

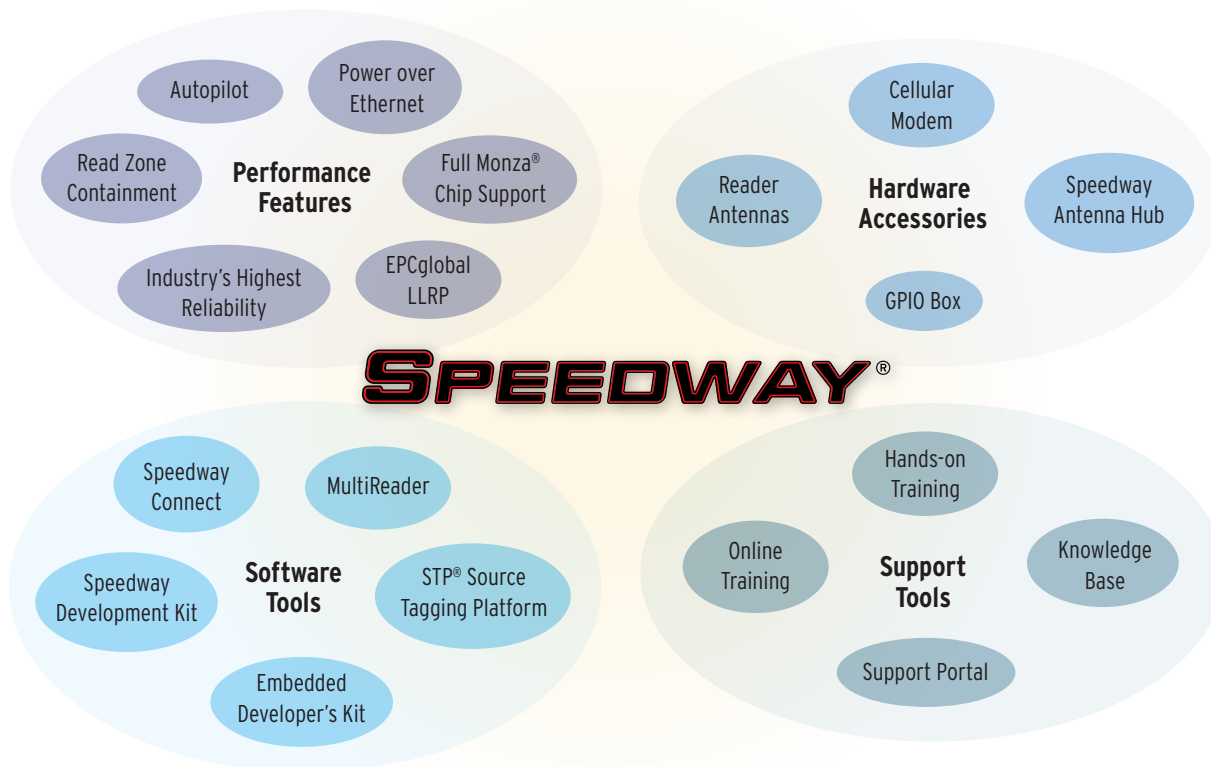


Speedway® RFID Reader Products

Superior Performance Made Easy

Speedway® Readers

Complete System Toolbox



Autopilot

Senses, Configures, Adapts—24/7



RF interference, tag quantity, ambient RF noise, and even building materials near an RFID installation all affect system performance. Most users configure their readers for worst case scenarios, often compromising best performance in the process. With the Speedway reader's Autopilot, innovative firmware features work together, automatically optimizing the reader operation to its environment—delivering peak performance at all times.

- > **Autoset** continuously optimizes the reader's configuration for the best, most reliable performance. The Speedway reader senses levels of RF noise and interference, automatically selecting the appropriate settings.
- > **Low duty cycle** reduces RF interference, power consumption, and energy costs. The Speedway reader only transmits when tags are in the field, helping to clear the air of unnecessary RF noise.
- > **Dynamic antenna switching** improves throughput and helps the reader work more efficiently. The Speedway reader senses where tags are in the field and automatically focuses more time on the antennas with the largest tag populations in view. For example, if a low-height pallet follows taller pallets through a portal, the Speedway reader reduces time spent on antennas in the upper positions.

By choosing Monza-powered tags you can take advantage of advanced capabilities such as best receive sensitivity and encoding speeds, interference rejection, and item-level carrier cancellation.

Speedway® Readers

Delivering Peak Performance All Day, Every Day

Impinj's Speedway fixed RFID readers deliver the performance, quality and reliability that is necessary to ensure visibility for your business. With the largest installed base of fixed readers across a diverse range of applications, high mean time between failure, and a suite of supporting products and tools, you can count on Speedway readers gathering the data you need.



