

# ROK500

8-Port UHF RFID Reader



## 1. Key Features

	Feature	Descriptions
1	Impinj R2000 Built-in	<ul style="list-style-type: none"> <li>• Impinj Indy R2000 chip as RF transceiver.</li> </ul>
2	Anti-collision Algorithm	<ul style="list-style-type: none"> <li>• Unique I - Search multi-tag identification algorithm providing the highest efficiency.</li> </ul>
3	Optimized Algorithm for Tags with Small Volume	<ul style="list-style-type: none"> <li>• Optimized applications for small volume with better tags respond time.</li> </ul>
4	Dual CPU Architecture	<ul style="list-style-type: none"> <li>• Main CPU tag inventory; Assistant CPU data management.</li> <li>• Tag inventory and data transfer are parallel and simultaneous.</li> </ul>
5	Fast 8-Antenna Switch Inventory	<ul style="list-style-type: none"> <li>• Every antenna' s inventory duration is configurable( Minimum Duration 30 ms).</li> <li>• Polling from ANT 1 to ANT 4.</li> </ul>
6	Two Modes for Inventory	<ul style="list-style-type: none"> <li>• Buffer mode and Real-time mode.</li> <li>• Tags will be stored as buffer under buffer mode.</li> <li>• Tags will send data under real-time mode. This mode allows user to get tag data instantly.</li> </ul>
7	Hardware System Halt Detection	<ul style="list-style-type: none"> <li>• Hardware CPU status surveillance.</li> <li>• Run for 24hours X 365 days without system halt.</li> </ul>
8	PA Health Surveillance	<ul style="list-style-type: none"> <li>• PA status surveillance.</li> <li>• Make sure PA never works under saturated state. Protected it for long term operation.</li> </ul>
9	18000-6B/6C Full Compatible	<ul style="list-style-type: none"> <li>• It can be switched rapidly between 18000-6B and 18000-6C tag.</li> </ul>
10	18000-6B Large Data Read/Write	<ul style="list-style-type: none"> <li>• Read 216 bytes in one time taking less than 500ms.</li> <li>• Write 216 bytes in one time taking less than 3.5 seconds.</li> <li>• It can read/write data with different lengths.</li> </ul>
11	Antenna Connection Detection	<ul style="list-style-type: none"> <li>• Detect antenna connection.</li> <li>• Protective for RF receiver.</li> <li>• It can be canceled with command.</li> </ul>
12	Temperature Sensor	<ul style="list-style-type: none"> <li>• Multi-point surveillance for accurate operating system temperature.</li> </ul>
13	Power Output Correction	<ul style="list-style-type: none"> <li>• Dual modules making sure output power can be fine adjusted.</li> <li>• Dual modules working and keeping correction unless they are both damaged.</li> </ul>
14	Excellent Cooling Design	<ul style="list-style-type: none"> <li>• Heat dissipation and large cooling surface design.</li> <li>• Thermal coupling interfaces using high-thermal conductivity solid materials which ensure stable performance under high temperature.</li> </ul>

