Specifications

Input Power Requirements

Powered through control board—NETCOM6P 140 mA + control board 130 mA = 270 mA

Powered through CIM—NETCOM6P 140 mA + CIM 150 mA = 290 mA

Network Interface

RJ45 (10/100 Base-T) Ethernet

LAN/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

1 9/16" x 1 15/16" (41 mm x 49 mm)

Environmental

Suitable for industrial and commercial applications.

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

Encryption

256 – bit AES Rijndael encryption

For more information on encryption, visit:

http://www.bis.doc.gov/encryption/default.htm

http://www.bis.doc.gov/policiesandregulations/regionalconsiderations.htm

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 – flashing	Half-duplex
Green – solid	100 Mbps	Green – flashing	Full-duplex

Address Settings

*IP Address:

*Subnet Mask:

Gateway:

**Ethernet Connection Type:

* Required fields for device configuration with software

** If other than Automatic Negotiation

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Technical Support

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

NETCOM6P Installation Guide - PC109x – 02.16 – Document # KD10032-E

KABA BEYOND SECURITY

NETCOM6P-Encrypted Installation Guide

This guide outlines how to install and program the NETCOM6P—serial to Ethernet converter—for network communication. As the NETCOM6P can be configured to operate with a CIM or directly from a PC109x or later control board, this guide is divided into the following 2 separate installation sections:

- NETCOM6P/CIM Installation—page 2
- NETCOM6P/ACU Control Board Installation (PC109x or later)—page 11

Please refer to the appropriate installation instructions and diagrams. Installation procedures are different for each type of configuration.

Important

Installing the NETCOM6P involves 2 wiring procedures: temporary serial programming connections and permanent operating connections. This applies to both types of installations. Please be sure to review the relevant diagrams for programming and operating connections.

Multiple NETCOMs within a communication loop must be either all encrypted (NETCOM6P) or all non-encrypted (NETCOM2P). Not both.

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 NETCOM6P. Space is provided at the back for recording addresses.
- Ensure that you install the latest Keyscan NETCOM Program Tool utility, which is on the enclosed CD, on a laptop or PC that can be serially connected to program the NETCOM6P.

About the Reset Function

During the NETCOM6P programming procedures, you are prompted to reset the device, which is a soft re-boot. This is equivalent to a power cycle.

Contents

Parts List

NETCOM6P	1
Serial Data Cable	1
Utilities & Drivers CD	1

NETCOM6P/CIM Installation

For installing a NETCOM6P mounted on a CIM, follow the directions in this section of the installation guide.

1) Create Encryption Key and Configure Communication

You must create a user-defined encryption key. The encryption key must consist of 32 characters (128 bit), 48 characters (192 bit) or 64 characters (256 bit). Characters can be as follows in any combination:

- alpha A—F
- numeric 0—9
- example 32 characters — A91376F1 C3621FBC DD68917E 1006B167

Ensure that you record the encryption key. You must use the same key when configuring communication in the procedures below and when programming the NETCOM. Follow the relevant set of procedures below for configuring encrypted communication depending on the Keyscan software platform.

Steps – System VII or Vantage Encrypted Communication

This procedure, installing the Communication Manager with encryption and entering the encryption key in the Keyscan Settings utility, is performed at the PC that will be used for operational communication with the NETCOM6P, CIMs, and ACUs.

1. Insert the Keyscan CD at the PC designated for communication with the ACUs.
2. From the Keyscan Encryption Installation screen, select Communication Setup. Follow the on-screen prompts.
3. Open Explorer, navigate to the Program Files folder > Keyscan7folder. For Vantage open the Keyscan Vantage folder.
4. Open the Keyscan7Settings Encryption application. For Vantage, open the KeyscanVantageSettingsEncryption application.
5. Click OK for English or select a language then click OK.
6. Create an encryption key and record it. It is required to program the NETCOM6P.
7. In one of the NETCOM Encryption Key text boxes, enter the encryption key. Enter the appropriate number of characters depending on the bit setting:
   - NETCOM Encryption Key 128 — 32 characters
   - NETCOM Encryption Key 192 — 48 characters
   - NETCOM Encryption Key 256 — 64 characters
8. Click on Save Settings, then close Explorer.

Steps – Aurora Encrypted Communication

This procedure is performed at an Aurora Client module workstation.

1. Log on and from the Aurora main screen, select the Settings menu > Application Utilities.
2. Opposite Communication Server, click on the down arrow and select the server running the communication service.
3. If the listening port is other than 3001, enter the port #. This is the inbound network port for the server.
4. Select the AES encryption bit setting – 128, 192, or 256, and then enter the encryption key.
5. Click on the Save button, and then click on the Exit button.

NETCOM6P/Control Board Operational Connections

Figure 9 illustrates NETCOM6P operating connections and jumper settings when mounted on a PC109x or higher control board. This configuration only supports a single control board communication loop.

Note
If connecting a PC109x control board activate M1 for communication with the NETCOM6P as follows:

- J16 – pin F - ON / pin G – OFF
- S2 – switch 7 – ON / switch 8 - OFF

Multiple Building Communication on a WAN

Keyscan requires a point-to-point private network where NETCOMs are used on a LAN/WAN (TCP/IP) that integrates building to building communication.

