Specifications

Input Power Requirements

12VDC, 270mA. Powered by DPS15

Maximum Cable Lengths

ACU/ECU to NETCOM2 Rev. B—22 AWG 5 conductor shielded - max 100 feet /30 m

CIM to NETCOM2 Rev. B—22 AWG 5 conductor shielded - max 49.2 ft/14.9 m @ 9600 bps

Network Communication

Existing LAN or WAN (TCP/IP protocol—port 3001)

Agency Approvals—Ethernet Socket

Complies with Class B limits of EN 55022: 1998 Direct & Indirect ESD.

Complies with EN55024:1998

Dimensions

3.031" x 3.896" (77 mm x 99 mm)

Environmental

Suitable for industrial and commercial applications.

Operating temperatures: 5^0 C to 70^0 C (41^0 F to 158^0 F)

RJ45 Ethernet (Xport) LED States

The RJ45 Ethernet terminal has two bi-colour LEDs:

Link LED (left side)		Activity LED (right side)	
Amber – solid	10 Mbps	Amber – flashes	Half-duplex
Green – solid	100 Mbps	Green – flashes	Full-duplex

Address Settings

*IP Address:
*Subnet Mask:
Gateway:
**Ethernet Connection Type:
MAC Address

* Required fields for device configuration with software

** If other than Automatic Negotiation

Keyscan Inc. A Member of the Kaba Group

901 Burns St., E. Whitby, Ontario, Canada L1N 0E6

1.888.539.7226 (toll free Canada/USA)

905.430.7226 (elsewhere)

www.keyscan.ca

Technical Support

Hours – 9:00 A.M. to 6:30 P.M. Eastern Time, Monday to Friday

NETCOM2 Rev. B Installation Guide - PC109x – 05.17 – Document # KD10029-E

NETCOM2 - Rev. B Installation Guide

This guide outlines how to install and program the NETCOM2 Rev. B. The NETCOM2 Rev. B is a serial to Ethernet converter that utilizes an embedded TCP/IP device server and requires an assigned static IP address as noted below under Before You Start. The NETCOM2 Rev. B mounts inside the ACU/ECU enclosure. For mounting locations within the ACU enclosure, refer to the 11 x 17 sheet that accompanied the control board or the Technical Guide on the Keyscan Product Documentation Library CD.

Before You Start

- Verify that you have all the parts as outlined below
- Obtain a static IP address, Subnet Mask, and, if applicable, a Gateway from the network administrator for each NETCOM2 Rev. B. Space is provided at the back for recording addresses
- You may require the assistance of the network administrator for programming the NETCOM2 Rev. B
- Ensure that you install the latest Keyscan NETCOM Utility, which is on the enclosed CD, on a server/laptop that has a local network connection to the NETCOM2 Rev. B

Parts	Qty
NETCOM2 Rev. B	1
Utilities and Drivers CD	1

New - Network Programming / Selectable DIP Switches

The NETCOM2 Rev. B is a redesigned version of the NETCOM2. You can now program the NETCOM2 Rev. B using a local network connection from a server/laptop which has the Keyscan NETCOM Utility installed.

In conjunction with its network programming capability, the NETCOM2 Rev. B has DIP switches for setting one of the embedded programming IP addresses and selecting the bit rate that matches the control boards on the communication loop. The DIP switches (S2) are reviewed on page 5.

Programming Connection Methods

The NETCOM2 Rev. B can be programmed using one of the following connection methods:

- Programmed using a local network connection via the RJ45 terminal
- Programmed using a serial data cable (Keyscan part # 40-2322) via the TB2 terminal block
- Programmed using a network crossover cable via the RJ45 terminal

