

CIM-LINK Specifications

Operating Voltage

12VDC

Current Draw

CIM-LINK 150 mA + NETCOM2P 140 mA = 290 mA

Dimensions

4 5/8" x 3" (11.7 cm x 7.6 cm)

Operating Environment

Suitable for industrial and commercial applications.

Operating temperatures: 5° C to 60° C (41° F to 140° F)

Cables

CAN Bus 2: CAT5, 1 twisted pair, maximum overall cable distance - 3280 ft (1000 m)

CAN Bus

CAN Bus 2: ACU to ACU communication for global functions

Ribbon Cable

CIM—LINK with single ACU communication loop—ribbon cable connects from HDR1 on CIM-LINK to H2 header on control board. In this configuration, the CIM—LINK/NETCOMP is powered from the control board.

Topology

Linear – does not support star or ring topologies

Inter-building Connectivity

Yes

NETCOM2P Specifications

Dimensions

1 9/16 " x 1 15/16 " (4.0 cm x 5.1 cm)

Operating Environment

5° C – 70° C (41° F – 158° F)

Network Interface

RJ45 - 10/100 Base-T Ethernet

LAN/WAN (TCP/IP protocol—port 3001)

Compatibility

Ethernet Version 2.0/IEEE802.3

Power Requirements

Powered through CIM-LINK—see current draw above

Agency Approvals—Ethernet Socket

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

Complies with EN55024:1998

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CIM Setup Guide - PC109x – 03.16 – Document # KD10028-E

CIM-LINK Setup Guide

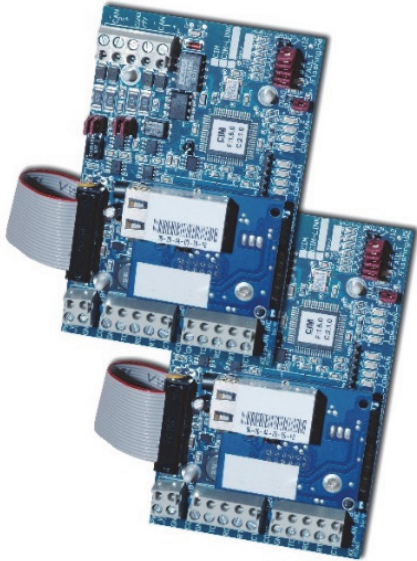
CIM-LINK modules are used to establish ACU to ACU communication across multiple communication loops for global functions, such as global anti-pass back, global time zones, or global inputs and outputs. This guide outlines how to connect the CIM-LINK modules and program the NETCOM2Ps with the Keyscan NETCOM Program Tool utility. CIM-LINK modules only communicate over a network (TCP/IP) using a NETCOM2P.

Before You Start

- Verify that you have all the parts as outlined below.
- Keyscan recommends reviewing this document and pre-planning where and how the CIM-LINK modules are connected to create global communication within the access control communication network.
- The NETCOM2Ps included with the CIM-LINK modules must be programmed with static IP addresses, subnet masks, and, if applicable, gateways and Ethernet connection types which you may have to obtain from the IT administrator.
- Ensure that the Keyscan NETCOM Program Tool utility, which is required for programming the NETCOM2P and is located on the Keyscan Drivers and Utilities CD, is installed on a PC or laptop that can be serially connected to the CIM-LINK/NETCOM2P as outlined in the Program NETCOM2P section.

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Figure 1 – CIM-LINK Modules



Pre-Installation

Keyscan suggests that you review the following material to ensure that you have the required firmware and software versions that support the CIM-LINK modules.

CIM-LINK Requirements

The CIM-LINK module requires the following control board firmware and software versions:

Hardware - Aurora

- EPROM version 9.20 or higher – door control units
- EPROM version 9.20 or higher – elevator control units
- Multiple ACUs on a communication loop require CIM-based communication configured for ACU to ACU communication on CAN Bus 2

Hardware – System VII/Vantage

- EPROM version 7.40/8.20 or higher – door control units
- EPROM version 7.97/8.77 or higher – elevator control units
- Multiple ACUs on a communication loop require CIM-based communication configured for ACU to ACU communication on CAN Bus 2

Software

- Aurora version 1.0.1.0 or higher
- System VII – version 7.0.6 or higher for global inputs/outputs
- Vantage – version 8.1.5 or higher for global inputs/outputs
- NETCOM Program Tool Utility – use the latest version on the Utilities & Drivers CD

Note

For global outputs, Keyscan recommends using the global OCB-8 option. This requires the purchase of an optional OCB-8 which connects to the control board's Control 5 header. Global outputs are not supported on CA200 or CA250 door control units and EC1000, EC2000, EC1500, or EC2500 elevator control units.

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.

Supplementary Documentation

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

- CIM Setup Guide
- Keyscan Technical Guide
- Global Inputs & Outputs/Time Zones

CIM-LINK Diagnostics

The CIM-LINK unit has on-board diagnostic LEDs - B3 to B0 – for troubleshooting communication difficulties.

- diagnostic LEDs during boot-up – initial power or Reset J1
- data LEDs during operation are Tx – transmit

LEDs B3 – B0 indicate Tx data transmission states. Diagnostic Jumper J2 sets the CIM-LINK board to run in diagnostic mode.

CIM-LINK Diagnostics – LED Codes

The following table lists diagnostic LED codes on the CIM-LINK. Place a jumper on J2 to run the CIM in diagnostic mode.

