



# keonn

Modular RFID  
Components

## AdvanReader-160™ 4 port RFID UHF reader





Datasheet rev.01

### 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.

### 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.



### RF specifications

Air Protocol Interface	EPC global UHF Class 1 Gen 2 / ISO 18000 - 6 C
Data output connectors	<ul style="list-style-type: none"> <li>FCC (NA, SA) (902 - 928) MHz</li> <li>ETSI (EU, IN) (865.6 - 867.6) MHz</li> <li>MIC (KR) (910 - 914) MHz</li> <li>SRRC-MII (P.R.China) (920.125 - 924.875) MHz</li> <li>Argentina (AR) (915.0 - 928.0) MHz</li> <li>Australia (AU) (920.0 - 926.0) MHz</li> <li>Bangladesh (BD) (925.0 - 927.0) MHz</li> <li>New Zealand (NZ) (922.0 - 927.5) MHz</li> <li>Hong Kong (HK) (865.0 - 868.0) MHz</li> <li>Indonesia (ID) (923.0 - 925.0) MHz</li> <li>Israel (IS) (915.0 - 917.0) MHz</li> <li>Japan (JP) (916.8 - 920.8) MHz</li> <li>Macao (MO) (920.0 - 925.0) MHz</li> <li>Malaysia (MY) (919.0 - 923.0) MHz</li> <li>Philippines (PH) (918.0 - 920.0) MHz</li> <li>Russia (RU) (866.0 - 868.0) MHz</li> <li>Taiwan (TW) (922.0 - 928.0) MHz</li> <li>Thailand (TH) (920.0 - 925.0) MHz</li> <li>Singapore (SG) (920.0 - 925.0) MHz</li> <li>Vietnam (VN) (866.0 - 869.0) MHz</li> <li>Brazil (902 - 907.5) MHz (915 - 928) MHz by using channel selection</li> <li>Chile (916 - 928) MHz by using channel selection</li> <li>Peru (916 - 928) MHz by using channel selection</li> <li>Taiwan (922 - 928) MHz by using channel selection</li> <li>Open Region (865 - 869) MHz and (902 - 928) MHz</li> </ul>
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 (Maximum power may have to be reduced to meet regulatory limits)
Max tag read throughput	Up to 750 tags/second* * The maximum throughput may be difficult to reproduce in real environments

### Software Specifications

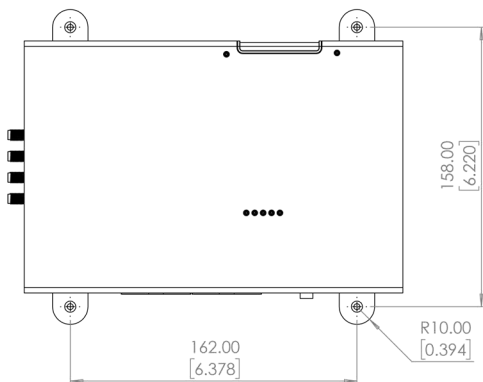
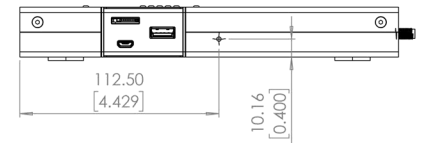
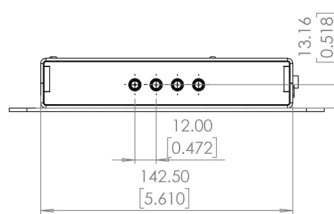
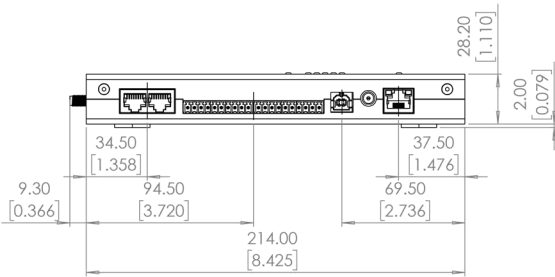
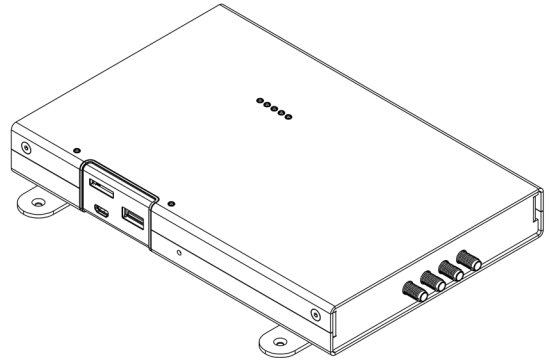
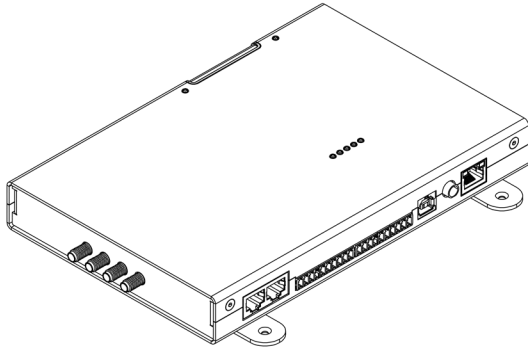
On-board intelligence	<ul style="list-style-type: none"> <li>MSP430 firmware</li> <li>Automatic battery protection</li> <li>Configurable scheduler for active/sleep mode</li> <li>ARM board</li> <li>Cortex A-8 CPU (1 GHz)</li> <li>512 MB RAM</li> <li>4 GByte ROM with Operating System</li> <li>1 x USB connector</li> </ul>
On-board software	AdvanNet-2.5: advanced driver platform for Keonn components and systems Debian Squeeze (Debian 10) based distribution
External software development	AdvanNet based: Test and deploy web-based GUI utility (AdvanNet Monitor) REST interface that can be used in any development environment
Internal development environments	Java development C development
Operating system	The OS is fully open

