RS9116 Connectivity Family

Redpine Signals’ RS9116 family of SoCs and modules provides a comprehensive multi-protocol wireless connectivity solution including 802.11 a/b/g/n (2.4 GHz and 5 GHz) and dual-Mode Bluetooth® 5. There are two product variants in this family – n-Link™ (hosted mode) and WiSeConnect™ (embedded mode). WiSeConnect variant has integrated wireless stacks, profiles and networking stack running on the internal processor, however, in n-Link variant all the stacks and profile run on the host processor.

RS9116 WiSeConnect™ / n-Link™ Features (Embedded Mode/Hosted Mode)

- Co-existence of multiple wireless protocols managed by an internal protocol arbitration manager
- Ultra-low power consumption with multiple power modes to reduce the system energy consumption
- Fully integrated and wireless certified modules with multiple sizes as small as 4.63 mm x 7.90 mm x 0.90 mm
- Application data throughput up to 90 Mbps (Embedded Mode)/100 Mbps (Hosted Mode) with 40 MHz bandwidth and up to 40 Mbps (Embedded Mode)/50 Mbps (Hosted Mode) with 20 MHz bandwidth
- Available host interfaces: UART, SPI, USB HS, SDIO 2.0 and USB HS CDC for Embedded Mode; SDIO 2.0 and USB HS for Hosted Mode
- Support for Client mode, Access Point mode, Wi-Fi Direct and Enterprise Security
- Supports advanced security features: WPA/WPA2-Personal and Enterprise (EAP-TLS, EAP-FAST, EAP-TTLS, PEAP-MSCHAP-V2)
- Integrated TCP/IP stack (IPV4/IPV6), HTTP/HTTPS, DHCP, ICMP, SSL 3.0/TLS1.2, Web Sockets, IGMP, DNS, DNS-SD, SNMP, FTP Client (Embedded Mode)
- Bluetooth profile support for SPP, A2DP, AVRCP, HFP, PBAP, IAP, GAP, SDP, L2CAP, RFCOMM, GATT, IAP1, IAP2 (Embedded Mode; for hosted mode, stack and profiles are present on the host processor)
- Wireless firmware upgrade and provisioning (Embedded Mode)
- Host mode drivers for Linux
- All SoC and module packages support industrial grade temperature (-40C to +85C)

Part Number | Bands (GHz) | Host Interface | Wi-Fi | Dual Mode Bluetooth S | Integrated TCP/IP | Integrated Wireless Stack and Profiles | HW Security Accelerators | Chip Packages (ppg) | Module Packages (ppg)
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
RS9116-W-SB00-ppg | 2.4 | SPI, USB, UART and SDIO 2.0 | ✓ | ✓ | ✓ | ✓ | ✓ | QMS | AA0, AA1, B00
RS9116-W-DB00-ppg | 2.4, 5 | SPI, USB, UART and SDIO 2.0 | ✓ | ✓ | ✓ | ✓ | ✓ | None | CC0, CC1
RS9116N-SB00-ppg | 2.4 | SDIO 2.0 and USB | ✓ | ✓ | X | X | ✓ | QMS | AA0, AA1, B00
RS9116N-DB00-ppg | 2.4, 5 | SDIO 2.0 and USB | ✓ | ✓ | X | X | ✓ | None | CC0, CC1, MB0, HB0

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RS14100 WiSeMCU™ Family

Redpine Signals’ RS14100 WiSeMCU™ family of SoCs and modules device is the industry’s first Wireless MCU family with a comprehensive multi-protocol wireless sub-system. It has an integrated ultra-low-power microcontroller, a built-in wireless subsystem, advanced security, high performance mixed-signal peripherals and integrated power-management.