LED				Trouble Indication Code	Fault
B3	B2	B1	B0	0=OFF/1=ON	
0	0	0	0	0	None
0	0	0	1	1	+ 5V Logic Voltage Low
0	0	1	0	2	+ 12V Input Voltage Low
0	0	1	1	3	+ 5V Isolated Logic Supply Low
0	1	0	0	4	n/a
0	1	0	1	5	Global Broadcast Fail
0	1	1	0	6	ACU Panel Initialize Fail
0	1	1	1	7	CAN Bus 2 Fault
1	0	0	0	8	n/a
1	0	0	1	9	n/a
1	0	1	0	10	NETCOMP not detected.

Note

Diagnostic mode is indicated by all 4 LEDs flashing 3 times. Diagnostic codes are displayed every 20 seconds. Multiple codes are displayed lowest to highest. End of diagnostic routine is indicated when all 4 LEDs flash 3 times. Unless Power Good/Fault LED is flashing, the unit will not enter unit diagnostic mode even if a jumper is on J2.

CIM-LINK Boot-up

When power is applied to the CIM or the reset jumper J1 is momentarily shorted, the CIM module will begin its boot-up sequence. The module uses the 4 diagnostic LEDs to indicate where it is in the boot-up sequence.

B3 – B0 Code

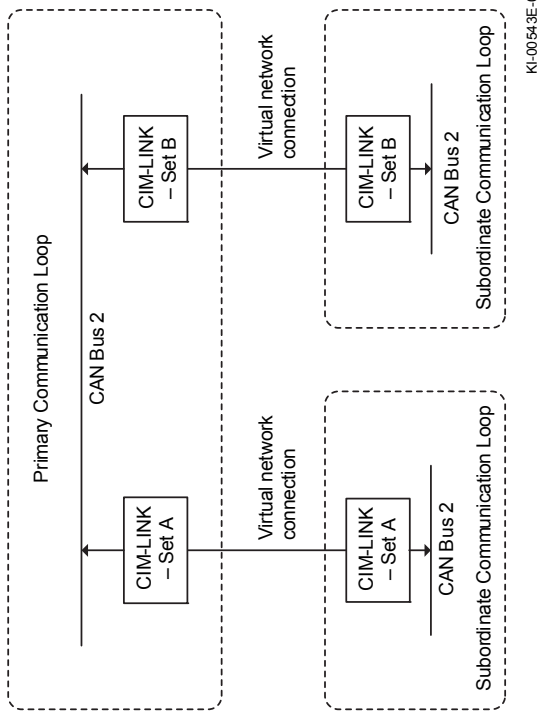
- 1 to 4 – basic initialization notices
- 5 (0101) – the CIM-LINK has entered NETCOMP program mode (LEDs will extinguish after approximately 1 second.)
- 8 (1000) – single ACU mode
- 9 (1001) – group ACU mode

CIM-LINK Configuration

When using CIM-LINK modules to bridge multiple communication loops, designate one as the primary communication loop and all others as subordinate communication loops within your global network. When establishing connections between two or more communication loops, install each pair of CIM-LINK modules as follows:

- Install a CIM-LINK module on the primary communication loop
- Install a CIM-LINK module on the subordinate communication loop

Figure 2 – CIM-LINK Modules Overview



One set of CIM-LINK modules is required to bridge each subordinate communication loop with the primary communication loop. The example above shows two subordinate loops bridged to the primary communication loop, which requires two sets of CIM-LINK modules.

CIM-LINK modules are extremely flexible in structuring global functions across multiple communication loops.

The following three block diagrams depict multiple communication loop models based on how the CIM-LINK may be configured for global communication. Refer to the illustrations that best approximate your particular ACU communication infrastructure. Each block diagram lists corresponding connection diagrams to assist with your installation of the CIM-LINK modules.

Note about Global Master

In the CIM Setup Guide, you are instructed to assign one CIM as a Global Master on a communication loop. However with multiple CIM-based communication loops only one CIM can be assigned as a Global Master for the entire global network. The CIM jumpered for Global Master must be on the primary communication loop. Ensure that you do not have any CIM modules on subordinate communication loops jumpered as global master. See Figure 3.

In cases where the CIM-LINK is installed on a primary communication loop with a single ACU, the CIM-LINK is assigned as the global master. See Figure 4 and Figure 5.

