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keonn

# AdvanReader-160 ™

4 port RFID UHF reader

# AdvanReader-160 ™
## 4 port RFID UHF reader

## Benefits:

- High-performance: high output power and high sensitivity
- Highest flexibility: on-board microcomputer
- Fully open Linux OS
- Reduces time and cost of developing RFID systems
- You can make it your own reader by putting your company logo on the enclosure
- Can control up to 1024 antennas by using it in combination with AdvanMux multiplexer
- Direct connection to an external loudspeaker
- 2 digital/analog inputs
- 8 digital outputs

## Applications:

- Smart shelves
- Smart display fixtures
- Smart surfaces
- RFID portals
- RFID tunnels
- Point of Sales
- Loss prevention systems
- In general, any RFID application

## Product overview

**AdvanReader-160** is a high power (31.5 dBm), four port, high performance UHF reader with an on-board microcomputer and a fully open Linux operating system.

Thanks to its on-board microcomputer, AdvanReader-160 can **work stand-alone**, without needing to be connected to an external computer, thereby reducing equipment costs, installation costs, and maintenance costs.

AdvanReader-160 is prepared to work with **batteries** and control the battery level. It has a sleep mode for minimizing consumption. It is therefore ideal for mobile systems.

## Additional product features

AdvanReader-160 can become **your own reader**: your company logo can be the only logo on the enclosure.

A single AdvanReader-160 unit **can control up to 1024 antennas** when connected to Keonn multiplexers.

AdvanReader-160 is also very flexible in terms of **inputs** and **outputs**:

- 2 x digital/analog inputs
- 2 x additional digital inputs
- 8 x digital outputs
- 4 x Direct LED connections (100 mA)
- 4 x GPO (lines 8 mA)
- 1 x relay enabled output
- Loudspeaker: 8 ohm/2 W
- 2 x RJ45 to directly connect to other Keonn devices, such as AdvanMux and AdvanPhaser

AdvanReader-160 includes several **sensors**, **actuators** and **indicators** on-board:

- Aux Power Supply Voltage
- PoE Power Supply Temperature
- Aux Power Supply Temperature
- On-board buzzer
- On-board LED indicators for: power on, Ethernet linked, Ethernet activity, serial data in, serial data out, etc.

AdvanReader-160 comes with a comprehensive set of built-in HW/SW communication options:

- USB HID emulation: allows generating keyboard events based on Reader events.
- HTTP: user-configurable HTTP request generation based on Reader events.
- MQTT: user-configurable MQTT packet generation based on Reader events.
- SQL: user-configurable SQL sentence generation based on Reader events.
- TCP: real-time TCP socket of Reader events.

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## 4 port RFID UHF reader

## RF specifications

| | |
|---|---|
| Air Protocol Interface | EPC global UHF Class 1 Gen 2 / ISO 18000 - 6 C |
| Data output connectors | FCC (NA, SA) (902 - 928) MHz<br>ETSI (EU, IN) (865.6 - 867.6) MHz<br>MIC (KR) (910 - 914) MHz<br>SRRC-MII (P.R.China) (920.125 – 924.875) MHz<br>Argentina (AR) (915.0 – 928.0) MHz<br>Australia (AU) (920.0 – 926.0) MHz<br>Bangladesh (BD) (925.0 – 927.0) MHz<br>New Zealand (NZ) (922.0 – 927.5) MHz<br>Hong Kong (HK) (865.0 – 868.0) MHz<br>Indonesia (ID) (923.0 – 925.0) MHz<br>Israel (IS) (915.0 - 917.0) MHz<br>Japan (JP) (916.8 - 920.8) MHz<br>Macao (MO) (920.0 – 925.0) MHz<br>Malaysia (MY) (919.0 – 923.0) MHz<br>Philippines (PH) (918.0 – 920.0) MHz<br>Russia (RU) (866.0 – 868.0) MHz<br>Taiwan (TW) (922.0 – 928.0) MHz<br>Thailand (TH) (920.0 – 925.0) MHz<br>Singapore (SG) (920.0 – 925.0) MHz<br>Vietnam (VN) (866.0 – 869.0) MHz<br>Brazil (902 – 907.5) MHz (915 – 928) MHz by using channel selection<br>Chile (916 – 928) MHz by using channel selection<br>Peru (916 – 928) MHz by using channel selection<br>Taiwan (922 – 928) MHz by using channel selection<br>Open Region (865 – 869) MHz and (902 – 928) MHz |
| RF connections | Four 50 ohm SMA connectors for monostatic antennas (4-port version) |
| RF Power | Programmable from 5 dBm to 31.5 dBm in 0.5 dBm steps<br>(Maximum power may have to be reduced to meet regulatory limits) |
| Max tag read distance | Up to 9 m (33 feet) with 6 dBi gain antennas |
| Max tag read throughput | Up to 400 tags/second |