Figure 9 - NETCOM2P/PC109x (or higher) Control Board Connections

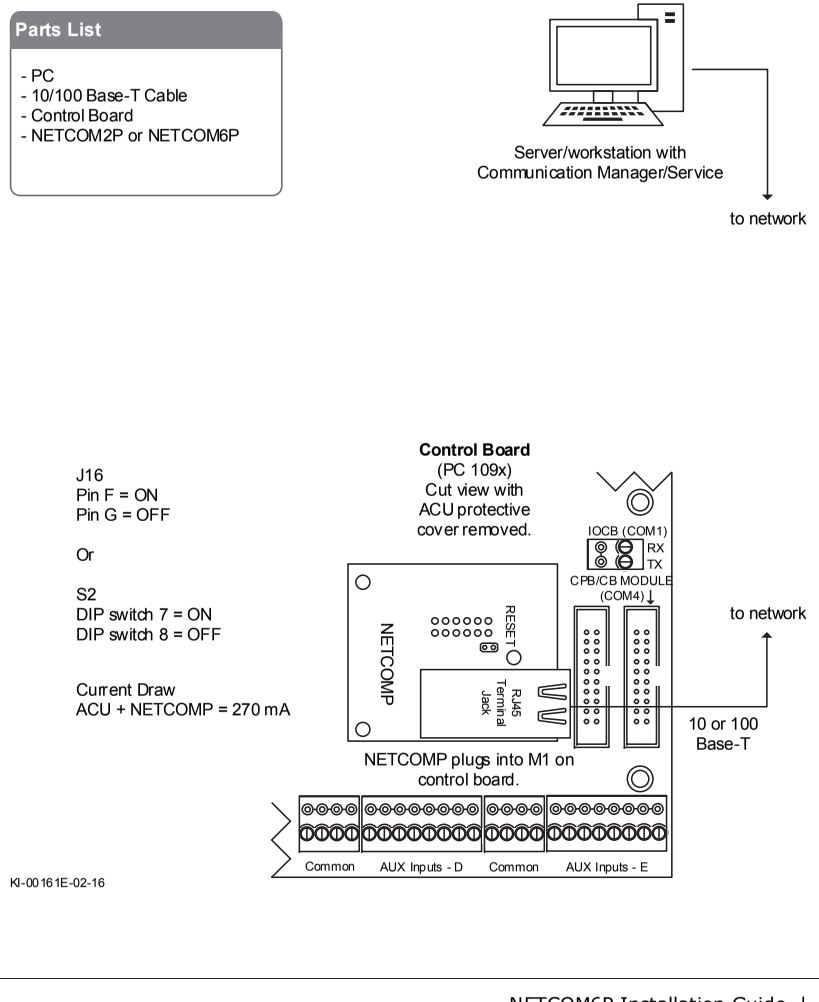
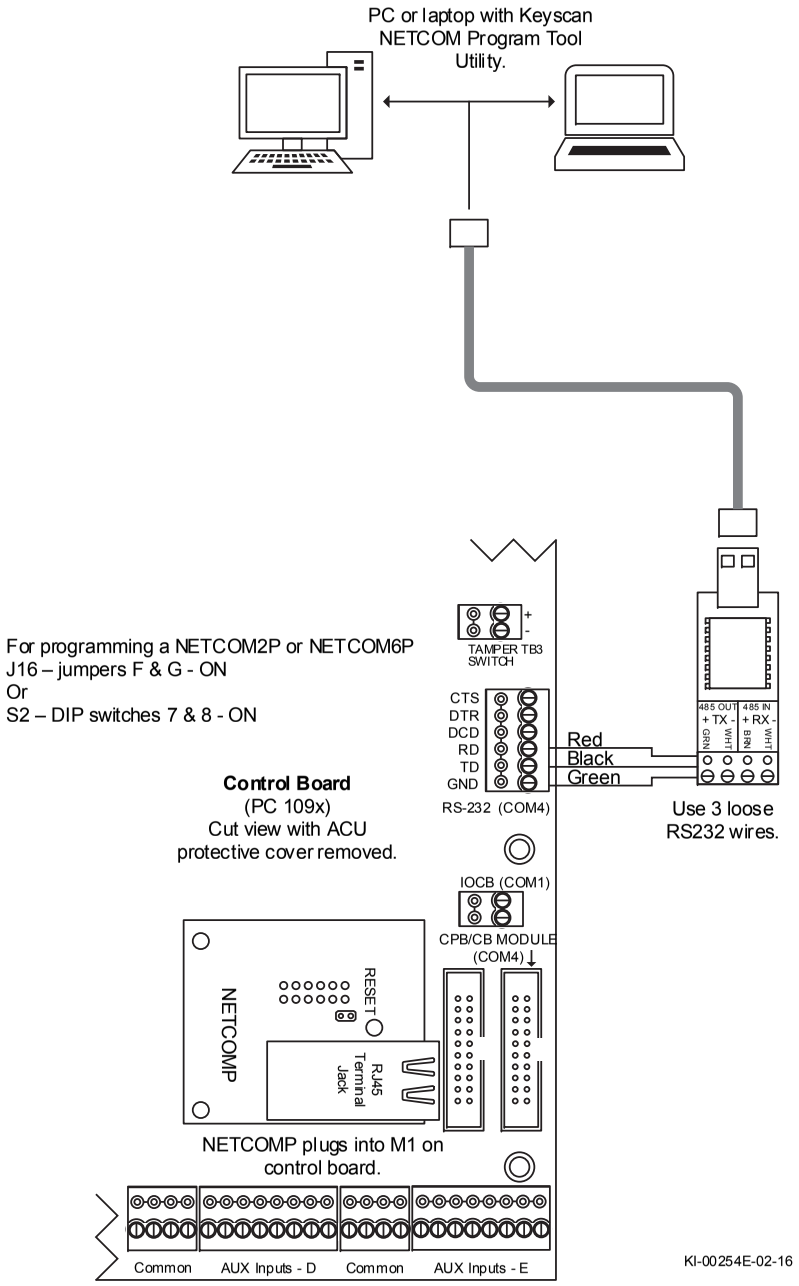


Figure 8 - Serial Programming Connections with USB Adaptor



2) Install NETCOM Program Tool Utility Software

Each NETCOM6P that you are installing must be programmed with the NETCOM Program Tool Utility software. Ensure you have the latest NETCOM Program Tool Utility software installed which is on the enclosed CD, otherwise you may encounter communication difficulties. You will require a PC or laptop that has a direct serial connection to the CIM/NETCOM6P to program the device. To install the NETCOM Program Tool Utility software, load the Keyscan Utilities & Drivers CD into the CD-ROM drive. The utility auto-starts. Follow the on-screen prompts.

