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DAEROCOMM

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This warranty does not cover and AeroComm will not be liable for, any damage or failure caused by misuse, abuse, acts of God, accidents, electrical irregularity, or other causes beyond AeroComm's control, or claim by other than the original purchaser.

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If, after inspection, AeroComm determines that there is a defect, AeroComm will repair or replace the OEM transceiver at their discretion. If the product is replaced, it may be a new or refurbished product.

Revision

Description

Version 1.0

12/27/07 - Initial release version.



1-800-492-2320 www.aerocomm.com

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CONNEXNET RF TRANSCEIVER

AeroComm's new ConnexNet RF transceiver is a Frequency-Hopping Spread Spectrum (FHSS) radio designed for license free operation in the 900 MHz ISM band. Requiring no additional FCC licensing in the Americas, OEMs can easily make existing systems wireless with little or no RF expertise. Housed in a compact and rugged die-cast enclosure, the ConnexNet provides an easy to install wireless LAN service supporting both Ethernet and serial interface options. Equipped with a CPU, real-time OS, and embedded TCP/IP stack, the ConnexNet connects serial devices to an IP network for remote monitoring, control and configuration.

CONNEXNET FEATURES

- Easy to implement, manage and maintain
- Durable industrial grade enclosure
- Programmable Network Parameters
- Support for TCP, UDP, Telnet, & PPP connections
- Fixed 76.8 kbps RF data stream
- Advanced configuration available using AT commands
- Easy to use Configuration & Test Utility software

OVERVIEW

This document contains information about the hardware and software interface between a ConnexNet transceiver and an OEM Host. Information includes the theory of operation, specifications, interface definitions, configuration information and mechanical drawings.

Note: Unless mentioned specifically by name, the ConnexNet will be referred to as "radio" or "transceiver". Individual naming is used to differentiate product specific features. The host (PC/Microcontroller/Any device to which the ConnexNet is connected) will be referred to as "OEM Host" or "Host."



SPECIFICATIONS

	General
Interface Connector	RJ-45 Female Ethernet
RF Connector	RPSMA (Reverse polarity SMA) jack
Serial Interface Data Rate	Up to 115.2 kbps
Impedance	50 ohms unbalanced
Channels	32 (USA/Canada), 7 (Australia)
Security	One byte System ID. 56-bit DES encryption key.
Interface Buffer Size	Input/Output: 256 bytes
	Transceiver
Frequency Band	902 - 928 MHz (USA/Canada); 915 - 928 MHz (Australia)
RF Data Rate (Raw)	76.8 kbps
RF Technology	Frequency Hopping Spread Spectrum (FHSS)
Output Power EIRP (3dBi gain antenna)	1000 mW
Supply Voltage	7 - 25 VDC
Current Draw (mA)	ТВД
Sensitivity	-99dBm
Range, Line of Site (based on 3dBi gain antenna)	Up to 20 miles
	Networking
Supported Network Protocols	ARP, DHCP client, ICMP, IP, UDP, TCP, Telnet, TFTP, HTTP server, SMTP client, POP3 cli- ent, FTP client, SNTP client, SNMP, and PPP
Physical Layer	10/100BaseT
	Environmental
Temperature (Operating)	-40°C to 85°C
	Physical
Dimensions	4.4" x 2.7" x 1.4"
	Certifications
FCC Part 15.247	KQLAC4490
Industry Canada (IC)	2268C-AC44901000

Table 1: ConnexNet Specifications



HARDWARE INTERFACE



Table 2: Ethernet LED descriptions

LED	Color	Description
Ethernet Link	Yellow	Ethernet link: On (continously indi- cates that an Ethernet connection has been made or an access point is engaged.
Ethernet Activity	Green	Ethernet activity: On when network traffic is detected. Off when no net- work traffic is detected. Diagnostic: Flashes three times in even duration during power up or reset, indicating successful startup.



Table 3: Status LED descriptions

LED	Color	Description
Power	Green	On indicates that the unit is powered up.
Link	Red	On indicates that the Client unit(s) and Server unit are in Range of each other. Client unit activates the Link LED when in range of the Server unit. Always lit on a Server unit.
RXD	Green	When flashing, indicates that the device is receiving data.
TXD	Red	When flashing, indicates that the device is transmitting data.



LAN PORT (RJ-45 CONNECTOR)

The ConnexNet's LAN port is used to connect the device to an Ethernet network.



