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## ***Frequently Asked Questions (FAQ)***



**Revision 1.10**

**Reference Version: 804B04**

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## Frequently Asked Questions (FAQ)

The following is a list of frequently asked questions and answers. This document complements the AT+i Programmer's guide which is available for download from Connect One's support section.

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## Answers

### [What kind of certification do I need to do if I use a Connect One WiFi module?](#)

Connect One modules are designed to meet radio, EMC and safety standards in the US, Canada and the European Union.

Check the relevant certifications for each product on Connect One's website or contact [support@connectone.com](mailto:support@connectone.com).

For Connect One WiFi products with Modular Approval, please follow the instructions in the relevant product certification document for what your product's label must contain and other instructions in order to inherit the certification Connect One received for its module.

In the US and Canada, your product's label will need to show "Contains FCC ID:xxxxx" or "Contains IC:xxxxx" respectively.

Please note that inheriting the FCC/IC ID is possible only when using the antennas designated by Connect One that took part in the certification process.

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### [Which antennas are recommended?](#)

Connect One modules use a UFL ultra-miniature coaxial antenna connector with Hirose pigtail cable and Reverse SMA on the other end (used to connect to a standard 2.4GHz antenna).

The antenna used for testing and included in most evaluation kits for WiFi modules is W1030 by Pulse Engineering (<http://www.pulseeng.com/>). Its specifications are 2.4GHz, 2.0dBi, 50Ω, omni-directional, 1/4 wavelength dipole configuration.

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### [What is the typical range of WiFi?](#)

There is no single answer to this question. Typically, WiFi range is about 30 meters indoors and 100 meters outdoors.

Basic WiFi range is determined by a module's transmit power, receive sensitivity and antenna used – combined with the path between the sender and the receiver. As such, outdoor performance is different from indoor performance.

Indoor performance is impacted by materials used in construction, which have an effect on signal attenuation. For example, indoor performance in wood houses is much better than in brick houses, etc.

Connect One uses the maximum allowed transmit power under FCC/CE regulations and uses a high end WiFi chip with high receive sensitivity – Marvell

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88w8686. We use and recommend 2dbi antennas for our modules. Customers can use higher gain antennas if they choose to, but this would be outside FCC/CE regulatory limits.

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#### [What WiFi chipsets are supported?](#)

Basically, CO2128 and CO2144 support any Marvell 88W8686 based product with an SPI interface. Specifically, Connect One supports the following parts:

- Wi2Wi (<http://www.wi2wi.com>) : W2SW0001
- USI Wireless ([http://www.usi.com.tw/products\\_communication\\_sip.asp](http://www.usi.com.tw/products_communication_sip.asp)): WM-G-MR-05 and WM-G-MR-09

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#### [I experience disconnection from Access Point after several minutes](#)

This is a known issue with old firmware versions. Please update to firmware version 722p08 or higher, dated April 11th, 2008 or later.

The reason for this phenomenon is that some Access Points proactively disconnect stations which do not transmit or receive anything for several minutes. The new firmware versions correctly identify this state and reconnect.

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#### [Roaming between several Access Points results in communication failure.](#)

Roaming is defined between Access Points which are configured exactly the same (SSID and encryption keys) so that they extend the range of one network. Please check the configuration of your Access Points or Wireless Routers to make sure the configurations are identical.

In addition, please verify that WROM parameter is set to 1.

The following parameters can be fine-tuned to optimize roaming quality at a specific venue: WPSI, WSRH, WSRL. See the programmer's manual for additional details.

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#### [Is there indication on link quality of the LAN or WiFi?](#)

Yes. Please review the description in the AT+i Programmer's manual regarding the status reports and the following commands:

AT+iRP2, AT+iRP10, AT+i!RP10, AT+iRP11, AT+i!RP11, AT+iRP20, AT+iIPA?

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#### [How do I connect to RS485 of the Secure iWiFi or the Secure iLAN?](#)

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To connect to a PC: use a full-duplex RS485 (RS422) converter to RS232 in order to connect to your computer. For example: ATC-101 (<http://www.szatc.com/english/Upload/20061121141938478.pdf>)

To connect to an embedded device such as a PLC:

- a. Use a full duplex connection (a half-duplex connection wouldn't work).
- b. Tx lines should be connected to Rx lines.
- c. Keep the signs straight: Tx+ to Rx+.
- d. Verify that the Connect One device is indeed the RS485 version by measuring 3.3VDC between pin 2 (Tx+) and pin 8 (Tx-) when power is applied and no other cable or device is connected.

