



# ALR-F800

## FIFTH GENERATION ENTERPRISE RFID READER

Alien® ALR-F800 is a best in class, **self-optimizing** Enterprise class reader that enables users to deploy best-in-class EPC Gen 2 RFID solutions for retail, supply chain, manufacturing, mobile asset tracking and asset management applications.

### FEATURES

- Global EPC Gen 2 platform
- DSA (Dynamic Self-Adapting) real-time read optimization
- Alien **GATESCAPE** ease-of-use
- Power source agnostic and auto-switching
- Automatic inventory optimization
- Feature-rich Alien Reader Protocol
- Dynamic Authentication of Higgs™ ICs
- Exceptional sensitivity and performance
- Automode, with on-board state machine
- High read rates for demanding applications
- Enhanced noise rejection for reliable data capture
- RSSI & speed filters
- Easy RFID software integration
- Easily configurable and upgradable
- Industrial, installation-friendly I/O connector
- Antenna reflection cancellation optimization
- Supports extended / custom Higgs IC features
- Auto “Seek” function for low duty cycle applications
- RoHS EU 2002/95/EC compliant
- Plenum Rated (EAHS) per UL 2043



| Feature  | Enabled By  | Benefit   |
|--|---|---|
| <b>Ease of Use</b>   | <ul style="list-style-type: none"> <li>• Alien <b>GATESCAPE</b> enhanced built-in configuration tool (via web interface)</li> <li>• Alien Reader Protocol or LLRP</li> <li>• Smart reader/autonomous mode</li> <li>• Alien Reader Control Architecture &amp; Ruby</li> <li>• Power over Ethernet</li> </ul> | <ul style="list-style-type: none"> <li>• Built in configuration tools</li> <li>• Easy to set up and deploy</li> <li>• No additional costly controllers</li> <li>• Less maintenance and overhead</li> </ul>  |
| <b>Industry leading PoE transmit power &amp; power source agnostic</b>   | <ul style="list-style-type: none"> <li>• Under PoE power, outputs 31.5dBm – significantly more than other readers</li> <li>• Dynamically switches between power sources when power fails</li> </ul>   | <ul style="list-style-type: none"> <li>• No power supply expense or bulk</li> <li>• Uses standard PoE</li> <li>• Best read sensitivity when plenum/ceiling mounted</li> <li>• Increased reliability</li> </ul>  |
| <b>DSA Capability: Dynamically Self-Adapting for best possible real-world performance</b><br><br>e.g. noisy or multi-reader environments | <ul style="list-style-type: none"> <li>• Dynamic “Smart-throttling” in adverse RF environments</li> <li>• Intelligent real-time Phase Cancellation</li> <li>• Maximizes the sensitivity and interference rejection in all environments</li> <li>• Other confidential techniques</li> </ul>                  | <ul style="list-style-type: none"> <li>• Robust against significant tag collisions</li> <li>• Maintains optimal sensitivity even in highly reflective environments</li> <li>• More likely than competitors to read tags in high interference environments (other readers and RF sources)</li> </ul> |
| <b>Extensible and obsolescence proof</b>   | <ul style="list-style-type: none"> <li>• Reconfigurable RF subsystem – Enables RF performance upgrades</li> <li>• MicroSD slot</li> <li>• USB Host</li> </ul>   | <ul style="list-style-type: none"> <li>• Firmware modernization</li> <li>• Enables virtually any amount of memory to be added</li> <li>• Add external peripherals including cellular, WiFi or BT</li> </ul>   |



# ALR-F800 Self-Optimizing, Enterprise RFID Reader

Fifth Generation, Self Optimizing, Easy to Deploy/Manage

## Reader Practicality and Power

The ALR-F800 introduces a paradigm shift in RFID reader practicality. The reader provides the highest transmit power of any reader when operating from Power-over-Ethernet (PoE) power yet offers seamless switching between DC power and PoE power. This removes the need to decide about power source in order to obtain optimal reader performance. Just pick the most cost effective source for your application.

Alien **GATESCAPE** built-in configuration tool simplifies reader set-up and configuration via a simple and modern web interface.

## Usable Performance

Many readers lay claims to the “best performance” and can throw datasheet numbers to “prove” it. However, as soon as these solutions are implemented in real-life complex RF environment their performance drops-off dramatically. The

ALR-F800 is different. Aliens **DSA** (Dynamic Self-Adapting) system monitors the RF environment in real-time and manipulates a number of parameters, filters and tuning metrics dynamically and provides “Smart Throttling” that gently changes the readers behavior to maximize the tags read. Non-Alien readers degrade their performance down to a minimum while the ALR-F800 throttles down using smart algorithms.

