

INP1010/1011/1012/1013

Multi-Protocol Wireless Modules

Integrated Communications & Control for Ultra-Energy Efficient IoT Nodes

The Talaria TWO modules are complete solutions with integrated wireless connectivity plus microcontroller for edge-of-network IoT designs. They incorporate the award-winning Talaria TWO Multi-Protocol System on Chip (SoC) with Wi-Fi and BLE for wireless data transfer, an embedded Arm Cortex-M3 for system control and user applications plus advanced security elements for device safeguards.

The Talaria TWO's unique digital polar radio architecture makes the modules the world's lowest power Wi-Fi solution. It also provides BLE connectivity for Wi-Fi provisioning, diagnostics and other local communication. The smaller module sizes and antenna options of the INP1012/INP1013 enable integration into compact designs such as smart door locks, remote security cameras, connected sensors or other space-constrained products. All modules will complete Wi-Fi Alliance, Bluetooth SIG, FCC, IC (Canada), and CE certification.

Antenna Options:

- INP1010 – PCB Antenna (PIFA)
- INP1011 – U.FL Antenna Connector
- INP1012 – RF Pad
- INP1013 – Ceramic Chip Antenna

Ultra-Low Power Wireless Modules New Smaller Sizes & Antenna Options



INP1010
(21.6mm x 19.1mm x 2.5mm)



INP1012
(15.0mm x 12.8mm x 2.5mm)



INP1013
(20.0mm x 12.8mm x 3.08mm)



Ultra-Low Power

Industry's lowest Wi-Fi power consumption enables battery-based cloud-connected IoT products



Superior Integration

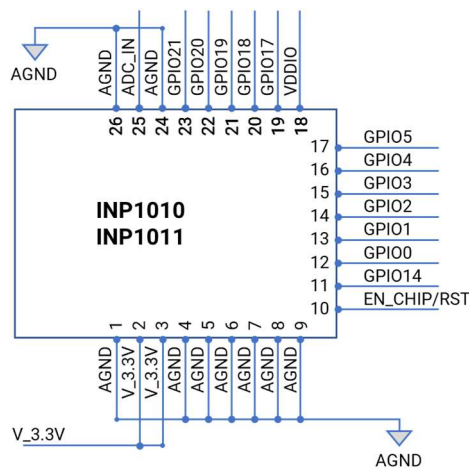
Complete module solutions with new smaller footprint options and various antenna configurations



Maximum Flexibility

Programmable radio protocols can be easily changed within microseconds through software APIs

INP1010/INP1011 I/O Diagram



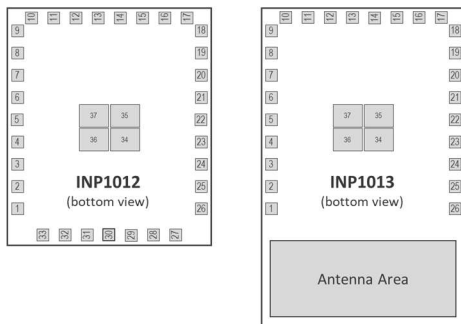
Features

- Fully Integrated Module Including All Required Clocks & Passives
- Agency and Standards Certifications
- Hostless Operation Using Internal Arm Cortex-M3, or Connect to a Host MCU Through UART/SPI Ports
- Eleven (11) Configurable GPIO Ports + Console Port (GPIO17)
- Ultra-Low Power Wi-Fi Connectivity
- BLE5.0 with Advanced Features
- Full SDK Environment for Application Development
- Arduino Compatible EVB Available for Evaluation