3) Install and Program the NETCOM6P

After you have installed the NETCOM Program Tool Utility, establish a temporary serial connection between the laptop or PC and the NETCOM device for programming, and then after you have programmed the device, establish a permanent network connection for system operation.

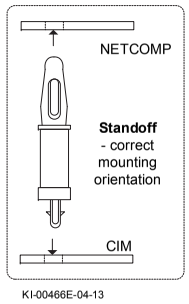
Connection Diagrams

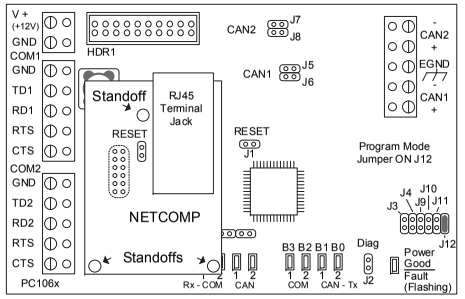
Connection diagrams are on the succeeding pages of the guide as outlined:

- See Figures 1—4 for temporary serial programming connections.
- See Figures 5—6 for permanent network connections.

Steps to Install and Program the NETCOM6P

1. Mount the NETCOM6P in the socket on the CIM as shown below. Press down so the standoffs secure the NETCOM6P to the CIM circuit board. Do not change the orientation of the standoffs.



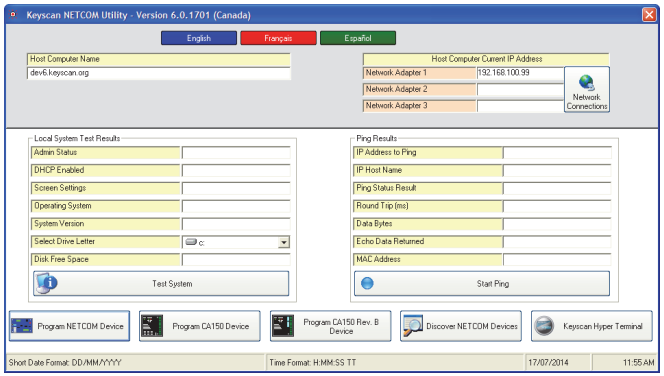


2. Mount the CIM/NETCOM6P in its designated location in the metal enclosure.
   - As an option, the NETCOMP can be programmed off-site before installation providing you have a 12 VDC power supply that can be connected to the CIM's TB4 power terminal. See figures 2 and 4.
3. On the CIM circuit board, place a jumper on J12.
4. Connect the ribbon cable from the HDR1 terminal on the CIM circuit board to the H2 terminal on the control board. See figures 1 and 3. The H2 terminal provides power for programming the NETCOMP.
5. Ensure the control board has power.
6. Connect the RS-232 serial cable from the laptop or PC to the COM2 terminal block on the CIM circuit board.
7. Turn on the laptop or PC connected to the CIM circuit board.

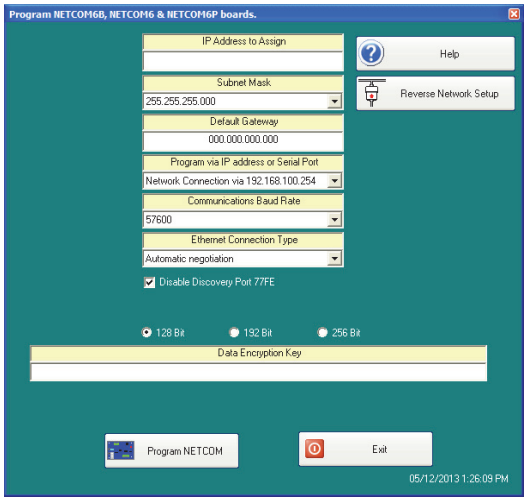
Continued on the next page…

Installation Steps ...cont'd

8. Select start > All Programs > and open the Keyscan NETCOM Program Tool from the Keyscan menu.



9. From the Keyscan NETCOM Utility screen, click on Program NETCOM Device.
10. From the select NETCOM Device Type screen, click on the Program NETCOM6 Family of Boards button.
11. From the Program NETCOM6B, NETCOM6 & NETCOM6P Boards screen, enter the IP address, the subnet mask, and, if applicable, the gateway (optional).