Speedway Revolution R220



Speedway Revolution R420



Speedway xPortal R640

Speedway Revolution

Expanding Options, Reducing Costs

With its compact form factor and support for Power over Ethernet (PoE) and Sierra Wireless cellular modem connectivity, the Speedway Revolution reader delivers increased application and deployment flexibility. PoE simplifies deployment and dramatically reduces cost by eliminating the need for AC outlet installation at read points. Made possible by the Speedway Revolution's low power consumption, PoE reduces operating costs as well as green house gas (GHG) emissions without compromise. Speedway Revolution delivers the full 30 dBm of transmit power and the highest read performance available—even with PoE operation.

- > 2 and 4 antenna port configurations
- > Power over Ethernet (PoE) and cellular modem connectivity
- > Autopilot capability (automatically senses environment and configures settings for best performance)
- > Enterprise-class management and monitoring
- > Industry standard application interface with support for EPCglobal Low Level Reader Protocol (LLRP)
- > Support for all Impinj Monza® family tag chip features
- > Industry's best sensitivity
- > Support for the STP® source tagging platform
- > Innovative features to enable read zone containment and eliminate stray reads
- > High transmit power capable to overcome cable losses
- > EPCglobal-compliant design
- > Quality design resulting in industry's highest reliability
- > Global partner and support network

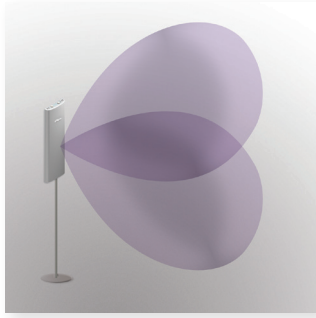
Speedway xPortal

Integrated Portal Reader



The Speedway xPortal incorporates the industry-leading Speedway Revolution reader and Impinj's Dual-Linear Phased Array (DLPA) antenna technology, yielding the industry's smallest, most flexible, and cost-effective RFID portal solution.

The Speedway xPortal's DLPA antenna elements continuously alternate between vertical and horizontal polarizations



- > 30.5 x 8.75 x 2 in (77.5 x 22.2 x 5 cm)
- > 6.5 lbs (3 kg)
- > DLPA antenna delivers full omni-directional power and zone coverage
- > VESA compliant mounting
- > Fully enclosed cable management clips and conduit knockouts
- > Keyhole slots, clearance holes, and integrated threaded fasteners
- > PoE connectivity eliminates need for AC outlet installation at read points

Tools, Accessories & Support Built for Success

Software Tools

Every Speedway reader user can access **MultiReader**, a tool designed to allow you to quickly assess your reader's performance and view tags. Our **Speedway Connect** software provides an easy-to-use graphical interface for setting basic reader configurations and also delivers a cost-effective method for readily converting barcode read points to RFID technology with minimal disruption to existing operations. For high-throughput encoding operations, the Impinj **STP® source tagging platform** provides algorithms, diagnostics, and write speeds of up to 7,500 Monza tags per minute using inline encoding or more than 1,000 items per minute using bulk encoding systems. More advanced users can take advantage of the **Speedway Development Kit** and **Embedded Developer's Kit** to customize performance and reader output to their application.



Hardware Accessories

Impinj's Speedway Antenna Hub provides a low cost opportunity to create a large, contiguous RFID read zone with many antennas connected to a single reader. The **Speedway Antenna Hub** supports up to 32 antennas connected to a single Speedway Revolution R420 reader for a robust solution to today's popular item monitoring and other antenna-intensive RFID applications which deliver enhanced business intelligence and customer experience. The Speedway Antenna Hub makes RFID monitoring applications, including smart shelves, interactive marketing displays, and document or item tracking, cost-effective and easy to deploy. Our **GPIO box** provides convenient access to Speedway readers' General Purpose Input/Output ports giving you the ability to add sensors and triggers to your application.



Speedway Antenna Hub










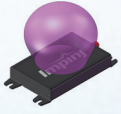


GPIO box

Speedway Reader Antennas

Innovative Solutions for Real-World Applications

Impinj's reader antennas evolved as innovative solutions to real world problems. The experience gained in solving customer challenges gave Impinj engineers invaluable insight that has resulted in a family of antennas with characteristics ideally suited for item-level operation.

READER ANTENNAS - Impinj's family of reader antennas control read zones from point of sale to packaging lines.

