Connect One™

Product Brief

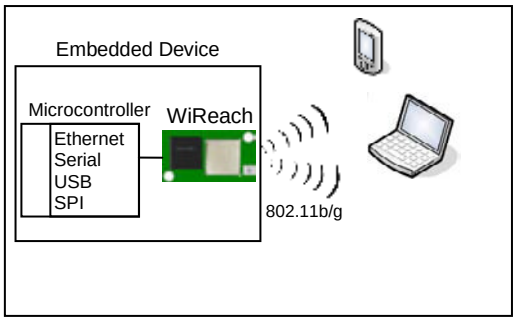
Publication Number 17-3520-10

Nano WiReach™

Miniature embedded secure WiFi module

General Description:

Nano WiReach™ is a secure embedded Wireless LAN bridge that easily connects embedded devices to 802.11b/g Wireless LANs. It includes the iChip™ CO2144 IP Communication Controller™ chip and Marvell 88W8686 WiFi chipset. It is packaged in 33x17mm RoHS-compliant ultra-slim low profile form factor.



Nano WiReach makes adding WiFi connectivity to embedded devices a breeze. It does not require any kind of WiFi driver development on the host CPU, and its multiple interface (UART, SPI, RMII and USB) minimize the need to redesign the host device hardware.

Connect One's high - level AT+i™ API eliminates the need to add WiFi drivers, security and networking protocols and tasks to the host application.

Nano WiReach supports the SSL3/TLS1 protocol for secure sockets, HTTPS and FTPS, WEP, WPA/WPA2 (PSK and Enterprise) WiFi encryption.

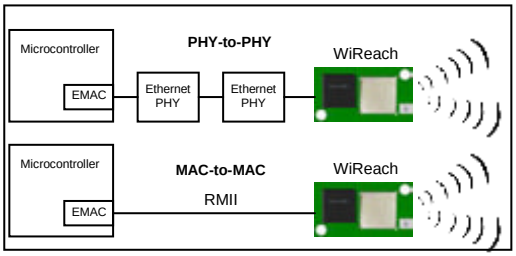
Nano WiReach firmware and configuration parameters are stored in on-board flash memory. The module is power-efficient: the core operates at 1.2V, while I/Os operate at 3.3V. Power Save mode further reduces power consumption.

Typical applications:

- Adding WiFi to serial embedded devices
- Replacing LAN cable using WiFi
- Adding SSL security to M2M solutions

Nano WiReach supports several operation modes:

- LAN to WiFi Bridge - allowing transparent bridging of LAN over WiFi, using direct RMII connection to existing MAC hardware or direct PHY-to-PHY connection.



- SerialNet™ Serial to WiFi Bridge - allowing transparent bridging of Serial over WiFi, using the 3Mbps fast UART. This is a true plug-and-play mode that eliminates any changes to the host application.
- PPP modem emulation – allowing existing (e.g. modem) designs currently using PPP to connect transparently over WiFi
- Full Internet Controller mode – allowing simple MCU to use the Nano WiReach's rich protocol and application capabilities to perform complex Internet operations such as E-mail, FTP, SSL, embedded web server and others. It also acts as a firewall, providing a security gap between the application and the network.

The II-EVB-363NW evaluation board provides an easy environment for evaluating the Nano WiReach.

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Hardware Description:

- Size: 33.0 x 17.0 x 5.0 mm
- Core CPU: 32-bit RISC ARM7TDMI, low-leakage, 0.13 micron, at 48MHz
- Operating Voltage: +3.3V+/-10%
- Operating Humidity: 90% maximum (non-condensing)
- Operating Temperature Range: -40°c to +85°c (-40° to 185°F)
- Power Consumption:
  - Transmit –250mA@16dbm, 235mA@12dbm (typical)
  - Receive – 190mA (typical)
  - Power Save mode – 8mA
- RF Connector: U.FL of Hirose
- Connector: Low profile 30 pin
- Host Interface: Serial, SPI, RMII and USB device.
- RoHS-compliant; lead-free

Wireless Specifications:

- Standards supported: IEEE 802.11b/g
- Frequency: Europe – 2.412-2.472GHz
  USA – 2.412-2.462GHz
- Channels: Europe – 13 channels
  USA – 11 channels

Performance Specifications:

- Host Data Rates:
  - UART: Up to 3Mbps
  - SPI: Up to 12Mbps
- Serial Data Format (AT+i mode): Asynchronous character; binary; 8 data bits; no parity; 1 stop bit
- Serial Data Format (SerialNET mode): Asynchronous character; binary; 7 or 8 data bits; odd, even, or no parity; 1 stop bit
- Flow Control: Hardware (-RTS, -CTS) and software flow control.

