AT5413 Hardened Rail Tag

Features

- Fully compliant with Association of American Railroads (AAR), American Trucking Association (ATA), and TransCore® Super eGo® (SeGo) protocols
- Harsh-environment durability
- Factory-programmed or field-programmable
- Factory-sealed case
- 1088-bit data storage
- Data encryption and authentication
- Beam-powered for unlimited service life
- Compatible with multiple Amtech®-brand readers, TransCore Encompass® multiprotocol readers, and the new Multiprotocol Rail Reader

The AT5413 Hardened Rail Tag is a beam-powered, field disturbance device used in 915 MHz radio frequency (RF) band applications. It is packaged in a factory-sealed case, which makes this tag ideal for mounting on railcars, vehicle chassis, intermodal containers, or in any environment requiring a durable, weatherproof tag.

The tag's mutual authentication feature uses hardware-based protection that is more difficult to compromise than software-only protection. Mutual authentication prevents unwanted data from being written to the tag's protected memory space.

The tag can be factory-programmed, as specified by the customer, or user-programmed in the field using the AP4118 Rail Tag Programmer. The tag has extended data capacity of 1088 bits, including the 20 six-bit alphanumeric characters of data (120 bits) compatible with previous ATA/AAR read-only readers.

The AT5413 Hardened Rail Tag is beam-powered (a small portion of the RF signal continually energizes the tag's circuitry) so no internal battery is required. In addition to giving the tag an unlimited service life, this feature limits the tag's range and reduces the possibility of cross-reads from nearby tags. System discretion is enhanced to within a 5- to 10-foot (1.5- to 3-meter) diameter reading area.

The tag contains electronically programmable circuitry activated by the RF beam, which is broadcast by a system antenna. The tag encodes the signal received from an Amtech-brand reader system with an identification number or a data message. The encoded signal reflects back (backscatters) to the Amtech reader system. TransCore's Amtech-brand readers — series AI1200, AI1300, AI1400, AI1600, the Encompass series of multiprotocol readers, and the new Multiprotocol Rail Reader — can read the AT5413 Hardened Rail Tag.

AT5413 Hardened Rail Tag

COMMUNICATIONS

Frequency Range
902 to 928 MHz

Typical Working Range
5 to 10 ft (1.5 to 3 m)

Range depends on system parameters

Polarization
Parallel with longer side

MEMORY

ATA Mode
Up to 20 six-bit alphanumeric characters (120 available bits)

SeGo Mode
Total: 32 pages, 256 bytes, 2,048 bits

Unique ID: 1 page, 8 bytes, 64 bits

User data, general use: 20 pages, 168 bytes, 1,344 bits

User data, AAR: 17 pages, 136 bytes, 1,088 bits

Reserved for security authentication: 11 pages, 88 bytes, 704 bits

Security
The AT5413 Hardened Rail Tag provides data encryption and authentication.

POWER REQUIREMENTS

Power Source
Beam powered

LIFE EXPECTANCY

Service Life
Unlimited

PHYSICAL

Dimensions
Size: 9.3 x 2.38 x 0.69 in. (23.6 x 6.05 x 1.75 cm)

Weight: 5.3 oz (150.2 g)

Case Material
Weatherproof, sealed, UV-stabilized, gray case

Mounting Surface
Any smooth metal surface

Where mounting surface is non-metallic or irregular, the AT5413 Hardened Rail Tag may be mounted to a metal backplate attached to the surface of the vehicle or object to be tagged.

Mounting Method
Rivet Mounting: The AT5413 Hardened Rail Tag can be mounted directly to any smooth metal surface using blind rivets or TIR-approved fasteners.

ENVIRONMENTAL

Operating Temperature
-40°F to +185°F (-40°C to +85°C)

Storage Temperature
-67°F to +212°F (-55°C to +100°C)

Humidity
100% relative humidity, condensing

Vibration
20 G_{rms}, 20 to 2000 Hz

Shock, Normal Environment
200 G, half-sine pulse, 3 ms duration, 3 axes

AREMA Requirements
Meets AREMA 11.5.1, Class A (Trackbed) requirements

Ultraviolet (UV) Exposure
MIL-STD 810-D, Method 505.2: 10 years of Florida-level UV radiation

Dust Ingress/Water Immersion
Meets IP67 requirements for dust ingress and water immersion (£1 meter of immersion)

STANDARDS

The AT5413 Hardened Rail Tag meets the standards for automatic equipment identification (AEI) set by AAR. Fully protocol-compliant with ISO 10374 and ATA standards.

OPTIONS

Factory Programming
AT5413 Hardened Rail Tags can be factory-programmed by TransCore to customer specifications.

ACCESSORIES

AP4118 Rail Tag Programmer
The AT5413 Hardened Rail Tag can be programmed in the field using the AP4118 Rail Tag Programmer. The AP4118 programmer contains serial interface logic for connection to a PC host.

For more information:

Call **800.923.4824** (Sales Support) **505.856.8007** (Technical Support)

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