Wireless Modules

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ROHM Wireless Modules Technology

■ Short-Range Wireless Communication

The correspondence of various wireless specifications

- ROHM group is developing Near-Field Wireless Communication devices in a broad range of fields.

Comprehensive support

- In-house ICs are integrated into our modules, making it possible to provide comprehensive support.

Specified Low Power Radio Modules

■ Wi-SUN

- 920MHz specified low-power wireless module
- Industry-leading receiver sensitivity
- Built-in antenna eliminates the need for high-frequency designs
- Transmitting power pre-adjusted
- MAC address included
- Japan Radio Law certified
- Incorporates HEMS-optimized firmware

■ Block diagram

BP35A1

■ Protocol Stack

Specified Low Power Radio Modules

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Supply Voltage (V)</th>
<th>Operating Temperature (°C)</th>
<th>Host/I/F</th>
<th>Terminal standards</th>
<th>Onboard System IC</th>
<th>Dimensions (mm)</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP35A1</td>
<td>2.7 to 3.6V</td>
<td>−20 to +80</td>
<td>UART</td>
<td>ARIB STD-T108</td>
<td>ML7396B (LAPIS Semiconductor Co., Ltd.)</td>
<td>22.0×33.5×4.0</td>
<td>Connector joint type 0.5mm pitch, 20pin</td>
</tr>
</tbody>
</table>
Wireless LAN Modules

- **Wi-Fi**
  - IEEE802.11b/g/n compliant Wireless LAN Module (BP3580 / BP3591/BP3599 / BP3595)
  - ROHM ICs for Base Band / MAC IC
  - Fully-Calibrated wireless characteristics at shipment.
  - Auto start up mode by Flash memory.
  - With built-in chip antenna. (BP3591 / BP3599)
  - BP3591 and BP3599 are certificate with Japanese radio law and FCC.

- **Wireless LAN module designed for embedded devices**
  - Stable support (domestic) provided via in-house firmware
  - ROHM baseband IC specifications
  - Single 3.3V power supply drive
  - Surface mount type
  - Built-in antenna type
  - Wide operating temperature range –40°C to +85°C
  - Stable, long-term supply possible using 100% ROHM components, from the IC to the module

- **Software Stack Comparison**
  - All functions performed by the module
    - Simple
    - Device driver development not required (shorter development time/program-based control possible)
    - Wireless LAN operation possible even in systems with underpowered CPUs
    - Eliminates the need for driver development costs and TCP/IP purchase expenses
  - Driver Sample Source
    - Linux sample source provided free of charge
    - Itron available for purchase (from 3rd party)

- **Aerial Device Driver Features**
  - ROHM original device drivers
  - Multi-platform specifications
  - Easy porting* even with different host CPU and OS
  - 3rd party porting support, test system
  - Device driver development not required
    - (shorter development time/program-based control possible)
  - Simple
  - Wireless LAN operation possible even in systems with underpowered CPUs
  - Eliminates the need for driver development costs and TCP/IP purchase expenses
  - Linux sample source provided free of charge
  - Itron available for purchase (from 3rd party)

