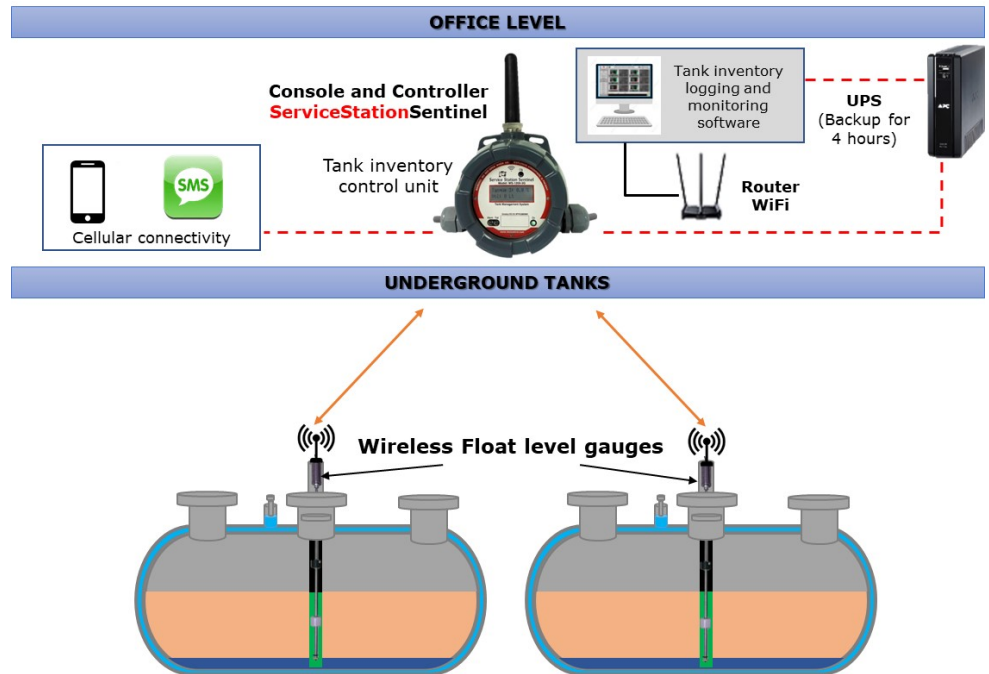


Figure 2. Simplified schematic of the **ServiceStationSentinel** solution.

Wireless specifications

- 3G Radio: For 3G cellular connectivity operating on bands 1 (2100 MHz), 2 (1900 MHz), 8 (900 MHz), 5 (850 MHz), and 19 (800 MHz).
- Transmission power: up to 33 dBm.
- Reception sensitivity: up to -111dBm.
- Download speed: up to 7.2 Mb/s.
- Upload speed: up to 5.76 Mb/s.
- SIM card supplied by the user.
- WiFi Radio (for connectivity with the optional operator station): Compatible with IEEE 802.11 bgn operating between 2.4 to 2.5 GHz (13 available channels). +20 dBm (0.1 Watts) peak power.



- Receiver Sensitivity: -98 dBm to – 69 dBm.
- Signal range:
 - 100m indoors without obstacles.
 - 1 km or more outdoors (with unobstructed line of sight) depending on antenna gain.

Input and output (I/O) specifications

- Discrete output (used for the pump stop command):
 - Number of outputs: 1.
 - Maximum voltage: 30 VDC.
 - Maximum current: 240 mA.
 - Shutdown current: < 1 μ A.
 - Response time: 3 mS.
 - Current protection: 250 mA @ 2s.
 - Output impedance: 10 Ω .
 - Isolation: 1500V from external power supply.

Mechanical specifications

- Dimensions: 144 mm (Height) x 133.3 mm (Width) x 106.1 (Depth).
- Material: UL94V-2 polycarbonate plastic with UV stabilizers.
- Ingress Protection: IP66 / Nema 4X.
- Weight: 0.84 kg.
- Conduit Connections: Tres $\frac{3}{4}$ " NPT.
- Window size: 84.5 in diameter.
- Color: Grey.

Led display and indicators

- LED indicators:
 - Green: Shows if the system is active and operating normally.
 - Amber: Shows if there is any failure in communication with the measurement probes.

- Red: Shows if there is any alarm condition present.
- LCD screen:
 - 2 lines, 16 characters each to show level and volume of each tank, diagnostic information, alarm conditions.
- Switches:
 - Magnetic sensor and mechanical pushbutton to activate system configuration and diagnostics.

Approvals

Cellular radio:

FCC ID: XPY1CGM5NNN

The **ServiceStationSentinel** contains a cellular radio that complies with part 15 of the US FCC Rules and Regulations.

Accepts 3G nano SIM card from any cell phone operator.

Support

For orders, information and support, write to:

MCL Control.

E-mail: info@mclcontrol.com

jcalderon@mclcontrol.com

www.mclcontrol.com