Digi XBee for Wi-SUN Development Kit

Complete development platform with high-performance, programmable Digi XBee Hive border router for resilient, Wi-SUN scalable mesh connectivity

The **Digi XBee® for Wi-SUN Development Kit** is a complete development platform and flexible, production-ready solution that accelerates time-to-market and simplifies every step of deployment for **Wi-SUN®** mesh networks.

As part of the complete Digi wireless ecosystem designed around the principles of Build, Deploy, Manage — the development kit and Wi-SUN border router support your Wi-SUN network from development to full-scale operation. It provides a straightforward path to reliable, scalable mesh networking and seamless interoperability across the **Digi XBee ecosystem** of hardware, software, services and award-winning tools.

The **Digi XBee Hive Border Router** is optimized for renewable energy (solar), street lighting, environmental monitoring, oil and gas, agriculture and other industrial applications. For developers needing a highly secure, unified platform that reduces costs and streamlines development, deployment and management, this kit minimizes risk, adds flexibility and drives efficiencies.

Digi XBee for Wi-SUN RF modules deliver a cutting-edge solution supporting **Wi-SUN** technology with enhanced range, reliability and energy efficiency for smart cities and industrial IoT networks. The kit also includes two Digi XBIB interface boards, Digi Remote Manager (trial account), Digi XBee Studio and Digi XBee Tools, and a Getting Started Guide, plus additional documentation and resources.

A simple, open source Python development environment included with the Digi XBee Hive Border Router enables custom applications to perform edge computing locally while ensuring resilient connectivity between your XBee network and cloud-based applications. **Digi Containers** also support flexible, resource-efficient applications and open-source development.

Gain critical insights into deployed devices and manage your network with SOC 2® Type 2 compliant **Digi Remote Manager®** (DRM) — the command center for your deployment. Together, these capabilities make the Digi XBee for Wi-SUN Development Kit a complete solution and a trusted path to resilient and scalable Wi-SUN mesh networking.

Connect and manage with Digi XBee Studio.
Create. Configure. Deploy. Manage.

The kit includes:

- ✓ (1) **Digi XBee Hive Border Router**
- ✓ (1) **Digi XBee for Wi-SUN RF modules**
- ✓ (2) **Digi XBIB-C Development Boards**
- ✓ **Digi XBee Studio** and **Digi XBee Tools**
- ✓ **Digi Remote Manager** (trial account)
- ✓ Getting Started Guide, documentation and examples

PART NUMBER	DESCRIPTION
XK-WS-0	Digi XBee for Wi-SUN Development Kit — North America
XK-WS-8	Digi XBee for Wi-SUN Development Kit — Europe

Key features, benefits and applications

- **Digi XBee Studio** for simple configuration and management
- Open source Python environment and **Digi Containers** for custom application development
- LTE Cat 1 cellular and 10/100 Ethernet WAN connectivity
- Full-featured industrial cellular routing platform
- Integrated with the SOC 2 Type 2 compliant **Digi Remote Manager** platform (trial account) for easy setup, mass configuration, out-of-band and remote management
- Redundant, persistent network connectivity options including Wi-Fi and cellular with always-on **Digi SureLink®**
- Built-in **Digi TrustFence®** for device security, identity and privacy
- **Digi XBee Tools** to simplify tasks and get to market faster
- **Digi Wireless Design Services** (WDS) development support

DIGI XBEE FOR WI-SUN DEVELOPMENT KIT

Management and Security

Build. Deploy. Manage.

Digi Remote Manager (DRM)

Digi Remote Manager is a proven technology platform that brings networks to the next level, empowering networks — and the people who manage them — to work smarter.