Pin	Function	Reference
1	Transmit Data (TX)	High
2	Transmit Data (TX)	Low
3	Receive Data (RX)	High
4	Unused	
5	Unused	
6	Receive Data (RX)	Low
7	Unused	
8	Unused	

Table 4: RJ-45 Connector pinout

POWER-OVER-ETHERNET

The ConnexNet does not currently support Power-over-Ethernet (PoE).

AUTO MDI/MDIX INTERFACE

The Auto MDI/MDIX feature automatically configures the system hardware connections for proper operation eliminating the need to switch between standard and crossover cables.



CONFIGURATION UTILITY

OVERVIEW

Aerocomm provides an easy to use Configuration utility to program and test the ConnexNet. The GUI based software is compatible with Microsoft® Windows 95, 98, 2000, ME, NT, & XP. The ConnexNet is a plug and play device which requires minimal or no configuration.

For additional details regarding the radio's operation and advanced configuration commands, users may refer to the AC4490 OEM module user's manual. The manual can be found on the Aerocomm Tools & Literature CD or on our website <u>http://www.aerocomm.com</u>.

SOFTWARE INSTALLATION

Locate the OEM software folder on the Aerocomm Tools & Literature CD and install the development kit software. To install the software, run Setup.exe and follow the installation prompts. During the installation, the software will prompt the user to install the Aerocomm USB Driver. It is recommended that the user installs the driver at the same time as the software.

Note: The USB driver is only required for Aerocomm devices with a USB interface and is not required by the ConnexNet transceiver.

芻 Install Driver		×
AeroComm Wireless USB Driver Set		
C:\Program Files\AeroComm Wireless USB		Browse
	Install	Cancel

The installer will notify the user when the software has successfully been installed. The user may be prompted to reboot the PC to complete the installation.

Click **OK** to complete the installation. By default, the software is stored in the following location on the Start Menu:

Start -> All Programs -> Aerocomm Wireless, Inc. -> Aerocomm OEM.exe



PC SETTINGS PAGE

The PC Settings page is shown below, as it will appear the first time the program is run.

The first time the software is run, it will prompt you to select a product. Select the correct product in the Product pulldown menu. Doing this will automatically select the default baud rate for that particular transceiver. If the COM port is listed as unavailable, a different COM port can be selected in the Port pull-down menu. The software can use two serial ports if the Enabled: box is checked.

Configu	re	Range Test	Ţ.	Terminal/Chat	Υ	Command	PC Settings
Port1 Settings USB / COW TCP/IP Por Port Status: Port2 Status: Party: Party: Data Bits: Port2 Settings Enabled: USB / COW CCP/IP Por Port Status: Port2 Statu	Port t Open COM4: Keyspan 57600 None (recomme Hardware (recc 8 Port t Open COM5: Keyspan 57600 None (recomme Hardware (recc 8 \$	Find Ports Open Por Close Por n USB 2.0 4-Port Ser 1 ended) 1 gtop Bits: 1 Find Ports Open Por Close Por find Open Por Ports find Open Por Close Por ended) 1 gtop Bits: 1 ended) 1 gtop Bits: 1	t t T Save V Read V Los A V Auto V Monit V Product V V V V V V	Settings on Exit Write with AT Com Auto Baud/Port Archive EEPROM Se or UDP for new dev Connex4490 Connex4490 Connex4790 Connex5124 ZB2430 AC4490 AC4490 AC4424	About		



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Port1/Port2 Options

The software can control up to (2) COM ports or TCP/IP ports, including virtual COM ports, which physically map to USB or Ethernet ports. An error message will be displayed if a port is selected that is either nonexistent or already occupied by another software program. When a port selection is made, the software will attempt to open the port and list its status as; Unavailable, Open or Closed. Although menus are shown for Data Bits, Parity and Stop Bits, only the Parity menu selection can be changed.

USB/COM PORT

Select this if you are using a standard COM port or have setup the ConnexNet as a Virtual COM Port.

TCP/IP PORT

Select this is you are connecting to the ConnexNet using a TCP/IP socket (default configuration).

Note: The port field <u>must</u> be set to 2101.

FIND PORTS BUTTON

If the available COM ports / IP addresses are unknown, the Find Ports button can be pressed to update the Port Selection pull-down menu with all available COM ports / IP addresses.

HANDSHAKING

By default the OEM utility will use hardware handshaking and monitor the CTS/RTS lines. For cases where these lines are not readily available such as RS-485 communications, the handshaking can be disabled by selecting "None" from the dropdown box.

Note: Handshaking box does not appear when TCP/IP Port is selected.

Other Options

These are additional options that can be enabled.

