AeroScout
Enterprise Visibility Solutions

AeroScout Exciter

Version 2.0

User Guide

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Introduction

The AeroScout Exciter is a component of the AeroScout suite of enterprise visibility solutions that enables location-based applications. The Exciter extends the AeroScout suite to provide robust and sophisticated RFID detection capabilities, using the same AeroScout tags that can also be accurately located in real time by the AeroScout system.

The Exciter triggers AeroScout's T2 tags as they pass through a choke point, and those transmit a message to AeroScout Location Receivers in range.

This provides instant acknowledgment that a tagged asset passed through a gate, doorway or some other well-defined area. The detection capabilities of the Exciter, combined with the location features of the AeroScout Location System, make the AeroScout suite the most sophisticated enterprise visibility solution for a wide variety of industries.
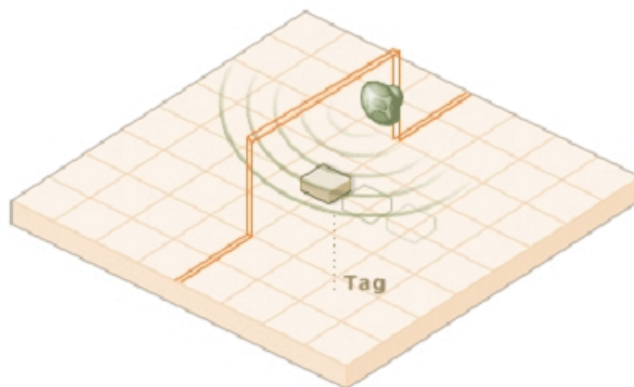

Figure 1: Exciter positioned at choke point triggering a tag

Application and Industry Examples

High value asset tracking

Health care facilities and general enterprises can tag valuable assets that are intended to stay within a certain area. The AeroScout system can track the location of those assets, and if they leave through an exit or enter a restricted area, the Exciter triggers a tag message.

Process control

Manufacturing and supply chain facilities can track the location and presence of equipment and in-process inventory as it moves through the production process. This gives an enterprise a real-time view of which (and how many) assets have passed each step in the process, enabling better supply chain management.

Inventory management

Logistics and manufacturing enterprises can automatically update inventory records as inventory enters and leaves the warehouse, ensuring real-time knowledge of levels without manual checks or physical scanning.

Security applications

Government agencies and enterprises can tag secure assets and people that are restricted to certain areas or require historical location tracking. If those assets leave through an exit or enter a restricted area, Exciter triggers a tag message.

Features

RFID detection of AeroScout T2 tags

Triggering the tags to transmit as they pass through a defined area, Exciters reach up to a 6m (18 ft) range, enough to cover wide gate areas.

Tag behavior modification:

Wireless activation and deactivation of tags. Tag battery life can be extended further by switching the tags off when they leave a defined tracking area through a gate or doorway.

Change of tag transmission rate temporarily or indefinitely to accommodate different usage patterns in various physical spaces.

Message Programming functions

Provide the ability to use the Exciter to store messages on the tag for later transmission. Message transmission can later be triggered by other Exciters, enabling sophisticated process control functions.

Exciters can trigger a tag to:

- Send up to 10 bytes of data
- Transmit one of 10 pre-stored messages
- Send and store up to 10 bytes of data

Rugged IP65 enclosure

To use in hostile indoor or outdoor environments and in a wide temperature range.

Ethernet connectivity

Enables centralized programming, monitoring and software updates by the AeroScout Engine.

Exciter Hardware

The AeroScout Exciter includes:

- Rugged IP65 rated enclosure

- Three RJ-45 interfaces

- Single power connector

- Mounting adapter

Figure 2. AeroScout Exciter v2.0

LED Indications

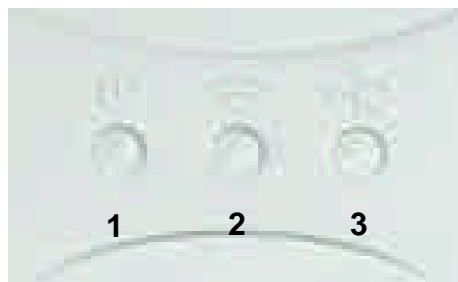The front panel of the Exciter consists of three LEDs. Figure 3 describes these LEDs.

Figure 3. LED Indicators

1   **Power** – Green LED indicates that the unit is ON and connected to a power source.

2   Status – Green LED indicates the unit's operational status.

   a.   Blinking (according to transmission interval) – Exciter is transmitting LF signals.

   b.   Off - Fault

3   Link – Orange LED indicates active Ethernet communication (In offline mode, when not connected to the network, this LED should be off).

