# RCAENRFID

## R4320C

# Hadron

## High Performance 4-port Embedded Reader



**IMPINJ**
CONNECTED

| BENEFITS | High sensitivity | 4-antenna ports | Long range readings | ⬱ USB | IOIOI GP I/O | IOIOI Serial interface |
|---|---|---|---|---|---|---|

## Features

- *RAIN RFID (UHF EPC Class1 Gen2, ISO 18000-63) compliant*
- *Multiregional support*
- *Four 50 Ohm MMCX antenna connectors*
- *Up to 31.5 dBm (1.4 W) output power*
- *USB Full Speed interface*
- *Serial interface (TTL Levels)*

## Applications

- *High performance handheld and sleds*
- *Points of sale readers*
- *Self-service kiosk*
- *Industrial automation readers*
- *Full portal readers*
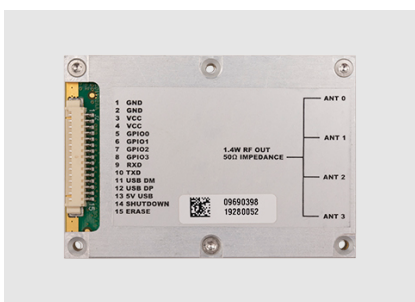- *Long range reading points*

## Overview

The **Hadron** (Model R4320C), embedded module of the easy2read© product line, is a RAIN RFID multiregional compact reader for high performance applications. With programmable output power from 10 dBm to 31.5 dBm, the reader reaches top reading performances being able to detect RAIN tags from a distance of 9 m (30 feet) depending on the antenna and the tag used.

The radio frequency core of the module allows to achieve fast reading/writing operations and to work in dense reader and dense tag environments for top-class rated performances.

Due to its compact form factor, the **Hadron** module is specifically designed to be easily embedded in battery powered devices such as high performance handhelds and sleds. Thanks to the 4-antenna ports and the high power capability, the **Hadron** module is the perfect RAIN RFID core component to design full size readers for portals, industrial automation readers or any RFID device requiring long reading distances.

The **Hadron** reader complies with and can operate in both European and US regulatory environments and, thanks to its multiregional capabilities, it's ideal for integration in devices requiring compliance to different geographical regions.

# Technical Specification Table

| | |
|---|---|
| **Frequency Range** | • 865.600÷867.600 MHz (ETSI EN 302 208 v. 3.1.1)<br>• 902÷928 MHz (FCC part 15.247) |
| **RF Power** | • Up to 31.5 dBm (1.4 W) conducted (ETSI)<br>• Up to 30 dBm (1 W) conducted (FCC) |
| **RX Sensitivity** | -84 dBm – 10%PER, assuming 20 dB antenna RL @ 31.5 dBm output |
| **Output Power Accuracy** | ± 1 dB |
| **Antenna VSWR Requir.** | < 2:1 for optimal performance |
| **Antenna Connectors** | 4 MMCX jacks |
| **Frequency Tolerance** | ± 10 ppm over the entire temperature range |
| **Number of Channels** | • 4 channels (compliant to ETSI EN 302 208 v. 3.1.1)<br>• 50 hopping channels (compliant to FCC part 15.247) |
| **Standard Compliance** | EPC Class 1 Gen 2 - ISO18000-63 |
| **Receiving Capability** | • Gen 2 Dense Reader Mode Management<br>• Data rate up to 400 kbit/s |
| **Forward Link Charact.** | • PR-ASK 40 kbit/s<br>• DSB-ASK 160 kbit/s (FCC only) |
| **Return Link Charact.** | • Miller encoding: M=4 - LF=250 kHz<br>• Miller encoding: M=4 - LF=300 kHz<br>• FM0 400 kbit/s (FCC only) |
| **Connectivity** | • USB Interface: USB 2.0 Full Speed (12 Mbit/s) device port<br>• UART Serial Port:<br>  • Baudrate up to 115.200 kbit/s<br>  • Databits: 8<br>  • Stopbit: 1<br>  • Parity: none<br>  • Flow control: none<br>• 3.3 V I/O voltage level |
| **I/O Interface** | • 4 I/O lines 3.3 V out @ 3 mA<br>• 5 V tolerant |
| **Power Supply** | • 5 V DC ÷ 5.5 V DC<br>• 8.5 W peak power consumption (TX/RX active) |
| **Dimensions** | • (W)60 x (L)42 x (H)7.5 mm³<br>• 2.36 x 1.65 x 0.29 inches³ |
| **Operating Temperature** | -20 °C to +60 °C |
| **Weight** | 35 g |

# Ordering Options

| | |
|---|---|
| **WR4320CXAAAA** | Hadron - Hi-Perf. Embedded Reader |
| **WR4320CXDKEU** | Hadron - ETSI Dev. Kit |
| **WR4320CXDKUS** | Hadron - FCC Dev. Kit |