SAVE SETTINGS ON EXIT

When enabled, all changes made to the Settings page will be automatically loaded the next time the software is run. Otherwise, the changes will be discarded.

READ/WRITE WITH AT COMMANDS

When enabled, the software will use AT Commands for its read/write EEPROM functions instead of the standard configuration commands. <u>This box should be enabled at all times.</u>

AUTO BAUD

When enabled, the software will scan all available COM Ports using the most common baud rates, until a radio is found. If no radio is found or the software cannot open the port, an error message will be reported. The software will only use Auto Baud when prompted by the user after an unsuccessful write process. To cancel the Auto Baud process, press the ESC key.

Note: Auto Baud feature does not work when TCP/IP Port is selected.

AUTO ARCHIVE EEPROM SETTINGS

When enabled, the software will archive the EEPROM settings for each radio after a successful write process. Although not required, the software will prompt the user to type a description of the changes made. Auto Archive can be used to restore the radio to a previously known working configuration. The first time that a radio is read with Auto Archive enabled will be stored as the "Original Configuration Settings" with the date and time the record was created.

MONITOR UDP FOR NEW DEVICES

When enabled, the software will automatically listen for new ConnexNet devices using the UDP port and automatically add them to the Port Selection dropdown.



Status Bar

Located at the bottom of the software, the status bar gives the state of Port 1, RTS Port 1, CTS Port 1, Port 2, RTS Port 2, and CTS Port 2 lines. When the text appears black, the current state will be shown. When the text appears gray, the current state will not be shown. The text shown in the bottom status bar gives a simplified status of the current, pending software process. The software has no pending process when "Communications Idle" is shown.

About Button

The About button can be pressed to determine the revision number of the software and the contact information for Aerocomm. Please include the software revision number in any correspondence with Technical Support.



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CONFIGURE PAGE

The Configure page is a GUI representation of the 256 byte EEPROM contents within the radio. The same data is shown in a full hexadecimal dump of the EEPROM in the EEPROM Editor View. The Configure page is shown below, as it will appear until a radio is successfully read:

Configure	Range Test	Terminal/Chat	Command	PC Settings
Radio Interface		Radio RF		Radio Features
Max Transmit Retries:	Dec	Client/Server:	Hex Hex Hex	Full Duplex Data Encryption RTS Enable Modern Mode Parity
		Radio Other	Calc Baud	
web: <u>www.aerocomm.com</u> sake email: <u>sake@aerocomm.</u> technical support: <u>tech_suppo</u> phone: (913)492-2320	<u>com</u> t <u>(Qaerocomm.com</u>	Destination DES Key:	Dec	
web: www.aerocomm.com sakes email: sake@aerocomm. technical support: tech suppo phone: (913)492-2320 Mailing Address: 11160 Thompson Avenue Lenexa, Kansas 65219	oom Ngaanoomm.com	Destination DES Key: MAC Address: Eirmware Version: Date of Birth: Full Part Number:	Dec	
web: www.aerocomm.com sakes email: sakes@aerocomm. technical support: tech support: Mailing Address: 1160 Thompson Avenue Lenexa, Kansas 65219 EEPROM GUI View EEPROM	oom Ngaarooomm.com	Destination DES Key: MAC Address: Eirmware Version: Date of Birth: Full Part Number: Archive Window	Dec	<u> 4</u>

There are five sections on the Configure page; Radio Interface, Radio RF, Radio Features, Radio Other, and Info Center. The fields displayed in these sections vary depending on the Product Mode. The Info Center provides a quick description of each setting/mode. For detailed decriptions of the individual settings, please refer to the OEM Module user's manual.

Read Radio Button

To update the Configure and EEPROM Editor View pages with the EEPROM contents of a radio you are currently connected to, click the Read Radio button. An example of the Configure page after a transceiver has successfully been read is shown below:



Configure	Range Test	Terminal/Chat	ľ	Command	PC Settings
Radio Interface Max Transmit Retries: 16 Broadcast Attempts: 4	Dec	Radio RF Client/Server: RF Channel Number: Max Power: System ID:	Client 10 Full Power 1	Hex Hex	Radio Features ✓ Full Duplex Data Encryption ✓ RTS Enable Modern Mode Parity
Info Center web: www.aatocomm.com sakes email: sake@aetocomm technisal support.tech.supp phone: (913/492/2330 Mailing Address: 11180 Thompson Avenue Lenexa, Kansas 68219	com nt@aeeccomm.com	Comm Development K ad successful. OK DES Key: 013 RF Delivery: Addressed MAC Address: 00 50 6 Eirmware Version: V 6 D O B + 1020007	it Utility X	Calc Baud Hex 33 109 Dec	
GUI View EEPROM Editor View	<u></u>	Full Part Number: CN449	0-200M-TTL-01 found for this radi	0	

Write Radio Button

After making changes to the controls on the Configure page, the Write Radio button can be pressed to save those changes to the radio EEPROM. The user will be notified of a successful write with a "Write successful" prompt. If Auto Archive is enabled, the software will prompt the user to type a description of the changes made.