DRM transforms a multitude of dispersed IoT devices into a dynamic, intelligent network. It's easy to deploy, monitor and diagnose thousands of mission-critical devices from a single point of command on a desktop, tablet or phone. All the while, software-defined security diligently safeguards your entire Digi ecosystem. **Learn more at digi.com/digi-remote-manager.**

DRM infrastructure and security

- Hosted in a commercial-grade cloud server environment that meets SOC 1®, SOC 2®, SOC 2® Type 2 and SOC 3® standards
- Superior availability, operating at 99.9% or greater uptime
- Open APIs are available to support application development
- Comprehensive security controls to protect your data
- Member of the Center for Internet Security® (CIS®)
- Enables compliance with security frameworks like ISO27002, HIPAA, NIST and more
- Earned Skyhigh's CloudTrust™ Program highest rating of Enterprise-Ready

Digi Accelerated Linux (DAL OS)

DAL OS is Digi's standard operating system integrated across an entire range of connected devices. Developed for speed and simplicity, DAL OS enables advanced capabilities that support today's demanding applications. **Learn more at digi.com/DAL.**

Digi TrustFence

The Digi TrustFence device security framework simplifies the process of securing multiple connected devices.

Designed for mission-critical applications, **Digi TrustFence** enables users to easily integrate device security, device identity, and data privacy capabilities into product design. Together with SOC 2 Type 2 compliant Digi Remote Manager, Digi TrustFence delivers unified, auditable security and compliance from device to cloud.

Learn more at digi.com/trustfence.

Data plans, DRM and DAL OS capabilities

- **Data plans:** simple, cost-effective global cellular connectivity
- **DAL OS with SOC 2 Type 2-compliant Digi Remote Manager:** remote console access, configuration templates, HTTP proxy, device event logs, configurable maintenance window
- **Digi MCP Server:** make your Digi infrastructure AI-ready — instantly and securely, without added integration complexity
- **Serial:** Modbus, serial-over-TCP/UDP
- **Customization:** Python 3, Python pip, PyCharm integration, shell scripting, containers, MQTT client
- **Troubleshooting:** iPerf, Ookla Speedtest®, Find Me device discovery
- **GNSS:** NMEA/TAIP location forwarding to servers, geo-fencing
- Activate, monitor and diagnose your mission-critical devices through a single portal
- Schedule key operations — including firmware updates and file management — on a device or group of devices, keeping network functionality up-to-date and maintaining compliance standards
- Manage edge devices out-of-band via console terminal access
- Monitor equipment health and connectivity across deployments
- Create detailed reports and real-time alerts for specified conditions
- Integrate device data through open APIs to gain deeper insights and control with third-party applications
- Report and alert on performance statistics, including connection history, signal quality, latency, data usage and packet loss

Built-in Security. Delivered.

- **Secure boot:** Programs and code running on the device are validated to be from an approved source or manufacturer
- **Protected hardware ports:** Internal and external I/O ports are hardened and access-controlled to prevent unwanted intrusion
- **Authentication:** Data authentication and device identity management options, with updated user and password settings
- **Secure connections:** Latest encryption protocols for data in motion and over-the-air (OTA) transmissions to ensure integrity
- **Ongoing monitoring and support:** Ongoing threat measurement and monitoring services, with external security audits

Tools and Configuration

Build. Deploy. Manage.

Digi XBee Studio

Free multi-platform application that enables developers to manage Digi XBee devices through a simple-to-use graphical interface

Digi XBee Studio is the definitive tool to manage and configure Digi XBee devices. This next generation configuration tool suite supersedes **Digi XCTU**® and offers an advanced set of tools that make it easy to set up, configure, communicate with and test Digi XBee modules and devices

The first thing you need to do in order to work with XBee devices in XBee Studio is to add them to the tool. In XBee Studio, this is easier than ever.

Simple setup and connectivity

Just after startup, XBee Studio will automatically look for XBee devices connected to your computer. As modules are found, they will appear in the Device Browser view. The Device Browser view displays all the devices connected to your computer.

View and manage your Digi XBee devices

View all of your Digi XBee devices in one table, or if they are geo-located, you can switch to the map view and see the location of each one.

Digi XBee Studio also offers a simple and step-by-step way to access and manage devices, including additional options for configuration, diagnostics, development, remote management and other utilities.