- **Wireless LAN Module with Built-In TCP/IP Stack**

### Wireless LAN Modules

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<tr>
<th>Part No.</th>
<th>Supply Voltage (V)</th>
<th>Operating Temperature (°C)</th>
<th>Host/IP</th>
<th>Terminal standards</th>
<th>Onboard System IC</th>
<th>Dimensions (mm)</th>
<th>Package</th>
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</thead>
<tbody>
<tr>
<td>BP3580</td>
<td>3.1 to 3.5 (Single power)</td>
<td>-40 to +85</td>
<td>USB/SDIO /UART</td>
<td>IEEE802.11b/g/n (CH1 to CH13)</td>
<td>BU1805GU</td>
<td>17.0 x 17.0 x 2.3</td>
<td>Surface mount type</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Available switching signal output for antenna A or antenna B</td>
<td></td>
<td></td>
<td>End face through hole</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>-Stored WPS and TCP/IP</td>
<td></td>
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<td>1.27mm pitch, 46pin</td>
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<tr>
<td>BP3591</td>
<td>3.1 to 3.5 (Single power)</td>
<td>-40 to +85</td>
<td>USB/SDIO /UART</td>
<td>IEEE802.11b/g/n (CH1 to CH13)</td>
<td>BU1805GU</td>
<td>24.0 x 33.1 x 4.7</td>
<td>Connector joint type</td>
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<td></td>
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<td></td>
<td>-Security standard</td>
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<td>0.5mm pitch, 34pin</td>
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<tr>
<td>BP3599</td>
<td>3.1 to 3.5 (Single power)</td>
<td>-40 to +85</td>
<td>USB/SDIO /UART</td>
<td>IEEE802.11b/g/n (CH1 to CH13)</td>
<td>BU1805GU</td>
<td>24.0 x 33.1 x 4.7</td>
<td>Connector joint type</td>
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<td></td>
<td>-Built-in chip-antenna</td>
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<td>0.5mm pitch, 34pin</td>
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<td>-Stored WPS and TCP/IP</td>
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<tr>
<td>BP3595</td>
<td>3.1 to 3.5 (Single power)</td>
<td>-40 to +85</td>
<td>USB/SDIO /UART</td>
<td>IEEE802.11b/g/n (CH1 to CH13)</td>
<td>BU1805GU</td>
<td>15.3 x 27.6 x 2.6</td>
<td>Connector joint type</td>
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<td></td>
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<td>-Security standard</td>
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<td>0.4mm pitch, 30pin</td>
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<td>-Built-in chip-antenna</td>
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<td>-Stored WPS, TCP/IP</td>
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* Original power module package used.
Wireless Communication Modules

- **Bluetooth® Low Energy**
  - Bluetooth Low Energy single mode module
  - Compliant to Bluetooth Core Spec v4.0 (MK71050-03)
  - Low power consumption and the best solution for the instruments using coin type/battery
  - TX : 9mA, RX : 9mA (MK71050-03)
  - LAPIS Semiconductor’s RF LSI mounted
  - RF characteristic adjusted before shipment
  - Built-in antenna and certified TELEC, FCC, CE (Under planning)

- **IEEE802.15.4 / ZigBee®**
  - IEEE802.15.4 compliant wireless communication module
  - ZigBee RF4CE compliant network protocol integrated (MK72750A-01)
  - Easy to develop one-chip RF remote controller using built-in 8×8 keyscan circuit
  - LAPIS Semiconductor’s RF LSI mounted
  - RF characteristic adjusted before shipment
  - Built-in antenna and certified TEDC

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**Bluetooth** Low Energy Module

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<tbody>
<tr>
<td>MK71050-03</td>
<td>1.8 to 3.6</td>
<td>-20 to +70</td>
<td>Synchronous serial or UART</td>
<td>Bluetooth® Core Spec v4.0</td>
<td>10.7×13.6×1.78</td>
<td>SMT</td>
<td>2.4GHz ISM Band</td>
<td>0/-6/-12/-18dBm</td>
<td>-86dBm</td>
<td>Certified Bluetooth® Products, TELEC, FCC, CE</td>
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**IEEE802.15.4 / ZigBee® Modules**

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<tbody>
<tr>
<td>MK72750A-01</td>
<td>1.8 to 3.6</td>
<td>-40 to +85</td>
<td>UART</td>
<td>IEEE802.15.4 / ZigBee®RF4CE</td>
<td>20.0×31.0×2.7</td>
<td>Connector</td>
<td>2.4GHz ISM Band</td>
<td>0/-35/-45dBm</td>
<td>-92dBm</td>
<td>Built-in ZigBee®RF4CE network</td>
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</tbody>
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EnOcean® Communication Modules

EnOcean products are based on energy harvesting battery-less / wireless telecommunication technology.

ROHM has become a promoter of EnOcean alliance which promote next generation radio telecommunication standard since 2012, and we contribute to the expansion of EnOcean communication method.

- **EnOcean®** is a registered trademark of EnOcean GmbH.

**Feature (BP35A3)**

- EnOcean Wireless Standard (ISO/IEC14543-3-10)
- Built-in antenna eliminates the need for high-frequency designs
- Japan Radio Law certification proceeding
- Selectable either sensor node mode [TX] and Gateway mode [TX/RX]
- Both modes also implement the sleep function

*BP35A3 is an original product of ROHM which modularized an IC supplied from EnOcean® in ROHM.

*This product (928MHz frequency band) is permitted as "specified low-power radio station" in Japanese Radio law.

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EnOcean communication modules/devices

- Please choose your region products by frequency band
- Please contact a ROHM sales representative for purchase and inquiry
- Please refer to our EnOcean introduction page (http://www.rohm.com/web/global/enocean) for detail

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