## Software Specifications

| | |
|---|---|
| On-board intelligence | BCM (Battery Controller Module)<br>• MSP430 firmware<br>• Automatic battery protection<br>• Configurable scheduler for active/sleep mode<br>ARM board<br>• Cortex A-8 CPU (1 GHz)<br>• 512 MB RAM<br>• 4 GByte ROM with Operating System<br>• 1 x USB connector |
| Battery control module | MSP430 firmware<br>Automatic battery protection<br>Configurable scheduler for active/sleep mode |
| On-board software | AdvanNet-2.5: advanced driver platform for Keonn components and systems<br>Debian Squeeze (Debian 10) based distribution |
| External software development | AdvanNet based:<br>Test and deploy web-based GUI utility (AdvanNet Monitor)<br>REST interface that can be used in any development environment |
| Internal development environments | Java development<br>C development |
| Operating system | The OS is fully open |

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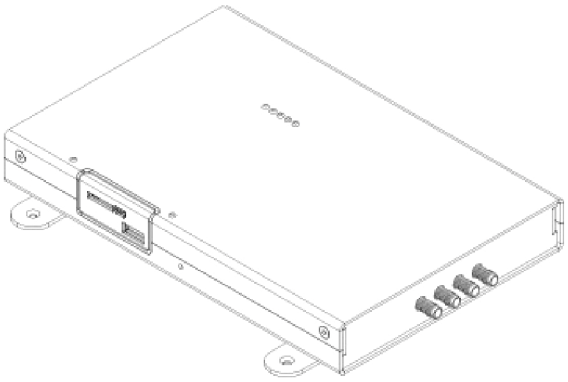
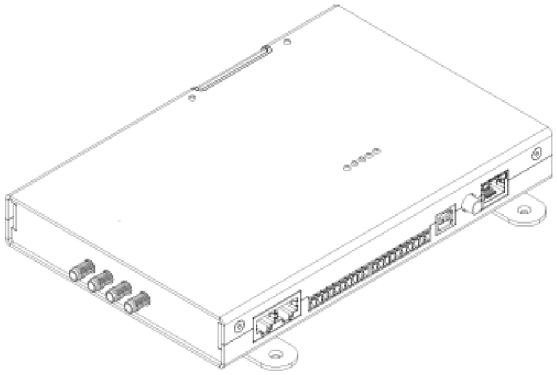
# AdvanReader-160 ™
4 port RFID UHF reader

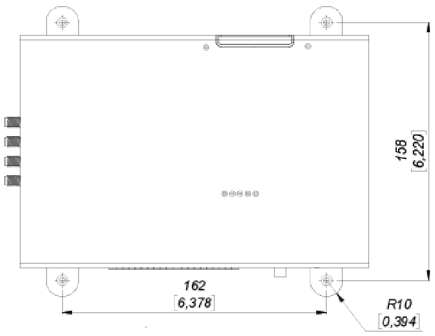
## Electrical, communication and mechanical specifications