Show Defaults Button

When the Show Defualts button is pressed, the GUI view will be updated with the default settings for the selected product. This feature is only available on the GUI Page and will not work when using the EEPROM Editor View.

Pairing Button

The pairing button can be used to pair (address) two radios together. The two radios must both be connected to the PC and to the Ports specified on the PC Settings page. The pairing function sets one radio as a Server and the other as a Client and programs each radio's Destination Address with the other radio's MAC Address.

Load / Save to File Buttons

A file previously created by this software can be loaded to restore an EEPROM to a former state. Files of type *.TXT and *.EE can be loaded.



An EEPROM can be saved to a file using the Save to File button. This allows for the current state of the EEPROM to be restored at a later time.

Port 1/Port 2 Buttons

When Port 1 is depressed, the Write Radio and Read Radio buttons communicate through Port 1. When Port 2 is depressed, the Write Radio and Read Radio buttons communicate through Port 2.

Hex/Decimal Button

All of the text entry type boxes found on the Configure page have a button located to the right of the box. When pressed a menu will be shown which allows the selection of either Hexadecimal or Decimal numbering format for that particular text box.



TERMINAL/CHAT PAGE

The Terminal/Chat page is a terminal emulator (similar to HyperTerminal) used to send small data packets between two COM ports. As data is received it is appended to the appropriate Port window. An example of the Terminal/Chat page is shown below.

Configure	Range	Test	Terminal/Chat		Command	PC Settings
Port 1:	0	.43		Line: 1 of 1		
					<u></u>	
<					>	
Port 2:	0			Line: 1 of 1		
					~	
					-575	
					~	
<					2	
Send				F	Port 1 Port 2	
ASCII Display		CI.	1	i nu l	o	
Hexadecimal Dis	play	Uear	Font	Fint	Save to File	

Send Button

This button sends the data in the textbox out the selected port(s). The current user's Windows username is also sent over the RF with the data.

Hexadecimal / ASCII Display

New received data will be displayed in ASCII or Hexadecimal format; depending on the current setting.



RANGE TEST PAGE

The **Range Test** page allows packets of data to be sent between two radios and reports the numbers of successes and errors.

Configure	Range	Test 📋	Terminal/Chat	∫ Com	mand 🎽	PC Settings
Test Selection ○ Port 1 → Port 2 ○ Port 2 → Port 1 ○ Port 1 <→ Port 2 Transmit Packet Selec ○ Create Data 6 ○ Load File Ei Loat Tune:	C Port 1 Send Only C Port 1 Receive 0 C Port 1 Loopback stion 4 ename: Status.txt	Port 1: 01234567 hijklmnopc 01234567 hijklmnopc 01234567 hijklmnopc 01234567 hijklmnopc 01234567 hijklmnopc 01234567	C View TX Pa 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI 39ABCDEFGHIJKLMNOI	ckats © View BX P PQRSTUVWXYZabcd PQRSTUVWXYZabcd PQRSTUVWXYZabcd PQRSTUVWXYZabcd PQRSTUVWXYZabcd	ackets efg efg efg efg efg	
C Number of Runs G Single Step C Break on Error	ASCII C Hex Only Display Erro Packet Time Star <u>Timing:</u> 0 Tx Dek 1000 Rx Time	Hijklmnopc 01234567 Ibijklmnopc Port 2: 01234567 hijklmnopc 01234567 hijklmnopc 01234567 bijklmnopc 01234567 bijklmnopc 01234567 bijklmnopc pout 01234567 bijklmnopc pout bijklmnopc	rsturvwsyz01 893ABCDEFGHIJKLMNOI rsturvwsyz01 893ABCDEFGHIJKLMNOI rsturvwsyz01 893ABCDEFGHIJKLMNOI rsturvwsyz01 893ABCDEFGHIJKLMNOI rsturvwsyz01	PQRSTUVWXYZabcd PQRSTUVWXYZabcd PQRSTUVWXYZabcd PQRSTUVWXYZabcd	efg 🔪 efg 🛋 efg	
Test Results <u>B</u> uns: Percentage Good: Approx. Throughput: Time Remaining:	42 0 100% 16,748.2bps	01234567 hijklmnopc 01234567 hijklmnopc 01234567 hijklmnopc 01234567 hijklmnopc	894BCDEFGHIJKLMNOI gisturwiky201 894BCDEFGHIJKLMNOI gisturwiky201 894BCDEFGHIJKLMNOI gisturwiky201 894BCDEFGHIJKLMNOI gisturwiky201	PQRSTUVWXYZabcd PQRSTUVWXYZabcd PQRSTUVWXYZabcd PQRSTUVWXYZabcd	elg elg elg elg v	
		Save	to File Clear	Stop R	un (F10)	