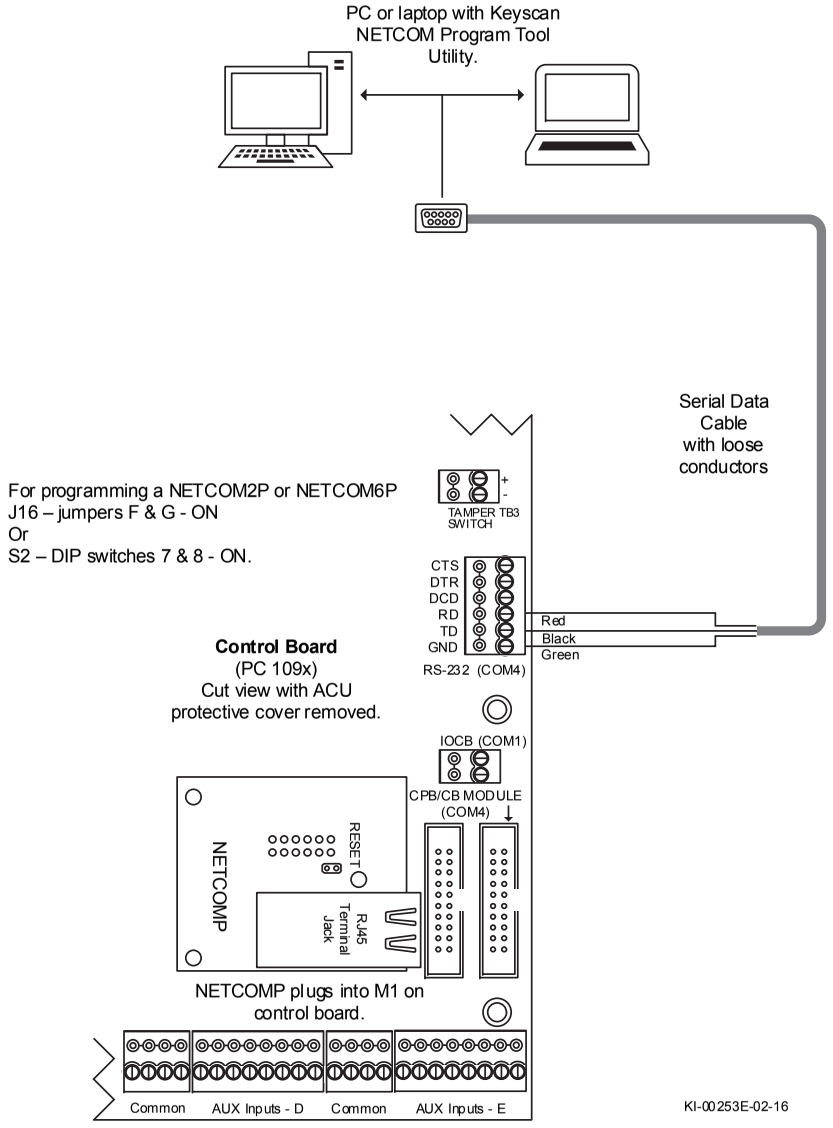
12. From Program via IP Address or Serial Port, select the port on the laptop or PC with the serial connection to the CIM in order to program the device.
13. Select the baud rate that corresponds to the J16 or S2 communication settings depending on the version of PC109x control board.
14. Leave Ethernet Connection Type on Automatic negotiation unless the IT administrator gives a specific setting.
    - 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,

Serial Programming Connections—ACU/NETCOM2P

Figure 7 illustrates serial programming connections from the PC or laptop to the NETCOM6P via M1 on the control board using the enclosed data cables.

If the PC or laptop does not have a serial port, use Keyscan's optional USB-SER Adaptor as shown in Figure 8.

Figure 7 - Serial Programming Connections



memory. Allow approximately 2 minute and do not make any changes while the control board re-configures. Remove the jumper from J16—pin H.

- S1 & S3 Switches - After applying power, press S1, wait 5 seconds, then within 10 seconds press S3 to reconfigure the on-board memory. Allow approximately 2 minute and do not make any changes while the control board re-configures.

34. Close and secure the ACU enclosure door.
35. Depending on the type of installation do one of the following steps:
    - If this is a new installation, install the Keyscan software, set up the site, and perform a full panel upload.
    - If this is an existing installation, log on to a Client software module, edit the site setup screens, and perform a full panel upload.

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.

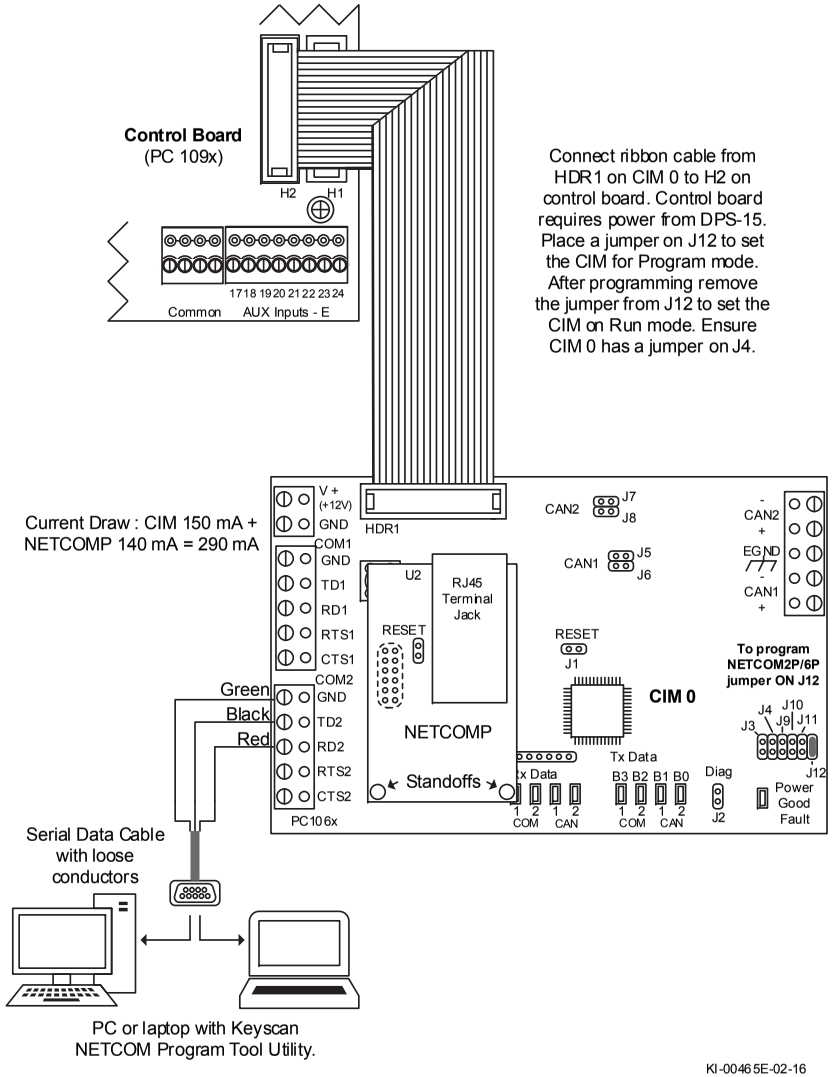
15. The Discovery Port 77FE is disabled by default. Keyscan recommends that you leave it on the default setting. This function is principally for troubleshooting communication difficulties.
16. Click on a radio button that corresponds to the encryption bit setting selected in the Keyscan Settings program.
17. Enter the same encryption key specified in the Keyscan Settings program or the Aurora Application Utilities – Server Settings screen.
18. Click on the Program NETCOM button.
19. The NETCOM Program Settings screen indicates it is waiting for a NETCOM reset or power cycle. Momentarily place a jumper on the CIM board's J1 RESET pins, then remove the jumper, and wait while the NETCOM is programmed.
    - If the NETCOM6P does not program on the first attempt, keep the NETCOM Program Settings screen open and press the F4 key. Click inside the box to the left of Program Server Address Settings Only so it has a check mark. Ensure the settings have been retained, including the IP address, otherwise re-enter them. 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.
20. When prompted by the NETCOM Program Tool utility, ensure that you remove the temporary RS-232 data cable connections from the CIM's COM2 terminal block after the device has been programmed and momentarily short the RESET jumper on the NETCOM6P.
21. Remove the jumper from J12 on the CIM circuit board.
22. Place a jumper ON J4 on the CIM unit to enable the board for network communication. This designates it as CIM 0.
23. Momentarily place a jumper on the CIM board's J1 RESET pins to initiate the jumper change in the preceding step.
24. Connect an Ethernet cable from the RJ45 jack on the NETCOM6P to a network terminal.
25. At the PC/laptop, click on the OK button in the Disconnect serial cable… screen.
26. If the PC/laptop has a network connection, verify network communication with the NETCOM6P. Select the Start Ping button on the Keyscan NETCOM Utility screen.
    - If the PC laptop does not have a network connection, close the NETCOM Program Tool utility, complete any remaining connections for permanent operation, re-locate to a PC connected to the network and PING the NETCOM6P's IP address using the Command Prompt. The Average Round Trip Times should be less than 100 milliseconds and the Packets sent should equal the Packets Received with 0% loss. Continue at step 28.
27. Wait for the Ping Status message:
    - IP Success indicates the NETCOM6P has network communication
    - IP Timed Out indicates the NETCOM6P does not have network communication—verify settings and connections.
28. Click on the X in the upper right corner of the Keyscan NETCOM Utility screen to close the application.
29. Depending on the type of installation, do one of the following steps:
    - If this is a new installation, install the Keyscan software, set up the site, and perform a full panel upload.
    - If this is an existing installation, log on to a Client software module, edit the site setup screens and perform a panel upload.