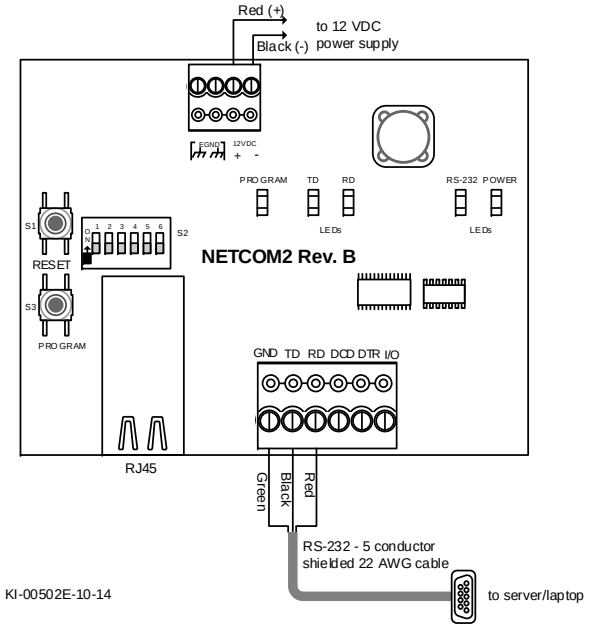
This document outlines the procedures for programming the NETCOM2 Rev. B using the local network connection method which starts on page 4.

If you elect to use either the serial data cable or the network crossover programming methods see the notes below.

Notes on Serial Data Cable Programming

The NETCOM2 Rev. B can be programmed with a serial data cable connected from the server/laptop with the NETCOM Program Utility to the NETCOM2 Rev. B's TB2 terminal block as shown below. The NETCOM2 Rev. B requires a 12VDC power source. Ensure that the DIP switch S2.1 is in the OFF position (Run mode). After establishing the connection, open the NETCOM Program Utility, complete the necessary settings and program the device. See Figure 3 or Figure 4 for permanent operating connections.

Figure 1 – Serial Data Cable Connection



Notes on Network Crossover Cable Programming

The NETCOM2 Rev. B can be programmed using a network cross over cable connected to the NETCOM2 Rev. B's RJ45 terminal. The NETCOM2 Rev. B requires a 12VDC power source. Ensure that the DIP switch S2.1 is in the OFF position (Run mode). If you elect to

- Pack Cntrl = 01
- DisConnTime = 15:00
- SendChar 1 = 00
- SendChar 2 = 00

10. After completing the Channel 1 parameters, Press 9 to save the configuration and restart the NETCOM2 unit.

Note

To exit without saving any changes, press 8.

8. Once you reach the Change Setup: prompt, Press 0 for Server setup parameters and enter the following values for 0 Server (Keyscan values)

0 Server (User Defined Values)

- IP Address: Enter the User Static IP Address, and press the Enter key.
- Set Gateway IP Addr: Press the Y key for yes or the N key for no.
- If Y was selected in the previous step, then enter the Gateway IP address, and press the Enter key.
- Netmask: Specify the Netmask by entering its list number (the number on the left opposite the Netmask) and press the Enter key.

  2 = 255.255.255.252

  3 = 255.255.255.248

  4 = 255.255.255.240

  5 = 255.255.255.224

  6 = 255.255.255.192

  7 = 255.255.255.128

  8 = 255.255.255.0 (Default)

  9 = 255.255.254.0

  10 = 255.255.252.0

  11 = 255.255.248.0

  12 = 255.255.240.0

  13 = 255.255.224.0

  14 = 255.255.192.0

  15 = 255.255.128.0

  16 = 255.255.0.0

  17 = 255.254.0.0

  18 = 255.252.0.0

  19 = 255.248.0.0

  20 = 255.240.0.0

  21 = 255.224.0.0

  22 = 255.192.0.0

  23 = 255.128.0.0

  24 = 255.0.0.0
- Set DNS Server IP addr: Press the N key for no.
- Change telnet config password: Press the N key for no.

9. After completing the Server parameters, press 1 for Channel 1 setup parameters and enter the following Keyscan values. Press the Enter key after each entry.

1 Channel 1 (Keyscan Values)

- Baudrate = 9600 (Must match ACU settings)
- I/F Mode = 4C
- Flow = 00
- Port No. = 3001
- ConnectMode = C0
- Send '+++' in Modem Mode = N
- Show IP addr after 'RING' = N
- Remote IP Address = 000.000.000.000
- Remote Port = 0
- DisConnMode = 00
- FlushMode = 80

program it with the Network Connection via ARP Request, you require the NETCOM2 Rev. B's MAC address, which is printed on the RJ45 port. This method does not require setting one of the NETCOM2 Rev. B's embedded IP addresses. See Figure 3 or Figure 4 for permanent operating connections.