Test Selection

There are six test options that can be selected. There are three typical hardware setups.

- 1 One radio is plugged into a serial or USB port on a PC. The second radio is plugged into a separate power supply with a loopback adapter connected.
- 2 One radio is plugged into a serial or USB port on a PC. The other radio is plugged into a different serial or USB port on the same computer.
- 3 One radio is plugged into a serial or USB port on a PC. The other radio is connected to a serial or USB port on another PC.



If using two PCs for the test, the software run on both sides should have the second COM port disabled on the Settings page.

Test Selection	Port 1 Action	Port 2 Action	Hardware Setup
Port 1 -> Port 2	ТХ	RX	2
Port 2 -> Port 1	RX	ТХ	2
Port 1 <-> Port 2	TX/RX	TX/RX	2
Port 1 Send Only	ТХ	N/A	3
Port 1 Receive Only	RX	N/A	3
Port 1 Loopback	TX/RX	N/A	1

Table 5: Test Selection Settings

Transmit Packet Selection

This section allows you to select the data packet used to perform the Range Test. You may either create data of a specified byte length or load your own text or configuration file.

Test Type

The test type allows you to select how long the test will be performed.

	, , , , , , , , , , , , , , , , , , , ,
Test Type	Description
Continuous	Test will run until stopped.
Timed	Test will run for a specified time period
Number of Runs	Test will run for a specified number of runs
Single Step	Test will run for a single step.
Break on Error	Test will run until an error occurs

Table 6: Test Type

Receive Packet Display

This section allows you to select how the received packets will be displayed. Received packets can either be displayed in ASCII or Hexadecimal format, marked with a time stamp, and show only when an error has occurred.



DEVICE SETUP

The ConnexNet can be setup several different ways; depending on network configuration and specific application needs. Each ConnexNet has an embedded device server which can be configured as a TCP socket or Virtual COM Port. By default, the ConnexNet is configured to as a TCP socket.

TCP SOCKET

In this mode, the Host can communicate with the ConnexNet through a TCP Socket. To connect to the ConnexNet, the Host simply needs to establish a TCP/IP connection using port 2101 and the IP address of the ConnexNet device.

Connecting via TCP socket

- 1 Connect the ConnexNet device to your network Router, hub, switch, etc.
- 2 Open the Aerocomm Configuration utility.
- 3 Go to the PC settings page and select Product Type as "Connex4490."
- 4 Change Port Type to "TCP/IP Port."
- 5 Press the "Find Ports" button and wait for the software to find the device.
- 6 Once a device has been discovered, select it from the Port selection dropdown.
- 7 Type "2101" in the Port field. This is the default TCP port used to connect to the ConnexNet.
- 8 Press the "Connect" button to open the selected Port. The Port Status should now change to "Connected."
- 9 Go to the Configure page and press the "Read Radio" button.
- 10 Configure the radio as necessary and press the "Write Radio" button.

Changing IP settings

The device's IP settings (IP address, DHCP, subnet Mask, default gateway, etc) can all be configured using the Aerocomm Configuration utility.

- 1 Connect the ConnexNet device to your network Router, hub, switch, etc.
- 2 Open the Aerocomm Configuration utility.
- 3 Go to the PC settings page and select Product Type as "Connex4490."
- 4 Change Port Type to "TCP/IP Port."
- 5 Press the "Find Ports" button and wait for the software to find the device.
- 6 Once a device has been discovered, select it from the Port selection dropdown.
- 7 Type "2101" in the Port field. This is the default TCP port used to connect to the ConnexNet.
- 8 Press the "Connect" button to open the selected Port. The Port Status should now change to "Connected."