Proven experience and expert support

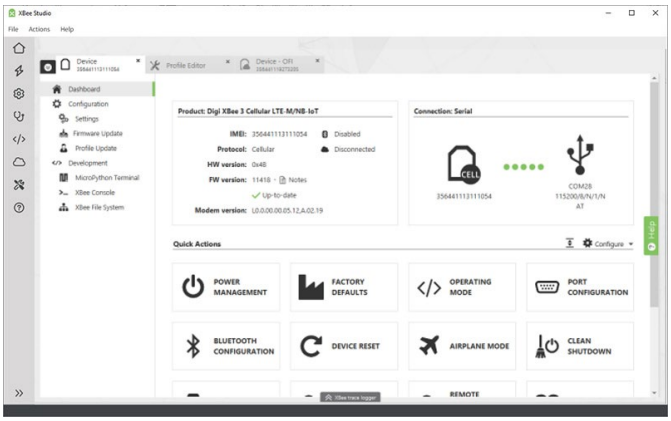
Our decades of embedded experience and millions of deployed devices tell our story; Digi is a trusted solutions provider dedicated to simplifying the way OEMs design, build, deploy and maintain secure connected products.

Digi Wireless Design Services (WDS) is an engineering team that provides additional connectivity integration support, certification assistance, and custom design and build services to get your products to market smarter and faster. The expert team of WDS engineers can support you wherever you are along your development path.

DIGI XBee Studio

Key features

- **Deploy on multiple platforms:** Digi XBee Studio is compatible with the most popular operating systems, including Microsoft Windows, macOS and Linux
- **Discover your devices:** Automatically discover XBee devices connected to your computer, regardless of their port connections or configured settings
- **Configure any device:** Manage and configure multiple XBee devices at once, including devices enrolled in your Digi Remote Manager account located anywhere in the world
- **Communicate with your devices:** Use the new smart XBee console to communicate with your devices regardless of whether they are configured for API mode or transparent mode
- **Access a range of tools:** Use embedded tools to perform operations like creating XBee profiles or recovering your devices
- **Get automatic updates:** Automatically update the application itself, as well as the radio firmware library, without downloading any extra files



DIGI XBEE FOR WI-SUN DEVELOPMENT KIT

Digi XBee Ecosystem, Tools and Supporting Services

Digi XBee Ecosystem

The world-renowned XBee module is part of a family of cellular modems and RF modules that provide ultimate flexibility for IoT application developers, with three programmable form factors, and a range of popular wireless protocols. The XBee family also includes IoT gateways and management tools to connect, monitor and manage your XBee network.

Learn more at digi.com/xbee.

Build. Deploy. Manage.

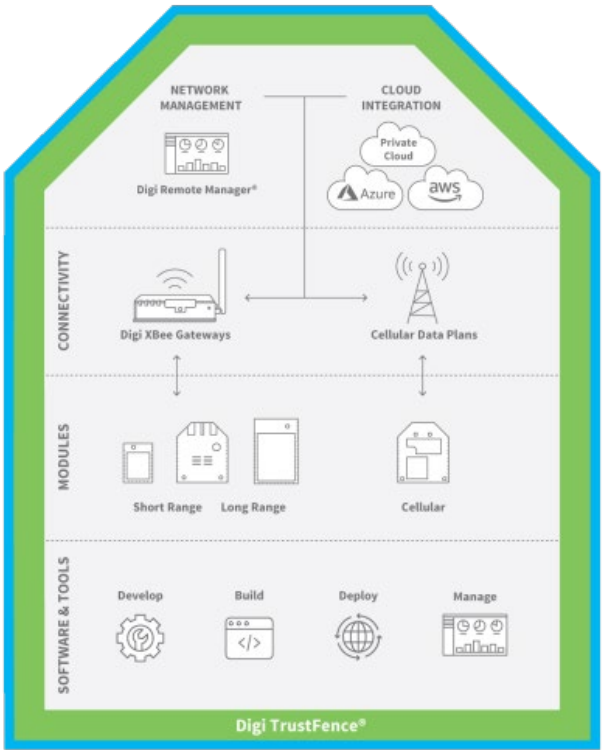
The **Digi XBee Ecosystem** is fully supported with the award-winning **Digi XBee Tools** suite. Designed to support the full product lifecycle, from prototyping and development to deployment and ongoing monitoring, Digi XBee Tools includes code libraries, testing and prototyping tools, product development and manufacturing support, and tools for deploying and managing end devices in the field.

Digi Wireless Design Services

Digi WDS supports new designs and redesigns

We offer services to support you wherever you are along your development path, with a record that speaks for itself.