Temporary Programming Connections CIM/NETCOM2P

Figure 1 illustrates serial programming connections from the PC or laptop to the NETCOM6P via the CIM using the enclosed data cable.

If the PC or laptop does not have a serial port, use Keyscan's optional USB-SER adaptor.

Figure 1 - Serial Programming Connections Powered via H2 on Control Board

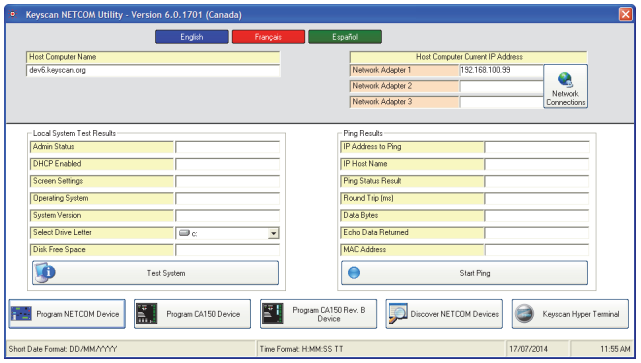


Temporary connections for programming only.

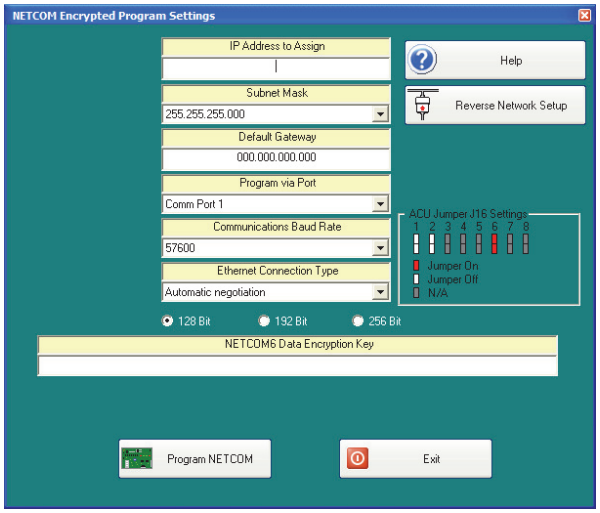
16. Click on a radio button that corresponds to the encryption bit setting selected in the Keyscan Settings program.
17. Enter the same encryption key specified in the Keyscan Settings program or the Aurora Application Utilities – Server Settings screen.
18. Click on the Program NETCOM button.
19. From the Program NETCOM Device via Serial Connection prompt "You must now connect your serial cable from your computer's port 1 to the NETCOM device and power cycle the NETCOM device", click on the OK button.
20. The NETCOM Program Settings screen indicates it is waiting for a NETCOM reset or power cycle. Momentarily do one of the following steps:
    - place a jumper on the control board's J6 RESET pins then remove the jumper
    - press and release the S1 switch
21. Wait while the NETCOM Program tool utility programs the NETCOM device.
    - If the NETCOM does not program on the 1st attempt, keep the NETCOM Program Settings screen open and press the F4 key. Click inside the box to the left of Program Server Address Settings Only so it has a check mark. Ensure the settings have been retained, including the IP Address, otherwise re-enter them. 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.
22. When prompted, disconnect the serial cable from the RS-232 (COM4) terminal on the control board.
23. Connect the NETCOM6P to the network.
24. Do one of the following steps:
    - Remove the jumper from J16 – pin G. However, leave the jumper ON pin F. This enables M1 for communication with the NETCOM6P.
    - Set S2 switch 8 to OFF, but leave S2 switch 7 ON so M1 is enabled for communication with the NETCOM6P
25. Momentarily place a jumper ON J6 Reset or press the S1 switch on the control board.
26. At the PC/laptop, click on the OK button in the Disconnect the serial cable… screen.
27. If the PC/laptop has a network connection, verify network communication with the NETCOM6P. Select the Start PING button on the Keyscan NETCOM Utility screen.
    - If the PC/laptop does not have a network connection, close the NETCOM Program Tool utility, complete any remaining connections for permanent operation, re-locate to a PC connected to the network and PING the NETCOM2's IP address using the Command Prompt. The Average Round Trip Times should be less than 100 milliseconds and the Packets Sent should equal the Packets Received with 0% loss. Continue at step 29.
28. Wait for the PING Status result message:
    - IP Success indicates the NETCOM6P has network communication
    - IP Timed Out indicates the NETCOM6P does not have network communication—verify settings and connections
29. Click on the x in the upper right corner of the Keyscan NETCOM Utility screen to close the application.
30. Disconnect the power from the ACU control board.
31. Re-mount the ACU protective cover.
32. Re-apply power after the ACU protective cover has been re-mounted.
33. Do one of the following procedures depending on the version of PC109x control board.
    - J16 Jumpers - After applying power, place a jumper ON J16—pin H, then momentarily place a jumper on J1—Clear Memory to reconfigure the on-board