- 9 Press the "Configure" button just below the Port field. This will bring up a screen which allows you to change the IP settings and enable/disable DHCP. Note: Check with your IT professional before making changes to the network configuration of the device.
- 10 After making the necessary changes to the configuration, press the "Save Settings" button to save the new changes to the ConnexNet device.

VIRTUAL COM PORT

In this mode, the ConnexNet can be accessed using a standard COM port; making it ideal for connecting legacy systems to a network. To connect to the ConnexNet, the Host simply needs to install the Virtual COM Port driver and then connect to the device using the COM port specified during setup.

Before you can access the ConnexNet with a Virtual COM Port, you need to install the COM Port Re-director software.

Virtual COM Port installation

- 1 Power on your PC and log in to your LAN.
- 2 Start Windows.
- 3 Insert the Aerocomm Tools & Literature CD into the CD ROM drive. Locate the MCSI200 software on the product CD and launch the software.
- 4 Follow the instructions on the Installation Wizard screens.
- 5 A 'Welcome' screen appears first. Click Next.



6 A 'System Requirements' screen will appear. Verify that the PC meets the requirements. Click Next.





7 The 'Choose Destination Location' screen will appear. Accept the default location.

ICSI2000 Setup	
Choose Destination Location	
Select folder where Setup will install file	es.
Setup will install MCSI2000 in the follow	wing folder.
To install to this folder, click Next. To ir another folder.	nstall to a different folder, click Browse and select
Destination Folder	
Destination Folder C:\Program Files\Multi-Tech Systems	s\MCS12000 Browse
Destination Folder C:\Program Files\Multi-Tech Systems	s\MCS12000 Browse
Destination Folder C:\Program Files\Multi-Tech Systems stallShield	s\MCSI2000 Browse

8 The 'Setup Status' screen appears while files are being copied.





9 At the 'Username & Password Required' screen, create a User Name and Password for use with the COM port. If a User Name & Password are selected, the credentials will be stored in the Windows registry. When any application opens a mapped COM port, the details from the registry are used to transparently login to the module. Click **OK**.

Defa	ult Login	
Server	Default	ļ
Protocol	ANY (IP or IPX)]
Login Prompt		-
🛃 Login	[
Password Prompt		1
Password		
Edit Login and	Password Prompt	1

10 The Add New Port screen appears. Select Direct and type in the IP address of the module.



COM Ports COM1 💌		Add
Connect Time (secs)	L	Done
C Auto-Discovery (MAG) 🔹 Direct	Use Line Defaults C Yes	• No
Enable Wild Card Mapping		
Server Name/ IP address General Line Specific Line Authentication Login Prompt Login Cogin Login Login Login	Protocol Protoc	oprietary)
Password Prompt	Edit Login and Passi	word Pron

- 11 Select Raw mode, set Port No to 2101.
- 12 After setup is complete, press the **Done** button to finish the installation.
- 13 A completion screen will appear. You will be prompted to reboot the computer. Select **Yes**, I want to restart my computer now.

Multi-Tech MCS12000 Setup Complete Setup has finished installing Multi-Tech MCS12000 on your computer For the MCSI ports to be operational, the system needs to be restarted. Do you want to restart your computer now? Yes, I want to restart my computer now. No, I will restart my computer later. Berrowe any disks from their dives, and then click Einish to
complete setup. < Back Finish Cancel



CONNECTING DIRECTLY TO A LAN PORT

By default, the ConnexNet is set to obtain its IP address automatically using DHCP. Typically most PC's are also configured to obtain their IP address from a DHCP server (i.e. switch, router, hub, etc). If you want to connect the ConnexNet directly to the LAN on your PC, you will need to configure both devices with Static IP addresses.

Assigning ConnexNet a Static IP

- 1 Connect the ConnexNet device to your network Router, hub, switch, etc.
- 2 Open the Aerocomm Configuration utility.
- 3 Go to the PC settings page and select Product Type as "Connex4490."
- 4 Change Port Type to "TCP/IP Port."
- 5 Press the "Find Ports" button and wait for the software to find the device.
- 6 Once a device has been discovered, select it from the Port selection dropdown.
- 7 Type "2101" in the Port field. This is the default TCP port used to connect to the ConnexNet.
- 8 Press the "Connect" button to open the selected Port. The Port Status should now change to "Connected."
- 9 Press the "Configure" button just below the Port field. This will bring up a screen which allows you to change the IP settings and enable/disable DHCP. Note: Check with your IT professional before making changes to the network configuration of the device.
- 10 Click on disable DHCP and select the button next to "Use these settings."
- 11 Configure the IP address, subnet mask, and default gateway. You will need to ensure that the subnet mask matches the mask used on your PC LAN port. Note: Check with your IT professional before making changes to the network configuration of the device.
- 12 After making the necessary changes to the configuration, press the "Save Settings" button to save the new changes to the ConnexNet device.

