Future Connectivity Solutions (FCS) was launched as a wireless technology integrator that strives to be more than just a partner in hardware engineering and logistical support. We know that there are several factors to consider in the total cost of integration of connectivity technologies, including software, drivers, support, certification and testing. That’s why we’ve developed an ever-expanding eco-system of partners in every aspect of the connectivity business. It’s also why we have dedicated engineering resources worldwide who understand connectivity and can help you select the right level of integration (from single chip, to “System In Package” (SIP), to module) for your product’s price point, volume and features. Always forward-looking, our team is exceptionally knowledgeable on emerging connectivity solutions and to which applications they are best suited. In short, FCS is your expert resource from design to delivery in the field of wireless enabled products.

Without a doubt, the “Internet of Things” will continue to fuel demand for connectivity products in the coming years at very high growth rates. For equipment manufacturers who want to seize this opportunity, we invite you to join us in our mission of “Taking the world wireless”. 

Murata Wireless Modules

Murata is a world leader in the design and manufacturing of wireless modules and products. Murata specializes in hardware and software designs covering the latest wireless standards including Wi-Fi, Bluetooth and Bluetooth Low Energy, and FHSS. Providing global leadership in quality and innovation, Murata’s wireless products are well positioned for applications in Smart Energy, Home Automation, Internet Appliances, Health & Fitness, and much more.

Please visit our website to learn more or contact your local Future Electronics representative.

FutureElectronics.com/ConnectivitySolutions
Embedded Wi-Fi™ 802.11b/g/n Modules and Network Controllers

The Murata Embedded Wi-Fi™ 802.11b/g/n Modules and Network Controllers provide simple wireless Internet connectivity to a broad range of industrial and commercial devices. They feature small form factors and ultra-low power suitable for mobile wireless applications such as asset monitoring, sensors and portable battery operated devices.

Wi-Fi™ & Wi-Fi™ + Bluetooth®

Murata’s Wi-Fi™ and Bluetooth® wireless modules are IEEE 802.11 and Bluetooth Special Interest Group (SIG) compliant devices. The modules’ form factors are world class, requiring minimal circuit board area on today’s high density mobile devices. Murata’s production capacity is unmatched in providing the world with a reliable supply of high-quality wireless modules.

Bluetooth® Products

As the Bluetooth® system continues to expand exponentially, Murata Manufacturing Company ensures that the latest advancements in Bluetooth technology are available to you. With the Murata Bluetooth portfolio, you can bring to life new state-of-the-art communications capabilities to differentiate your products from your competitors.

Proprietary FHSS

Comprised of the 900MHz DNT90 and the 2.4GHz DNT24, the DNT series is a low-cost, long-range, multi-purpose, multi-function frequency hopping line of RF modules. DNT modules support Analog and Digital I/O and Serial data, and have the ability to auto-report and sleep between reports, thereby reducing power consumption. On-board data buffering and an error-correcting air protocol provide smooth data flow and simplify the task of integration with existing applications.

Taking the world wireless
Embedded Wi-Fi™ 802.11b/g/n Network Controllers

The Murata Embedded Wi-Fi™ 802.11b/g/n Modules and Network Controllers provide simple wireless Internet connectivity to a broad range of industrial and commercial devices. They feature small form factors and ultra-low power suitable for mobile wireless applications such as asset monitoring, sensors and portable battery operated devices.

<table>
<thead>
<tr>
<th>Product</th>
<th>Murata P/N</th>
<th>Chipset</th>
<th>Processor</th>
<th>WLAN</th>
<th>Operation Temperature</th>
<th>Size</th>
<th>Host Interface</th>
<th>Antenna</th>
<th>Certified</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN8000</td>
<td>88-00153-00</td>
<td>Broadcom® BCM43362</td>
<td>N/A</td>
<td>802.11b/g/n</td>
<td>-40°C to +85°C</td>
<td>24.0 x 11.4 x 1.9</td>
<td>SDIO/SPI</td>
<td>On Board or U.FL Connector</td>
<td>Yes</td>
<td>Industrial</td>
</tr>
<tr>
<td>SN820X</td>
<td>88-00151-00</td>
<td>Broadcom® BCM43362</td>
<td>ARM® Cortex®-M3</td>
<td>802.11b/g/n</td>
<td>-40°C to +85°C</td>
<td>30.5 x 19.4 x 2.8</td>
<td>UART/SPI</td>
<td>On Board</td>
<td>Yes</td>
<td>Industrial</td>
</tr>
</tbody>
</table>