### Electrical, communication and mechanical specifications



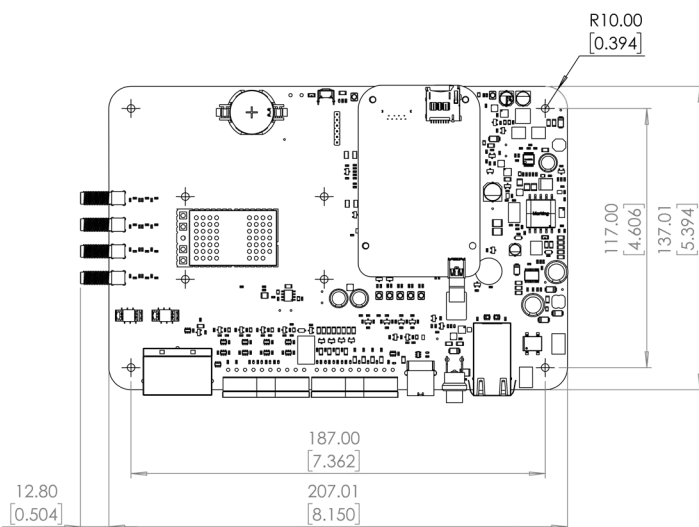
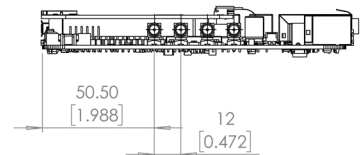
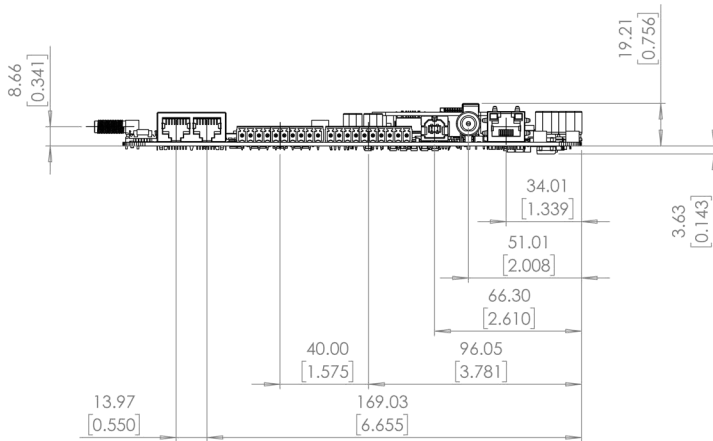
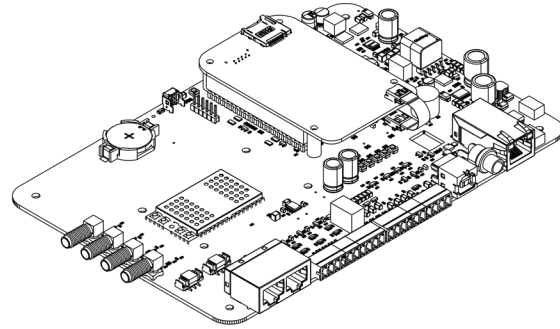
Data communications	<p>Ethernet: IEEE 802.3 up to 100 Mbps</p> <p>Ethernet over USB (USB mini Type-B connector)</p> <p>USB HID (USB Type-B connector)•USB HID hardware emulation</p>
Other ports	<p>USB (Type-A) Host</p> <p>Accepts USB memory sticks</p> <p>Etc</p>
Power supply	<p>Power Over Ethernet (PoE):</p> <p>IEEE 802.3af and 802.3at (Type I &amp; Type II)</p> <p>Power consumption: Class 3</p> <p>Power supply from 11 to 24 V (DC)</p> <p>11 V (DC) @ 2 A</p> <p>24 V (DC) @ 1 A</p> <p>On-board battery for RTC chip (CR2032)</p>
Output power	<p>5 V @ 100 mA non-isolated power supply to feed external devices and circuitry</p>
On-board sensors and actuators	<p>Buzzer</p> <p>Aux Power Supply Voltage</p> <p>Aux Power Supply Temperature</p> <p>5 Vcc Voltage</p> <p>Power consumption</p> <p>IN1 Voltage</p> <p>IN2 Voltage</p> <p>RTC chip to keep Date and Time between reboots. Battery life timemore than 10 years in power off mode.</p>
On-board LED indicators	<p>LED ON (Blue LED)</p> <p>LED status (Orange LED)</p> <p>LED M6e Rx line (Green LED)</p> <p>LED M6e Tx line (Red LED)</p> <p>LED Micro Status (Green LED)</p>
Inputs	<p>2 x digital inputs (IN3 and IN4)</p> <p>Non isolated</p> <p>0 V (DC) – 30 V (DC)</p> <p>2 x digital/analog inputs, 10 bits resolution</p> <p>Inputs accepted in the range:</p> <p>0 V – 3 V (IN 1)</p> <p>0 V – 10 V (IN 2)</p>
