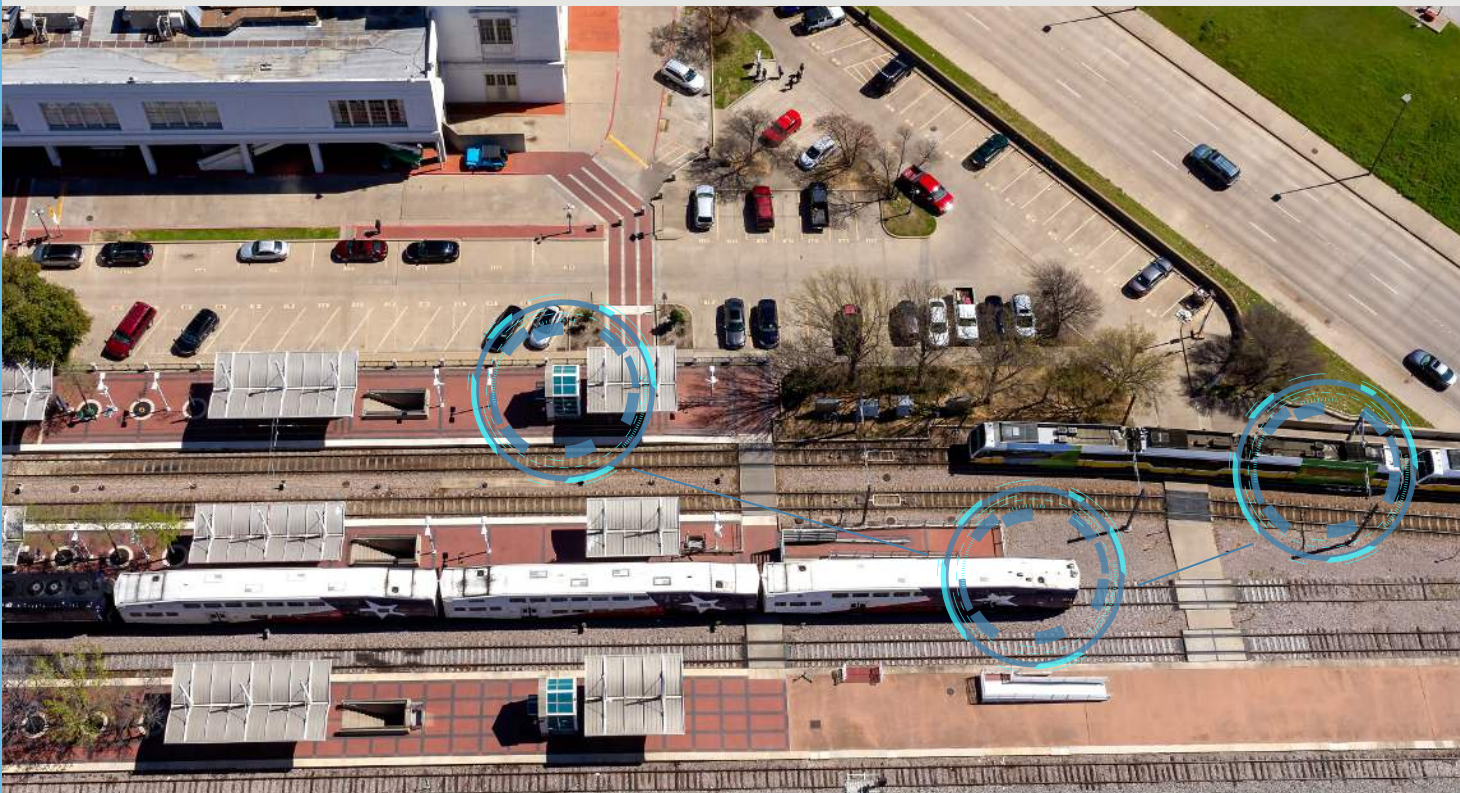# RFID For Rail Application

Step Globals RFID Solutions for Rail, enhance efficiency, safety, and asset tracking capabilities. Optimize rail operations with our advanced and reliable products. Elevate your railway system today.

Why use RFID on Railroads?

1. Preventative Maintenance on rolling stock
2. Identifying individual bogies, locomotives, and wagons
3. Reduction in maintenance
4. Higher asset utilisation
5. Know where your assets are.

To achieve this, RFID tags placed on each side of the locomotive or wagons provide information about their identity and location. The RFID readers can be integrated with wayside train monitoring systems such as hot box detectors, axle load checkpoints, ultrasonic sensors, video, and vibration sensors.

Individual RFID tags can contain specific information about the asset that they are attached to, including maintenance dates, asset type and configuration, age, etc. This data can be integrated with the other inspection systems making identification of pre-maintenance issues simple and on time.

