IP-Link™ Embedded Wireless Modules

ZigBee™ & IP-Net™ Networking Solutions

2.4 GHz or 915 MHz

Accelerate Wireless Product Development

Helicomm s industry leading, 8051-based IP-Link Modules support both ZigBee & IP-Net solutions and 2.4GHz & 915MHz frequencies.

Simplify Development & Speed Time to Market

Helicomm s highly integrated IP-Link Modules simplify wireless integration and reduce development cycles by six months or more. Each IP-Link embedded module includes an IEEE 802.15.4-compliant radio, a Silicon Laboratories 8051 microcontroller, programmable I/O, flexible antenna and range solutions, and ZigBee-Ready IP-Net " networking software.

Our FCC certified IP-Link Modules are designed for reliability and manufacturability, making it easy and convenient to add wireless communications to your products. Whether you need to evaluate mesh networking concepts, quickly demonstrate a wireless product prototype, or ramp your products to volume production, Helicomm can help you save time and money and reduce your development risk.

Unsurpassed Customer Choice

Helicomm offers the broadest selection of ZigBee wireless networking solutions available in the industry. Our 2.4GHz IP-Link Modules support global deployment and a data rate of 250Kbps, and our 915MHz Modules support extended range and enhanced Wi-Fi co-existence. IP-Link Modules can be ordered with your choice of ultra low power or high performance 8051-based microcontroller, along with several standards-based networking gateways, packaged modems, development kits, design tools and design & integration services to help you complete your development project.

Powerful Development Environment

Helicomm s IP-Link Modules and DevKits include support for the Keil C compiler and integrated development environment, allowing you to embed your application directly onto the IP-Link module to reduce system cost and power consumption.

Flexible Networking Solutions

IP-Link Modules support mesh, star and hybrid networking topologies and come with Helicomm s ZigBee-Ready IP-Net software. Simply select the Networking solution that best meets your needs for interoperability, IP compatibility, or simplicity.

Helicomm's ZigBee-Ready IP-Net networking software is ideal for customers looking for a highly reliable and field-proven wireless solution. IP-Net includes support for our innovative 'serial mesh mode', allowing RS232/RS485 data streams to be transmitted over multiple hops to improve data reliability and increase transmission range.

Alternatively Helicomm also provides ZigBee networking stack library to enable third party product and system interoperability, for example, lighting, heating, and access control systems to work as an integrated system.

ZigBee-Ready Modules are available now.

Helicomm
WIRELESS SOLUTIONS • SIMPLIFIED

SILICON LABORATORIES

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Module Selection Guide

Helicomm offers seven 8051-based IP-Link embedded modules, providing the broadest selection of ZigBee and IP-Net wireless networking solutions. IP-Link modules are available in both 2.4GHz and 915MHz frequencies, with three choices of Flash/RAM combinations. These options allow you to select the right-sized module for your needs, and provide you a flexible way to build and test both simple and sophisticated wireless networks.

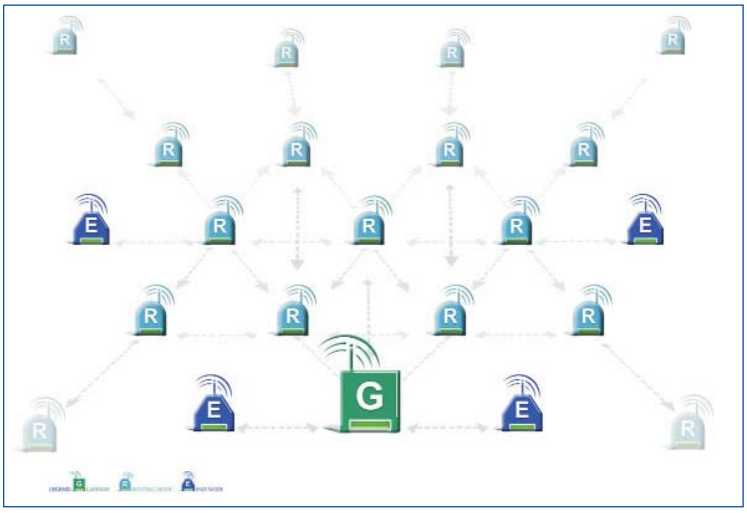
The following Module Legend, IP-Link Module Comparison Charts and Module Specification Table are provided to aid in identifying the highly integrated, standards-based IP-Link modules that meet your requirements.