Assigning your PC LAN a Static IP

- 1 Click Start -> Control Panel -> Network Connections.
- 2 Right click "Local Area Connection" and select "Properties" from the list.
- 3 Under Local Area Connection Properties, scroll down to "TCP/IP Internet Protocol" in the box titled "this connection uses the following items" and press the "Properties" button.
- 4 Select the bullet next to "Use these settings."
- 5 Configure the IP address, subnet mask, and default gateway. You will need to ensure that the subnet mask matches the mask used on your ConnexNet device. Note: Check with your IT professional before making changes to the network configuration of the device.
- 6 Click "OK" to exit the "Properties" menu.



ETHERNET BRIDGE CONFIGURATION

ENGINEER'S TIP

When Bridging is enabled

- You will not be able to configure the radio module once bridging is enabled.
- You will not be able to access the web interface to configure the Ethernet device.
- The only way to connect to the device to configure is via Telnet port 23.
- DHCP must be disabled. The device must be assigned a static IP address. Check with your IT department before proceeding.

Enabling Ethernet Bridge function

- Install the Multitech Auto Discovery Manager software. Available online http://aerocomm.com/software/Auto_Discovery_Mgr.zip
- 2 <u>Connect your device to the network via a switch, router, hub, etc.</u> so that it can be assigned a DHCP IP address.
- 3 Open the Auto Discovery Manager & wait for your device to be discovered.

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	•	AutooDi	scovery Manager
S.No MAC ADDRESS 1 1 00:08:00:D2:54:B9	PADDRESS HOST NAM 192.168.002.001 SocketEther	E DHCP STATUS DHCP IF metIP Enabled 010.016.	ADDRESS CLIENT STATUS VERSION 202.081 Active 3.10
MAC ADDRESS	00:08:00:D2:54:89	HOSTNAME	SocketEthernetIP
SUBNET MASK DHCP IP ADDRESS	255.255.252.000 010.016.202.081	CLIENT PORT NUMBER BROADCAST TIMER	9999
DHCP SUBNET MASK DHCP STATUS	255.255.252.000	VERSION CLIENT ACTIVITY STATUS	3.10 Iz
.og - last messages 19:21:46 Discovered Client Sor 19:21:42 Server Started 19:21:42 Listening on Port - 10: 19:21:42 Listening on Port - 10:	sketEthernetIP (MAC: 00:08:00:1 20	D2:54:B9)	

- 4 Write down the value of the DHCP IP Address.
- 5 Double-click on the discovered device to bring up the Edit Attributes dialog.



6 The second field listed is labeled IP address with a default setting of 192.168.2.1. Replace the default setting with the IP address shown in the DHCP IP Address field. This will be our static IP for the time being and is set to simplify configuration.

Port Help	Auto Discovery Manager - Edit	t Attributes 🛛 🔀	
S.No MACADDRI 1 00:08:00:D2	Edit MAC ADDRESS IP ADDRESS SUBNET MASK DHCP STATUS DHCP IP ADDRESS DHCP SUBNET	00:08:00:D2:5A:B9 10 . 16 . 202 . 81 255 . 255 . 252 . 0 ✓ 010.016:202.081 255.255.252.000	TATUS VERSION 3.10
MAC AD IP AD SUBNE	HOSTNAME CLIENT PORT	SocketE themetIP	
DHCP IP AL DHCP SUBNE DHCP	CLIENT ACTIVITY STATUS BROADCAST TIMER		
Log - last messages 08:36:40 Change in - 08:36:39 Packet Ser	VERSION	3.10	
08:30:35 Change in . 08:30:33 Client Sock 08:08:34 Change in . 08:08:31 Client Sock	SET	RESTORE DEFAULTS CANCEL	

- 7 After the changes have been made, press the **Set** button to save the changes to the device.
- 8 Open HyperTerminal on your PC and setup a new connection. Type a name and press OK.