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### [What does the US/EU suffix mean in WiFi part numbers?](#)

The reason there are US and EU models is linked purely to certification. Hardware-wise, the modules are identical and the only difference is a hidden parameter in the firmware. The US allows only 11 channels and EU allows 13 channels in the 2.4GHz range (these are defined in the 802.11 standard). To be CE approved your device needs to allow channels 1-13 and to be FCC approved you need to allow only channels 1-11.

The change from US to EU or EU to US is done with a special, hidden AT+ command, and the setting is stored in non-volatile memory. Upon request, Connect One will provide the command that changes the region. This will enable you to stock only one type of unit (for example: only the US type) and set the region before shipping to Europe as part of configuration and testing, thereby allowing you to comply with certification.

You may also allow the end-user to set the region – much like you do when you set up a new WiFi AP – you're prompted for your geographical location and warned that choosing the wrong one can be illegal – behind the scenes, the AP selects EU or US for the user. This requires the appropriate warnings and/or an end-user agreement.

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### [What about 802.11n? Do I really need it?](#)

802.11n is the newest WiFi standard, offering high speeds which are usually required for high definition video streaming, etc. However, these speeds are usually not required for M2M communications; 802.11g provides effective TCP throughput of ~20Mbps, which is more than enough. In fact, most CPU and interfaces are slower than the WiFi speed – meaning the bottleneck is not the WiFi link anyway!

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In addition, at this stage there aren't that many 802.11n access points deployed in the field. And all 802.11n Access Points are compatible with 802.11b/g devices.

Connect One's core product is the iChip. The iChip is used in Connect One's own modules (e.g. WiReach) and is also available as a standalone chip to allow customers to implement the same design on their PCB. Connect One uses high-grade commercially available WiFi chipsets.

At this stage, industrial 802.11n is not affordable. Connect One is committed to "isolating" the end users from all the hassles related to WiFi – drivers, etc. When 802.11n becomes more affordable and available, Connect One will support it in a way which will be transparent to customers: AT+i commands will stay the same and all the adaptation will be done on the firmware of the iChip. This is one of the advantages of using an iChip or an iChip based module– future proofing the design against evolving WiFi standards. Using Connect One means you as a customer do not have to develop drivers every time.

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### [How do I do a single design for LAN and WiFi?](#)

#### Software:

The AT+i command set allows you to set the active network interface: LAN or WiFi. Set AT+iLTYP=0,1 or 2 for Auto-detect, WiFi or Ethernet respectively. Alternatively, you can enable LAN-to-WiFi Bridge mode by the setting AT+iBRM=0, 1, 2, 3 or 4. Please refer to the Programmer's Manual for detailed descriptions.

#### Hardware:

Option 1: Build the solution on the main board using a chip from Connect One along with LAN and WiFi components from recommended vendors. Please see the Support->Reference Designs section on our website.

Option 2: Use a pre-certified module which is pin-compatible between LAN and WiFi, and design a PCB which can accept this kind of module. You can then decide which module to use at the very last manufacturing/assembly steps.

- Nano LANReach is pin-compatible with Nano WiReach
- Nano SocketLAN is pin-compatible with Nano Socket iWiFi

Option 3: Use a pre-certified module which includes both WiFi and LAN interfaces: Nano WiReach or Nano Socket iWiFi. Please refer to the manual of the evaluation board II-EVB-363 for a schematic reference design of such a solution. Note that with these modules you will need to add an external Ethernet PHY, Magnetics and RJ45 connector.



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## [How do I do a single design for modem and for LAN \(or WiFi\)?](#)

### Software:

The AT+i command set allows you to configure which network interface is active: modem or LAN . The modem can be GPRS, CDMA, PSTN or any other standard equipment. The LAN side can be Ethernet or WiFi. Set AT+iCPF=0 or 1 for Modem or LAN respectively. Alternatively, you can enable both interfaces using iRouter mode by the issuing AT+iSTRR or setting AT+iARS=1. Please refer to the Programmer's Manual for detailed descriptions.