Connectors Panel

Figure 4 describes the Exciter connectors panel (bottom panel).

Figure 4. AeroScout Exciter Connectors Panel

1. Ethernet LAN Connection – RJ-45 interface. In a configuration that uses physical Ethernet cable connection to the LAN, the network cable is attached here. Permanent connection to a wired network is not mandatory. However you must have a wired connection for configuring the Exciter. In addition, some of the monitoring functions will not be available if the Exciter is not wired. This connection shall be used also for PoE (802.3af).

2. Power jack – Fit for 24VAC, 24VDC and 48VDC. The power adapter plug (see 5) supplied with the Exciter, should be assembled to a power cord and connected to the power jack. Alternatively, you can use the power supply that is packaged along with the Exciter. When PoE is used, this connection is not required.

3. Power and Control IN Connector – RJ-45 connector. This connector is used for distributing power, Serial connection and Data to chained Exciters. Chaining configuration is currently not supported by AeroScout Engine.

4. Power and Control OUT Connector – RJ-45 connector. This connector is used for distributing power , Serial connection and Data to chained

Exciters.
GPIO – one input and one output (optionally).
Chaining configuration is currently not supported by AeroScout Engine.

5. Termination Switch – For defining termination settings in chained Exciters installations. Default factory setting is Termination On (o-o).
Chaining configuration is currently not supported by AeroScout Engine.

6. Chaining/Control Switch – For defining the Exciter setting to Control or Chaining. Default factory setting is Chaining which is the viable setting for single Exciters also.
Chaining and Control configuration is currently not supported by AeroScout Engine.

Sealing the connectors panel

It is recommended to seal the Exciter connectors panel after connecting the required cables.

Installing the Exciter

This section explains how to install an Exciter unit.

Preparing the Cables and Connectors

Network:
Connect the LAN cable to the LAN connection on the Exciter.

Power:
Connect the power cable to the power jack.

Configuring the Exciter

Exciters are configured using the AeroScout System Manager. The configuration settings consist of device installation and network definitions. The configuration procedure involves the following steps:

1. Connect all Exciters with a wired Ethernet connection to a dedicated segment.

2. Add the Exciters to the system and define their IP settings (IP, subnet, gateway, ports) in the System Manager.

3. Verify that the Exciters' status is OK.

4. Position the Exciter in the site according to site survey recommendations, and mount it.

5. Align the Exciters' positions according to the required area coverage.

6. Configure the Exciter's settings.

7. If you wish to define the Exciter as an offline Exciter that is not connected to the network, you should approve the above configuration, wait for a confirmation, define the Exciter as disconnected from network, approve the settings again and disconnect the Exciter from the network.

Mounting the Exciter

The Exciter can be mounted on a wall using the mounting adapter (provided with the Exciter). The mounting adapter includes five optional screw holes that can be mounted to a wall, a ceiling or any other placement as shown in Figure 3. The adapter also has a swivel with which it can be adjusted in various angles. After setting the required angle, fasten the screws on the sides of the mounting adapter.

Figure 3. Exciter Mounting Adapter

Exciter Specifications

Range

- Adjustable range up to 6 m (18 feet)

- Supports AeroScout T2 Tags

Physical and Mechanical

- Dimensions: 220mm (8.6 inches) diameter, 115mm (4.5 inches) depth

- Weight: 800g (28 oz.)

- Housing: IP65 Rugged Enclosure

Network Interface

- Ethernet (RJ-45)

Power

- Input voltage: 24VAC, 24VDC, 48VDC

- PoE (802.3af)

- Maximum Power Dissipation: 10W

Management

- All settings configured remotely using AeroScout Engine's System Manager.

Environmental Specifications

- Operating temperature: -20°C to +60°C (-4°F to 140°F)

- Humidity: 0 to 95%, non-condensing

LF Channel

- 125kHz

- Field intensity limits: 37.3dBµA/m at 10m (ETSI)

- Propagation limits: 21.8dBµV/m at 300m (FCC)

- Modulation: ASK

Certification

- Radio:
  FCC Part 15, Sub-part B, Class B, Sub-part C
  EN 300-330, EN 301-489
  RSS210 (Canada)

- Safety:
  CE, cTUVus (EN60950)

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.

Instructions concerning human exposure to radio frequency electromagnetic fields.

To comply with FCC Section1.307 (b)(1) for human exposure to radio frequency electromagnetic fields, implement the following instruction: A distance of at least 20 cm between the equipment and all persons should be maintained during operation of the equipment.

Warranty

Hardware. AeroScout Inc. ("AeroScout"), warrants that commencing from the date of delivery to Customer, and continuing for a period of one year 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 returned of affected articles in accordance with AeroScout's then-current Return Material Authorization (RMA) procedures.

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