Figure 3 - CIM-LINK Modules Connecting Multiple Communication Loops

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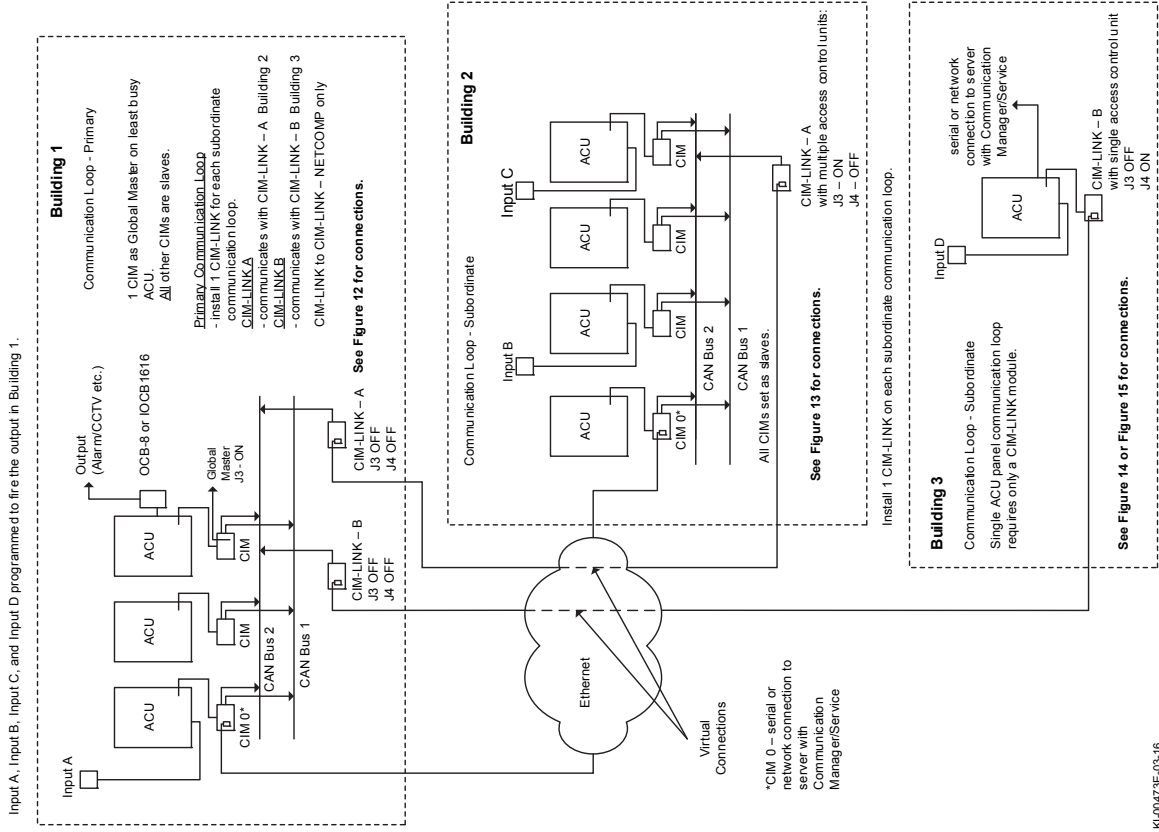


Figure 5 - Single ACU Communication Loop as Global Master to Single Subordinate ACU Communication Loop

A primary communication loop with a single access control unit is restricted to one subordinate communication loop. See Figure 6 if a single primary communication loop is required to integrate multiple subordinate communications.

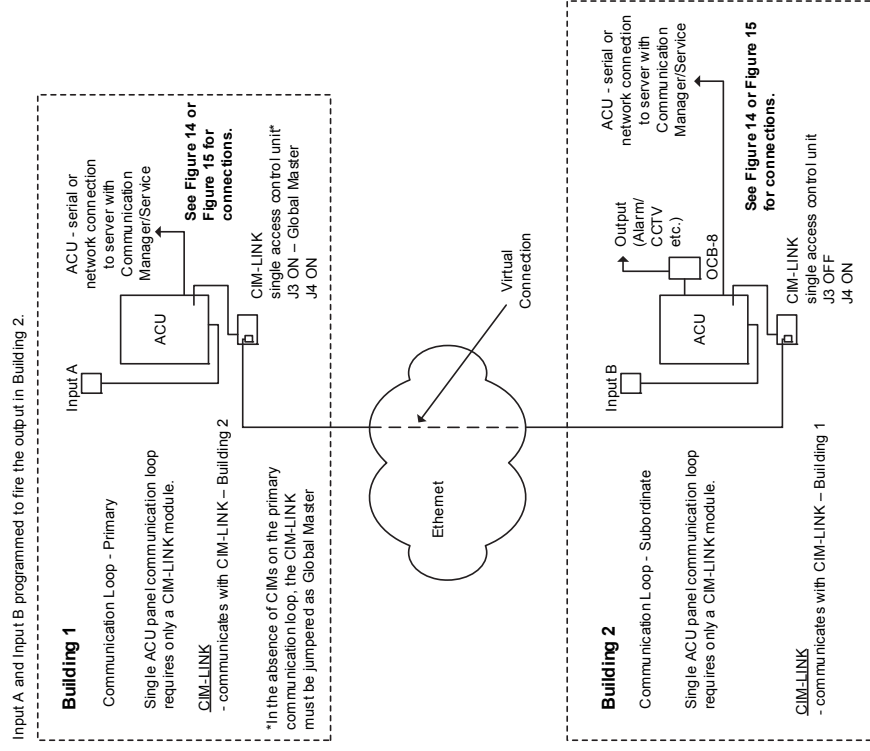
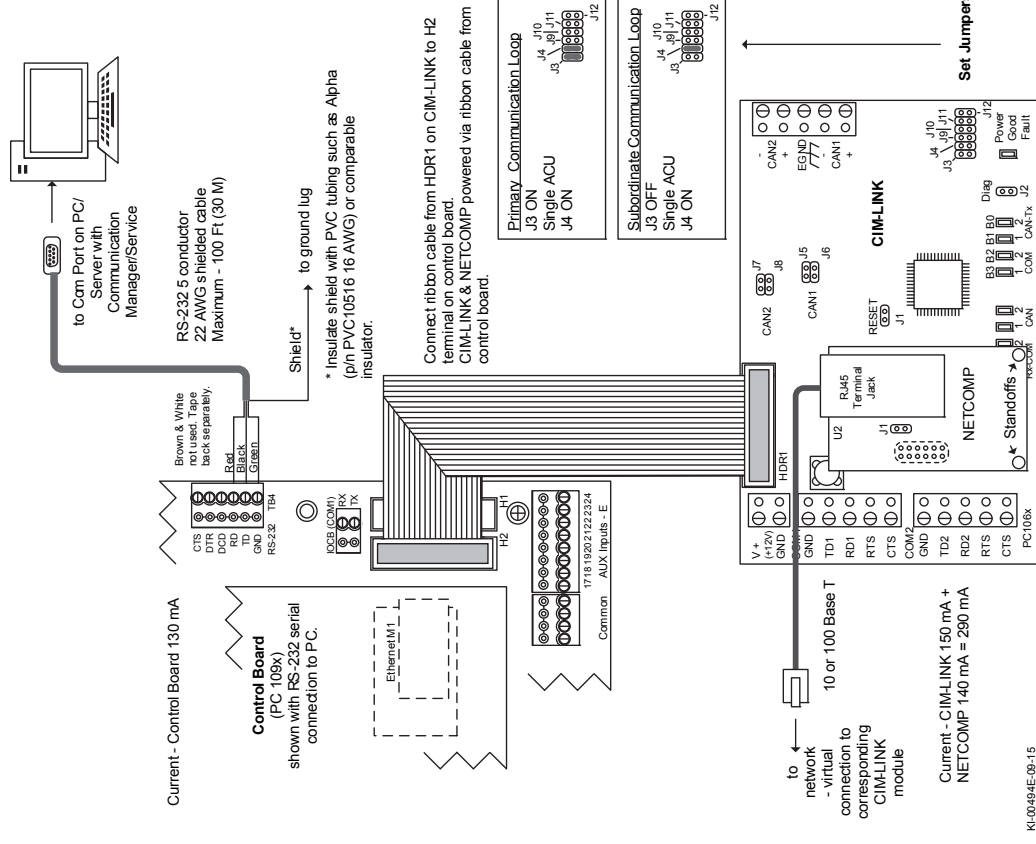