New Connect File Edit View C Pile Edit View C Pile Edit View C	In - HyperTerminal Transfer Help ID IN INFORMATION In Connection Description In Connection Inter a name and choose an icon for the connection: Name: Test Icon: Inter a name and choose an icon for the connection: Name: Test Icon: Inter a name and choose an icon for the connection: Name: Test Icon: Inter a name and choose an icon for the connection: Name: Test Icon: Inter a name and choose an icon for the connection: Name: Test Icon: Inter a name and choose an icon for the connection: Name: Test Icon: Inter a name and choose an icon for the connection: Inter a name and choose an icon for the connection: Inter a name and choose an icon for the connection: Name: Inter a name and choose an icon for the connection: Inter a na name and choose an icon for the connection: Inter a name and c	
Disconnected	Auto detect Auto detect ISCROLL CAPS MILM Capture Print echo	

9 Select TCP/IP from the Connect using drop-down. Type in the IP address you noted from the Auto Discovery Manager. Set the port to 23. Press OK to continue.



File Edit, View Call Transfer Help		
	Connect To Image: Connect To Image: Second connect to the post of the	

10 When prompted, login to the device.Login: adminPassword: admin





- 11 At the prompt, type the following command: #set ip eth0 dhcp-client disable
- 12 Wait for an **OK** response.
- 13 At the prompt, type the following command: #set ip eth0 ip 10.16.202.81 Note: In this example, the desired static IP address is 10.16.202.81 and the correct IP should be substituted as needed.
- 14 Wait for an **OK** response.
- 15 At the prompt, type the following command: #set bridge enable
- 16 Wait for an **OK** response.
- 17 At the prompt, type the following command: #set bridge ipmodule ip-address 10.16.202.81 Note: In this example, the desired static IP address is 10.16.202.81 and the correct IP should be substituted as needed.
- 18 Wait for an OK response.
- 19 At the prompt, type the following command: #set ppp ppp0 enable
- 20 Wait for an OK response.
- 21 At the prompt, type the following command: #set ppp ppp0 raw-mode enable
- 22 Wait for an **OK** response.



23 At the prompt, type the following command: #save



24 Repeat for second (and additional radios).



Disable Ethernet Bridge functions

When you enable bridging, the serial-to-ethernet interface is disabled and the device is configured to act as an ethernet bridge. Since the serial-to-ethernet interface is disabled, you will not be able to access the device using a TCP socket with the default port of 2101. In order to re-gain access to the serial-to-ethernet functionality, you will need to disable the bridge feature using the procedure listed below.

1 Open HyperTerminal on your PC and setup a new connection. Type a name and press OK.

New Connection - HyperTerminal	
File Edit View Call Transfer Help	
	ection Description
Disconnected Auto detect Auto detect	SCROLL CAPS NUM Capture Print echo

2 Select **TCP/IP** from the Connect using drop-down. Type in the IP address you noted from the Auto Discovery Manager. Set the port to 23. Press **OK** to continue.



Test - HyperTe File Edit View Cal	rminal Transfer Help C 沿 C		
		Connect To Image: Test Enter details for the host that you want to call: Host address: 10.16.202.81 Port number: Image: Za Connect using: TCP/IP (Winsock) Image: DK Cancel	
Disconnected	Auto detect Auto de	etect SCROLL. CAPS NUM Capture: Print echo	<u>v</u>

When prompted, login to the device.
 Login: admin
 Password: admin



🎝 Test - HyperTeri	minal								
File Edit View Call	Transfer Help								
								 	12
Login: adm Password: logged in s #	in successfu	lly							
Connected 0:01:56	Auto detect	TCP/IP	SCROLL	CAPS	NUM	Capture	Print echo		

- 4 At the prompt, type the following command: **#show bridge configuration**
- 5 Check to make sure that the device reports that bridge is enabled.
- 6 Wait for an **OK** response.
- 7 At the prompt, type the following command: #set bridge disable
- 8 The device should respond by stating Disabling ppp done.
- 9 Wait for an **OK** response.
- 10 At the prompt, type the following command: #save



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Login: admin Password: logged in successfully #_show bridge configurat	ion	
	Bridge configuration	i
bridge ip-address mask	: enable : 10.16.202.81 : 255.255.252.0	
)K # set bridge disable Disabling ppp done DK # save Saving Configuration and	exiting	

11 Repeat for second (and additional radios).

TROUBLESHOOTING

Technical Support is available Monday through Friday 8:30 - 5:00.

Please include the following in all correspondence with Technical Support: company name, phone number, product part number, a good description of the problem or question, and the EEPROM files for both radios.

To save the EEPROM files, read the radio using the Configure page and then press the Save to File button. Attach both files to the email. Visit us online <u>www.aerocomm.com/support</u> or email us at <u>support@aerocomm.com</u>.