Steps to Program and Install a NETCOM2P/ACU Control Board …cont'd

10. From the Keyscan NETCOM Utility screen, click Program NETCOM Device.

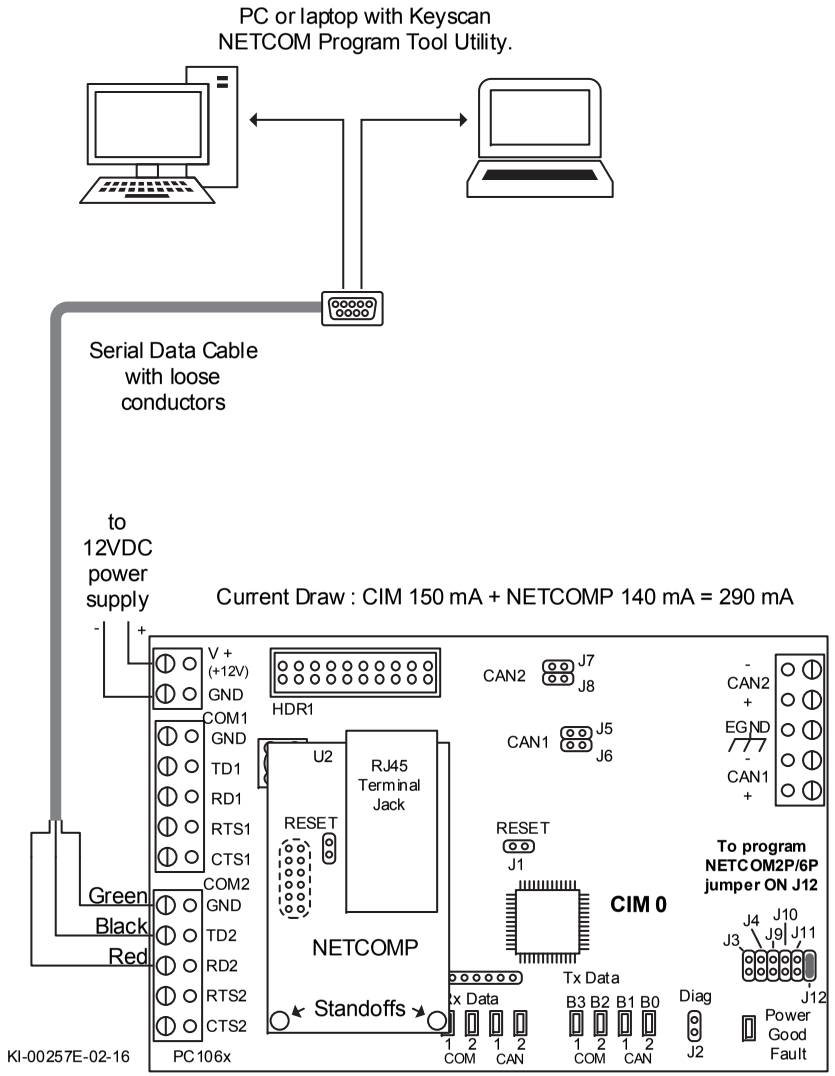


11. From the Select NETCOM Device Type screen, click on the NETCOM6/6P button.
12. From the NETCOM Encrypted Program Settings screen, enter the IP address, the subnet mask, and a gateway (optional).