Figure 15 - CIM-LINK on a Single Communication Loop – Control Board has RS-232 Serial Connection



The CIM-LINK module interlinks multiple communication loops for global communication using either CAN Bus 2 on multiple ACU communication loops or a direct network connection on a single ACU communication loop. When connecting CIM-LINK modules, ensure the units are configured with the correct jumper settings as outlined.

When integrating CIM-LINK modules, establish one communication loop as the primary communication loop and set all other communication loops as subordinate communication loops. Refer to Figure 3 or Figure 4 or Figure 5.

On the primary communication loop, configure J3 as follows depending on the setup:

- set one CIM as Global Master – J3 ON; all other CIMs and CIM-LINKs – J3 OFF

- set CIM-LINK as the Global Master – J3 ON

- Ensure that only one CIM or CIM-LINK is set as a global master for the entire network of communication loops/ACUs.

- On the subordinate communication loops, configure J3 on the CIM-LINK as follows depending on the setup.

- Set the CIM-LINK module:

- Set the CIM-LINK module:

- The CIM-LINK module must be set for single ACU mode or multiple ACU mode on both the primary communication loop and the subordinate communication loop.

- Set the CIM-LINK module to single ACU mode:

- Set the CIM-LINK module to multiple ACU mode:

- CIM-Link Setup Guide | 21

[illegible]

Refer to the following diagrams for connecting the CIM-LINK modules with NETCOM2Ps. Ensure that you have programmed the NETCOM2Ps with the Keyscan NETCOM Program Tool Utility before making permanent operating connections.

[illegible]

The CIM-LINK has termination jumpers J5 to J8 when the module is located at the beginning or the end of the CAN Bus. Observe the following termination jumper settings.

- The method of powering the CIM-LINK module with the NETCOM2P depends on the type of communication loop they are connected on:

- KI-00490E-10-15

Jumper #	Function	Setting	Notes
0=Off / 1=On			
J1	Reset	1	Short momentarily when the CIM-LINK has been re-configured, otherwise leave the jumper off.
J2	Diagnostics	1	Runs the CIM-LINK in Diagnostic Mode. See CIM-LINK Diagnostics section.
J3 & J4	Refer to page 8 and Figure 3, Figure 4, Figure 5		
J5 & J6	CAN 1 Termination Jumpers	0 0	CIM-LINK modules do not communicate on CAN Bus 1.
J7 & J8	CAN 2 Termination Jumpers – Multiple ACU Mode	1 1	If the CIM-LINK is first or last module on CAN Bus 2, set termination jumpers ON J7 & J8.
CAN 2 Termination Jumpers – Single ACU Mode			
		0 0	When CIM-LINK is set for Single ACU Mode, leave CAN Bus 2 termination jumpers OFF J7 & J8.
J9 J10 J11	Global message Filtering	0 0 0	No filtering, all messages pass
		1 1 1	Filter global I/O messages with a destination ACU S/N of 0000. S/N 0000 is for all ACUs
		0 0 1	Filter global I/O with a specific ACU S/N and ACU S/N of 0000.
		0 1 0	Filter global time zone messages.
		0 1 1	Filter global anti-pass back messages.
		1 0 0	Filter global I/O messages with a specific ACU S/N or ACU S/N of 0000 and filter global time zone messages.
		1 0 1	Filter global time zone and global anti-pass back messages.
		1 1 0	Filter global I/O messages with ACU S/N of 0000, as well as global time zone and global anti-pass back messages.
J12	NETCOMP Programming Mode	1	Sets the CIM-LINK module to programming mode when NETCOMP plugged into SCKT1.

