



Savi[®] SensorTag ST-673

SensorTag with Engine Mounting Bracket

The Savi SensorTag[™] ST-673 is a data rich, active RFID tag for metal containers enabling shippers, carriers and logistics service providers to monitor their shipments in real-time as they move through the global supply chain. In addition to real-time tracking, the Savi SensorTag ST-673 includes RFID sensor capabilities to monitor environmental conditions, both temperature and humidity, of metal containers during transportation and in storage.

The Savi SensorTag ST-673 Form Factor

Designed for various types of applications including engine container tracking, medical supply tracking, ammunition, food stuff and other perishables requiring the sensing of temperature and humidity, the Savi ST-673 includes:

- Metallic container mounting bracket to secure the tag to the outside of the container.
- Removable battery.
- Externally mounted, low profile encasement.
- Audio beeper for location notification and alarms.
- Simple installation with screws and mounting tool.

Key Features:

Integrated environmental sensors monitor temperature and humidity throughout the container's journey.

LF receiver for tag wakeup and spot level locating at chokepoints and short range commissioning.

UHF receiver to support tag interrogation.

UHF transmitter to transmit alarms, beacon and Savi Reader reports, and interrogation responses.

Rugged, weather-proof design for harsh outdoor environments.

RFID Tracking with Savi's EchoPoint[™] Technology

Built on Savi's innovative EchoPoint Technology, the Savi SensorTag ST-673 consists of an active RFID tag that enables effective and accurate real-time tracking of metal containers. Savi's EchoPoint Technology employs a unique multi-frequency design and three-element system architecture to achieve both reliable long-range communication, and short-range locating capability. Utilizing this innovative RFID technology, Savi Signposts SP-65X communicate positional information to the Savi ST-673 over a short-range LF link, to notify the tag of its location. As the container passes by choke points and other fixed reader locations, the Savi Fixed Reader SR-650 acquires and stores the tag's location information along with identity and status details, through transmission over a long-range UHF link. For containers in storage, users scan the Savi SensorTag with a handheld reader to gather the data via short range communication. This information is then aggregated into the server and viewed via web-based software to provide the precise location of the container.

Environmental Sensors

The Savi ST-673 includes environmental sensors to monitor the container's temperature and humidity conditions. To monitor the acceptable environmental condition, the user sets the condition range within the Savi SensorTag during tag commissioning. The Savi ST-673 periodically records the environmental status data, time and date to an event log in the Savi SensorTag's memory. If the collected data should rise above or fall below the set condition range, the Savi SensorTag sends a real-time alarm to a fixed or mobile RF reader and the temperature or humidity condition change is escalated via a web application, cell phone or email notification, allowing it to be addressed immediately before spoilage or damage occurs.



Specifications

Physical	Dimensions: Weight:	6.25 in. (16 cm) x 2.3 in.(5.4 cm) x 1.13 in (2.9 cm) 3.8 oz. (108 g)
Environmental	Temperature: Humidity: Vibration and Shock: Altitude:	-40°C (-40 °F) to +70°C (158 °F) Operating -40°C (-40 °F) to +85 °C (185 °F) Storage 100% at 50 °C (122 °F); Salt Fog Testing per MIL STD 810 Testing per MIL STD 810 Low Pressure Testing per MIL STD 810, Procedure 1
LF Receiver (Downlink)	Frequency: Range: Antenna: Modulation: Data Rate: Data Coding: Air Protocol:	123 kHz Up to 4 ft.(1.2 m) from Savi Mobile Reader; Up to 12 ft. (3.66 meters from Savi Signpost 2 integrated ferrite core antennas orthogonally mounted on tag board within tag housing ASK On-Off Keying Average 1.6 Kbps, 50% duty cycle Pulse Width Modulation EchoPoint LF Air Protocol 1.1
UHF Transmit/Receiver	Frequency: Range: Air Protocol: Modulation: Data Rate: Data Coding: Max. Transmit Power: Antenna:	433.92 MHz Up to 300 feet line of sight when mounted to a container to Savi Fixed Readers; Up to 200 feet to Savi Mobile Readers Savi EchoPoint Air Protocol 2.2 Seal and Sensor Protocol Extension; Backward Compatible with Savi EchoPoint Air Protocol 2.2; EBCS FSK, deviation +/- 50 KHz 27.8 Kbps Manchester -7.4 dBm (9.18 mW) typical Internal Loop Antenna
Tag Identification	EchoPoint Air Protocol 2.1: BCS/EBCS Commands:	32-bit tag identification supported 22-bit tag identification supported- Sensor data byte supported
Digital	Sensor Memory: User Memory: Interfaces:	On-board non-volatile EEPROM memory 32 kbytes On-board non-volatile EEPROM memory 128 kbytes Wireless (RF Read/Write Capable); Audible Beeper for tag location and status indication
Mounting	Metallic Container Mounting Bracket	
Approval	FCC Part 15, ESD, EN 300 220-1, EN 301 489-1, U.S. UL 1950, EN 60950, and HERO Certification; Navy Tank testing- environmental	
Environmental	Temperature: Humidity:	Senses & samples temperature with adjustable sample period and adjustable alarm thresholds Senses & samples humidity with adjustable sample period and adjustable alarm thresholds
Power	Battery: Battery Life:	'A' size 3.6 volt primary lithium (Li-SOC12), User replaceable, hermetically sealed in its own compartment 4 years or more based on usage of 2 collections per day

About Savi

With over 16 years experience, Savi is a proven leader in RFID solutions for the management and security of supply chain assets, shipments and consignments. Savi's integrated RFID hardware and software solutions drive business value, such as reducing supply chain assets, inventory and operational costs. Founded in 1989, Savi Technology is a wholly-owned subsidiary of Lockheed Martin, with headquarters in Sunnyvale, California, and offices in Johannesburg, London, Melbourne, Singapore, and Washington D.C. For more information, visit www.savi.com.

About Lockheed Martin

Headquartered in Bethesda, Md., Lockheed Martin employs about 135,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The corporation reported 2005 sales of \$37.2 billion.

Contact Savi

Let us show you how Savi's supply chain solutions can work for your organization. In the United States, call toll-free 800-428-0554, international customers dia 408-743-8000. Contact Savi Asia at 65-62411191, Savi Australia at +61 03 9882 4430, and Savi EMEA at +44 1344 742 815 (Great Britain), or +2711 469-3144 (S. Africa). Visit www.savi.com or email us at sales@savi.com.