## 2. Product View



ROK500 rear view



ROK500 front view



ROK500 top view

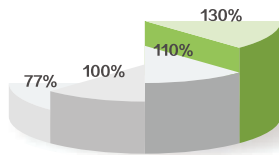
### 3. Electrical Parameters

Electrical Parameters	
Dimension	ROK500 : 198(L)*198(W)*26(H)mm
Weight	ROK500 : 1.3kg
Body Material	Die-cast aluminum
Input Voltage	DC 12V ~ 18V
Standby Mode Current	<80mA
Sleep Mode Current	<100uA
Max Operating Current	700mA +/-5% @ DC 12V Input
Operating Temperature	- 20 °C ~ + 85 °C
Storage Temperature	- 20 °C ~ + 85 °C
Humidity	5%RH - 95%RH (non -condensing)
Interface Protocol	EPC global UHF Class 1 Gen 2 / ISO 18000-6C / ISO 18000-6B
Spectrum Range	902MHz – 928MHz , 865MHz – 868MHz <span style="color: green;">Optional✓</span>
Supported Regions	US, Canada and other regions following U.S. FCC Europe and other regions following ETSI EN 302 208 Mainland China, Taiwan, Korea, Malaysia
Output Power	0 – 33dBm
RF Connector	TNC/RP-TNC
Output Power Precision	+/- 1dB
Output Power Flatness	+/- 0.2dB
Receive Sensitivity	< -85 dBm
Peak Inventory Speed	>700 tags/sec
Tag Buffer Capacity	1000 tags @ 96 bit EPC
Tag RSSI	Supported
Antenna Detector	Supported
Ambient Temp Monitor	Supported
Working Mode	Single/DRM
Host Communication	RS-232 or TCP/IP
GPIO	2 input optical coupling & 2 output coupling
Baud Rate	115200 bps/38400bps
Heat Dissipation	Air cooling

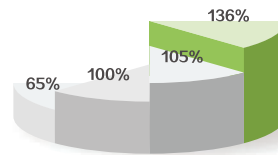
## 1. Advantages

- > Unique I-Search multi-tag identification algorithm
- > Based on high performance Impinj Indy R2000 chip
- > 18000-6B/C compatible, flexibly switch between protocols
- > Cast aluminum body, ensuring better heat dissipation
- > CPU status monitored by hardware.  
Running for 24hours \* 365 days without system halt

## 2. Anti-Collision Algorithm Comparison



100 Tags

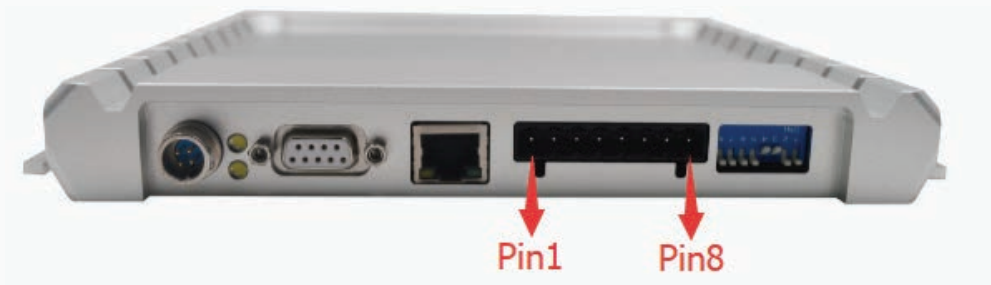


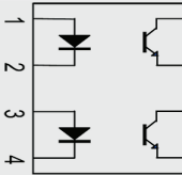
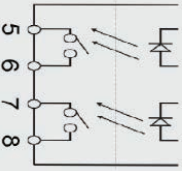
200 Tags

Algorithm	Description
Standard fixed Q algorithm	<ul style="list-style-type: none"> <li>• Standard 18000-6C algorithm.</li> <li>• The performance is reduced significantly when tag quantity gets larger.</li> <li>• The efficiency is not high when tag quantity is small.</li> </ul>
Impinj dynamic Q algorithm	<ul style="list-style-type: none"> <li>• The algorithm of Impinj.</li> <li>• It has a good efficiency for various tag quantities.</li> <li>• It sacrifices some performance for the sake of compatibility.</li> </ul>
I-Search dynamic Q algorithm V1.0	<ul style="list-style-type: none"> <li>• Based on Impinj dynamic Q algorithm.</li> <li>• The performance is optimized.</li> <li>• It's the algorithm for firmware version 6.6 or below.</li> </ul>
I-Search dynamic Q algorithm V2.0	<ul style="list-style-type: none"> <li>• Based on Impinj dynamic Q algorithm.</li> <li>• It's a brand new data structure, the performance of which is significantly improved for firmware version 6.7 or above.</li> <li>• The improvement of performance can be easily sensed after the first round of inventory especially when the tag volume increases.</li> </ul>