- Proof of concept
- Architecture consultation
- Requirements definition
- System, software and electrical design
- Design reviews
- Certifications
- Prototype build
- Manufacturing test fixtures
- 250+ product development projects
- 100+ certification failure rescues
- 100 million connected devices around the globe



Get to market faster with Digi WDS

Digi Wireless Design Services (WDS) has a proven history of helping clients speed down the path to success by guiding them through the technological and regulatory certification pitfalls that botch budgets and disrupt product introductions.

We begin by actively listening to your business and technical requirements, and then leverage our proven methodology, world-class engineering expertise and library of IP to design a cost-effective solution that is tailored to your specific needs. Accelerate toward the solution that is right for you and your customers.

Contact Digi WDS to find out how we can guide you to success.

DIGI XBEE FOR WI-SUN DEVELOPMENT KIT

Specifications

Manage and configure Digi XBee for Wi-SUN Development Kit with Digi XBee Studio

Specifications	Digi XBee Hive Border Router
HARDWARE	
DIGI XBEE FOR WI-SUN MODULE	900 MHz: Digi XBee for Wi-SUN — 900 MHz, Full Function Node (FFN), U.FL, MMT, North America (XB-WSB-UM-001) 920 MHz: Digi XBee for Wi-SUN — 920 MHz, Full Function Node (FFN), U.FL, MMT, Japan (XB-WSB-UM-051) 868 MHz: Digi XBee for Wi-SUN — 868 MHz, Full Function Node (FFN), U.FL, MMT, Europe (XB-WSB-UM-081) 865 MHz: Digi XBee for Wi-SUN — 868 MHz, Full Function Node (FFN), U.FL, MMT, India (XB-WSB-UM-071)
DIGI CONNECTCORE MP157	STMicroelectronics STM32MP157C, Arm® dual Cortex®-A7 at 650 MHz, Cortex®-M4 at 209 MHz with FPU/MPU, 3D GPU, secure boot, crypto engine, 512 MB SLC NAND flash and 512 GB DDR3L, STMicroelectronics Power Management IC — STPMIC1
TRANSMIT POWER	Up to 19 dBm ERP (North America)
RECEIVER SENSITIVITY	−114 dBm at 50 kbps (FSK)
BLUETOOTH VERSION	Supports Bluetooth Low Energy 5.2 and capable of interoperating with Bluetooth Low Energy 5.2 devices that support 1M PHY. Hardware is software upgradeable to 5.2 (not yet enabled except payload extensions).
XBEE CONNECTOR	(1) 50 ohm RP-SMA (center pin: male)
MEMORY	512 MB RAM, 512 MB flash; (1) microSD card slot
USB	(1) USB type 2.0
SOFTWARE AND MANAGEMENT	
PYTHON	Python 3
REMOTE MANAGEMENT	Digi Remote Manager; SNMP v2/v3 (user installed/managed)
LOCAL MANAGEMENT	WebUI (HTTP/HTTPS); CLI (Telnet, SSH)
MANAGEMENT / TROUBLESHOOTING TOOLS	FTP client, SCP; protocol analyzer with PCAP for Wireshark; event logging with syslog and SMTP client; NTP/SNTP; Nagios, Intelliflow, iPerf, Dynamic DNS, ping, traceroute
ETHERNET	
PORTS	(1) RJ-45; 10/100 Mbps (auto-sensing)
SERIAL	
PORTS	(1) RJ-50 10 pin (10P10C); RS-232/485; software-selectable - RS-232 DTE (RXD, TXD, RTS, CTS, DTR, CDC, DSR, RI) - RS-485 (TX/RX+;RX/TX-); half-duplex
WI-FI / BLUETOOTH LOW ENERGY	
TECHNOLOGY	Wi-Fi 5 dual-band 802.11a/b/g/n/ac 1x1 radio (up to 433.3 Mbps) with strong SPA3-Enterprise authentication/encryption, Bluetooth 5.2 (Basic Rate, Enhanced Data Rate and Bluetooth Low Energy)
SECURITY	WPA, WPA2 and WPA3 Personal and Enterprise, Open and Open Enhanced security standards
HOTSPOT	Captive portal with customizable splash page, terms and conditions, shared password, user-specific password, RADIUS authentication
THIRD-PARTY SERVICES	Content filtering, embedded advertising
USER MANAGEMENT	Per-client usage limit and reporting
MODES	Simultaneous client and access point support
CONNECTORS	(1) 50 Ω RP-SMA (center pin: male)
CELLULAR	
4G LTE CAT 1	XBee 3 Global LTE Cat 1 (Thales PLS63-W)
ANTENNAS	(2) 50 Ω RP-SMA (center pin: female)
SIM	(1) External (4FF SIM)