Outputs	<p>4 x digital outputs (higher power):</p> <p>Non isolated</p> <p>Maximum output current 100mA</p> <p>4 x digital outputs (low power):</p> <p>Non isolated</p> <p>Maximum output current 8 mA</p> <p>1 x Relay output (24 VDC / 0.5 A)</p> <p>Other outputs :</p> <p>Loudspeaker : 8 ohm/2 W</p> <p>2 x RJ45 to directly connect to other Keonn devices, such as Advan-Mux and AdvanPhaser</p>
Power consumption	<p>Idle consumption &lt; 3 W</p> <p>Max consumption (@31.5 dBm) &lt; 14 W</p>
Temperature	<p>Operating temperature: -20 °C to +40 °C</p> <p>Storage temperature: -30 °C to +60 °C</p>
Humidity	<p>20 % to 85 % without condensation</p>
Size	<p>Without enclosure: 219.8 mm x 137mm x 19.21 mm ( 8.150 in x 5.39 in x 0.76 in)</p> <p>With enclosure: 214 mm x 142.5 x 28.2 mm (8.43 in x 5.61 in x 1.11 in)</p>
Weight	<p>Without enclosure: 280 g (9.9 oz)</p> <p>With enclosure: 620 g (21.9 oz)</p>

### Mechanical specifications with enclosure



Units in millimeters and [inches]

### Mechanical specifications without enclosure



Units in millimeters and [inches]

### Product codes for ordering

ADRD	-	MX	-	E	CT	-	SC	
								<b>MX = number of ports</b>
		M4						4 ports
								<b>E = enclosure</b>
				-				without enclosure
				E				with enclosure
								<b>CT = connector type</b>
					SMA			SMA Straight
								<b>SC = series code</b>
							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**



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