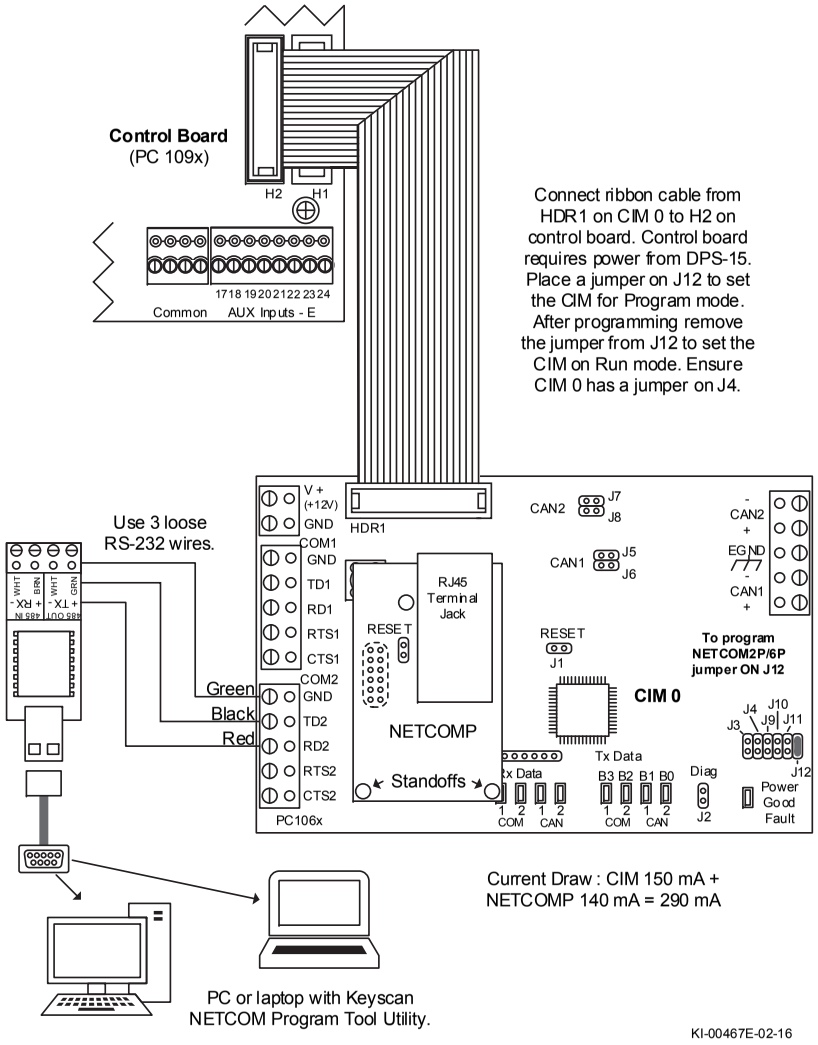
13. From Program via Port, select the port on the PC/laptop with the serial connection to the control board's RS-232 (COM4) terminal so the NETCOM6P can be programmed.
14. Select the baud rate that corresponds to the control board's J16 or S2 communication settings.
15. Leave Ethernet Connection Type set on Automatic Negotiation unless the IT administrator gives a specific setting.
    - 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.

Figure 2 - Serial Programming Connections via Independent 12 VDC Supply



Temporary connections for programming only.

Figure 3 - Optional USB-SER Serial Programming Connections Powered via H2 on Control Board



Temporary connections for programming only.

2) Install NETCOM Program Tool Utility Software

Each NETCOM6P that you are installing must be programmed with the NETCOM Program Tool Utility software. Ensure you have the latest NETCOM Program Tool Utility software installed which is on the enclosed CD, otherwise you may encounter communication difficulties. You will require a PC or laptop that has a direct serial connection to the NETCOM6P via the control board's RS-232 (COM4) terminal to program the device. To install the NETCOM Program Tool Utility software, load the Keyscan Utilities & Drivers CD in the CD-ROM drive. The utility auto-starts. Follow the on-screen prompts.

3) Install and Program the NETCOM6P

After you have installed the NETCOM Program Tool Utility, establish a temporary serial connection between the laptop or PC and the NETCOM device for programming, and then after you have programmed the device, establish a permanent network connection for system operation.

Connection Diagrams

Connection diagrams are on the succeeding pages of the guide as outlined:

- See Figure 7 or Figure 8 for temporary serial programming connections.
- See Figure 9 for permanent network connections.

Steps to Install and Program the NETCOM6P

The NETCOM6P can be plugged directly into a PC109x or higher control board. Please note that this configuration only supports a single panel communication loop. For programming the NETCOM6P (required), use a direct serial connection via the RS-232 (COM4) terminal block on the ACU control board as instructed.

1. Touch the earth ground lug in the ACU metal enclosure to discharge body static.
2. Power down the ACU control board.
3. Using a #4 Phillips screwdriver, unfasten the 6 screws holding the ACU protective cover. Remove the cover and set it aside with the six screws.
4. Mount the NETCOM6P into M1 in the correct orientation as shown below.
5. On the control board, set the ACU communication for M1 to program mode for the NETCOM6P depending on the version of PC109x control board:
   - J16 – pins F & G - ON
   - S2 DIP switches 7 & 8 - ON
6. Connect the serial programming cable from the RS-232 (COM4) terminal on the ACU to the laptop or PC as illustrated in Figure 7. If using the USB-SER adaptor, see Figure 8. Be sure the USB-SER adaptor has been configured before programming.
7. Apply power to the ACU control board.
8. Turn on the laptop or PC connected to the ACU control board.
9. Select start > All Programs and select Keyscan NETCOM Program Tool from the Keyscan menu.

NETCOM6P/ACU Control Board Installation

For installing a NETCOM6P mounted on an ACU control board (PC109x or later), follow the directions from pages 12—19.

1) Create Encryption Key and Configure Communication

You must create a user-defined encryption key. The encryption key must consist of 32 characters (128 bit), 48 characters (192 bit) or 64 characters (256 bit). Characters can be as follows in any combination:

- alpha A—F
- numeric 0—9
- example 32 characters — A91376F1 C3621FBC DD68917E 1006B167

Ensure that you record the encryption key. You must use the same key when configuring communication in the procedures below and when programming the NETCOM. Follow the relevant set of procedures below for configuring encrypted communication depending on the Keyscan software platform.

Steps – System VII or Vantage Encrypted Communication

This procedure, installing the Communication Manager with encryption and entering the encryption key in the Keyscan Settings utility, is performed at the PC that will be used for operational communication with the NETCOM6P, CIMs, and ACUs.