Evaluation Boards

SN8000 EVK: 88-00153-85
SN8000UFL EVK: 88-00153-87

- SN8000 802.11 b/g/n Wi-Fi module
- STM32F205RG ARM Cortex-M3 processor with integrated memory
- Mini-USB connector supporting USB-JTAG and USB serial interfaces to STM32F205RF
- Serial flash (8M bits) and interface connectors
- Pads for header to access the I/O pins of the SN8000 module
- Pads for header to access select I/O pins of the STM32F205RG
- Pads for header to access SDIO interface between SN8000 and STM32F205RG

Multi-Platform Evaluation Kit: SN8200-MPK
Evaluation Kit for the SN8200 Network Controller Module

- One Murata Wi-Fi module board
- One Renesas adaptor board (connects with the RX63N RDK)
- One NXP adaptor board (connects with LPCXpresso kit)
- One STM32 adaptor board (connects with STM32F3 Discovery kit)

* See back cover for further details
Each WICED™ Wi-Fi module features a Broadcom® BCM43XXX single chip wireless LAN MAC/baseband/radio, and embedded processor that runs a unique “self-hosted” Wi-Fi networking library and software application stack.

WICED modules enable the addition of secure, interoperable Wi-Fi functionality via a simple serial port using a basic command set that does not require any significant changes in product microcontroller architectures. WICED SDK enables developers to quickly create network connected applications targeted for low-resource microcontrollers.

Murata has partnered with Ayla Networks to offer a complete end-to-end platform for building world class Internet-connected products. The Murata Type YD Wi-Fi Connectivity Module comes pre-loaded with the Ayla Embedded Agent, enabling developers to connect to the Ayla Cloud Services and smartphone/tablet applications based on the Ayla Application Libraries.

Build world class Internet-connected products quickly and economically through Ayla embedded agents, cloud services and application libraries.

The Ayla Design Kit features Murata Type YD Wi-Fi Connectivity Modules.

Eliminate Firmware Programming with Murata SNIC + EZ Web Wizard™

Murata offers a pre-packaged firmware/software solution that makes the host integration, wireless control and peripheral control easy to manage.

Built upon the Broadcom WICED SDK platform, the Murata pre-packaged solution is comprised of two feature-rich software components.

1. SNIC Interface Protocol supports socket interface on both UART and SPI to host.
2. Murata EZ Web Wizard Software supports easy custom web-based control to save the cost of additional host microcontroller.

Connectivity Made Simple

Electric Imp offers a connectivity platform that delivers a powerful cloud service tied closely to Murata’s leading-edge hardware, making it simple to connect devices to the Internet.

Since launching the Electric Imp platform in 2012, we have shipped hundreds of thousands of units. Our connectivity solution is being used in more than 25 diverse product segments. Find out more at www.electricimp.com
Bluetooth® Products

As the Bluetooth® system continues to expand exponentially, Murata Manufacturing Company ensures that the latest advancements in Bluetooth technology are available to you. With the Murata Bluetooth portfolio, you can bring to life new state-of-the-art communications capabilities to differentiate your products from your competitors’. All modules are FCC/IC/EU certified to speed time-to-market. Purchase the evaluation or development kits or tools to speed up your evaluation and design.

<table>
<thead>
<tr>
<th>Product</th>
<th>Frequency</th>
<th>Murata P/N</th>
<th>Power Class</th>
<th>Version</th>
<th>Output Power</th>
<th>Operation Temperature</th>
<th>Size</th>
<th>Host Interface</th>
<th>Antenna</th>
<th>Certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type ZF</td>
<td>2.4GHz</td>
<td>LB-CA2B-ZZ-FZ-710</td>
<td>Class 3</td>
<td>BLE</td>
<td>0dBm</td>
<td>-40°C to +85°C</td>
<td>5.4 x 4.4 x 1.0</td>
<td>UART</td>
<td>External</td>
<td>No</td>
</tr>
<tr>
<td>Type ZY</td>
<td>2.4GHz</td>
<td>LB-CA2HN-ZY-FZ-711</td>
<td>Class 3</td>
<td>BLE</td>
<td>0dBm</td>
<td>-40°C to +85°C</td>
<td>7.4 x 7.0 x 1.0</td>
<td>UART</td>
<td>Internal</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Evaluation Boards

**LBCA2HNZYZ-TEMP-DK**

Design Kit for Type ZY Module:
- Mother board
- Type ZY Daughter board
- J-link Cable for Dialog based BLE

Daughter boards separately available
- For Type ZF
  - LB-CA2BZZ-FZ-TEMP-D-MU
  - Used with Murata Mother Board
- For Type ZY
  - LB-CA2HNZYZ-TEMP-D-MU
  - Used with Murata Mother Board

![Design Kit Mother Board](Design Kit Mother Board)

![Daughter Board with Type ZY Mounted](Daughter Board with Type ZY Mounted)
Comprised of the 900MHz DNT90 and the 2.4GHz DNT24, the DNT series is a low-cost, long-range, multi-purpose, multi-function frequency hopping line of RF modules. DNT modules support Analog and Digital I/O and Serial data, and have the ability to auto-report and sleep between reports, thereby reducing power consumption. DNT modules support all standard serial data rates for host communications from 1.2 to 460.8kb/s. On-board data buffering and an error-correcting air protocol provide smooth data flow and simplify the task of integration with existing applications.