DIGI XBEE FOR WI-SUN DEVELOPMENT KIT

Specifications

Manage and configure Digi XBee for Wi-SUN Development Kit with Digi XBee Studio

Specifications	Digi XBee Hive Border Router
PHYSICAL	
DIMENSIONS (L X W X H)	148 mm x 99 mm x 33 mm (5.83 in x 3.9 in x 1.3 in)
WEIGHT	0.24 kg (0.53 lb)
STATUS LEDS	Power, XBee, Cellular (where applicable), Wi-Fi (where applicable), User
BUTTONS	Erase, User
ENCLOSURE	ABS, flame rating: UL94-HB
POWER REQUIREMENTS	
POWER INPUT	9 - 30 VDC, 1.0 A Maximum
POWER CONSUMPTION	1.75 W typical (idle); 9 W typical (peak Tx/Rx)
ENVIRONMENT	
OPERATING TEMPERATURE	PCB: −40 °C to 70 °C (−40 °F to 158 °F) With enclosure: 0 °C to 40 °C (32 °F to 104 °F)
RELATIVE HUMIDITY	95% ROHS
REGULATORY APPROVALS*	
SAFETY	IEC62368-1
EMISSIONS	CE; RED; FCC Part 15, Subpart B*; ICES-003; AU/NZS CISPR32
CELLULAR AND REGULATORY	Visit **digi.com/resources/certifications** for latest certifications and approvals.
WARRANTY	
PRODUCT WARRANTY	3-year

*Visit **digi.com/resources/certifications** for latest certifications and approvals.

Enterprise Software	Description
NETWORK PROTOCOL SUPPORT	HTTPS, FTP client, TLS v1.2, SCP (client and server), SFTP, SMTP client for use by scripts and the command line, SNMP (v2/v3), SSH; remote management via **Digi Remote Manager**; protocol analyzer, ability to capture PCAP for use with Wireshark; DynDNS; dynamic DNS client compatible with BIND9/No-IP/DynDNS; captive portal, Intelliflow; Nagios, DNS server, NTP server, multicast, mDNS, IPerf
SECURITY	IP filtering, stateful firewall, custom firewall rules (iptables), address and port translation, TLS 1.2 and above, OpenVPN client and server, VPN tunnels; Authentication: RADIUS, TACACS+; certificates; MAC address filtering; VLAN support
VPN	IPSec with IKEv1, IKEv2, NAT Traversal; OpenVPN client and server; GRE VPN tunnels; Cryptology: SHA-1/256/384/512, MD5, RSA; Encryption: 3DES and AES up to 256-bit (CBC mode for IPsec); Diffie Hellman: DH groups 1-32 (CURVE448)
ROUTING/FAILOVER	IP pass-through; NAT, NAPT with IP port forwarding; GRE; multicast routing; routing protocols: RIP (v1, v2) OSPF, BGP; IP failover: VRRP; automatic failover, **Digi SureLink**®
OTHER PROTOCOLS	DHCP; dynamic DNS client compatible with No-IP/DynDNS

*For a comprehensive list of operating system features, please visit **digi.com/solutions/by-technology/dal-operating-system/features**.