## 5. PIN Assignments

### PIN Assignments



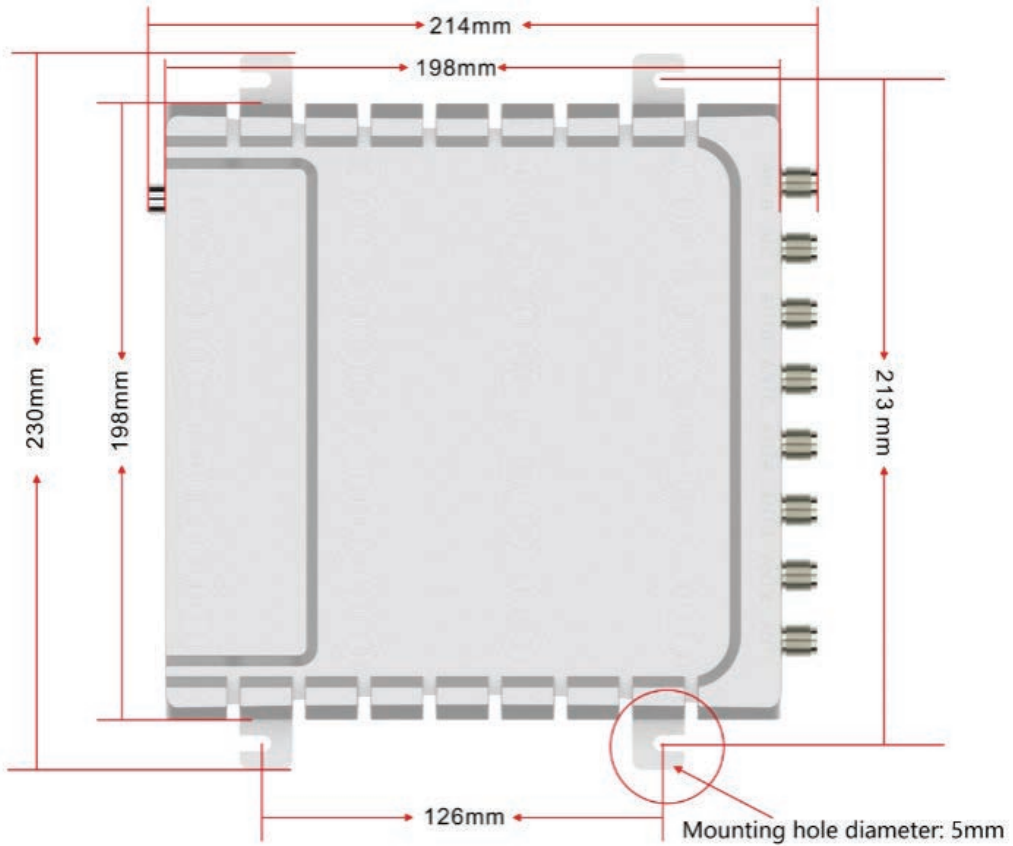
PIN ID	Function	Equivalent Circuit	Instructions
PIN 1	GPIO 1 Input +		<ul style="list-style-type: none"> <li>• Voltage between PIN 1,2 (PIN 3,4) &lt; 12V</li> <li>• Hetero polarity</li> <li>• LED equivalent resistance 470Ω</li> <li>• Response time &lt; 150uS</li> </ul>
PIN 2	GPIO 1 Input -		
PIN 3	GPIO 2 Input +		
PIN 4	GPIO 2 Input -		
PIN 5	GPIO 4 Output		<ul style="list-style-type: none"> <li>• Voltage between PIN 5,6 (PIN 7,8) &lt; 12V</li> <li>• Non-polarity</li> <li>• On resistance 110Ω</li> <li>• Response time &lt; 6mS</li> </ul>
PIN 6	GPIO 4 Output		
PIN 7	GPIO 3 Output		
PIN 8	GPIO 3 Output		

## 6. Product Dimensions ( unit : MM )

Any discrepancy, please defer to the real product instead.



ROK500 Side view



ROK500 Contour and hole location