Digi XBee® Migration Guide

Migration from Digi XBee 868LP to Digi XBee SX 868

As of June 2017, Digi has updated and ported its XBee 868LP firmware to the newer XBee SX hardware, and released the Digi XBee SX 868. The XBee SX 868 is fully pin compatible and over-the-air compatible with the XBee 868LP, and includes significant improvements to both the software and hardware. These updates and improvements will be highlighted in this guide.

Hardware Improvements

- Onboard microcontroller changed from Silicon Labs EFM32G230F128 to EFM32LG230F256 – 2x more memory and faster clock speed
- Integrated SAW filter and Low Noise Amplifier improves receive sensitivity from -106dBm to -113dBm and Receiver IF selectivity by about 5dB

Specification Comparison

Specifications	Legacy XBee 868LP	New XBee SX 868	Notes (If Applicable)
Operating Frequency	863 to 870 MHz	863 to 870 MHz	
Dimensions	2.119 x 3.4 x 0.305 cm	2.119 x 3.4 x 0.305 cm	
Weight	40 g (1.4 oz)	40 g (1.4 oz)	
Operating Temperature	-40 ºC to 85 ºC (industrial)	-40 ºC to 85 ºC (industrial)	
Antenna Options	U.FL, RF pad, PCB antenna (PCB limited to 10Kbps variant)	U.FL, RF pad	PCB antenna variant no longer supported
Digital I/O	13 I/O lines	13 I/O lines	
ADC	4 10-bit analog inputs	4 10-bit analog inputs	
Transmit Power (ERP w/ 2.1dB dipole)	Up to 12dBm (16mW)	Up to 13dBm (20mW)	Improved
Transmit Power (EIRP w/ 2.1dBi dipole)	Up to 14dBm (25mW)	Up to 15dBm (32mW)	Improved
RF Data Rates	80Kbps or 10Kbps (separate f/w builds)	80Kbps or 10Kbps (s/w configurable)	Improved
UART Data Rate	Up to 230Kbps	Up to 921Kbps	Improved
SPI Clock Rate	Up to 3.5MHz	Up to 6MHz	Improved
Receiver Sensitivity	-101dBm @ 80Kbps / -106 @ 10Kbps	-106dBm @ 80Kbps / -113dBm @ 10Kbps	Improved
Channel Spacing	100 kHz	200 kHz	No compatibility impact
Receiver Bandwidth	150 kHz	150 kHz	
Modulation Bandwidth	< 300 kHz	< 300 kHz	
LBT Threshold	< -88 dBm	< -90dBm @ 80Kbps / < -95dBm @ 10Kbps	Adjusted for new RED standards
Supply Voltage	2.7 to 3.6 VDC	2.4 to 3.6 VDC	Improved
Transmit Current	45 mA @ 12dBm	55 mA @ 13dBm	
Receive Current	24 mA	40 mA	
Sleep Current	1.7 uA	1.8 uA	
Network Topologies	DigiMesh, Point to Point, Point to Multipoint, Peer to Peer	DigiMesh, Point to Point, Point to Multipoint, Peer to Peer	
Channels	30	28	Excludes channels 9 and 24 for transmitting. Still compatible for receiving on those channels.
Addressing Options	Personal Area Network identifier (PAN ID) and 64-bit addresses	Personal Area Network identifier (PAN ID) and 64-bit addresses	
Encryption	128 bit AES	128 bit AES	

Other Unique Feature Differences	Parameter	Legacy XBee 868LP	New XBee SX 868
RF Data Rates	BR	Two firmware images; one for 80Kbps and one for 10Kbps	Single firmware image, BR parameter configures desired data rate
Channel Mask	CM	Transmissions may occur on any subset of 30 channels from 0 to 29	Transmissions may occur on the same channels as S8 except for 9 and 24 which are excluded for certification purposes
Hardware Version	HV	0x24 identifies the module	0x45 identifies the module
Hardware Series	HS	0x0A02 identifies the module	0x0800 identifies the module
Device Descriptor	DD	0xC0000 identifies the module	0x110000 identifies the module
I/O Line Passing	IU, IA, + Timeout Parameter	Not available	New Feature

Pin Compatibility

Pinout for the XBee SX 868 is identical to the XBee 868LP. No design changes should be required. Reference the XBee SX 868 User Guide for pinout details.

Part Number References

The following table shows the appropriate migration path for legacy 868LP parts. Note the programmable and PCB antenna variants do not have direct replacements. Customers using those parts will be offered an extended Last-Time-Buy window, which will be announced in a separate End of Life notification.

Legacy 868LP Part Number	Replacement SX 868 Part Number	Replacement SX 868 Description
XK8-DMS-0	XK8X-DMS-0	Digi XBee SX 868 Development Kit
XK8-DMSB0	No direct replacement	No direct replacement
XB8-DMRS-002	XB8X-DMRS-001	XBee SX 868, 25 mW, DigiMesh/P2MP, RF Pad, Europe
XB8-DMPS-002	No direct replacement	No direct replacement
XB8-DMUS-002	XB8X-DMUS-001	XBee SX 868, 25 mW, DigiMesh/P2MP, U.FL, Europe
XB8-DMPSB002	No direct replacement	No direct replacement
XB8-DPPS-001	No direct replacement	No direct replacement
XB8-DPRS-001	XB8X-DMRS-001	XBee SX 868, 25 mW, DigiMesh/P2MP, RF Pad, Europe
XB8-DPUS-001	XB8X-DMUS-001	XBee SX 868, 25 mW, DigiMesh/P2MP, U.FL, Europe
XB8-DMRSB002	No direct replacement	No direct replacement
XB8-DMUSB002	No direct replacement	No direct replacement