Supplementary Documents and Help

You may also require the following Keyscan documentation which can be located on the Keyscan Products Documentation Library CD:

- CIM Setup Guide
- Keyscan Technical Guide

New System Installation Help

If this is a new installation, for assistance on installing Keyscan software and setting up a site, refer to the following help sources:

- Aurora Software Installation – access the Aurora installation help from the Aurora software installation main screen
- Aurora Site Setup – access the Aurora help from the Aurora Client main screen for site and hardware setup
- System VII or Vantage Software Installation – refer to the System VII Software Installation Guide or the Vantage Software Installation Guide for installing the software
- System VII or Vantage Site Setup – access the System VII or Vantage help for the Client main screen for site and hardware setup

Prerequisite

To program the NETCOM2 Rev. B device, you require:

- NETCOM Program Utility version 6.0.16 or higher

Manually Configure the NETCOM2 Rev. B Serially

In the event that you program the NETCOM2 Rev. B using one of the three programming connection methods previously reviewed and the device fails to communicate, refer to manually configuring the device on page 13. You should only undertake these procedures if you were unsuccessful programming the device with the NETCOM Program Tool Utility.

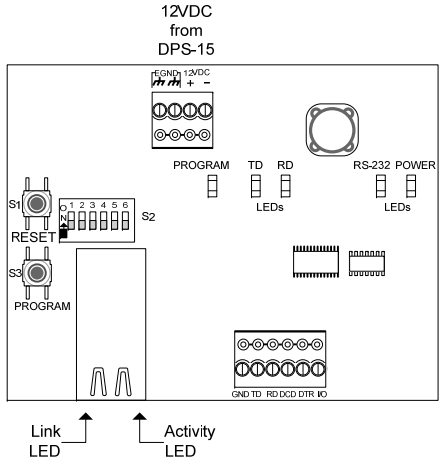
Section 1 – Install/Configure the NETCOM2 Rev. B

This section outlines the procedures for installing and configuring the NETCOM2 Rev. B. After completing the instructions in section 1, ensure you review and complete the instructions in section 2.

Keyscan recommends that you review the document first, before beginning the installation.

Important
If you are installing more than one NETCOM2 Rev. B, do not apply power to more than one NETCOM2 Rev. B at a time until each unit has been programmed with its assigned static IP address. If you apply power to multiple NETCOM2 Rev. Bs while they are configured with the same embedded programming IP address, you will create an address conflict on the network. As a result, you will not be able to program the units.

Figure 2 - NETCOM2 Rev. B Circuit Board



LED Legend
- RS-232 indicates serial connection
- TD indicates PC polling ACU/ECU
- RD indicates ACU/ECU replying to PC
- POWER indicates unit receiving power
- PROGRAM indicates unit is programming selected IP & bit rate

S1, S2, S3 Switches
- S1 – Reset
- S2.1 – Run/Program Mode*
- S2.2/3 – bits/second selection
- S2.4/5 – IP address selection
- S2.6 – Unassigned
- S3 – Starts program sequence

*Run mode for operating
*Program mode for on-board programming firmware

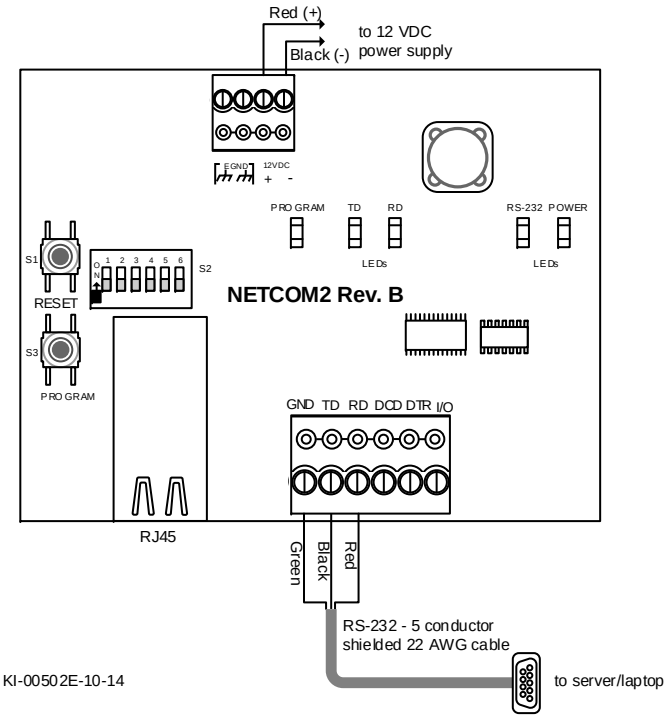
KI-00245E-08-13

Manually Configure the NETCOM2 Rev. B Serially

These procedures should only be performed in the event that the Keyscan NETCOM Utility was used to program the NETCOM2 Rev. B in section 2 and the device is still failing to communicate. These procedures are intended for advanced computer users only. You require a data serial cable (Keyscan part # 40 – 2322).