Module Legend

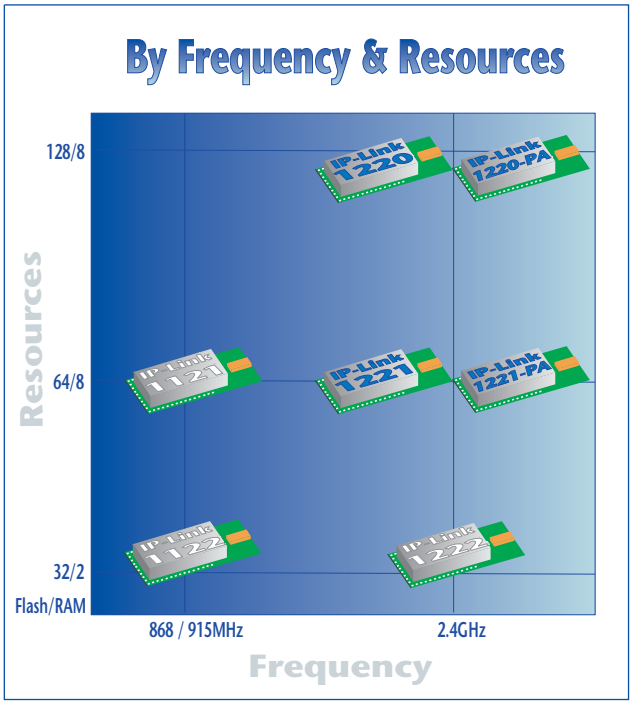
IP-Link Model	Description	Flash/RAM	Max Output Power
1220-2033	2.4GHz	128KB/8KB	0dBm
1221-2033	2.4GHz	64KB/8KB	0dBm
1220-2133	2.4GHz	128KB/8KB	15dBm
1221-2133	2.4GHz	64KB/8KB	15dBm
1220-2033*	2.4GHz	32KB/2KB	0dBm
1121-3033*	915MHz	64KB/8KB	0dbm
1122-3033*	915MHz	32KB/2KB	0dbm

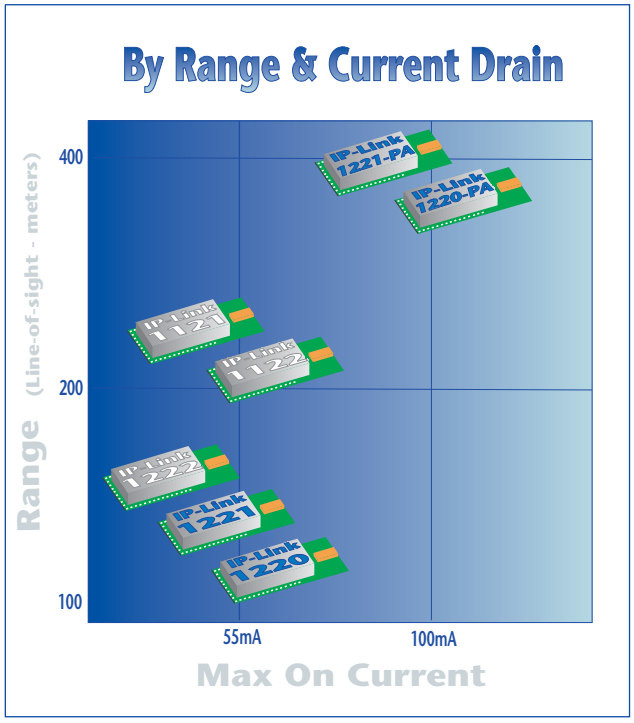
**IP-Link1121, 1122 & IP-Link 1222 are coming soon*