Steps to Program the NETCOM2P – CIM-LINK on Subordinate Communication Loop cont'd

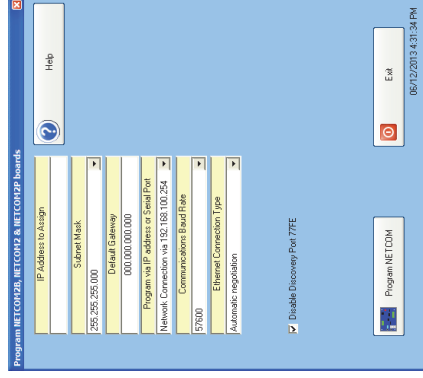
10. Enter a Subnet Mask or select from the drop down list by clicking on the arrow to the right.
11. If applicable, enter a Gateway.
12. From the Program via IP Address or Serial Port, select the serial port on the PC/laptop connected to the CIM-LINK module.
13. Under Communication Baud Rate, select 38,400 from the drop down list.
14. Leave Ethernet Connection Type set on Automatic Negotiation unless the IT administrator provides 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.
15. Click on the Program NETCOM button.
16. The NETCOM Program Settings screen indicates it is waiting for a NETCOM reset or power cycle. Momentarily short the Reset jumper on the NETCOM2P and follow the on-screen prompts.
17. If the PC/laptop and the CIM-LINK/NETCOM2P are connected to the network, you can PING the device to verify a network connection. Select Start PING and wait for the PING Status Result message – IP Success.
 - If you receive a Timed Out result, check the settings and connections.
18. Close the NETCOM program.
19. Disconnect the serial cable or USB-SER adaptor from the CIM-LINK's terminal block COM2 (TB3) and the PC or laptop.
20. Remove the jumper from J12 on the CIM-LINK module.
21. Place a jumper momentarily on J1 RESET on the CIM-LINK module.

Steps to Program the NETCOM2P – CIM-LINK on Primary Communication Loop cont'd

23. The NETCOM Program Settings screen indicates it is waiting for a NETCOM reset or power cycle. Momentarily short the Reset jumper on the NETCOM2P and follow the on-screen prompts.
24. If the PC/laptop and the CIM-LINK/NETCOM2P are connected to the network, you can PING the device to verify a network connection. Select Start PING and wait for the PING Status Result message – IP Success.
 - If you receive a Timed Out result, check the settings and connections.
25. Leave the NETCOM2 Program Utility open. You will require it to program the NETCOMP for the subordinate communication loop.
 - Disconnect the serial cable or USB-SER adaptor from the CIM-LINK's terminal block COM2 (TB3).
26. Remove the jumper from J12 on the CIM-LINK module.
27. Place a jumper momentarily on J1 RESET on the CIM-LINK module.

Steps to Program the NETCOM2P – CIM-LINK on Subordinate Communication Loop

1. Mount the CIM-LINK module with the NETCOM2P in the designated location on the subordinate communication loop. Ensure that the NETCOM2P is mounted securely.
2. Connect the serial cable or USB-SER adaptor to the CIM-LINK terminal block COM2 (TB3) and the PC or laptop with the NETCOM2 Utility software.
3. Place a jumper on J12 on the subordinate CIM-LINK module.
4. Turn on the laptop or PC connected to the CIM-LINK module.
5. Connect the CIM-LINK module to a power source or connect the ribbon cable to H2 on the control board. If using the latter method, ensure the control board has power from the DPS-15.
6. Momentarily place a jumper on J1 RESET on the CIM-LINK module.
7. From the Keyscan NETCOM Utility screen, click Program NETCOM Device.
8. From the Select NETCOM Device Type screen, select NETCOM2/2P.
9. From the Program NETCOM2B, NETCOM2 & NETCOM2P Boards screen, enter the IP address of the NETCOM2P connected to the CIM-LINK module on the subordinate communication loop.



Programming continued on the next page...

Note on Global Message Filtering

Jumpers J9 – J10 – J11 shorted in various combinations on the CIM-LINK module filter global messages as outlined in the table. Note the following global message filtering conventions:

- Filter messages in both directions – short the designated jumpers on the CIM-LINK modules on the master and subordinate communication loops
- Filter messages in one direction – short the designated jumpers on the CIM-LINK module where the message originates

Example of Global Message Filtering

As an example, to block global time zone message transmissions from a subordinate communication loop to a master communication loop but allow global time zone message transmissions from the global master communication loop to the subordinate communication loop, jumper J10 would be shorted on the CIM-LINK module located on the subordinate communication loop.

Global message filtering should be used with caution.

Program NETCOM2P

Each NETCOM2P must be programmed with the Keyscan NETCOM Program Tool utility which is on the enclosed CD. You require a static IP address, Subnet Mask and, if applicable, a Gateway and Ethernet Connection Type for each NETCOM2P.