Important
Keyscan recommends that you review the setup procedures before performing them so you are familiar with the steps, some of which are intricate and require quick dexterity.

1. With the serial data cable establish a connection to the server/laptop that has the NETCOM Program Tool utility.

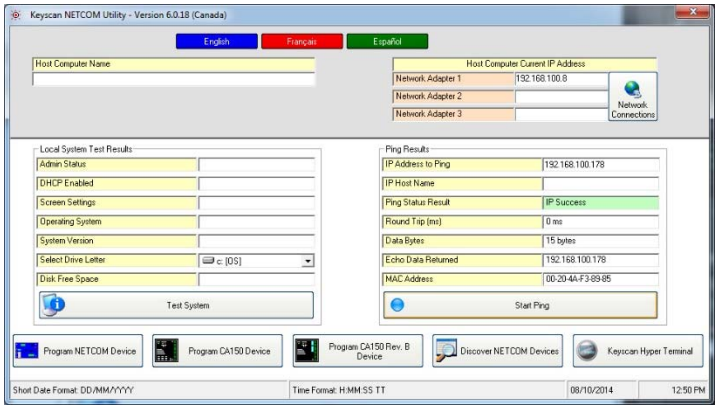


KI-00502E-10-14

2. Open the NETCOM Program Tool utility and select the Keyscan Hyper Terminal Button.
3. Set the Comm Port Number if you are connected via a serial port other than communication port #1.
4. Leave the baud rate set on 9600. Click on the Open Port button.
5. To enter Setup Mode, reset the NETCOM2, either by pushing the reset button or cycling the unit's power (power off and back on).
6. Within 1 second of the NETCOM2 reset, enter 3 lowercase x characters—xxx.
   - Tip—The easiest way to enter Setup Mode is to hold down the x key at the keyboard terminal while resetting the unit.
7. When the Setup Mode window opens, press the Enter key within 5 seconds to enter setup mode.

15. Wait for the PING Status result message:

    - IP Success indicates the NETCOM2 Rev. B has network communication
    - IP Timed Out indicates the NETCOM2 Rev. B does not have network communication—verify settings and connections*



16. Click on the x in the upper right corner of the Keyscan NETCOM Utility screen to close the application.

17. If the installation of the NETCOM2 Rev. B has altered panel communication, open a Keyscan Client software module, log on, make the necessary hardware changes, and perform an upload.

* If the IP address was not accepted by the NETCOM2 Rev. B on the 1st attempt, return to the Program NETCOM2B, NETCOM2 & NETCOM2P Boards screen and press the F4 key on the keyboard. Click inside the box to the left of Program Server Address Settings Only so it has a check mark. Re-enter the settings, including the IP Address. Click on the Program NETCOM button. If successful, program the NETCOM one more time. For additional programming tips, press the F1 key with the Keyscan NETCOM Program Settings screen open.

Important
If you experience communication difficulties, you may have to program the NETCOM2 Rev. B following the procedures outlined in Manually Configure the NETCOM2 Serially on page 13.

Switches S1, S2 and S3

The NETCOM2 Rev. B's switches S1, S2 and S3 are used to configure the device for the functions outlined in Table 1.

The Steps to Install and Configure the NETCOM2 Rev. B advise you which switches to set and when to initiate setting the switches.

Table 1 – S1, S2 & S3 Switch Functions

Switch	Name	Setting	Function
S1	Reset	Press momentarily	Resets the embedded device server to prepare for programming
S2.1	Run/Program Mode	Off = Run On = Program	Sets the device for run mode (operate) or enables S3 to initiate program sequence (embedded firmware)
S2.2 / S2.3	Bit Rate Selection	See Table 3	Configures the NETCOM2 Rev. B for the specified bit rate/second processing speed
S2.4 / S2.5	Embedded Programming IP Address Selection	See Table 2	Configures the NETCOM2 Rev. B with an embedded programming IP address for network connection to program the device.
S2.6	Unassigned	N/A	
S3	Program	Press momentarily	S2.1 must be on. When pressed initiates the program sequence for the embedded firmware.