### Hardware:

Option 1: Build the solution on the main board using a chip from Connect One, a Modem and a LAN or WiFi components from recommended vendors. The application microcontroller can be connected to the iChip via UART, SPI or USB. Please see the Support->Reference Designs section on our website.

Option 2: Use a pre-certified module which is pin-compatible between LAN and WiFi, and design a PCB which can accept this kind of module. Note that you will want to use SPI as the host interface. You can then decide which module to use at the very last manufacturing/assembly steps.

- Nano LANReach is pin-compatible with Nano WiReach
- Nano SocketLAN is pin-compatible with Nano Socket iWiFi

Option 3: Use a WiFi or LAN module: Nano LANReach, Nano SocketLAN, Nano WiReach or Nano Socket iWiFi. Please refer to the manual of the evaluation board II-EVB-363 for a schematic reference design of such a solution. These modules already include the LAN / WiFi interface on board and can be connected to the modem via a UART. The application microcontroller should be connected to the module via SPI or USB.

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## [How do I assign a MAC addresses to the iChip?](#)

The CO2064, CO2128 and CO2144 iChips include the MAC hardware as part of the Silicon but the actual MAC address is stored in external memory. When Connect One sells modules, or devices, they are a complete system including the flash, and are pre-programmed with a MAC addresses.

When Connect One sells standalone iChips, they do not have the non-volatile memory component required to contain the firmware and MAC address. Therefore, an external memory is required.

When implementing the CO2064/CO2128/CO2144 for a LAN application - the MAC address should be assigned during production.

Connect One can allocate MAC addresses to chip customers, free of charge, from our address bank, which was purchased by Connect One from the IEEE.

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For customers who wish to have their own MAC address range can, there is a simple procedure to obtain MAC address allocations. The information is found on the IEEE website: <http://standards.ieee.org/regauth/registries.html>

Assigning a MAC address to an iChip enabled device is done using a simple AT+i Command and is usually performed as part of the standard device configuration/testing during the production phase.

In the CO2128/CO2144: AT+iMACA=[MAC]

Note that this assignment will only succeed once for a new flash memory component, which contains an 0xFFFFFFFF value where the MAC address is stored. If a MAC address needs to be re'assigned, the flash device must first be completely erased.

In the CO2064: AT+iMAOR=[MAC]

Note that in CO2064 implementations the MAC address is not stored in Flash. Therefore, the AT+iMAOR command is issued to store a MAC address in the iChip's MAC address override parameter. CO2064 devices that do not have an SPI flash attached and are initialized by the host process will require the AT+iMAOR assignment command to be issued every power-up initialization.

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[The modem is supposed to be continuously connected. How do I verify if the connection is alive?](#)

iChip may be put in "Always Online" mode with the AT+iTUP=2 command. To verify that the modem is kept online, it is advised to use the keep-alive PING feature using the parameters: PFR, PDS1, PDS2, PGT. If the PING fails, iChip will try to reestablish the modem connection.

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[How can the USB device interface be utilized?](#)

The USB device interface can be connected to the host microcontroller as the AT+i command interface. It can also be connected to a PC for configuration. The iChip identifies itself as a CDC class device. USB Drivers for the PC are available on our website at: "Support"->"Utilities & Drivers".

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[How can the USB host interface be utilized?](#)

The USB host interface is used to connect a USB (usually 3G) cellular modem to the iChip. Several modem models are supported. Please refer to the latest firmware release notes for the most updated list of modems. The list is below,

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and also published on our website under "Support"->"Reference Designs". Contact Connect One support if you have an interest in a specific, unlisted modem.

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[What modems are supported via the USB Host port on the CO2128 and CO2144?](#)

Several model numbers are supported by the firmware for the CO2128 and CO2144 chips. An updated list is published on our website at: Support->Reference Designs. The list includes:

<b>Module Name</b>	<b>Vendor-Id</b>	<b>Product-Id</b>
Siemens HC25	Siemens AG (0x0681)	Siemens HC25 (0x0040)
ZTE MF622	ONDA Communication (0x19D2)	ONDA CDMA Technologies MSM (0x0001)
ZTE AC8700 (EVDO)	ONDA Communication (0x19D2)	ZTE CDMA Tech (0xFFFFE)
ZTE AC8710	ONDA Communication (0x19D2)	ZTE CDMA Tech (0xFFFF)
ZTE AD3801	ONDA Communication (0x19D2)	ZTE CDMA Tech (0xFFFF)
DTmobile DTM6211	Datang (0x1AB7)	DTM6211 (0x6000)
U5100 LONGSUNG	LongSung (0x1C9E)	USB Modem (0x9000)
U6100 LONGSUNG	LongSung (0x1C9E)	USB Modem (0x6061)
IRIDIUM 9555	Iridium (0x1EDD)	9555 Handset (0xA555)
Motorola H24	Motorola PCS (0x22B8)	Motorola Z8m (0x2BC4)
Motorola C-Light	Motorola PCS (0x22B8)	Motorola CDMA Technologies MSM (0x2D10)
G24 Data Mobile	Motorola PCS (0x22B8)	Triplet GSM Phone (0x4902)

Note: All USB modems must be configured for CDC class (MSD class is not supported)

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[Are there any recommendations when migrating from iConnector to iConnectorLE](#)

1. iConnectorLE is based on the CO110 iChip, while the previous models were based on CO561 and CO661 iChip processors. Please refer to the relevant manuals on our support page.
2. The CO110 allows saving current settings to the Flash memory using a special command: AT+iPARS. Otherwise all settings are stored in RAM and erased with every SW or HW reboot.
3. In the iConnectorLE, Pin 1 on the DB9 connector is connected to the iChip MSEL signal. This pin must be pulled high for normal use. The MSEL signal is used to exit SerialNET mode therefore, if this signal is not pulled high, the module cannot enter SerialNET mode.

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[Why do I receive an Error message when programming the CO110 with a new firmware?](#)

If seeing one of these two messages:

1. Error - Invalid Backup Serial Number found. - occurred.

Error number: 20051

Source:

cmdFirmwareUpdate/CO110WriteImage/CO110ManageSerialNumber/iChipConfig

2. Error - Invalid Serial Backup Magic number. - occurred.

Error number: 20050

Source:

cmdFirmwareUpdate/CO110WriteImage/CO110ManageSerialNumber/iChipConfig

The problem with updating some of the CO110 chips is known and has a solution. It is related to a bug in the iChip Configuration utility (Windows program) that causes it not to support some of the versions of CO110 iChip.

Please try the following sequence:

1. Verify that you are using iChipConfig version 2\_4\_53 or higher. Version is listed in Help->About menu.
2. Run the iChipConfig utility and start the iChip Uploader tool (the first step in a firmware update procedure).
3. Before selecting the file for the update please press: ALT + SHIFT + Y simultaneously
4. In the pop-up window that appears please check the "Fast Mode" option.
5. Then continue with the update procedure.

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### [Tips on using Windows NULL modem connection with iChip PPP Routing and Host Interface](#)

Please see release Notes for firmware version 802b04 for information on PPP.

Usually when disconnecting a terminal program it sends some signals which cause the Nano WiReach to reboot. It may be toggling the DTR line or sending a long NULL value on the Tx line (BREAK). In order to bypass this behavior please follow these guidelines:

1. Send AT+iSPPP:0 command from the terminal program and expect to see some PPP messages.
2. Disconnect the RS232 cable from the evaluation board.
3. Close the terminal program.
4. Start the dialer.
5. Reconnect the RS232 cable.

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### [What is the difference between the \\*.IMF and \\*.IMZ files?](#)

The firmware files for the iChip processors are provided in these two formats for different purposes:

\*.IMF should be used for local firmware update, which is done over the host interface (UART, USB or SPI).

\*.IMZ should be used for remote firmware update, which is done over the embedded website or using the AT+iRFU command.

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### [How do I load my own website to the iChip?](#)

Please follow the instructions in the AT+i programmer's manual in the chapter describing the Embedded Web Server for instructions on packing and loading an application web-site.

Even a simple HTML page should be packed using the iChipConfig Utility to create the \*.IMG file which can be loaded.

