



Connect Tech Inc.
Industrial Strength Communications

Xtreme/104 Radio Modems PC/104 Card Manual

**Xtreme/104 900 MHz and 2.4 GHz Radio Modems
PC/104 Interface User's Manual**



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One Year Warranty

Connect Tech Inc. provides a One-Year Warranty for all Xtreme/104 Radio Modem products built with Cirronet modules. Should this product, in Connect Tech Inc.'s opinion, fail to be in good working order during the warranty period, Connect Tech Inc. will, at its option, repair or replace this product at no charge, provided that the product has not been subjected to abuse, misuse, accident, disaster or non Connect Tech Inc. authorized modification or repair.

You may obtain warranty service by delivering this product to an authorized Connect Tech Inc. business partner or to Connect Tech Inc. along with proof of purchase. Product returned to Connect Tech Inc. must be pre-authorized by Connect Tech Inc. with an RMA (Return Material Authorization) number marked on the outside of the package and sent prepaid, insured and packaged for safe shipment. Connect Tech Inc. will return this product by prepaid ground shipment service.

Should the product prove to be irreparable, Connect Tech Inc. reserves the right to substitute an equivalent product if available.

The above warranty is the only warranty authorized by Connect Tech Inc. for the Xtreme/104 Radio Modems. Under no circumstances will Connect Tech Inc. be liable in any way for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use, such product.

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Customer Support Overview

If you experience difficulties after reading the manual and/or using the product, contact the Connect Tech reseller from which you purchased the product. In most cases the reseller can help you with product installation and difficulties.

In the event that the reseller is unable to resolve your problem, our highly qualified support staff can assist you. Our support section is available 24 hours a day, 7 days a week on our website at: www.connecttech.com/sub/support/support.asp. See the contact information section below for more information on how to contact us directly. Our technical support is always free.

Contact Information

We offer three ways for you to contact us:

Email/Internet

You may contact us through the Internet. Our email and URL addresses on the Internet are:

sales@connecttech.com
support@connecttech.com
www.connecttech.com

Note:

Please go to the [Download Zone](#) or the [Knowledge Database](#) in the [Support Center](#) on the Connect Tech website for product manuals, installation guides, device driver software and technical tips.

Submit your technical support questions to our customer support engineers via the [Support Center](#) on the Connect Tech website.

Telephone/Facsimile

Technical Support representatives are ready to answer your call Monday through Friday, from 8:30 a.m. to 5:00 p.m. Eastern Standard Time. Our numbers for calls are:

Telephone: 800-426-8979 (North America only)

Telephone: 519-836-1291 (Live assistance available 8:30 a.m. to 5:00 p.m. EST, Monday to Friday)

Facsimile: 519-836-4878 (on-line 24 hours)

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You may contact us by letter at:

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Introduction

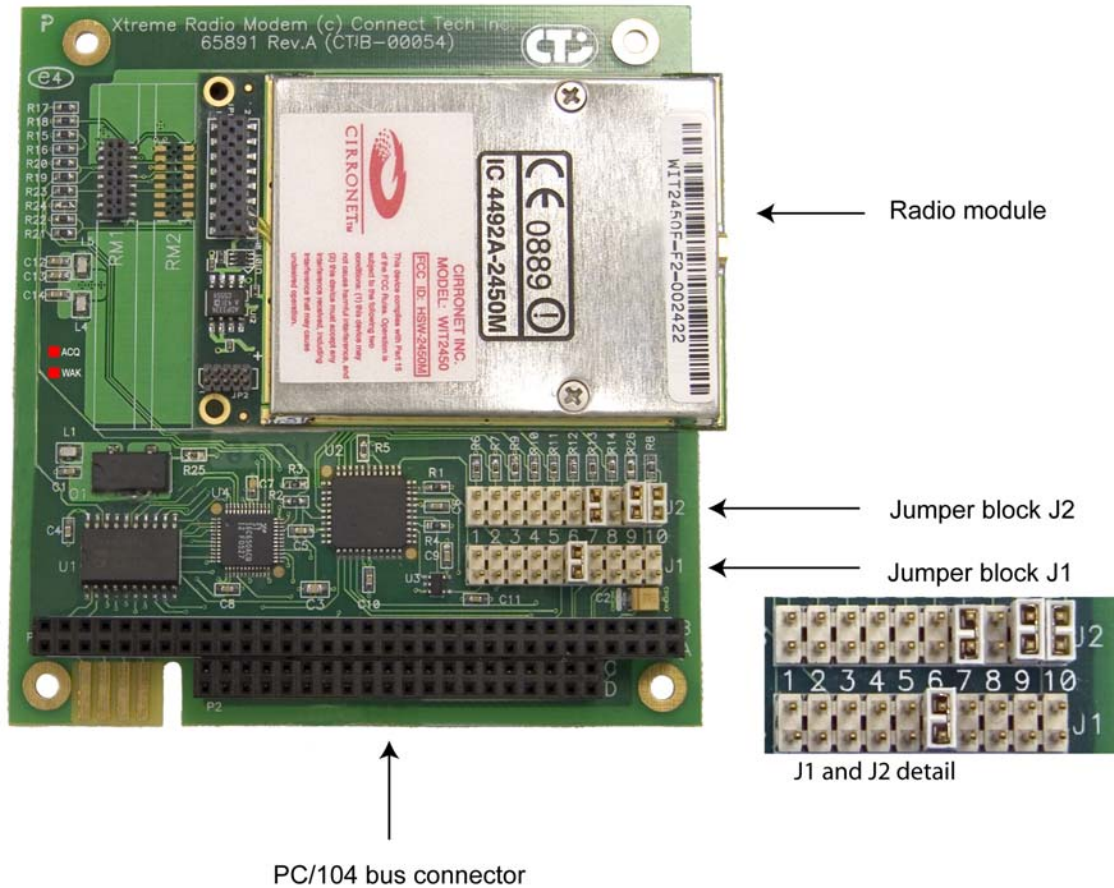
Connect Tech's PC/104 Radio Modems, available with Cirronet's WIT910, WIT2450 or WIT2410 roaming transceiver modules, offer a convenient, reliable method to introduce wireless communications into your PC/104 application.