DIGI XBEE FOR WI-SUN DEVELOPMENT KIT

Specifications

Manage and configure Digi XBee for Wi-SUN Development Kit with Digi XBee Studio

Specifications	Digi XBee for Wi-SUN (FG25)
HARDWARE	
PROCESSOR	Silicon Labs EFR32FG25
FREQUENCY BAND	902 MHz to 928 MHz — United States / Canada 920.5 MHz to 928.1 MHz — Japan 863 MHz to 870 MHz — European Union 865 MHz to 868 MHz — India
AVAILABLE FORM FACTORS	Micro-mount (MMT), surface-mount (SMT), and through-hole (TH)
ANTENNA OPTIONS	MMT: U.FL connector, RF pad SMT: U.FL connector, RF pad, chip antenna TH: U.FL connector
WEIGHT	MMT: 1.2 grams (0.042 oz) SMT: 3.0 grams (0.11 oz) TH: 3.1 grams (0.11 oz)
DIMENSIONS	MMT: 1.36 cm x 1.93 cm x 0.241 cm (0.534 in x 0.760 in x 0.095 in) SMT: 2.2 cm x 3.38 cm x 0.325 cm (0.866 in x 1.33 in x 0.128 in) TH: 2.44 cm x 2.76 cm x 0.688 cm (0.96 in x 1.088 in x 0.271 in)
PERFORMANCE*	
RF DATA RATE	FSK: 50 to 300 kbps; OFDM: 200 to 2400 kbps (depending on region)
UART DATA RATE	Up to 921.6 kbps
SPI DATA RATE	Up to 5 Mbps
LINE OF SIGHT RANGE**	Up to 7 km (~4.5 mi); Up to 1.5 km (1 mi) urban
INDOOR RANGE**	Up to 1.5 km (1 mi)
TRANSMIT POWER	Up to 19 dBm ERP (North America)
RECEIVER SENSITIVITY	−114 dBm at 50 kbps (FSK)
BLOCKING SELECTIVITY	>70 dB for out-of-band interference
FEATURES	
DIGITAL I/O	15
AVAILABLE CHANNEL FREQUENCIES	Channel spacing 50 to 600 kHz depending on region and data rate
ANALOG INPUTS	(4) 10-bit ADC inputs
OPERATING TEMPERATURE	−40 °C to 85 °C (−40 °F to 185 °F)
NETWORKING TOPOLOGIES	Mesh networking
SECURITY	Secure certificates via public-key infrastructure (PKI), IPv6 networking security, 128-bit AES Encryption, Silicon Labs Secure Vault
POWER	
SUPPLY VOLTAGE	2.4 - 3.8 VDC, 3.3 VDC typical
TRANSMIT CURRENT	18 dBm OFDM 195 mA; 16 dBm FSK 79 mA
RECEIVE CURRENT	12.2 mA
SLEEP CURRENT	1.5 uA

*Availability of specific data rates will be dependent on the region of operation.

**Range figure estimates are based on free-air terrain with limited sources of interference. Actual range will vary based on transmitting power, orientation of transmitter and receiver, height of transmitting antenna, height of receiving antenna, weather conditions, interference sources in the area, and terrain between receiver and transmitter, including indoor and outdoor structures such as walls, trees, buildings, hills, and mountains.