Embedded Programming IP Address

The NETCOM2 Rev. B has three (3) embedded programming addresses. You select one of these addresses by setting the DIP switches S2.4 and S2.5 as outlined in Table 2. These addresses act as a temporary IP to connect the NETCOM2 Rev. B with a server/laptop that has the Keyscan NETCOM Utility. The NETCOM2 Rev. B and the server/laptop must be on a local network for programming. The NETCOM2 Rev. B is not programmable via routers.

You must select an embedded programming IP address that matches the first three octets used by your network. Octets are the series of numbers separated by a period (.).

- Example of first three octets in an IP address - 192.168.100.

If you do not use matching octets you will not be able to communicate with the NETCOM2 Rev. B.

Table 2 – Embedded Programming IP Addresses/DIP Switch Settings

IP Address	S2.4	S2.5	Type
192.168.100.254	Off	Off	Static
10.0.100.254	Off	On	Static
169.254.100.254	On	Off	Static

Using the Embedded IP Address as the Static IP Address

Although Keyscan does not recommend this, as an option the embedded programming IP address may also be used as the static IP address. If you elect to do this you only need to set the embedded IP address as outlined in the instructions below. The device does not have to be programmed with the Keyscan NETCOM Program Utility. In the Client software, the panels on the communication loop must have the embedded programming IP specified.

Using the embedded programming IP address restricts your communication with the panels to a local network connection and you can only use a NETCOM2 Rev. B once per embedded IP.

NETCOM2 Rev. B Bit Rate Setting

DIP switches S2.2 & S2.3 regulate the NETCOM2 Rev. B's bit rate setting. The NETCOM2 Rev. B's bit rate setting must match the bit rate setting of the control boards on the communication loop. The bit rate on the control board is determined by J16 jumpers or S2 DIP switches. The bit rate is the number of bits processed per second at one of the speeds listed in the table.

Table 3 – DIP Switch Bit Rate Settings

Bit Rate / Second	S2.2	S2.3	Notes
9,600	On	On	
19,200	On	Off	
57,600	Off	Off	Default
115,200	Off	On	

Steps to Install and Configure the NETCOM2 Rev. B

Ensure that you know which embedded programming IP address to select based on the IP addresses used on the network and you know the control board bit rate setting. Space is provided at the back for recording the IP address, subnet mask, gateway and MAC address.

1. Mount and connect the NETCOM2 Rev. B as shown in either Figure 3 or Figure 4 within the ACU metal enclosure.
2. Ensure the S2.1 DIP switch is in the off position.
3. Connect the NETCOM2 Rev. B to the power. Observe that the POWER LED illuminates.
4. Set the S2.4 and S2.5 DIP switches to the correct embedded programming IP address in accordance with the network. Refer to Table 2.
5. Set the S2.2 and S2.3 DIP switches to the same bit rate setting as the control boards. Refer to Table 3. If connecting with DSC, match NETCOM to DSC bit rate setting.
6. Set the S2.1 DIP switch to the ON position.
7. Press and release the S3 PROGRAM button. Observe the PROGRAM LED illuminates – solid – and the RD LED - flashes.
8. Press and release the S1 RESET button. Observe the following LED sequences:
   - After flashing for approximately 2 seconds the TD, RD and PROGRAM LEDs turn off.
9. Change the S2.1 DIP switch to the off position.

Continued on the next page...