Keyscan NETCOM Program Tool Utility

You will require a PC or laptop that has a direct serial connection to the CIM-LINK/NETCOM2P to program the device. To install the Keyscan NETCOM Program Tool utility, load the CD into the CD-ROM drive. The utility is set for auto-start. Follow the on-screen prompts.

Note

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-LINK's TB4 power terminal. See Figure 8 or Figure 10 for connections.

Temporary Programming Connections

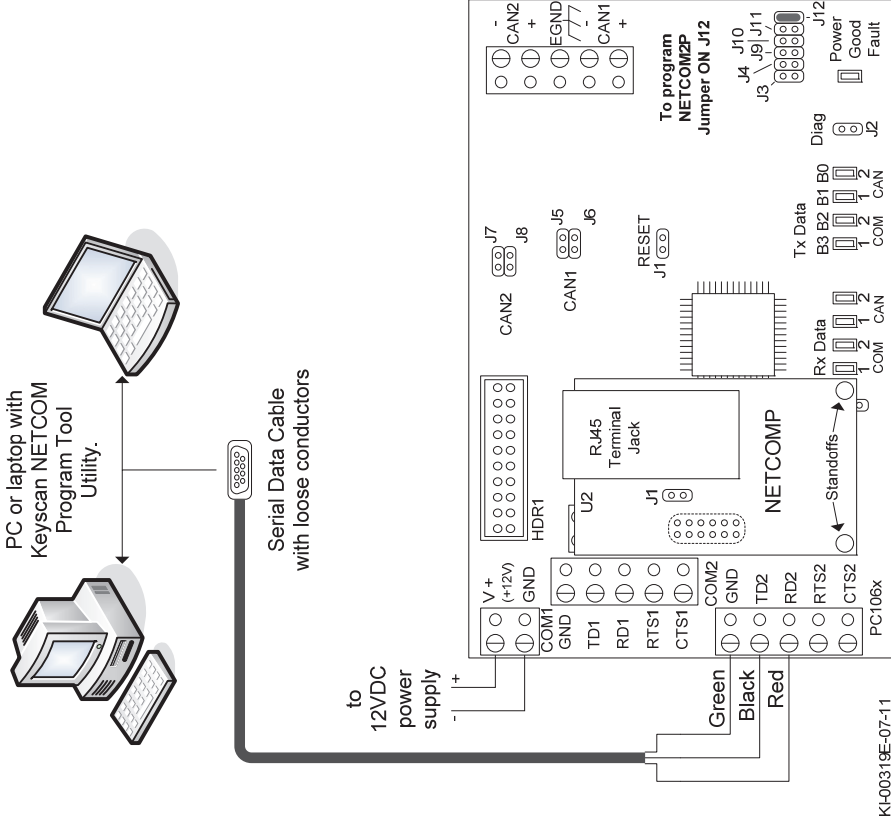
Review Figure 8 to Figure 11 for establishing a connection with the serial data cable and/or with the USB-SER adaptor from the PC/laptop to the NETCOM2P. Please note this is a temporary connection. Be sure to disconnect the cable after the programming procedure is completed.

Programming instructions follow the diagrams.

About the Reset Function

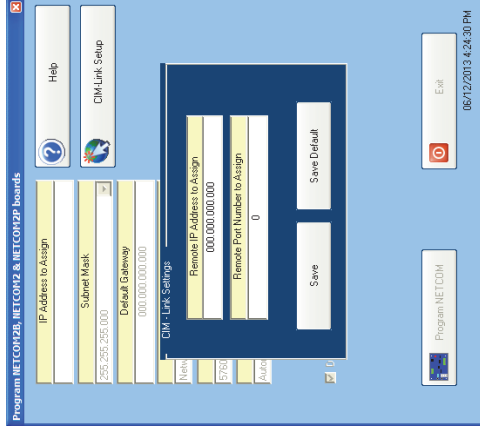
During the NETCOM2P programming procedures, you are prompted to reset the device, which is a soft re-boot. This is equivalent to a power cycle.

Figure 8 — Serial Programming Connection with Independent 12 VDC Supply



Steps to Program the NETCOM2P – CIM-LINK on Primary Communication Loop

11. From the Program NETCOM2B, NETCOM2 & NETCOM2P Boards screen, enter the IP address assigned to the NETCOM2P for the global master communication loop.
12. Enter a Subnet Mask from the drop down list by clicking on the arrow to the right.
13. If applicable, enter a Gateway.
14. From the Program via IP Address or Serial Port, select the serial port on the PC/laptop connected to the CIM-LINK module.
15. Under Communication Baud Rate, select 38,400 from the drop down list.
16. Leave Ethernet Connection Type set on Automatic Negotiation unless the IT administrator provides 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.
17. Click on the CIM-LINK Setup button.



18. Enter the IP address of the corresponding subordinate CIM-LINK's NETCOM2P in the IP Address to Assign.
 19. Enter 3001 in the Remote Port Number to Assign field.
 20. Click on the Save button.
 21. 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.
 22. Click on the Program NETCOM button.
- Programming steps continued on the next page...