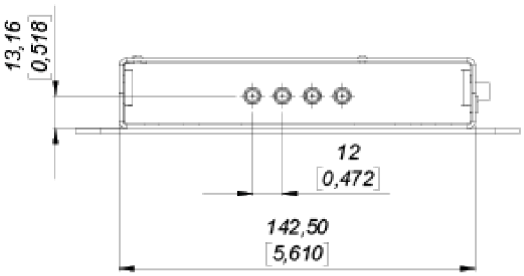
| | |
|---|---|
| Data communications | EEthernet: IEEE 802.3 up to 100 Mbps<br>Ethernet over USB (USB mini Type-B connector)<br>USB HID (USB Type-B connector)•USB HID hardware emulation |
| Other ports | USB (Type-A) Host<br>Accepts USB memory sticks<br>Accepts USB Wi-Fi dongle<br>Etc |
| Power supply | Power Over Ethernet (PoE):<br>IEEE 802.3af and 802.3at (Type I & Type II)<br>Power consumption: Class 3<br><br>Power supply from 11 to 24 V (DC)<br>11 V (DC) @ 2 A<br>24 V (DC) @ 1 A<br><br>On-board battery for RTC chip (CR2032) |
| Battery Operation | The system is specifically designed for battery assisted operation.<br>Protects lead batteries by disconnecting the system when the battery level is below a threshold<br>Scheduler to activate/deactivate the system<br>Very low consumption in sleep mode: < 320 uA |
| Output power | 5 V @ 100 mA non-isolated power supply to feed external devices and circuitry |
| On-board sensors and actuators | Buzzer<br>Aux Power Supply Voltage<br>Aux Power Supply Temperature<br>5 Vcc Voltage<br>Power consumption<br>IN1 Voltage<br>IN2 Voltage<br>RTC chip to keep Date and Time between reboots. Battery life timemore than 10 years in power off mode. |
| On-board LED indicators | LED ON (Blue LED)<br>LED status (Orange LED)<br>LED Móe Rx line (Green LED)<br>LED Móe Tx line (Red LED)<br>LED Micro Status (Green LED) |
| Inputs | 2 x digital inputs (IN3 and IN4)<br>Non isolated<br>0 V (DC) – 30 V (DC)<br><br>2 x digital/analog inputs, 10 bits resolution<br>Inputs accepted in the range:<br>0 V – 3 V (IN 1)<br>0 V – 10 V (IN 2) |
| Outputs | 4 x digital outputs (higher power):<br>Non isolated<br>Maximum output current 100mA<br>4 x digital outputs (low power):<br>Non isolated<br>Maximum output current 8 mA<br>1 x Relay output (24 VDC / 0.5 A)<br>Other outputs :<br>Loudspeaker : 8 ohm/2 W<br>2 x RJ45 to directly connect to other Keonn devices, such as Advan-Mux and AdvanPhaser |
| Power consumption | Idle consumption < 3 W<br>Max consumption (@31.5 dBm) < 14 W |
| Temperature | -20 °C to +40 °C |
| Size | Without enc.: 222 mm x 146 mm x 24 mm ( 8.74 in x 5.79 in x 0.95 in)<br>With enc.: 214 mm x 142.5 x 28 mm (8.42 in x 5.61 in x 1.1 in) |
| Weight | Without enclosure: 280 g (9.9 oz)<br>With enclosure: 620 g (21.9 oz) |

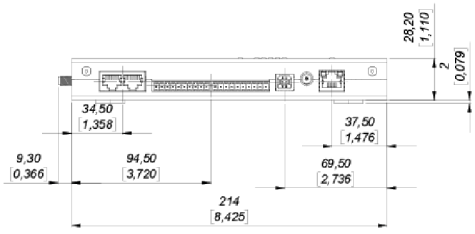
## Mechanical specifications with enclosure

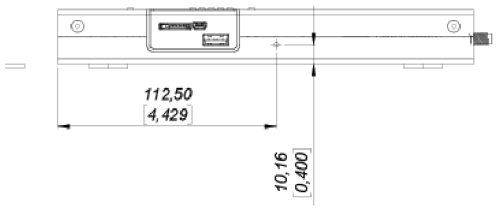







Units in millimeters and [inches]

## Product codes for ordering

| ADRD | - | MX | - | E | CT | - | SC | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **MX = number of ports** |
| | | M4 | | | | | | 4 ports |
| | | | | | | | | **E = enclosure** |
| | | | | - | | | | without enclosure |
| | | | | E | | | | with enclosure |
| | | | | | | | | **CT = connector type** |
| | | | | | SMA | | | SMA Straight |
| | | | | | | | | **SC = series code** |
| | | | | | | | 160 | Serie 160 |

Examples:

**ADRD-M4-SMA-160:**

- AdvanReader
- With 4 ports
- Without enclosure
- SMA connector type
- Model **160**

**ADRD-M4-ESMA-160:**

- AdvanReader
- With 4 ports
- With enclosure
- SMA connector type
- Model **160**

Information in this publication supersedes all earlier versions. Specifications subject to change without notice.