IP-Link Modules support Star, Cluster-Tree and Mesh Topologies



IP-Link Module Comparison





IP-Link™ Embedded Wireless Modules

ZigBee™ & IP-Net™ Networking Solutions

2.4 GHz or 915 MHz

		IP-Link 1121-3033	IP-Link 1122-3033	IP-Link 1220-2033	IP-Link 1221-2033	IP-Link 1222-2033	IP-Link 1220-2133 INCL. PA	IP-Link 1221-2133 INCL. PA
NETWORKING	IP-Net	S	S	S	S	S	S	S
	ZigBee Library	O	N/A	S	O	N/A	O	O
	FFD	S	S	S	S	S	S	S
	RFD	S	S	S	S	S	S	S
	802.15.4	S	S	S	S	S	S	S
	Security	S	S	S	S	S	S	S
MICROCONTROLLER	Version	F133	F015	F121	F133	F015	F121	F133
	FlashROM	64KB	32KB	128KB	64KB	32KB	128KB	64KB
	RAM	8KB	2KB	8KB	8KB	2KB	8KB	8KB
RF	Frequency	915MHz	915MHz	2.4GHz	2.4GHz	2.4GHz	2.4GHz	2.4GHz
	Max data rate	40Kbps	40Kbps	250Kbps	250Kbps	250Kbps	250Kbps	250Kbps
	Receive sensitivity	-97dBm	-97dBm	-94dBm	-94dBm	-94dBm	-94dBm	-94dBm
	Transmit range	200m LOS	200m LOS	150m LOS	150m LOS	150m LOS	400m LOS	400m LOS
	RF channels	10 (2MHz)	10 (2MHz)	16 (5MHz)	16 (5MHz)	16 (5MHz)	16 (5MHz)	16 (5MHz)
	Transmit power	-21 to 0dBm	-21 to 0dBm	-24 to 0dBm	-24 to 0dBm	-24 to 0dBm	-9 to15dBm	-9 to15dBm
	Data encryption	128-bit AES	128-bit AES	128-bit AES	128-bit AES	128-bit AES	128-bit AES	128-bit AES
	Antenna	Chip	Chip	Chip	Chip	Chip	Chip	Chip
	Certification	FCC Part 15, CE	FCC Part 15, CE	FCC Part 15, CE	FCC Part 15, CE	FCC Part 15, CE	FCC Part 15, CE	FCC Part 15, CE
POWER CONSUMPTION	Transmit	55mA	55mA	55mA	55mA	55mA	100mA	100mA
	Receive	55mA	55mA	55mA	55mA	55mA	100mA	100mA
INPUT / OUTPUT	Physical pins	51	51	62	62	62	70	70
	Serial	2 RS232, JTAG	RS232, SMB, JTAG	2 RS232, JTAG	RS232, SMB, JTAG	RS232, JTAG, C2	2 RS232, JTAG,	RS232, JTAG
	A/D	5 (10-bit) & 1 Comparator	10-bit & 2 Comparators	3 (12-bit) & 2 Comparators	3 (12-bit) & 2 Comparators	10-bit & 2 Comparators	3 (12-bit)	3 (12-bit)
	D/A		2 (12-bit)	2 (12-bit)		2 (12-bit)	2 (12-bit)	
PHYSICAL	Size (W x H x D)							
	Inches	1.2 x 1.2 x 0.2	1.2 x 1.2 x 0.2	1.6 x 0.7 x 0.2	1.6 x 0.7 x 0.2	1.6 x 0.7 x 0.2	1.8 x 0.7 x 0.2	1.8 x 0.7 x 0.2
	Millimeters	30 x 30 x 4	30 x 30 x 4	41 x 19 x 4	41 x 19 x 4	41 x 19 x 4	46 x 19 x 4	46 x19 x 4
	Operating temp	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
	Humidity	10% - 90%	10% - 90%	10% - 90%	10% - 90%	10% - 90%	10% - 90%	10% - 90%

S: Standard **O: Option** **N/A: Not Available**

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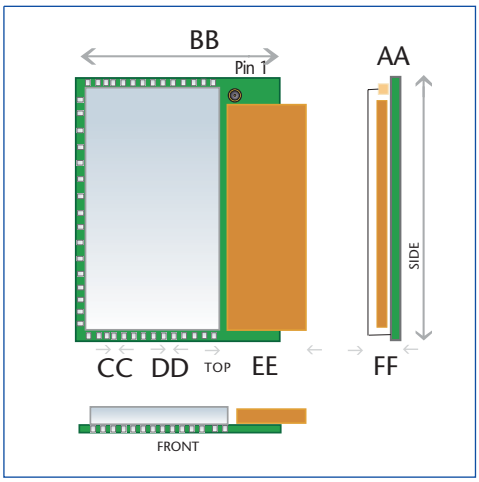
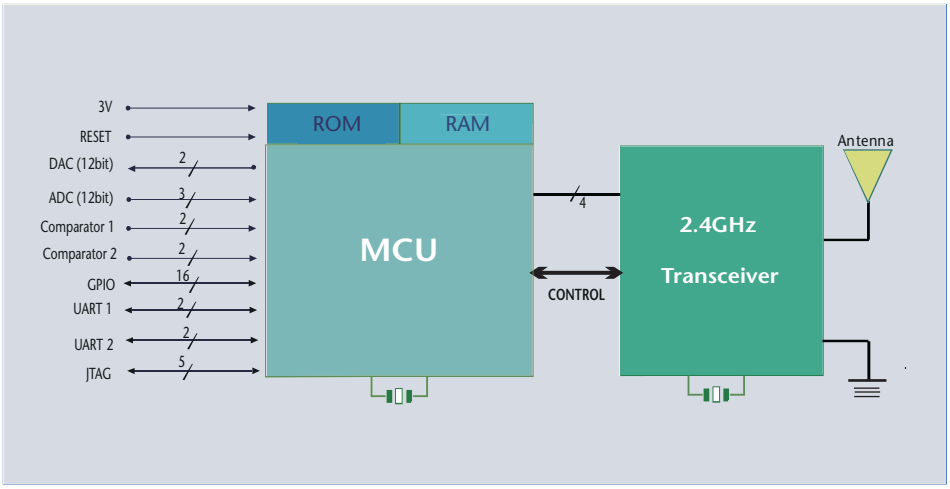


