

UHF | RAIN - Reader Module CAEN - Lepton^{3,7,9}x1

- RAIN RFID (UHF EPC Class1 Gen2, ISO 18000-63) compliant
- Up to 30 dBm (1 W) output power
- Ultra compact size
- Serial interface (TTL Levels)
- Low power consumption



UHF | RAIN - RFID Module Reader Module

CAEN RFID's Lepton x1 reader modules are embedded readers of the easy2read© product line. Their ultra-compact form factor is perfect for low power, high performance RAIN RFID applications.

With a programmable output power of up to 30 dBm, the readers can detect tags at a distance of more than 10 m (depending on the reader IC, antenna, tag dimensions and environment). The radio frequency core of the modules is based on Impinj's RAIN RFID reader chips (E310, E710 or E910), which enables fast reading speeds and high performance in dense reader and tag environments.

Due to their high sensitivity, the modules are well suited for the development of industry-leading RAIN RFID readers for dense tag environments. The small size of the devices allows the Lepton x1 reader modules to be embedded in single antenna readers and other compact form factor devices.

The Lepton x1 reader modules have been designed on the basis of the Lepton reader modules, with the aim of facilitating integration for those who prefer to use connectors rather than the automated manufacturing required by the SMD form factor. The Lepton x1 reader modules also have a wider supply voltage range to allow direct connection to battery packs.

Common Applications

- Handheld devices
- Vehicle mounted readers
- Point of Care
- Access Management
- Defence Industry
- Industrial Automation
- Warehouse & Logistic



TECHNICAL SPECIFICATIONS

Contactless Interface

| | |
|--------------------------|---|
| Operating Frequency | 865.600÷867.600 MHz (ETSI EN 302 208 v. 3.3.1) 902÷928 MHz (FCC part 15.247) |
| Supported Standards | EPC Class 1 Gen 2 - ISO18000-63 |
| RF Power | Lepton ³ x1: 0 - 25 dBm (1 - 316 mW) Lepton ⁷ x1: 0 - 30 dBm (1 - 1000 mW) Lepton ⁹ x1: 0 - 30 dBm (1 - 1000 mW) |
| vRX Sensitivity | Lepton ³ x1: -72 dBm - 10%PER (@ 20 db antenna & 25 dBm output) Lepton ⁷ x1: -85 dBm - 10%PER (@ 20 db antenna & 30 dBm output) Lepton ⁹ x1: -90 dBm - 10%PER (@ 20 db antenna & 30 dBm output) |
| Antenna VSWR Requirement | < 2:1 for optimal performance |
| Antenna Connectors | MMCX jack |
| Sensitivity | ± 10 ppm over the entire temperature range |
| Number of Channels | 4 channels (ETSI EN 302 208 V. 3.3.1) 50 hopping channels (FCC part 15.247) |
| Operation Modes | N/A |

Host Interface

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|---------------------|--|
| Interface | TTL - UART |
| Protocol | Serial Protocol |
| Interface Settings: | Baudrate: 9.6 to 921.6 kbps Databits: 8 Stopbit: 1 Parity: none Flow control: none |
| I/O Level | 3.3 V |

Physical Characteristics

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|----------------|-------------------------------------|
| Dimension | 51.0 x 42.0 x 8.1 mm |
| Weight | 30 g |
| Connector Type | Molex Connector 53261-1571 (15 Pin) |
| IP Protection | N/A |
| Temperature | -20 °C to +70 °C |
| Humidity | N/A |

Electrical Characteristics

| | |
|---------------|---|
| Voltage | 3.2 ÷ 5.25 V DC |
| Consumption | Lepton ³ x1: 800mA @ 5V RF - Out =25dBm 5 mA in idle mode - Ready to receive commands Lepton ⁷ x1 & Lepton ⁹ x1: 1.4 A @ 5V - RF Out =30dBm 5 mA in idle mode - Ready to receive commands |
| I/O Interface | 4 I/O lines 3.3V level @ 8 mA max. |
| LED | N/A |

Certifications & Compliances

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|----------------|-----------------------------|
| Certifications | CE, UKCA, FCC, REACH & RoHS |
| Compliances | RAIN ALLIANCE (ISO18000-63) |

Drivers & Support

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|---------------------|--|
| Supported OS | Works with any OS & µC |
| Supported Libraries | Visual C, .NET Standard 2.0, Swift, Java & Light C |
| Tools | Software Development Kit |

Part No. / Model

| | |
|--------------------|--------------------------------------|
| 25-RRM-C01-0004-01 | Lepton ³ x1 - Impinj E310 |
| 25-RRM-C01-0005-01 | Lepton ⁷ x1 - Impinj E710 |
| 25-RRM-C01-0006-01 | Lepton ⁹ x1 - Impinj E910 |