Fully PC/104 2.5 compliant, simply install the card into an available PC/104 position in your stack to communicate up to 20 miles away, depending on model and antenna option.

Features

- Frequency hopping spread spectrum technology
- 900 MHz or 2.4 GHz , incorporating Cirronet's WIT910, WIT2410 or WIT2450 frequency hopping transceiver modules
- Radio modem operating ranges of up to 20 miles (900 MHz model)
- Low power consumption (can be powered via the PC/104 bus)
- Store and forward repeating while operating as a node (WIT910)
- License-free operation
- Immunity to jamming and multipath fading, even in noisy environments
- Available with roaming capability (2.4 GHz)
- FCC certified
- Data speeds between 86.4 Kbps (900 MHz) and 230.4 Kbps (2.4 GHz)
- Jumper selectable I/O addresses and interrupts
- Point-to-point and point-to-multipoint network deployments
- I/O address ranges from 0x000 to 0x7F8 (jumper selectable)
- Operating temperature range of 0°C to 70°C
- RTS/CTS hardware flow control
- Jumper selectable IRQ interrupts 3, 4, 6, 7, 9, 10, 11, 12, 14, 15
- Requires no additional drivers, appears as COM port to your operating system

Figure 1: Xtreme/104 Radio Modem jumper locations



Hardware Installation

Installing the PC/104 Radio Modem into your PC/104 stack

Before you place your Xtreme/104 Radio Modem into your PC/104 stack, take a minute to ensure that your package includes the required components that should have shipped with your PC/104 Radio Modem.

- One unit
- One CD containing software and documentation
- One cable (optional)
- One antenna (optional)

If any of these components is missing, [contact Connect Tech](#) (See Contact Details) or your reseller.

This card can be installed into any PC/104 stack and is fully PC/104 2.5 compliant.

Hardware Configuration

Memory Address and Interrupts Selection

I/O Address

J2 positions 2 through 8:

Jumper block J2, positions 2 through 8, define the I/O Base Address setting for the UART. Each of these positions corresponds to one bit of the I/O address. If a jumper is installed (on), then the corresponding bit equals 1, otherwise that bit equals zero. (Please see [Figure 1](#) for jumper locations.)

J2 position 1:

Position J2-1 enables the control of the CFG (Configuration) signal on the Radio Modem, and changes the operation of the I/O address decoding.

When this position is not jumpered (off):

- J2-2 controls the setting of both I/O Address bits 4 and 3.
- The board decodes only an 8 byte region of I/O Space.

When this position is jumpered (on):

- J2-2 controls I/O Address bit 4.
- The board decodes a 16 byte region of I/O Space.
- I/O Address bit 3 controls the selection of the UART or CFG mode.
 - When bit 3 = 0: The Radio Modem CFG signal can be changed via I/O Writes. Writing 0x00 disables the CFG mode, writing 0x01 enables the CFG mode. (Disabled at power-up).
 - When bit 3 = 1: The UART is selected.