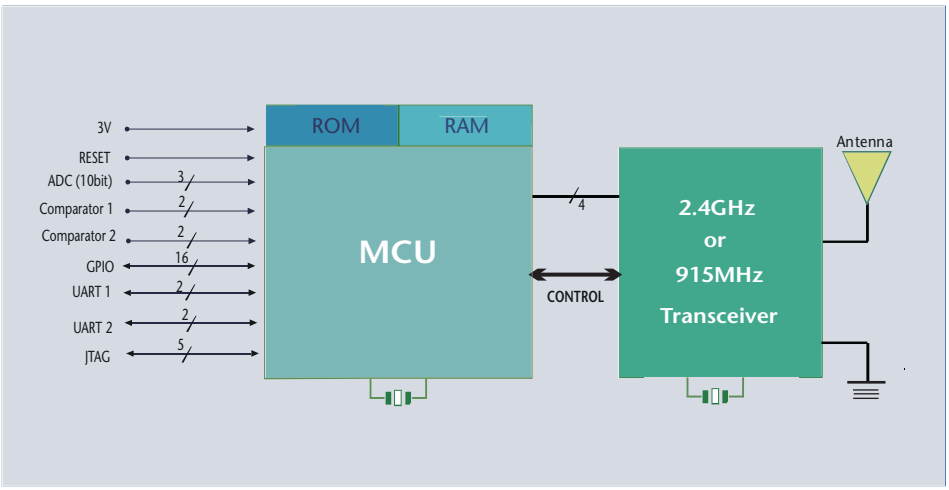
915MHz Module Dimensions See Table 1



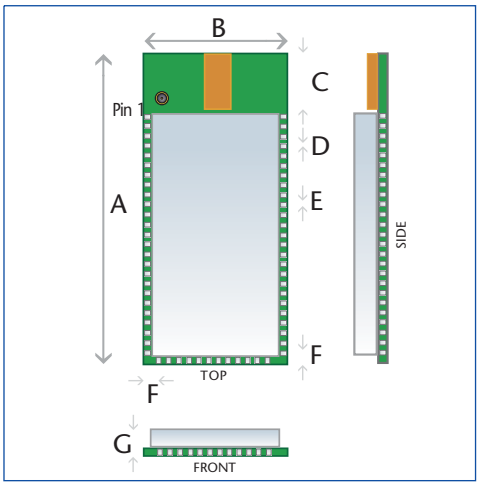
Block Diagram of IP-Link Modules with F121 Microcontroller

Table 2: *915MHz Module Dimensions*

Module	Ref	Value (mm)	Description
915MHz	AA	30	Length for Modules with NO PA
915MHz	BB	30	Width for Module
915MHz	CC	1.27	Distance Between Pins
915MHz	DD	0.79	Width of Pins
915MHz	EE	13	Antenna Area
915MHz	FF	4	Heigth of for Module



Block Diagram of IP-Link Modules with F133 Microcontroller



2.4GHz Module Dimensions See Table 2

Table 2: *2.4GHz Module Dimensions*

Module	Ref	Value (mm)	Description
2.4GHz	A	41	Length for Modules with NO PA
2.4GHz	A	46	Length for Modules with PA
2.4GHz	B	19	Width for Module
2.4GHz	C	8.5	Antenna Area
2.4GHz	D	1.27	Distance Between Pin's
2.4GHz	E	0.812	Width of Pins
2.4GHz	F	2.1	Pin Distance from Edge
2.4GHz	G	4	Heigth for Module

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