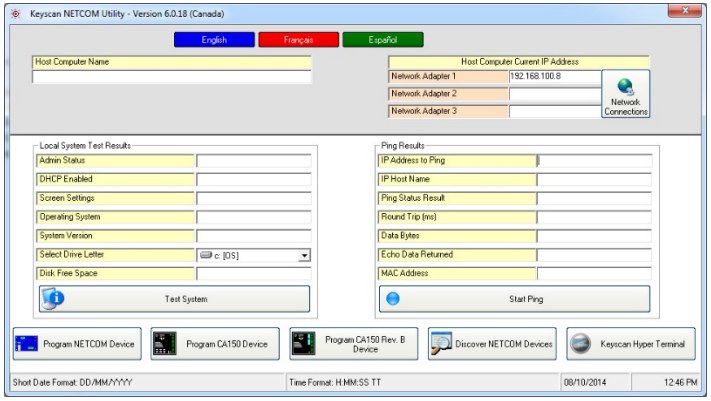
   - Depending on the network configuration, the Subnet Mask and Gateway settings are in relation to network communication between the NETCOM2 Rev. B and the server with the Keyscan communication application or service.
7. From Program via IP Address or Serial Port, select the embedded programming IP address that the NETCOM2B's S2.4 & S2.5 DIP switches were set on.
   - If Network Connection via ARP Request is selected, enter the NETCOM2 Rev. B's MAC address printed on the RJ45 terminal in the MAC Address boxes.
8. Click on the down arrow below and to the right of Communication Baud Rate and select the bit rate that corresponds to the NETCOM2 Rev. Bs S2.2 & S2.3 DIP switches.
9. Leave Ethernet Connection Type on Automatic Negotiation unless given a specific setting by the IT administrator.
   - If the NETCOM device experiences network communication difficulties, you may have to alter the Ethernet Connection Type from automatic negotiation. (The Ethernet Connection Type is the network speed & duplex setting). Set the NETCOM so it matches the network equipment setting. If the network equipment was on an automatic setting, then reconfigure both the network equipment, which may include routers or switches, and the NETCOM to a matching fixed speed and duplex setting. As an example, NETCOM = 100 Mbit/Half Duplex – Network equipment = 100Mbit/Half Duplex.
10. The Discovery Port 77FE setting is disabled by default. Keyscan recommends that you leave it on the default setting. This function is principally for troubleshooting communication difficulties.
    - If you de-select the Disable Discovery Port 77FE function (the box does not have a check mark) the Discover NETCOM Devices function will list the device by its MAC address and IP address if it is located on the network.
11. Click on the Program NETCOM button. Wait while the utility programs the device.
12. From the Program Device via Network Connection prompt – Your NETCOM2 device has been configured, click on the OK button.
13. Click on the Exit button of the Program NETCOM2B, NETCOM2 & NETCOM2P Boards screen.
14. From the Keyscan NETCOM Utility screen, verify network communication with the NETCOM2 Rev. B by selecting the Start Ping button.

Continued on the next page...

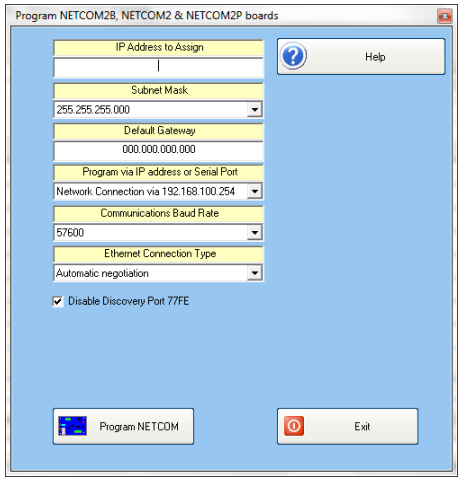
Steps to Program the NETCOM2 Rev. B

These instructions assume you have completed section 1 and the Keyscan NETCOM Utility is installed on a server/laptop connected on a local network with the NETCOM2 Rev. B. If you are continuing from Steps to Set a Static IP Address for the Server/Laptop go to step 2.

1. Select start > All Programs > Keyscan NETCOM Program Tool > Keyscan NETCOM Program Tool.
2. From the Keyscan NETCOM Utility screen, click Program NETCOM Device.



3. From the Select NETCOM Device Type, click on the NETCOM2 Family of Boards.
4. From the Program NETCOM2B, NETCOM2 & NETCOM2P screen, enter the assigned IP address. This is not to be confused with the embedded programming IP address.



5. Enter the Subnet Mask by selecting an address from the drop down list.
6. For a gateway, optional, enter the number in the Default Gateway text box.

10. The NETCOM2 Rev. B is configured and installed and ready for programming. Perform any other necessary connections at the ACU.
11. Secure the ACU metal enclosure cover.
12. Proceed to Section 2 - Install the Keyscan NETCOM Utility and Program the NETCOM on page 9.