The RFID Products for Rail

The following UHF Readers can be loaded with AEI ATA UHF RFID

RFID readers

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	Ports	Power (dBm)	Sensitivity (dBm)	On-board computer	Multiplexing	Other
AdvanReader-160	4	31.5	-80	Linux	2-level	• Open Linux operating system • Multiple inputs and outputs • Can be connected up to 1024 antennas • Control and data exchange: REST API, TCP socket, MQTT, HTTP, USB HID, CSV, SQL, …
AdvanReader-70	2	30.0	-75	Linux	1-level	• Open Linux operating system • Multiple inputs and outputs • Can be connected up to 32 antennas • Control and data exchange: REST API, TCP socket, MQTT, HTTP, USB HID, CSV, SQL, …
	1	27.0	-65	Linux	1-level	
AdvanReader-10	2	30.0	-75	-	-	• 5 versions: 1 port with integrated antenna, 1 port with external antenna, 1 port with enclosure, 2 ports with/without enclosure • Low cost, small form factor • Fed through USB • SDK available for: Java, C#, C/C++
	1	27.0	-65	-	-	

RFID readers with integrated antenna

	Reader	Antenna	Main application
AdvanTrack-50	AdvanReader-70, 2 port	SP11	• Choke points for asset management and item tracking • Long range reading
AdvanReader-70A	AdvanReader-70, 1 port	CP11	• Check-in/ Check-out • Short range reading

IP66 Rugged integrated UHF RFID Reader and Antenna – non AEI ATA UHF RFID
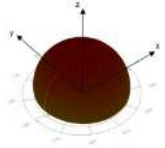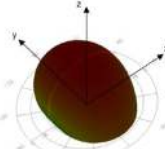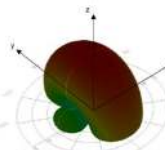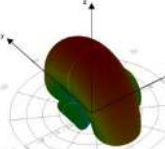
☑ All-in-One Design, With Antenna 8dBi
☑ Circular Polarization Antenna
☑ Support RS232, Ethernet, Wiegand26/34
☑ Self-Developed R2000 Chip Module,
☑ Reading Range 15m Adjustable
☑ Lightning and Surge Protection Design,
☑ Low/ High Temperature Tolerance (-40°C ~70°C), IP66 Rating, Suitable for Tough Environment
☑ Support Online Upgrading

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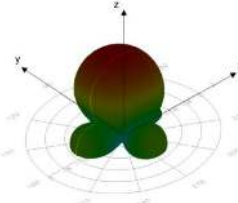
RFID Far Field Antennas

Successful use of RFID comes down to how the RF field is set up to match the operating environment. It is most important to control the 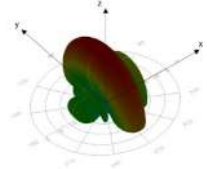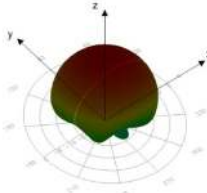RF field so that your reader can read the tag that you are targeting. In most cases you want to have a directional field with enough power to activate the tag and read its contents, but you don't want to pick up data from adjacent tags.

The RF field is controlled by the antenna design.

	Gain	Beamwidth	Radiation pattern
Advantenna-p11	3.2 dBiC (ETSI) 3.4 dBiC (FCC)	90° / 90°	
Advantenna-p12	5.4 dBiC (ETSI) 5.6 dBiC (FCC)	60° / 90°	
Advantenna-p13	6.9 dBiC (ETSI) 6.8 dBiC (FCC)	40° / 90°	
Advantenna-p14	8.0 dBiC (ETSI) 8.1 dBiC (FCC)	30° / 90°	

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RFID Far Field Antennas

	Gain	Beamwidth	Radiation pattern
Advantenna-p16	9.4 dBiC (ETSI) 9.2 dBiC (FCC)	20° / 90°	
Advantenna-p22	7.8 dBiC (ETSI) 7.7 dBiC (FCC)	60° / 60°	
Advantenna-p33	10.7 dBiC (ETSI) 10.6 dBiC (FCC)	40° / 40°	

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Heavy Duty, High Vibration Panel RFID Antennas

Optional Pole Mount

HD7 Series with Integral N Female (Front)

HD7 Series with Integral N Female (Back)

MobileMark antenna solutions®

- Heavy-duty impact resistant; has passed industry standard shock & vibration tests
- Rated waterproof "temporary emersion" IP67
- Low profile design, less than 1" deep
- 7 dBic panel model for long range systems

PN10-915RCP

Pole Mount Configuration

MobileMark antenna solutions®

- Weatherproof radome; perfect for in- building & outdoor coverage
- 10 dBic panel model for long range sys- tems
- Low Profile ABS radome is aesthetic and durable
- Pole or wall mount makes installation easy and quick

AdvanScan TM Handheld RFID inventory system

AdvanScan is an Android handheld RFID reader system, that obtains the inventory of products in a space with a high read-rate (typically above 99 %) and uploads the inventory data to the cloud (AdvanCloud), to a specific server, or locally.

AdvanScan also manages receptions, movements, picking, transfers and other processes. AdvanScan also encodes RFID tags and prints RFID soft tags by using it together with Advan-Print.
AdvanScan works with WiFi and avoids the need to use any local computer. It's plug & play.

Benefits:

- Increase of product availability
- Reduction of out-of-stocks
- Reduction of shrinkage
- Very easy to use: requires no installation, and needs only 3 clicks to make an inventory and upload it to the cloud
- Plug & play
- No need of an external computer

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Middleware for the Advan family of Readers

Start-up and device self-discovery

RFID tag monitoring

XML data supplied by AdvanNet

Control of digital inputs and outputs

RF Configuration

AdvanNet includes a web-based configuration and monitoring tool, and an API based REST service