## Industry Standard I/O and Firmware Personality

The reader is extensible via industry standard I/O including micro-SD cards (for adding memory) and USB (for accessing wireless I/O such as Wifi and cellular modems). Most readers are programmable but this reader also has the ability for the RF subsystem to be updated via firmware. These updates help protect the ALR-F800 from obsolesce.

## Reader Kits

| Kit Name       | Target User   | Kit Model Number<br>XXX = Country Code | Contents  | Notes   |
|----------------|---|--|---|---|
| Reader         | Large installations that have an existing PoE power supply infrastructure.  | ALR-F800-XXX-RDR-ONLY                  | Reader only (country/region specific)<br>I/O mating connector   | No power supply (DC or Power-over-Ethernet Injector) provided. If you need one, order the “Kit” below.  |
| Reader Kit     | Someone planning to evaluate or develop with the reader and required a power source to power the reader. Good for working on a lab bench.   | ALR-F800-XXX-RDR-KIT                   | ALR-F800 Reader (country/region specific)<br>PoE Injector<br>Power Cable for PoE injector/reader<br>Two Ethernet cables<br>USB Cable (Type B to A)<br>I/O mating connector  | Reader with a power supply in the form of a Power-over-Ethernet Injector (which supplies both power and data to the reader). Comes complete with power cord for the injector and 2 Ethernet cables, one for data and one for both data and power).  |
| Reader Dev Kit | Someone planning to evaluate or develop with the reader and required a power source to power the reader. Good for working on a lab bench.<br><br>Provides an antenna, antenna cable, tags, and all miscellaneous cables, brackets in a carry case for one-stop-shop evaluation. | ALR-F800-XXX-DEV-C                     | ALR-F800 Reader (country/region specific)<br>PoE Injector<br>Power Cable for PoE injector/reader<br>Two Ethernet cables<br>USB Cable (Type B to A)<br>I/O mating connector<br>DC Power Supply Unit<br>Serial cable<br>One ALR-8697 Antenna<br>20ft antenna cable<br>Tag sample pack<br>Micro-SD Card<br>VESA Mounting Bracket<br>Black carry case with foam inserts | Reader with a power supply in the form of a Power-over-Ethernet Injector (which supplies both power and data to the reader). Comes complete with power cord for the injector and 2 Ethernet cables, one for data and one for both data and power).<br><br>Provides everything possible for complete system evaluation without the need to purchase RFID antenna, coax cables etc. |

# ALR-F800 Self-Optimizing, Enterprise RFID Reader

Fifth Generation, Self Optimizing, Easy to Deploy/Manage



| Model Number                 | ALR-F800 (All Models and Country Variants)  |
|------------------------------|---|
| Architecture                 | ARM9 677MHz processor, Linux, 512 MBytes DDR3 RAM, 2 GBytes Flash                                       |
| Supported RFID Tag Protocols | EPC Gen 2; ISO 18000-6c   |
| Reader Protocols             | Alien Reader Protocol, LLRP   |
| LAN Protocols                | TCP/IP, NTP, DNS, DHCP, SNMP  |
| Dense reader management      | Dense Reader Mode, auto event triggering and event management   |
| Power                        | Power over Ethernet or robust universal AC-DC power converter; 100-240 VAC, 50/60Hz                     |
| Reader Power (with PoE)      | ≥31.5 dBm (lower as required by law in specific regions - see tables below)                             |
| Communications               | LAN TCPI/IP (RJ-45), RS-232 (DB-9 F), USB Host, USB Console   |
| Antennas                     | 4 reverse polarity TNC monostatic ports; circular or linear polarization; near and far field compatible |
| General Purpose I/O          | Optically isolated. 0-24VDC rail. 4 inputs. 8 outputs (1500mA capacity).                                |
| Dimensions                   | (L) 20.2 cm x (W) 19.1 cm x (D) 2.8 cm (7.5" x 7.9" x 1.1")   |
| Weight                       | 0.85 kg (1.88 lb)   |
| Operational Temperature      | -20°C to +50°C (-4°F to +122°F)   |
| Environmental Rating         | IP53  |
| LED Indicators               | Power, CPU, Read, Sniff, Ant 0-3  |
| Software SDK                 | Java, .NET, Ruby APIs   |
| RoHS                         | EU 2002/95/EC compliant   |