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### [Is there an indication when new data was received on a TCP or UDP socket?](#)

There are a few ways to check for new data waiting in an iChip buffer:

1. Poll for new data on one socket with AT+iSST:<socket handle number>.
2. Poll for new data on all sockets with AT+iRP4.
3. Poll for new data on any socket or Web parameter with AT+iRP7.
4. Monitor IO signal change::

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CO2128 - DATA\_RDY\pin62  
CO2064 - DATA\_RDY\pin 28  
CO2144 - DATA\_RDY\pin K9  
CO110 - DTRH pin4 of the DB9 connector  
Nano WiReach / LANReach – DATA\_READY\pin 7  
Nano Socket iWiFi- DATA\_READY\pin 12 ON J8  
Nano SocketLAN – DATA\_READY\pin 7 ON J8

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[My Connect One iChip / module / device is stuck and does not communicate over the host interface anymore. What should I do?](#)

There are a few options to get the iChip / module / device back to working correctly:

1. Send the sequence +++ in the baud rate that was last configured. If the iChip is not stuck it will reply and become ready for further commands.
2. Enter "Rescue Mode" as explained in chapter 1 of the AT+i programmer's manual. It involves shorting the MSEL signal to Ground (or pushing the MSEL button) for more than 5 seconds while the chip is running. In rescue mode iChip automatic modes are canceled and iChip baud rate is set to 'Auto'. The Host interface is also set to 'Auto'. Therefore, in all likelihood, the iChip will be restored to a mode where AT+I commands may be issued to update iChip's configuration.
3. Erase all existing configuration from the Flash memory in the following way:
  - 3.1. Please press the MSEL (Mode Select) button on the board and then apply power. Release the button after 5 seconds or more.
  - 3.2. Connect the iChip to a PC serial port. In the "iChipConfig" software top menu, choose "Tools" and then "CO2128 Monitor Mode".
  - 3.3. Choose the appropriate Flash size from the list.
  - 3.4. Some software will automatically be loaded to the iChip. Do not load any other files. Then, close the "Monitor Mode" window with the X button on the top right corner of the window. Do not use the "Exit Monitor mode" button.
  - 3.5. Please open the "Dumb Terminal" tool. Press the "Enter" key (Carriage Return) and expect to see the response: '>'.
    - 3.6. Send the following command, will not see what is being typed (there is no echo). The command is: **E 2,3**. After pressing Enter, the expected response is another '>' sign.
    - 3.7. Please recycle the power to the board and issue "AT+i" to test the board.

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[The iChip is configured to be in iRouter mode and it does not communicate over the AT+i interface anymore. What should I do?](#)

1. Before trying to enter iRouter mode you need to verify that you have a working LAN (or WiFi) connection and a working modem connection. To do that you need to verify that when +iCPF=0 (dialup side) and you enter AT+iUP, you get IP address and DNS assignments. Then when you configure +iCPF=1 (LAN side), you get an IP address (fixed or from a DHCP server) and can connect with other systems on that subnet (you can use PING for example).
2. Check if the iRouter works when you start it manually with the AT+iSTRR command instead of the +iWRS=1 parameter. Verify that iChip gets an IP on the cellular side. Then verify that some other systems on the LAN side can use iChip as their Gateway and get WAN services – such as browsing the Web.
3. If (2) above works, try to set +iARS=1 (Automatic routing). You will then need to issue AT+iDOWN or power cycle the iChip.

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[The iChip is in SerialNET mode but does not transmit any data from the host interface to the network. What can the problem be?](#)

If using UART, please make sure to send data in the baud rate that was configured in the SNSI parameter.

In addition, please be sure to configure "flush conditions" that determine when to transmit data that is automatically buffered. The relevant parameters are: MTTF, MCBF, FCHR.

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[What is the recommended way to interface Linux with the iChip?](#)

Several options should be considered:

1. If the iChip is connected via an Ethernet connection to a Linux driven microcontroller then no changes should be made on the Linux system. The iChip should be configured for iRouter mode or for LAN-to-WiFi Bridge mode.
2. If the iChip is connected via its UART or USB Device port: Enable "PPP Host Interface & Routing" on the iChip and use Linux PPP stack to create a Null Modem connection over the UART. Linux will regard the iChip as a modem and the integral TCP/IP stack doesn't need to be changed. Please see the description in the release notes for firmware version 802B03.
3. If the iChip is connected via its UART, USB Device or SPI port, you can choose to change the integral TCP/IP stack of Linux so that native socket handling functions will implement AT+i commands to the iChip. Please see the description in the AT+i Programmer's Manual.

