AeroScout®

Enterprise Visibility Solutions

AeroScout T3100 Integration Tag

User Guide

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This product includes software developed by the Apache Software Foundation (http://www.apache.org/).

Table of Contents

Introduction

The T3100 integration tag has been especially designed for technology partners who wish to embed the power of the AeroScout location technology into their own products.
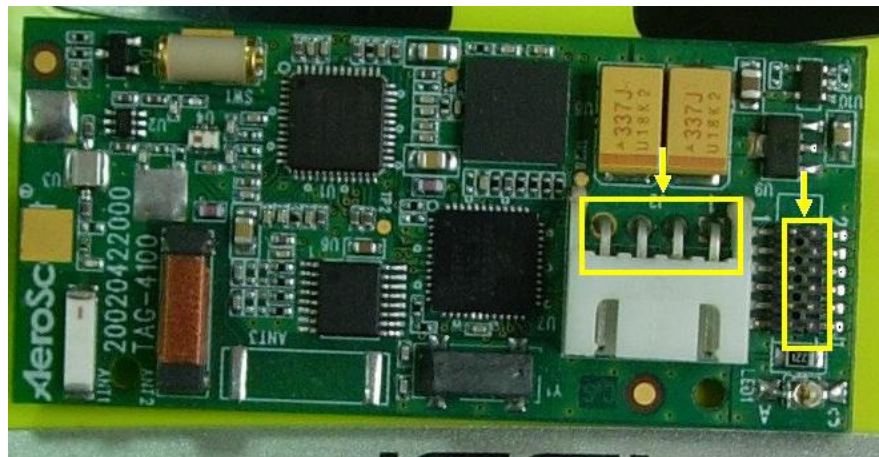
T3100 is the most advanced Wi-Fi based Active RFID tag on the market, manufactured by a market leader and the original creators of the Wi-Fi-based Active RFID technology. It provides accurate location, improved asset tracking and expanded communication capabilities for a more diverse solution offering.

Utilizing the core of the AeroScout T3 tag, the latest model in the AeroScout line of tags, the advantages are already recognized by industries such as healthcare, manufacturing and logistics. Tracking high-value assets and people in real time, in any environment – from tight indoor locations to open outdoor areas – gives enterprises proven positive results and ROI.

T2 Tag Features

Compact Board Design

The T3100 is a PCB that functions in the same way as the AeroScout T3 tag does. it is the smallest and most feature-rich model in the AeroScout Tag family, and thanks to its compact design it can be easily embedded into product enclosures.

Single Streamlined Power Source

The T3100 is powered by the product's own power source, which eliminates complicated dual power maintenance.

Call button interface

The tag includes a call button interface for physical interfaces that can transmit specific data loads coming from the integrated product. In addition, the tag includes another I/O which can be customized for external control for multiple purposes

Serial interface for telemetry

A serial interface connector is integrated for connecting with a host unit for telemetry transmission, or for extracting one of 15 x 15 byte stored messages in the tag's memory.

Indoor-Outdoor Reliability

Both RSSI (Received Signal Strength Indication) and TDOA (Time Difference of Arrival) location is available, with the ability for both to function seamlessly and accurately in any environment. This means that the same tag can track and manage assets in real time across a variety of industries and needs, from aerospace manufacturers tracking parts in an aircraft hangar, to hospitals locating patients across an indoor/outdoor campus, to automotive distributors tracking cars in large parking lots.

Simple Board Management

The T3100 can be programmed via a wireless interface and in batches of up to 50 units at a time, using Tag Activator. The Tag Manager software allows for easy and efficient tag configuration, activation, deactivation and programming.

Compatibility and Non-Interference

AeroScout T3 Tags are 802.11-compatible, and feature the lowest impact on the Wi-Fi network of any tag on the market. The Tag's channel sensing techniques avoid interference with over-the-air Wi-Fi data. The use of the 2.4GHz frequency band at low power levels ensures no interference with other wireless equipment and virtually no measurable impact on network traffic. AeroScout Tags have received EMI certification, making them safe for use with sensitive equipment such as medical devices in a hospital.

Choke-Point Detection Capabilities

Using the AeroScout Exciter, distinct tag presence can be automatically detected and behavior can be modified as the tag passes through a choke point, such as a doorway or gate. This includes turning tags on/off, or changing tag transmission rates. In addition, choke points enable precise real-time alerts, through the AeroScout MobileView software.

Motion Sensor

The motion sensor intelligently conserves battery life and offers enhanced tracking, by enabling separate transmission intervals for tags when they are stationary or in motion.

LED indicator

Optional external LED interface for regular AeroScout tag indications.