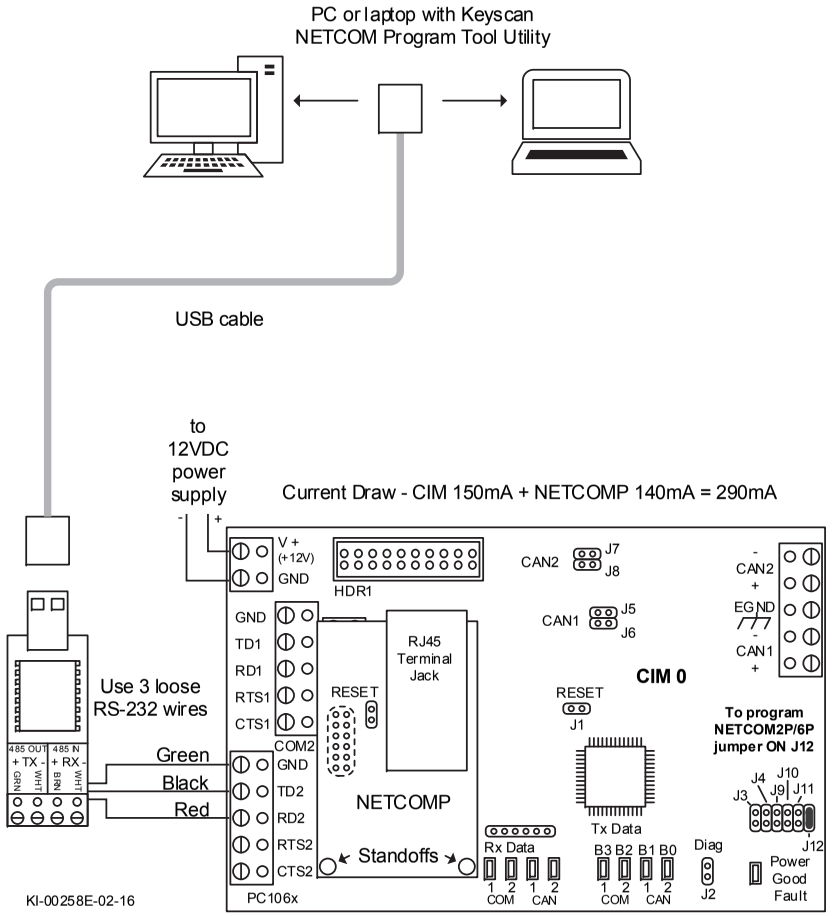
1. Insert the Keyscan CD at the PC designated for communication with the ACUs.
2. From the Keyscan Encryption Installation screen, select Communication Setup. Follow the on-screen prompts.
3. Open Explorer, navigate to the Program Files folder > Keyscan7 folder. For Vantage, open the Keyscan Vantage folder.
4. Open the KeyscanSettingsEncryption application. For Vantage, open the KeyscanVantageSettingsEncryption application.
5. Click OK for English or select a language then click OK.
6. Create an encryption key and record it. It is required to program the NETCOM6P.
7. In one of the NETCOM Encryption Key text boxes, enter the encryption key. Enter the appropriate number of characters depending on the bit setting:
   - NETCOM Encryption Key 128 — 32 characters
   - NETCOM Encryption Key 192 — 48 characters
   - NETCOM Encryption Key 256 — 64 characters
8. Click on Save Settings, and then close Explorer.

Steps – Aurora Encrypted Communication

This procedure is performed at an Aurora Client module workstation.

1. Log on and from the Aurora main screen, select the Settings menu > Application Utilities.
2. Opposite Communication Server, click on the down arrow and select the server running the communication service.
3. If the listening port is other than 3001, enter the port #. This is the inbound network port for the server.
4. Select the AES encryption bit setting – 128, 192, or 256, and then enter the encryption key.
5. Click on the Save button, and then click on the Exit button.

Figure 4 - Optional USB-SER Serial Programming Connections via Independent 12 VDC Supply



Temporary connections for programming only.

NETCOM6P/CIM Operational Connections

Figure 5 and Figure 6 illustrate NETCOM6P operating connections. Also refer to the CIM Setup Guide for CANBUS connections and jumper settings.

Multiple Building Communication on a WAN

Keyscan requires a point-to-point private network where NETCOMs are used on a LAN/WAN (TCP/IP) that integrates building to building communication.

Figure 5 – NETCOM6P/CIM Operational Connections

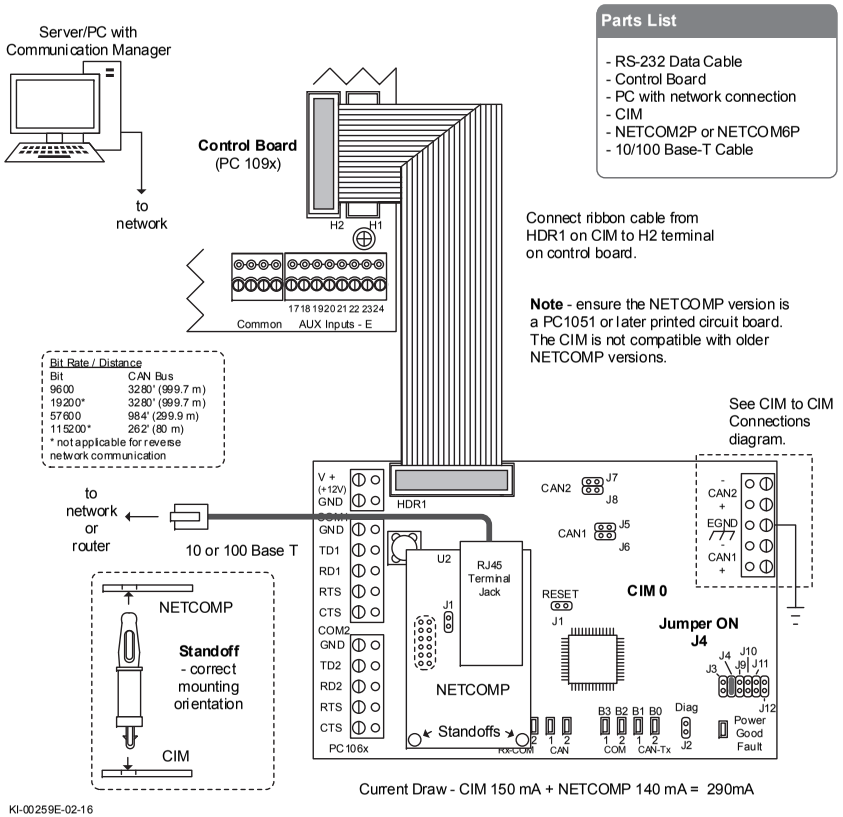


Figure 6 – NETCOM6P – Multiple CIMs/Control Boards