Steps to Program the NETCOM2P – CIM-LINK on Primary Communication Loop

1. Mount the CIM-LINK with the NETCOM2P in the designated location. Ensure that the NETCOM2P is mounted securely in the socket.
2. Connect the serial cable or USB-SER adaptor to the CIM-LINK terminal block COM2 (TB3) and the PC or laptop with the NETCOM Program Tool Utility software.
3. Place a jumper ON J12 on the CIM-LINK circuit board.
4. Turn on the laptop or PC connected to the CIM-LINK.
5. Connect the CIM-LINK to a power source or via the ribbon cable to H2 on the control board.
6. Momentarily place a jumper on J1 RESET on the CIM-LINK.
7. At the PC or laptop, select start > All Programs and select Keyscan NETCOM Program Tool from the Keyscan software menu. At the PC or laptop, select start > All Programs and select Keyscan NETCOM Program Tool from the Keyscan software menu.
8. From the Keyscan NETCOM Utility screen, click Program NETCOM Device.
9. From the Select NETCOM Device Type screen, select Program NETCOM2 Family of Boards.
10. With the Program NETCOM2B, NETCOM2 & NETCOM2P Boards screen open, press the F8 function key on the keyboard to open the CIM-LINK Setup button as shown.

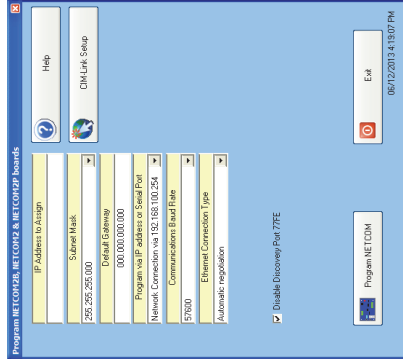
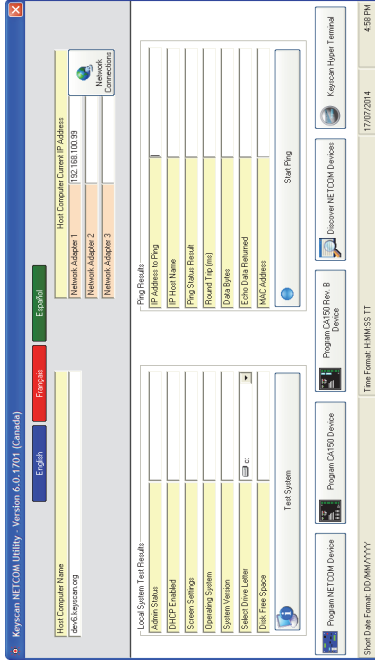
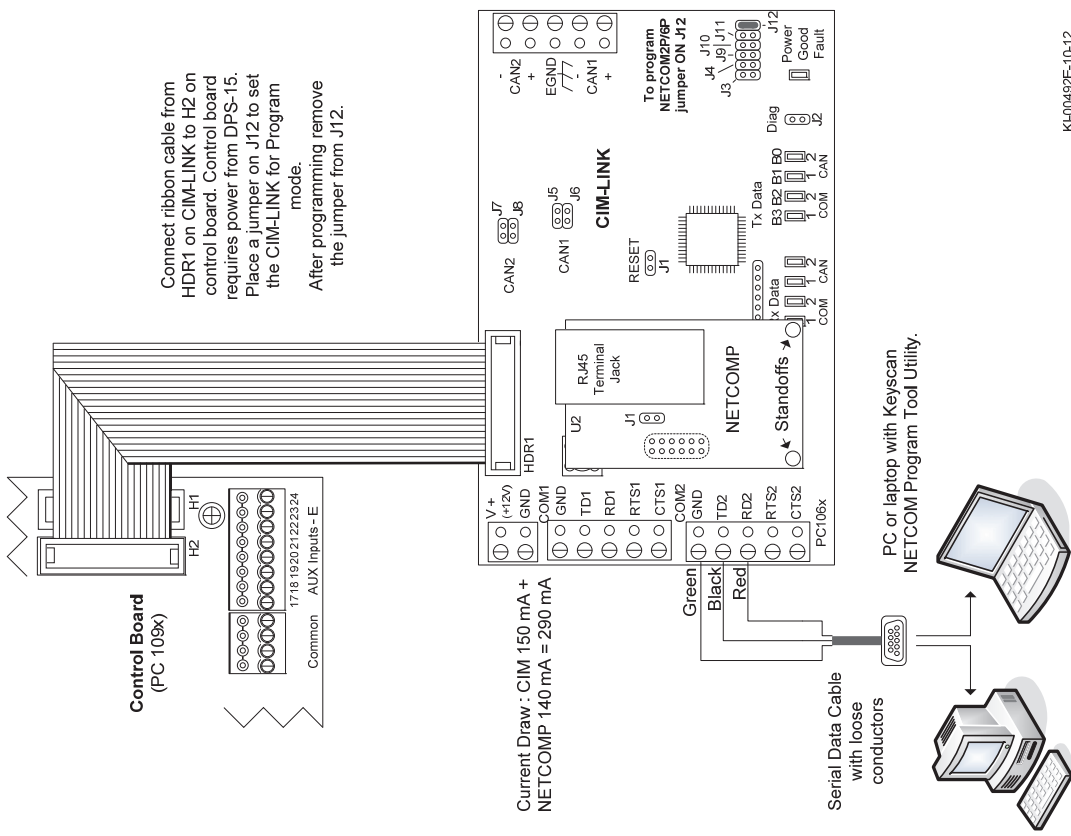
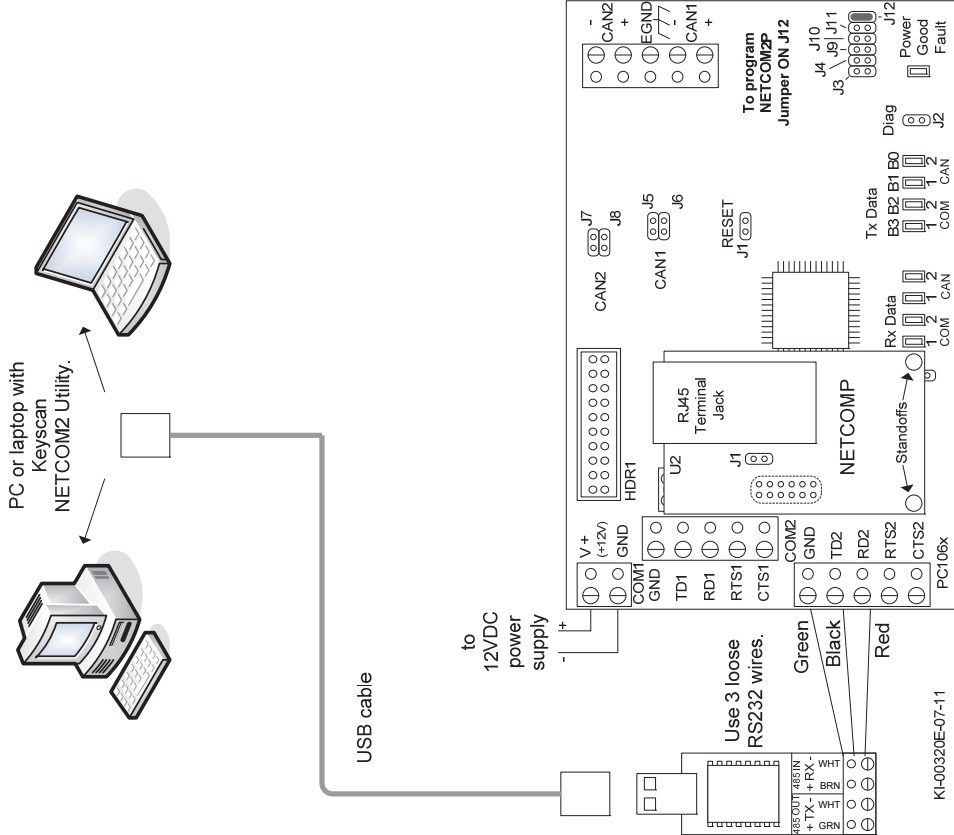