Connectors and Electrical Interfaces

The T3100 is equipped with a 4-pin and a 12-pin connector.
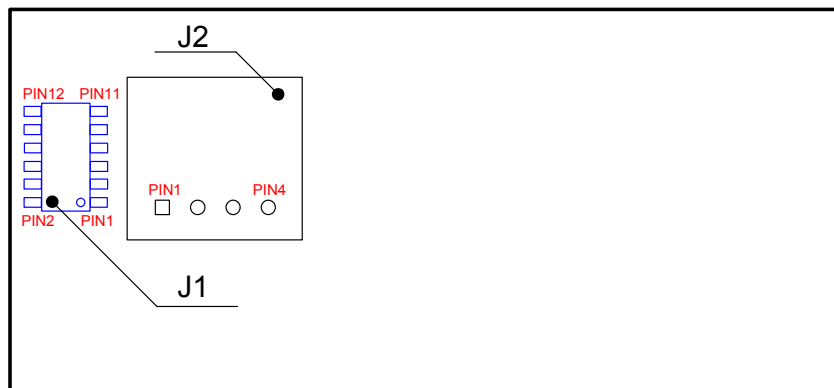
12-pin connector (J1)

The 12-pin serial connector can be used for telemetry transmissions.

The following table describes the pins.

Pin Number	Pin name	Pin Description
1	+5VBAT	+5VDC External Battery Voltage Input
2	TxD1	RS-232 Serial Communication Transmitted Data. Used for sending telemetry data from a host to the tag. Voltage levels 0 to 3.6V
3	RxD1	RS-232 Serial Communication Received Data. Used for reading data from the tag Voltage levels 0 to 3.6V
4		Reserved
5	GND	System Ground
6		Reserved
7		Reserved
8		Reserved

Pin Number	Pin name	Pin Description
9	/PROGEN	When held low, the micro-controller enters the RS-232 serial communication mode. Voltage levels 0 to 3.6V
10		Reserved
11		Reserved
12		Reserved

4-pin connector (J2)

The pins are designed for VCC (5V), ground and call button. A fourth interface can be customized on request.

The following table describes the pins.

Pin Number	Pin name	Pin Description
1	+5VBAT	+5VDC External Battery Voltage Input
2	IO1	Interruptible General purposes I/O. Used as an AeroScout tag call button. Voltage levels 0 to 3.6V
3	IO2	Interruptible General purposes I/O. Can be customized to control external devices. Voltage levels 0 to 3.6V
4	GND	System Ground

Tag Management

The AeroScout T3100 tag can be configured, programmed and activated via a wireless interface. This is done with the help of the AeroScout Tag Manager application and the AeroScout Tag Activator.

In addition, Tag Manager is used to activate and deactivate tags and to program stored messages on the tags.

The Tag Manager functions can also be activated via APIs that enable easy integration with third-party applications.

Please refer to *AeroScout Tag Manager User Guide* and *AeroScout Tag Manager API User Guide*.

Tag Specifications

PERFORMANCE
Outdoor range: Up to 200m (600 feet)

Indoor range: Up to 60m (180 feet)

PHYSICAL AND MECHANICAL
Dims: 27mm width x 59mm height PCB thickness 1.6 mm (board only)

RADIO
802.11b/g radio compliant (2.4 GHz)

RFID low frequency receiver (125kHz)

Transmission power: up to +19dBm, ~81mW

Clear channel sensing avoids interference with wireless networks

PROGRAMMABILITY
Transmission interval programmable, 128 msec to 3.5 hours

Channel programmable

Wireless tag programming

Infrared compatibility for firmware upgrade

ENVIRONMENTAL SPECIFICATIONS
Temperature: -40°C to +85°C

POWER
Input: 5VDC

Average Consumption: 50μA when transmitting as 5-minute intervals.

Peak Current Consumption: 70mA

CERTIFICATION
Radio: FCC Part 15, sub-part C class B, sub-part B (US), EN 300-328, EN 300-330, EN 301-489 (visit website for updated certification and regional specific information).

Recommended
Collaboration with AeroScout personnel for integration processes is recommended to ensure optimal RF performance and prevent interference. For technical support regarding interfacing the board for telemetry, contact AeroScout.

Ordering Information
For ordering and pricing information, please contact AeroScout at info@aeroscout.com.

Safety and Warnings

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
a) Reorient or relocate the receiving antenna.
b) Increase the separation between the equipment and receiver.
c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
d) Consult the dealer or an experienced radio/TV technician.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
a) This device may not cause harmful interference
b) This device must accept any interference received, including interference that may cause undesired operation.

FCC Warning

Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.

Warranty

Hardware. AeroScout Inc. ("AeroScout"), warrants that commencing from the date of delivery to Customer, and continuing for a period of ninety (90) days the Hardware will be free from defects in material and workmanship under normal use. The date of shipment of a Product by AeroScout is set forth on the packaging material in which the Product is shipped. This limited warranty extends only to the original user of the Product. Customer's sole and exclusive remedy and the entire liability of AeroScout and its suppliers under this limited warranty will be, at AeroScout's or its service center's option, shipment of a replacement within the period or a refund of the purchase price if the Hardware is returned to the party supplying it to Customer, if different than AeroScout, freight and insurance prepaid. AeroScout replacement parts used in Hardware repair may be new or equivalent to new. AeroScout's obligations hereunder are conditioned upon the return of affected articles in accordance with AeroScout's then-current Return Material Authorization (RMA) procedures.

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