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[Which interface should be used with my system? What is the maximum speed can I expect?](#)

<b>Interface</b>	<b>Frequency</b>	<b>Effective Throughput</b>	<b>Comments</b>
<b>UART</b>	1200 bps to 3 Mbps	3 Mbps TCP/3Mbps UDP	Easiest to integrate
<b>SPI</b>	Master clock up to 24 MHz	5.5 Mbps TCP/6Mbps UDP	Requires implementation of SPI-master protocol
<b>USB Device</b>	Full Speed 12 MHz	512 Kbps TCP/ 512Kbps UDP	Sometimes requires USB driver development on the host side
<b>MII/RMII (Ethernet)</b>	10/100 Mbps	Depends on the host interface chosen	
<b>802.11 b/g 2.4GHz RF</b>	1 – 54 Mbps	Depends on the host interface chosen	
<b>LAN-WiFi bridge mode</b>	1-54Mbps	12 Mbps TCP/15Mbps UDP	LAN-to-WiFi Bridge is the easiest solution to enable WiFi to system with existing LAN

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[What external electronic components are needed on the host board to support the CO2064, CO2128 or CO2144? \(BOM\)](#)

Please take a look at the support page which includes reference design documents. Each reference design document includes schematics and bill of materials.

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[What external electronic components are needed on the host board to support an embedded module such as the Secure Socket iWiFi or the Nano LANReach? \(BOM\)](#)

Please review the manual for the relevant evaluation board - It includes schematics for a reference host board.

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[What Ethernet PHY components are supported by the CO2064, CO2128 and CO2144?](#)

Most 10/100 Mbps components for RMII or MII/RMII are compatible. The following devices were tested with the iChip:

1. Davicom: DM9161
2. Micrel : KSZ8041NL

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3. IC+: IP101A LF
  4. National Semiconductor : DP83848I
  5. SMSC: LAN8700 / LAN8710 / LAN8720
  6. Marvell: 88E3015 (MII only, not RMII)

You are welcome to confirm with us a part number that does not appear on the following list. Connect One support will approve the part in 1-2 working days.

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#### [What EBI Flash components are compatible with the CO2128 and CO2144?](#)

The iChip has been tested with the following Flash components:

2MB TSOP:

- a. Numonyx: M29W160EB-70N6F (or E)
- b. EON: EN29LV160AB-70TIP
- c. AMIC: A29L160AUV-70UF
- d. Macronix: MX29LV160DBTI-70G

2MB BGA:

- e. Numonyx: M29W160EB-70ZA6F (or E)
- f. EON: EN29LV160AB-70BIP
- g. AMIC: A29L160AUG-70UF
- h. Macronix: MX29LV160BXBI-70G

You are welcome to confirm with us a part number that does not appear on the following list. Connect One support will approve the part in 1-2 working days.

[UP ↑](#)

#### [What SPI Flash components are compatible with the CO2064?](#)

The iChip has been tested with the following Flash components:

Numonyx: M25P40 (512 Kbyte)

You are welcome to confirm with us a part number that does not appear on the following list. Connect One support will approve the part in 1-2 working days.

[UP ↑](#)

#### [How do I move from module to chip level solution?](#)

Connect One will support your design effort by providing OrCAD and Gerber files and by reviewing your schematic design. We publish reference design examples on the support section of our website. Note that there are no changes required to your application and/or AT+I scripts.

[UP ↑](#)

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[Are the chips and embedded modules tolerant to 5V DC?](#)

They are not 5V tolerant. A single source 3.3VDC +/-10% is required.

[UP](#) ↑

[What is the recommended method to program the Flash memory?](#)

One option is to program the Flash memory in a dedicated programmer before assembly. See answer to the next question.

Another option is to use the iChip to program a blank Flash memory, using the iChipConfig Utility, which includes a blank Flash programming tool. Activate the iChipConfig "Monitor mode" found in the TOOLS menu.

The iChipConfig tool may be used for EBI & SPI Flash. Please review the manual for the iChipConfig PC utility regarding the iChip Uploader Tool.

[UP](#) ↑

[Is it possible to use an external programmer to program the boot loader or firmware to NOR Flash before soldering it to PCB?](#)

Yes, it is possible. You should prepare a consolidated binary file from the Boot-loader and application files, which you can program onto the Flash with an external programmer. Instructions:

1. Open iChipConfig utility
2. Open "Tools" menu and select "Create full 2128 image"
3. A window will open and ask for the Boot loader and iChip application Firmware files. Both files can be downloaded from our website.
4. To create the consolidated image file just point to the locations and file names and press the "Create" button.
5. The binary image file must be burned to Flash starting address 0x00000000.