Figure 3 - NETCOM2 Rev. B Connected to Control Board Communication Terminal

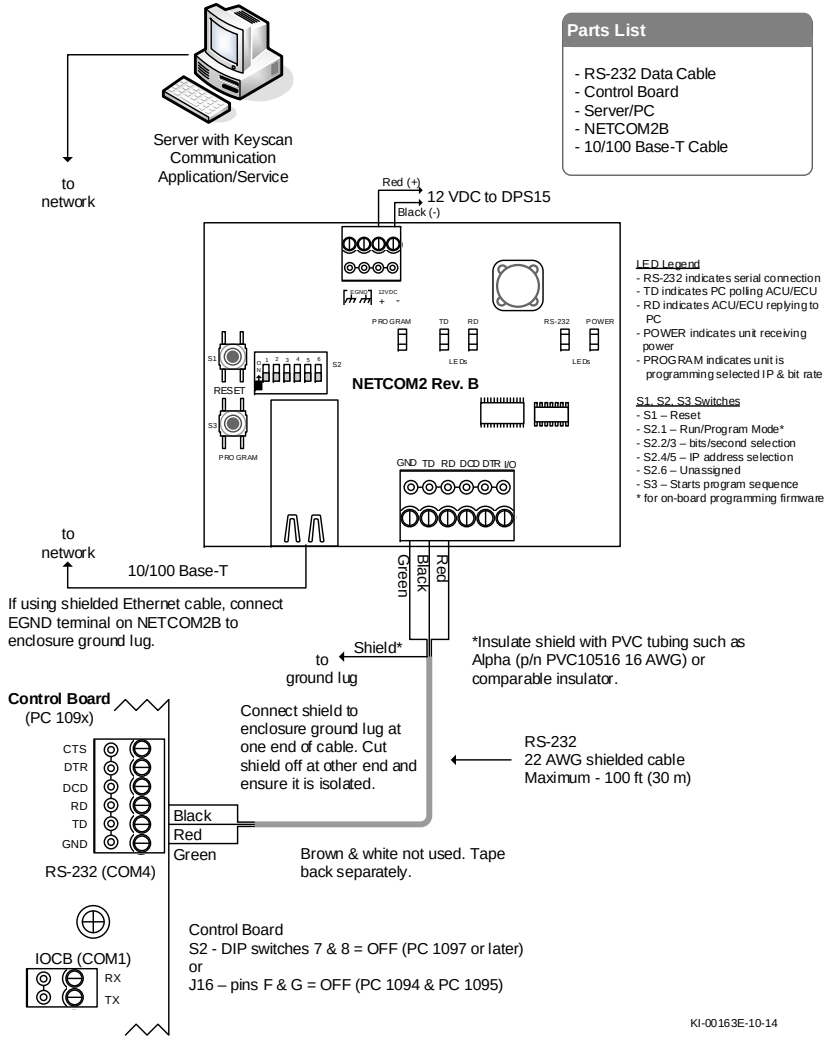
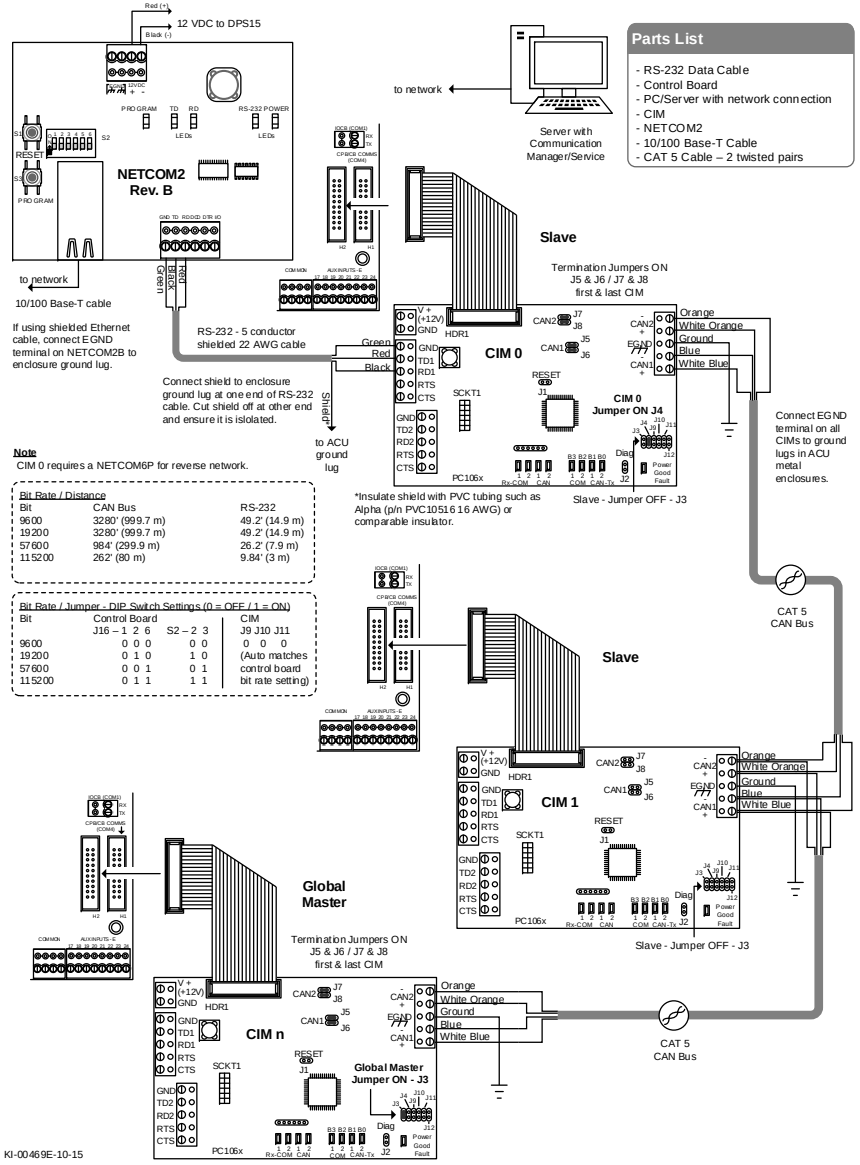