Figure 9 – Serial Programming Connection Powered via H2 on Control Board



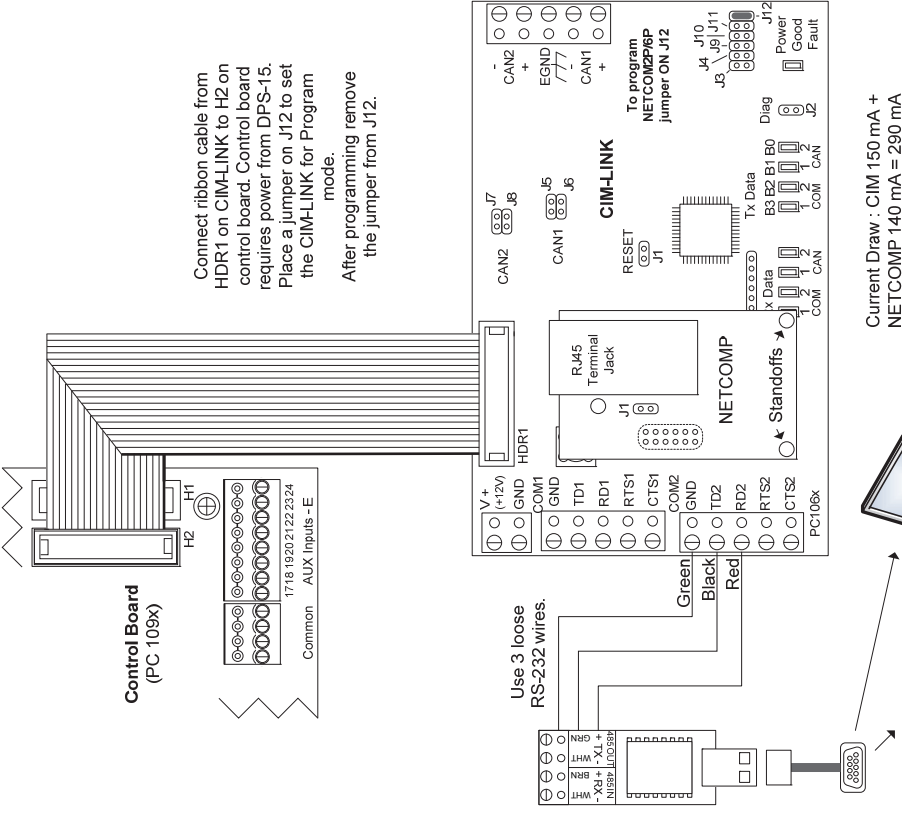
KI-00492E-10-12

Figure 10 – Optional USB-SER Adaptor Programming Connection with Independent 12 VDC Supply



KI-00320E-07-11

Figure 11 – Optional USB-SER Adaptor Programming Connection Powered via H2 on Control Board



KI-00493E-10-12