Note: The image file supports both CO2128 and CO2144

[UP](#) ↑

[How should unused pins of a chip or a module be treated?](#)

Please refer to the relevant data sheet and in addition follow these guidelines:

1. UART CTS has to be shortened to RTS if not used.
2. UART DTR should stay unconnected if not used.
3. UART DSR signal should connect to GND if not used.
4. UART CDH should connect to GND if not used.
5. SPI1 signals can be left unconnected if not used.
6. USB Device signals can be left unconnected if not used.
7. RESET signal should connect to VDD if not used.
8. MSEL signal should be unconnected if not used.
9. RF\_LED signal should be unconnected if not used.
10. READINESS signal should be unconnected if not used.

[UP](#) ↑

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### [How should VDDCORE and VDDPLL be connected?](#)

When connecting a power supply of 3.3V to the iChip, the internal regulator will produce 1.2V. Please follow a reference design: #162 (CO2144), #149 (CO2128) or #152 (CO2064). Note that ONREG pin should be connected to 3.3V. This is the recommended method.

In order to work with an external supply of 1.2V, please connect ONREG pin to GND and connect the external 1.2V to VDDPLL pin and all VDDCORE pins.

[UP](#) ↑

### [Why does the Nano WiReach / LANReach need two pins for GND and two for VDD? Can I connect just one set?](#)

This is a safety design feature in order to avoid overloading a single pin above the max current it can support.

[UP](#) ↑

### [What is the DATA\\_RDY signal?](#)

DATA\_RDY signal is raised when new data in one or more sockets is available or when a remote browser has changed a web parameter. It is lowered when any socket or web parameter is read. See chapter 4 in the AT+i Programmer's manual regarding Report Status: AT+iRP7.

This signal is optional and can be left unconnected.

[UP](#) ↑

### [What is the READINESS signal?](#)

READINESS signal is asserted low, once after power cycle, to indicate that internal boot is complete. After the first AT+i command it will become high and stay high until the next power cycle. See chapter 1.14 in the AT+i Programmer's manual.

This signal is optional and can be left unconnected.

[UP](#) ↑

### [What is the MSEL signal?](#)

MSEL (Mode Select) has several functions in approaching systems which become irresponsive.

1. Rescue. See "Rescue mode", chapter 1.10 in the programmer's manual.
2. Enter Programming Flash memory mode t.

We recommend connecting a push button to this signal or providing a jumper to easily short it to GND for a period of several seconds. This signal is optional and can be left unconnected.

[UP](#) ↑

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### What is the SPI1\_INT signal?

SPI1\_INT signal is a control signal which is necessary for implementing SPI connection with the iChip and with the Nano modules. It is designed as active high and the application controller can read it using a general IO. It is used to indicate a flow-control STOP command and also as indication for the SPI master to read available data. Please see a full description in the release notes of firmware version 802b04 or the programmer's manual.

[UP ↑](#)

### Do I have to implement the Reset function?

The CO2064, CO2128, CO2144 and the embedded modules are designed with an internal Power On Reset circuit. However, the reset pin should be pulled HIGH instead of being left untied.

[UP ↑](#)

### What are the mating connectors for connecting the embedded modules to the host board?

1. Secure Socket iWiFi  
P/N: SQT-109-03-L-S (9 pins), SQT-102-03-L-S (2 pins) from Samtec  
[http://www.samtec.com/technical\\_specifications/overview.aspx?series=SQT](http://www.samtec.com/technical_specifications/overview.aspx?series=SQT)
2. Mini Socket iWiFi:  
P/N: CB91122V100 from Cvilux or P/N: F-D-2x06-LF from Morethanall  
Standoffs that stabilize the module to the board: M3x12 Hexagonal female/female Nylon spacers and M3x8 Din 85 Nylon screws.
3. Nano WiReach and LANReach  
P/N: 52991-0308 from Molex  
Standoffs / studs that stabilize the module to the board: M2 X 4mm screws and SMT Standoffs from MAC8, P/N: 2SSB-3.0.
4. Nano SocketLAN and Nano Socket iWiFi  
We qualified the following (10 and 15 pin headers accordingly):  
Weitronic; 136-1010-10-10-60  
Morethanall; S-D63-1x10-LF  
Samtec; SQT-110-01-F-S

[UP ↑](#)