DIGI XBEE FOR WI-SUN DEVELOPMENT KIT

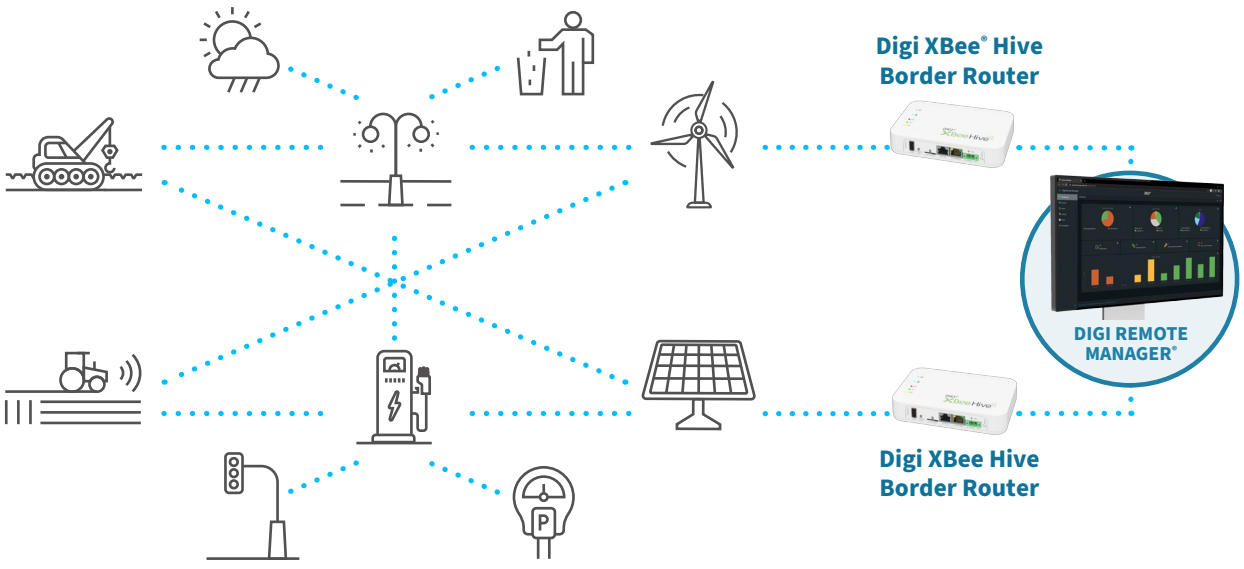
Specifications

Manage and configure Digi XBee for Wi-SUN Development Kit with Digi XBee Studio

Specifications	Digi XBee for Wi-SUN (FG25)
REGULATORY APPROVALS*	
FCC (USA)	Compliant
ISED (CANADA)	Compliant
CE (EUROPE)	Compliant
MIC-TELEC (JAPAN)	Pending
WPC (INDIA)	Pending
NETWORKING AND SECURITY	
MODULATION	OFDM, FSK, and O-QPSK
SPREADING TECHNOLOGY	Frequency Hopping Spread Spectrum (FHSS)
GENERAL	
MANUFACTURING	ISO 9001:2000 registered standards
ANTENNA IMPEDANCE	50 ohms
MAXIMUM INPUT RF LEVEL AT ANTENNA PORT	6 dBm
WI-SUN FAN SUPPORT	Fan 1.1

*Visit digi.com/resources/certifications for latest updates.

Digi XBee for Wi-SUN solution example

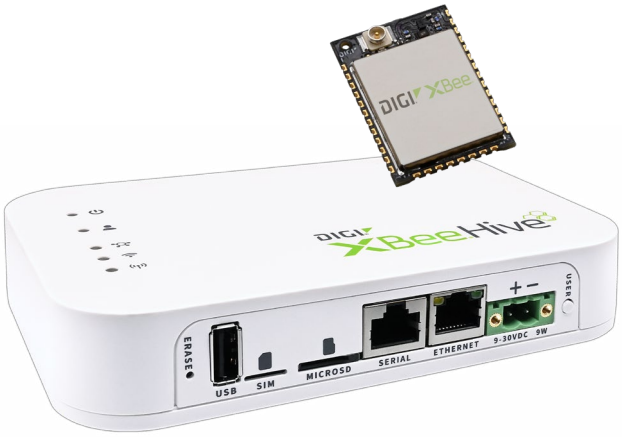


Product Photos

Digi XBee for Wi-SUN Development Kit

Digi XBee Hive Border Router

Digi XBee Hive Border Router and module



Digi XBee for Wi-SUN RF modules — MMT

DIGI XBEE FOR WI-SUN DEVELOPMENT KIT

Part Numbers

Part Numbers	Digi XBee for Wi-SUN Development Kit
DIGI XBEE FOR WI-SUN DEVELOPMENT KITS	
XK-WS-0	Digi XBee for Wi-SUN Development Kit — North America
XK-WS-8	Digi XBee for Wi-SUN Development Kit — Europe

The Dig XBee for Wi-SUN Development Kit includes:

(1) **Digi XBee Hive Border Router for Wi-SUN**
(2) **Digi XBee for Wi-SUN modules** (with FFN nodes)
(2) **Digi XBIB-C Development Boards**
(2) Antennas and cables

Digi Remote Manager (trial account)
Digi XBee Studio and **Digi XBee Tools**
Getting Started Guide with kit registration
Additional documentation and examples

For more information, visit digi.com.

For more information on Digi XBee for Wi-SUN, visit our Wi-SUN solutions at **digi.com/wi-sun**.

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