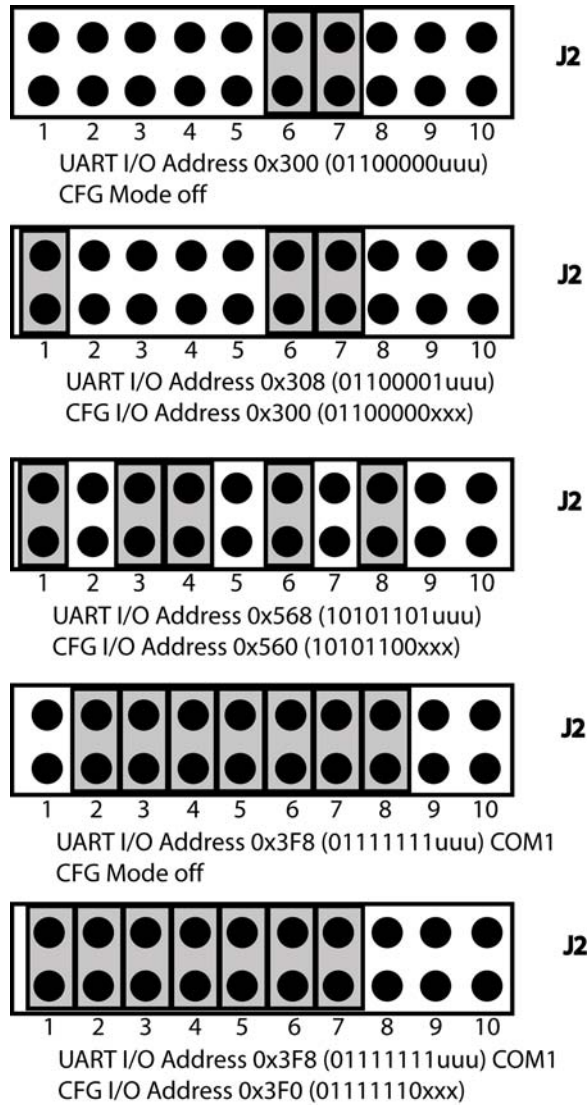
Table 1: Jumper J2-1 to J2-8 functions

J2 position	Function
1	Enable Radio Modem-CFG mode
2	I/O address bit 4 (When J1-1 is jumpered) I/O address bit 3 and 4 (When J1-1 is not jumpered)
3	I/O address bit 5
4	I/O address bit 6
5	I/O address bit 7
6	I/O address bit 8
7	I/O address bit 9
8	I/O address bit 10

Notes:

- >The lower 3 bits of the I/O address (A2, A1, A0), access the Registers of the UART.
- >The Base I/O Address is always on a boundary 8 or 16, depending on the setting of J2-1.
- >The total I/O setting range possible is 0x000 to 0x7F8.
- >Settings below 0x100 should be used with caution, since there may be conflicts with system devices.
- >Some systems may not support an I/O Base setting greater than 0x3F8.

Figure 2: J2 jumpering examples



uuu = UART Register Address
 xxx = Don't care

(Please see [Figure 1](#) for jumper locations.)

IRQ Selection

The IRQ number selection is controlled by jumper block J1. Jumpers 1 through 10 correspond to the IRQ numbers listed in Table 2 below. Only one jumper should be installed.

Table 2: IRQ Selection

J1 Position	IRQ#
1	3
2	4
3	6
4	7
5	9
6	10
7	11
8	12
9	14
10	15

IRQ Mode

J2-9 (when jumpered or on) enables the IRQ to be shared with other cards/devices in the system.

J2-10 (when jumpered or on) provides a 1K pull-down resistor on the selected IRQ signal. This is used in conjunction with the Shared IRQ mode. Only one 1K resistor is allowed in the system per Shared IRQ. Only one card in the system should provide this pull-down.

Note:

The IRQ Sharing mechanism is implemented as described in the PC/104 Bus Specification V2.5.

(Please see [Figure 1](#) for jumper locations.)

Indicator LEDs

There are two red LEDs located on the PC/104 board. They serve to indicate whether the Xtreme/104 Radio Modem has acquired a lock (ACQ) and whether it is awake (WAK).

ACQ (DCD)

This LED indicates that the Xtreme/104 Radio Modem has acquired (ACQ) a lock with the hopping pattern. This applies to modems that are configured to be Remotes. A Base Radio Modem would have this LED on at all times. The signal which drives this LED is also the DCD input on the serial port. When DCD is on, the Radio Modem has acquired the lock.

WAK (DTR)

This LED indicates that the Xtreme/104 Radio Modem is awake (WAK), or not sleeping. The serial port DTR signal is driving both this LED and the Sleep Signal of the Radio Modem. When DTR is on, the Radio Modem is awake.

Optional External LEDs

The Xtreme/104 Radio Modem includes the option to connect the LED drivers to LEDs located external to board. Connector P4 provides this ability. (See [Figure 3.](#)) The pinout for this locator is provided below.

Table 3: Connector P4 pinout for external LEDs

Pin	Function
1	ACQ
2	Gnd
3	WAK
4	Gnd

Figure 3: P4 connector option for external LEDs

