

## Nano LANReach™

### Miniature embedded secure 10/100BaseT Ethernet module

#### General Description:

Nano LANReach™ is a secure embedded Ethernet module that enables installed devices to connect to the IP Networks over a 10/100BaseT Ethernet LAN. It includes the iChip™ CO2144 IP Communication Controller™ chip and a 10/100BaseT Ethernet Phy and is packaged in a 35x24 mm RoHS-compliant ultra-slim low profile form factor.

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

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

Nano LANReach supports the SSL3/TLS1 protocol for secure sockets, HTTPS and FTPS.

Nano LANReach 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.

The Nano LANReach contains a pin to pin compatible connector to Connect One's Nano WiReach Module, allowing a seamless swap between the two modules. Customers are now able to design embedded devices to connect using either LAN or WiFi, simply by adding the correct module.

#### Typical applications:

- ❖ Connecting serial embedded devices to 10/100BaseT LAN
- ❖ Adding SSL security to M2M solutions
- ❖ Connect One's WiFi/LAN Nano modules exchangeable

Nano LANReach supports several operation modes:

- SerialNet™ Serial to LAN Bridge - allowing transparent bridging of Serial over LAN, 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 LAN
- Full Internet Controller mode – allowing simple MCU to use the Nano LANReach'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.

As product volumes increases, customers may realize significant cost savings by switching to an on-PCB design using iChip CO2144/2128/2064. The transition is seamless as no changes is required to the application. Reference designs and additional information for this transition are available on [www.connectone.com](http://www.connectone.com)

The II-EVB-363ML evaluation board provides an easy environment for evaluating the Nano LANReach and can also be used to evaluate the Nano WiReach.

### Hardware Description:

- Size: 35.0 x 24.88 x 17.4 mm
- Core CPU: iChip CO2144 32-bit RISC, 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:
  - 130mA Typical (150mA max)
- Connector: Low profile 30 pin
- Host Interface: Serial, SPI and USB device.
- RoHS-compliant; lead-free

### 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
- 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-LAN conversion

### Warranty:

One year

### Certifications:

- FCC modular and CE pending

### Installation Requirements:

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

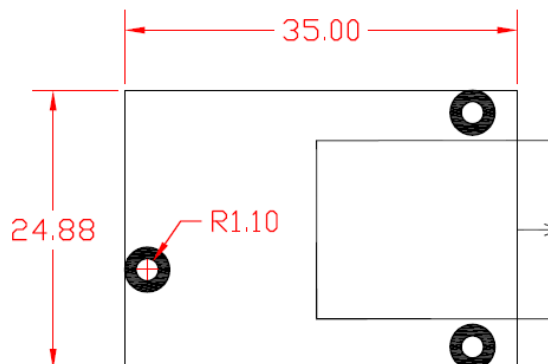
### J6 Molex Board-to-Board Pin Assignments:

Pin	Signal	type	Description
1	VDD	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	ACT_LINK	Output	LAN LINK LED indicator
11	nSPI1_CS	Input	SPI 1 chip select for host
12	SPI1_CLK	Input	SPI 1 clock for host (Max 12MHz)
13	SPI1_MISO	Output	SPI 1 slave out for host master in
14	SPI1_MOSI	Input	SPI 1 slave in for host master out
15	SPI1_INT	Output	SPI 1 has 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		N.C.	
22		N.C.	
23		N.C.	
24		N.C.	
25		N.C.	
26		N.C.	
27		N.C.	
28		N.C.	
29		N.C.	
30		N.C.	

### Mechanical View:

All measurements are in millimeters:



Ordering Information	
Part Number	Description
iL-SM2144N1-I	Nano LANReach module
II-EVB-363ML-110/220	Evaluation board for Nano LANReach. Includes Nano LANReach attached to a motherboard's 30 pin connector. The main board includes one male-female RS-232 DB-9 connector for high speed USART, RJ-45, USB, SPI and DC power connector. Includes female 30 Pin connector for prototyping. Specify 110V/220v power supply. RoHS.

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