# ALR-F800 Self-Optimizing, Enterprise RFID Reader

Fifth Generation, Self Optimizing, Easy to Deploy/Manage

## Models by Country

| Model Number         | Countries   | Frequency                       | Transmit Channels | Channel Spacing | RF Power                | Compliance Certification   |
|----------------------|---|---------------------------------|-------------------|-----------------|-------------------------|--|
| ALR-F800-RDR-KIT     | USA, Bolivia, Colombia, Mexico, Panama, Venezuela       | 902 - 928 MHz                   | 50                | 500 KHz         | 4 watts EIRP            | Emissions: FCC Part 15<br>Safety: cTUVus tested to: CAN/CSA-C22.2 No.60950-1-03, and UL 60950-1:2007 specifications IEC 60950-1 and EN60950-1, UL 2043 ATT, CRC, IFETEL, ASEP, CONATEL |
| ALR-F800-EMA-RDR-KIT | Europe, Middle East & Africa, New Zealand, South Africa | 865.6 - 867.6 MHz               | 4                 | 600 KHz         | 2 watts ERP             | Emissions: ETSI EN 302-208-2 (4 channel plan), EN 301-489.<br>Safety: EN 60950, EN 50364   |
| ALR-F800-CHN-RDR-KIT | China, Singapore  | 902.5 - 924.5 MHz               | 16                | 250 KHz         | 2 watts ERP             | Emissions: CMII Safety: IEC 60950-1:2005 2nd edition & CCC   |
| ALR-F800-BRA-RDR-KIT | Brazil  | 902 - 907.5 MHz and 915-928 MHz | 35                | 500 KHz         | 4 watts EIRP            | Emissions: Agência Nacional de Telecomunicações - ANATEL<br>Safety: UL Brazil  |
| ALR-F800-EGY-RDR-KIT | Egypt   | 865.6 - 867.6 MHz               | 4                 | 600 KHz         | 20 dBm ERP (at antenna) | National Telecom Regulatory Authority (NTRA)   |
| ALR-F800-KR2-RDR-KIT | South Korea   | 917 - 920 MHz                   | 6                 | 600KHz          | 4W EIRP                 | KC   |
| ALR-F800-TAI-RDR-KIT | Taiwan  | 922 - 928 MHz                   | 12                | 500KHz          | 1W ERP                  | NCC  |
| ALR-F800-URY-RDR-KIT | Uruguay, Peru   | 916 - 928 MHz                   | 23                | 500 KHz         | 4 watts EIRP            | Unidad Reguladora de Servicios de Comunicaciones (URSEC),<br>Ministerio de Transportes y Comunicaciones  |

August 26, 2016

Copyright© 2016 Alien Technology, LLC. All rights reserved.  
 Alien, Alien Technology, the Alien Technology logo, Spider, Higgs, Dynamic Authentication, QuickWrite, BlockWrite, Squiggle, and the Squiggle logo are trademarks or registered trademarks of Alien Technology Corporation in the U.S. and other countries.  
 HANDLING PRECAUTIONS Observe standard handling practices to minimize ESD.  
 DISCLAIMER Application recommendations are guidelines only - actual results may vary and should be confirmed. This is a general purpose product not designed or intended for any specific application.

This product is covered by one or more of the following U.S. patents: 7716208, 7716160, 7688206, 7671720, 7659822, 7619531, 7615479, 7598867, 7580378, 7576656, 7562083, 7561221, 7559486, 7559131, 7554451, 7411503, 7385284, 7377445, 7364084, 7353598, 7342490, 7324061, 7321159, 7301458, 7295114, 7288432, 7265675, 7262686, 7215249, 7214569, 7199527, 7193504, 7173528, 7172910, 7172789, 7141176, 7113250, 7101502, 7080444, 7070851, 7068224, 7046328, 6998644, 6988667, 6985361, 6980184, 6970219, 6952157. Other patents pending.

This product is licensed under patents of Round Rock Research, LLC, for use solely with UHF RFID Readers (such as Alien reader products) that are licensed under an agreement with Round Rock Research, LLC.



Alien Technology  
 845 Embedded Way  
 San Jose, CA 95138  
 866-RFID NOW  
 www.alientechnology.com