INP1010 & INP1011 Product Specifications

Wi-Fi Technology	802.11 b/g/n, up to MCS7	Single-stream (1x1)
Bluetooth Technology	BLE 5.0	w/ Advanced Features: 2Mbps PHY, LE Coding (Long-Range), Extended Advertising
Frequency Band	2.4GHz	
Application Processor	Arm Cortex-M3, 80MHz	
Embedded Memory	512KB SRAM, 2MB Flash	
Host Interface Options	UART, SPI (slave)	
Peripherals	GPIO, 10-bit SAR ADC, PWM, PDM, SPI (slave & master), UART JTAG, I2C, and I2S	
Hardware Based Security	PUF (Physically Unclonable Function), Crypto Engines, Secure Boot	
WiFi Active Mode Power/Performance (@ 3.3V)	<u>TX Current Consumption/Output Power</u> 802.11b DSSS 1 Mbps 178 mA (+17.5 dBm) 802.11g OFDM 54 Mbps 100 mA (+15.5 dBm) 802.11n OFDM 65 Mbps MCS7 81 mA (+12.5 dBm) <u>RX Current Consumption/Sensitivity</u> 802.11b DSSS 1Mbps 31 mA (-96 dBm)	
WiFi Power Save Mode 802.11b, 1 Mbps (Clean Environment, @ 3.3V)	150 µA (DTIM = 3)	
	97 µA (DTIM = 5)	
	57 µA (DTIM = 10)	
BLE Active Mode Consumption (@ 3.3V, 2Mbps)	30 mA RX	
	27 mA TX (0dBm), 38mA TX (+10dBm)	
Deep Sleep Mode (@ 3.3V)	11-19µA (RTC, memory retained, depends on amount of memory retained)	
Temperature Range	-40°C to +85°C	
Antenna	PCB Antenna (INP1010)	U.FL Connector (INP1011)
Packaging Information	21.6mm x 19.1mm x 2.5mm (height includes shield, both INP1010 & INP1011) 26 Castellated Pins	

INP1012/INP1013 Pin Diagram



PIN TABLE	GND	GND (RF)	RFIO (Ant.)	V_3.3V	EN_CHIP	VDDIO	ADC_IN	GPIO14	GPIO0	GPIO1	GPIO2	GPIO3	GPIO4	GPIO5	GPIO17	GPIO18	GPIO19	GPIO20	GPIO21
INP1012	1,4,5,6,7,8,9,24,26,34,35,36,37	27,28,29,31,32,33	30	2,3	10	18	25	11	12	13	14	15	16	17	19	20	21	22	23
INP1013		N/A	N/A																

Features

- Fully Integrated Module in a Smaller, More Compact Footprint
- Agency and Standards Certifications
- Hostless Operation Using Internal Arm Cortex-M3, or Connect to a Host MCU Through UART/SPI Ports
- Eleven (11) Configurable GPIO Ports + Console Port (GPIO17)
- Ultra-Low Power Wi-Fi Connectivity
- BLE5.0 with Advanced Features
- Full SDK Environment for Application Development
- Arduino Compatible EVB Available for Evaluation

INP1012 & INP1013 Product Specifications

Wi-Fi Technology	802.11 b/g/n, up to MCS7 Single-stream (1x1)
Bluetooth Technology	BLE 5.0 w/ Advanced Features: 2Mbps PHY, LE Coding (Long-Range), Extended Advertising
Frequency Band	2.4GHz
Application Processor	Arm Cortex-M3, 80MHz
Embedded Memory	512KB SRAM, 2MB Flash
Host Interface Options	UART, SPI (slave)
Peripherals	GPIO, 10-bit SAR ADC, PWM, PDM, SPI (slave & master), UART JTAG, I2C, and I2S
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Deep Sleep Mode (@ 3.3V)	11-19µA (RTC, memory retained, depends on amount of memory retained)
Temperature Range	-40°C to +85°C
Antenna	INP1012: RF Pad INP1013: Ceramic Chip-Antenna
Packaging Information	INP1012: 12.8mm x 15.0mm x 2.5mm (height includes shield) INP1013: 12.8mm x 20.0mm x 2.5mm (shield height) / 3.08mm (antenna height)