	Application	Dimensions	Range
Brickyard Antenna 	The Brickyard reader antenna works well for tagged items on a variety of package types, making it an ideal choice for point of sale applications.	29.5 cm D x 6 cm	 short (30-45 cm)
Guardwall Antenna 	The Guardwall reader antenna provides a tightly controlled read zone and intense RF field, critical to penetrating deep into packed cases traveling on conveyors or packing lines.	70 x 40 x 10 cm	 long (3 m) alone, shorter (variable) when used in pair
MatchBox Antenna 	With its diminutive size, the MatchBox reader antenna is ideally suited for embedded applications that require unobtrusive RFID capability with short-range, well-defined read zones.	7.3 x 3.3 x 1.1 cm	 very short (3.5 cm)
Mini-Guardrail Antenna 	The Mini-Guardrail reader antenna, specifically designed for demanding item-level performance, operates very effectively at 7.5 cm or less, with high reliability and a constrained read zone.	13 x 7 x 2 cm	 very short (7 cm)
Threshold Antenna 	The Threshold antenna provides a consistent and continuous read zone when linearly distributed head-to-tail, with a planar form factor that fits readily into doorways for traffic monitoring.	46 x 9 x 2 cm	 long (4 x 3 m)

Speedway® Readers At A Glance

PRODUCT DETAILS	SPEEDWAY REVOLUTION R420	SPEEDWAY REVOLUTION R220	SPEEDWAY R640	
Description	Provides peak performance. Includes all performance configurations and functionality.	Intended for less demanding applications. Does not support max throughput modes.	Portal reader provides peak performance with integrated antennas.	
Antennas	4 high performance, monostatic antenna ports optimized for Impinj reader antennas (RP TNC)	2 high performance, monostatic antenna ports optimized for Impinj reader antennas (RP TNC)	Dual-Linear Phased Array (DLPA) antenna technology	
Air Interface Protocol	EPCglobal UHF Class 1 Gen 2 / ISO 18000-6C			
Supported Regions or Geographies	<ul style="list-style-type: none"> • US, Canada, and other regions following US FCC Part 15 regulations • Europe and other regions following ETSI EN 302 208 v1.2.1 without LBT regulations For complete region list visit: http://www.impinj.com/speedwayspecs			
Transmit Power	<ul style="list-style-type: none"> • +10.0 to +30.0 dBm (PoE) • +10.0 to +32.5 dBm (external universal power supply) 		FCC +10 to +28.5 dBm, ETSI +10 to +27.5 dBm	
Max Receive Sensitivity	-82 dBm			
Min Return Loss	10 dB			
Application Interface	EPCglobal Low Level Reader Protocol (LLRP) v1.0.1, Speedway Revolution SDK & EDK			
Network Connectivity	10/100BASE-T auto-negotiate (full/half) with auto-sensing MDI/MDX for auto-crossover (RJ-45)			
Cellular Connectivity*	<ul style="list-style-type: none"> • Sierra Wireless AirLink PinPoint XT (CDMA or GSM connectivity with GPS data) • Sierra Wireless AirLink Raven XT (CDMA or GSM connectivity) (* Available through Impinj-authorized partners)			
IP Address Configuration	DHCP, Static, or Link Local Addressing (LLA) with Multicast DNS (mDNS)			
Time Synchronization	Network Time Protocol (NTP)			
Management Interfaces	<ul style="list-style-type: none"> • Impinj Web Management UI • Impinj RShell Management Console using serial management console port, telnet or SSH • SNMPv2 MIBII • EPCglobal Reader Management v1.0.1 • Syslog 			
Reliable Firmware Upgrade	<ul style="list-style-type: none"> • Dual image partitions enable smooth transition to new firmware while the reader is still operating • Scalable upgrade mechanism enables simultaneous scheduled upgrades of multiple readers • USB Flash Drive • Impinj Web Management UI 			
Management Console	<ul style="list-style-type: none"> • RS-232 using a standard Cisco-style management cable (DB-9 to RJ-45) • Baud rate: 115200, Data: 8 bit, Parity: none, Stop: 1 bit, Flow control: none 			
USB	<ul style="list-style-type: none"> • USB 1.1 Device (Type B) and Host (Type A) ports • USB Virtual COM Serial Port and USB drive support for embedded applications 			
GPIO	<ul style="list-style-type: none"> • 4 inputs, optically isolated 3-30V; 4 outputs, optically isolated, 0-30V, non-isolated 5V, 100mA supply (DB-15) 			
Power Sources	<ul style="list-style-type: none"> • Power over Ethernet (PoE) IEEE 802.3af • +24 VDC @ 800mA via external universal power supply with locking connector—sold separately 			
Power Consumption		Idle	Typical	LDC
	PoE at +30 dBm	3W	11.5W	6W
	Power Supply at +30 dBm	3W	13.5W	6W
	Power Supply at +32.5* dBm	3W	15W	6W
	(*maximum is 31.5 dBm for ETSI region readers)			
Environmental Sealing	IEC IP52			
Shock and Vibration	Mil-Std-810G Certified			
Operating Temperature	-20 °C to +50 °C			
Humidity	5% to 95%, non-condensing			
Dimensions (H x W x D)	7.5 x 6.9 x 1.2 in (19 x 17.5 x 3 cm)		30.5 x 8.75 x 2 in (77.5 x 22.2 x 5 cm)	
Weight	1.5 lbs (24.5 oz)		6.5 lbs (3 kg)	
RoHS	Compliant to European Union directive 2002/95/EC			

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