Figure 4 - NETCOM2 Rev. B Connected to CIM 0 Communication Terminal

Building to Building Communication

Where NETCOM2 Rev. Bs are used on a LAN/WAN integrating building-to-building communication, a point-to-point private network is required.



Section 2 - Install the Keyscan NETCOM Utility and Program the NETCOM

Each NETCOM2 Rev. B that you have installed must be programmed with the Keyscan NETCOM Program Utility which is on the enclosed Utilities and Drivers CD. To install the Keyscan NETCOM Program Utility, load the CD into the CD-ROM or DVD drive. The utility is set on auto-start. Follow the on-screen prompts.

- NETCOM2 Rev. B requires Keyscan NETCOM Utility version 6.0.16 or higher

The server/laptop IP address must have the same first three octets as the embedded programming IP address set on the NETCOM2 Rev. B from section 1.

- If your server IPs do not match the first three octets as the embedded programming IP address on the NETCOM2 Rev. B, see IP Address Examples below and steps to set a static IP address for the server/laptop
- If your server IPs match the first three octets as the embedded programming IP address on the NETCOM2 Rev. B, go to Steps to Program the NETCOM2 Rev. B

IP Address Examples

The following three examples show the embedded programming IP address and valid corresponding IP addresses for the server/laptop.

Table 4 – Valid Subnet Server Examples

NETCOM2 Rev. B – IP Address	Valid Server IP Address
192.168.100.254	192.168.100.20
10.0.100.254	10.0.100.33
169.254.100.254	169.254.100.100

Steps to Set a Static IP Address for the Server/Laptop

These steps apply to most Windows operating systems. You must have installed the NETCOM Program Tool Utility to perform the procedures below.

1. Select Start > All Programs > Keyscan NETCOM Program Tool > Keyscan NETCOM Program Tool.
2. From the Keyscan NETCOM Utility screen, click on the Network Connections button.
3. Right click on Local Area Connection > Properties.
4. Select Internet Protocol Version 4 (TCP/IPv4). Select the Properties button.
5. Click in the radio button opposite Use the following IP address:
6. Enter the correct IP address and subnet mask.
7. Click on OK.
8. Click on OK.
9. Click on the X in the upper right of the Local Area Connection screen to exit.
10. Complete the Steps to Program the NETCOM2 Rev. B.