900MHz DNT90 — The 900MHz ISM band allows license-free use in the US, Canada, South America, Australia and New Zealand.

2.4GHz DNT240 — 2.4GHz ISM band allows the DNT2400 to be used license-free worldwide.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Frequency</th>
<th>Transmit Power</th>
<th>Data Rate</th>
<th>RF Conn/Antenna</th>
<th>Development Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNT24C</td>
<td>2.4GHz</td>
<td>10 to 100mW</td>
<td>250kbps</td>
<td>Chip Antenna</td>
<td>DNT24K</td>
</tr>
<tr>
<td>DNT90C</td>
<td>900MHz</td>
<td>150mW</td>
<td>100kbps</td>
<td>Chip Antenna</td>
<td>DNT90DK</td>
</tr>
</tbody>
</table>

Evaluation Boards

**DNT24DK**
Development Kit for DNT24C
- 2 DNT24P radios installed in DNT24 interface boards, labeled Base and Remote
- 2 patch antennas and two 2 dBi dipole antennas with MMCX/RSMA adaptor cables
- 2 wall-plug power supplies, 9VDC,120/240 VAC, plus 2 batteries, 9VDC
- 2 RJ-45/DB-9F cable assemblies and two A/B USB cables
- Documentation and software CD

*Additional daughter boards available*

**DNT90DK**
Development Kit for DNT90C
- 2 DNT90 modules with pins
- 2 DNT90 development boards
- 2 USB cables, 2 Serial cables, Antennas and RF cables
- Program CD with software and manuals, Quick start guide
**SN8200 Multi-Platform Evaluation Kit MPK**

The SN8200 MPK simplifies the process to evaluate the SN8200 Wi-Fi network controller module on multiple MCU platforms using three different daughter boards with a UART to interface to the host MCU.

The kit comes with driver and basic level application to allow quick and easy connection of the SN8200, MCU platform and the network.

A user interface allows to perform the following operations:

- **Wi-Fi® Scan**: Scans and displays the existing networks
- **Wi-Fi® Join**: Joins a predefined Wi-Fi® network
- **Get IP**: Gets an IP address via DHCP
- **TCP client**: Runs a TCP client
- **TCP server**: Runs a TCP server
- **UDP client**: Runs a UDP client
- **UDP server**: Runs a UDP server
- **Send from sock**: Creates a TCP/UDP socket and sends data from it
- **Get Wi-Fi® status**: Displays the Wi-Fi® status
- **Wi-Fi® Leave**: Disconnects from the connected Wi-Fi® AP

**SN8200 - 2.4GHz Wi-Fi 802.11b/g/n Network Controller**

The SN820X is a family of small, low power, self-contained, certified Wi-Fi® network controller modules that provide simple serial-to-Wi-Fi® connectivity to the Internet. These modules are an ideal solution for device manufacturers who are looking to add wireless connectivity to home appliances, smart energy systems, healthcare and industrial control equipment.

The SN820X modules are enabled with Broadcom Corporation’s Wireless Internet Connectivity for Embedded Devices (WICED) architecture.

**SN820x Wi-Fi Network Controller Module Family**

<table>
<thead>
<tr>
<th>Model #</th>
<th>P/N</th>
<th>Built-in STM</th>
<th>RAM Size</th>
<th>Flash Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN8200</td>
<td>88-00151-00</td>
<td>ARM Cortex M3</td>
<td>96KB</td>
<td>768KB</td>
</tr>
<tr>
<td>SN8200UFL</td>
<td>88-00151-02</td>
<td>ARM Cortex M3</td>
<td>96KB</td>
<td>768KB</td>
</tr>
<tr>
<td>SN8205</td>
<td>88-00158-00</td>
<td>ARM Cortex M3</td>
<td>128KB</td>
<td>1024KB</td>
</tr>
<tr>
<td>SN8205UFL</td>
<td>88-00158-02</td>
<td>ARM Cortex M3</td>
<td>128KB</td>
<td>1024KB</td>
</tr>
</tbody>
</table>

They host the Wi-Fi®, TCP/IP network stack, security supplicant, and other network application features. The modules are provided with Murata Simple Network Interface Connection (SNIC) software and EZ Web Wizard™ software. They are also compatible with Broadcom WICED SDK.

Contact your local Future sales representative to obtain a SN8200 MPK

FutureElectronics.com/ConnectivitySolutions

October 2014