RS14100 Features:
- Ultra-low power consumption with multiple power modes to reduce the system energy consumption
- Multiple levels of security including PUF (Physically Unclonable Function), Crypto HW accelerators and Secure Bootloader to create a highly secure system
- Fully integrated and wireless certified modules with multiple sizes as small as 4.63 mm x 7.90 mm x 0.90 mm
- Rich set of digital and analog peripherals including USB, Ethernet, CAN, SDMem, I2S, ADC, DAC, Opamp, Voice Activation Detection, Touch, Timers, GPIOs
- Bluetooth profile support¹ for SPP, A2DP, AVRCP, HFP, PBAP, IAP, GAP, SDP, L2CAP, RFCOMM, GATT, IAP1, IAP2
- All SoC and module packages support industrial grade temperature (-40°C to +85°C)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Bands (GHz)</th>
<th>RAM (KB)</th>
<th>Flash (MB)</th>
<th>Cortex M4 Max Speed (MHz)</th>
<th>Wi-Fi</th>
<th>Dual Mode Bluetooth</th>
<th>No. of Peripherals</th>
<th>Chip Packages (ppg)</th>
<th>Module Packages (ppg)</th>
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</thead>
<tbody>
<tr>
<td>RS14100-SB00-110F-ppg</td>
<td>2.4</td>
<td>208</td>
<td>1</td>
<td>100</td>
<td>✔️</td>
<td>✔️</td>
<td>&gt;10</td>
<td>QMS</td>
<td>B00</td>
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<tr>
<td>RS14100-SB00-210F-ppg</td>
<td>2.4</td>
<td>208</td>
<td>1</td>
<td>180</td>
<td>✔️</td>
<td>✔️</td>
<td>&gt;10</td>
<td>QMS</td>
<td>B00</td>
</tr>
<tr>
<td>RS14100-SB00-1N0F-ppg</td>
<td>2.4</td>
<td>208</td>
<td>0</td>
<td>100</td>
<td>✔️</td>
<td>✔️</td>
<td>&gt;10</td>
<td>QMS</td>
<td>B00</td>
</tr>
<tr>
<td>RS14100-SB00-2N0F-ppg</td>
<td>2.4</td>
<td>208</td>
<td>0</td>
<td>180</td>
<td>✔️</td>
<td>✔️</td>
<td>&gt;10</td>
<td>QMS</td>
<td>B00</td>
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<td>RS14100-DB00-140F-ppg</td>
<td>2.4, 5</td>
<td>208</td>
<td>4</td>
<td>100</td>
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<td>&gt;10</td>
<td>None</td>
<td>CC0, CC1</td>
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<tr>
<td>RS14100-DB00-240F-ppg</td>
<td>2.4, 5</td>
<td>208</td>
<td>4</td>
<td>180</td>
<td>✔️</td>
<td>✔️</td>
<td>&gt;10</td>
<td>None</td>
<td>CC0, CC1</td>
</tr>
</tbody>
</table>

SoC Options

- n-Link, WiSeConnect EVK P/N:
  - RS9116X-SB-EVK1
  - RS9116X-DB-EVK1

WiSeMCU EVK P/N:
- RS14100-SB-EVK1
- RS14100-DB-EVK1

Package Options

<table>
<thead>
<tr>
<th>Package Code</th>
<th>Package Type, Pins</th>
<th>Dimensions (mm)</th>
<th>Frequency Band</th>
<th>Integrated Antenna</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>QMS</td>
<td>QFN, 84</td>
<td>7 x 7 x 0.85, 0.5</td>
<td>Single Band (2.4 GHz)</td>
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<td>AA0</td>
<td>LGA, 101</td>
<td>14 x 15 x 2.1</td>
<td>Single Band (2.4 GHz)</td>
<td>No</td>
<td>RS9113 compatible</td>
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<tr>
<td>AA1</td>
<td>LGA, 79</td>
<td>16 x 27 x 3.1</td>
<td>Single Band (2.4 GHz)</td>
<td>Antenna and u.FL Connector</td>
<td>RS9113 compatible</td>
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<tr>
<td>CC0</td>
<td>LGA, 173</td>
<td>9.1 x 9.8 x 1.2</td>
<td>Dual Band (2.4 / 5 GHz)</td>
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<tr>
<td>CC1</td>
<td>LGA, 155</td>
<td>15.0 x 15.70 x 2.2</td>
<td>Dual Band (2.4 / 5 GHz)</td>
<td>Antenna and u.FL Connector</td>
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<td>B00</td>
<td>LGA, 126</td>
<td>4.63 x 7.90 x 0.9</td>
<td>Single Band (2.4 GHz)</td>
<td>No</td>
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<td>MB0</td>
<td>M.2, 75</td>
<td>22 x 30</td>
<td>Dual Band (2.4 / 5 GHz)</td>
<td>Two u.FL Connectors</td>
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<tr>
<td>HB0</td>
<td>Half Mini PCIe Card, 52</td>
<td>26.8 X 30</td>
<td>Dual Band (2.4 / 5 GHz)</td>
<td>Two u.FL Connectors, USB interface</td>
<td></td>
</tr>
</tbody>
</table>

Module Options

- 9.8 mm LGA Module (CC0)
- 15.0 mm LGA Module (AA0)
- 27.0 mm LGA Module (AA1)
- 16.0 mm M.2 module (MB0)

Evaluation Kits

- n-Link, WiSeConnect EVK P/N:
  - RS9116X-SB-EVK1
  - RS9116X-DB-EVK1

- WiSeMCU EVK P/N:
  - RS14100-SB-EVK1
  - RS14100-DB-EVK1