Internet Protocols:

- ARP, ICMP, IP, UDP, TCP, DHCP, DNS, NTP, SMTP, POP3, MIME, HTTP, FTP and TELNET
- Security protocols: SSL3/TLS1, HTTPS, FTPS, RSA, AES-128/256, 3DES, RC-4, SHA-1, MD-5, WEP, WPA/WPA2 (PSK and Enterprise)
- Protocols accelerated in hardware: AES, 3DES and SHA

Application Program Interface:

- AT+i protocol for Internet Controller mode
- SerialNET mode for transparent serial data-to-Internet bridging
- LAN-WiFi transparent bridging
- PPP operation mode for Modem-WiFi conversion

Warranty:

One year

Certifications:

- FCC modular and CE pending

Installation Requirements:

The Nano WiReach must be installed within a full-enclosure device that is safety certified.

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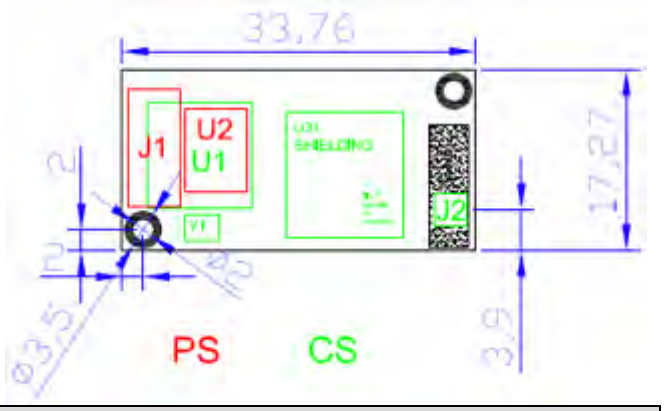
Pin Assignments:

Pin	Signal	type	Description
1	V_{DD}	Power	
2	GND	power	
3	RXD0	Input	Uart 0 receive
4	TXD0	Output	Uart 0 transmit
5	nCTS0	Input	Uart 0 clear to send
6	nRTS0	Output	Uart 0 request to send
7	DATA_RDY	Output	Data ready
8	MSEL	Input	Mode select
9	nRESET	Input	Reset Module.
10	nRF_LED	Output	Rf led indicator
11	nSPI1_CS	Input	SPI 1 chip select for host
12	nSPI1_CLK	Input	SPI 1 clock for host
13	nSPI1_MISO	Output	SPI 1 slave out for host master in
14	nSPI1_MOSI	Input	SPI 1 slave in for host master out
15	nSPI1_INT	Output	SPI 1 have data on his buffer

Pin	Signal	type	Description
16	Readiness	Output	iChip Ready
17	DDP	Analog	USB device positive
18	DDM	Analog	USB device negative
19	VDD	Power	
20	GND	Power	
21	ETX_EN	Output	RMII Transmit Enable
22	RMII_REFCLK	Output	RMII Reference Clock
23	CRSDV	Input	RMII Carrier sense and Data Valid
24	ERXER	Input	RMII Receive Error
25	EMDIO	I/O	Management data I/O
26	EMDC	Output	Management data Clock
27	ETX1	Output	RMII transmit Data 1
28	ERX1	Input	RMII Receive Data 1
29	ETX0	Output	RMII transmit Data 0
30	ERX0	Input	RMII Receive Data 0

Mechanical View:

All measurements are in millimeters:



Ordering Information

Part Number	Description
iW- SM2144N1-US-0	Nano WiReach module, for USA, External Antenna
iW- SM2144N1-EU-0	Nano WiReach module, for Europe, External Antenna
II-EVB-363NW-US-0-110	Evaluation board for Nano WiReach module for USA, with 110V power supply adaptor, External Antenna
II-EVB-363MW-EU-0-220	Evaluation board for Nano WiReach module for Europe, with 220V power supply adaptor, External Antenna
iW-CAB-150	Miniature coaxial pigtal cable. UFL-SMA connectors. 150mm length.
iW-ANT2-BL	2.4GHz WiFi antenna, 2.0dBi, 50Ω, omni-directional, 1/4 wavelength dipole configuration

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