SIEMENS

Installation Instructions
Model NIC-C

Network Interface Card

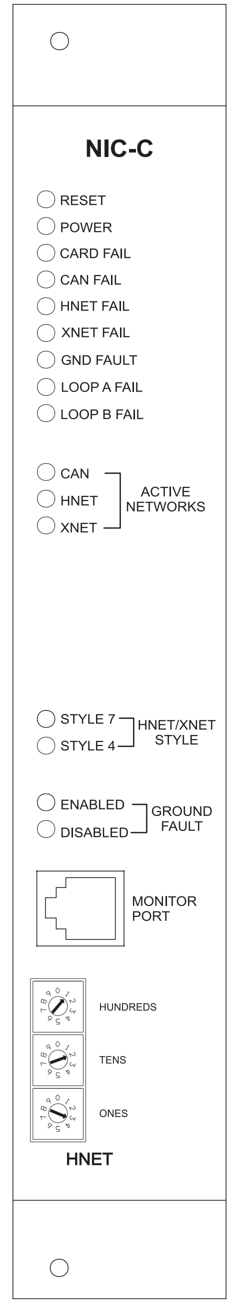


Figure 1
NIC-C Network Interface Card

INTRODUCTION

The Model NIC-C from Siemens Industry, Inc., is a card that provides HNET/XNET and CAN network communication within and between enclosures. The HNET/XNET network can be wired either Class-B/Style 4 or Class-X/Style 7. For HNET one NIC-C is required in each enclosure. Each NIC-C (HNET or XNET) occupies one HNET address. See Table 1 for restrictions on the location of equipment on the HNET and XNET.

When configured for XNET, the NIC-C provides communication between FireFinder XLS/Desigo Fire Safety Modular/Cerberus PRO Modular systems, as well as the NCC or Desigo CC/Cerberus DMS in an XNET network. MXL systems may also reside on the same XNET. All events occurring in the FireFinder XLS/Desigo Fire Safety Modular/Cerberus PRO Modular will be displayed at the NCC or Desigo CC/Cerberus DMS. Additionally, these events may be acknowledged and the system can be reset via the NCC or Desigo CC/Cerberus DMS. Events initiated by FireFinder XLS/Desigo Fire Safety Modular/Cerberus PRO Modular members can cause output state changes (inter-panel logic) in other FireFinder XLS/Desigo Fire Safety Modular/Cerberus PRO Modular panels. Inter-panel logic between FireFinder XLS/Desigo Fire Safety Modular/Cerberus PRO Modular and MXL is not available. One NIC-C configured for XNET is required in each FireFinder XLS/Desigo Fire Safety Modular/Cerberus PRO Modular system connected to XNET. This NIC-C must reside in the same enclosure as the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular).

Additionally, the NCC-GL is supported where display and control of an individual XLS/Desigo Fire Safety Modular/Cerberus PRO Modular system is required. The NCC-GL must be connected to the XNET network. The connection to HNET is not supported.

The CAN network is also supported by NIC-C. It can be isolated within a given enclosure or extended external to the enclosure. External CAN networks require either an RNI, OCM-16 or SIM-16 in the remote enclosure. The CAN address of the NIC-C does not need to be set.

A single NIC-C provides either HNET or XNET. The CAN interface is available regardless of the HNET/XNET selection.

The NIC-C supervises each network to insure proper operation. Any faults that are detected by the NIC-C are reported to the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) for annunciation. In addition, the NIC-C has diagnostic LEDs that indicate which faults have been found. Individual LEDs are included for HNET/XNET Loop A and Loop B faults, as well as an LED for complete failure of the HNET or XNET network or the CAN network. The NIC-C can also be configured to perform ground fault detection on both networks.

Features

The NIC-C isolates short circuit faults to each individual segment of the HNET/XNET network. If a short occurs, only the segment of wire between the two NIC-Cs is affected. In a Class-B/Style 4 system the network will be divided into two sections. Communication in each of the sections will continue. For a Class-X/Style 7 network, the fault will be detected and the network will continue to operate as a single network. An HNET/XNET network monitoring jack is included for connection of diagnostic tools. This jack is located on the front bezel.

The NIC-C supports the LCM-8/SCM-8/FCM-6/OCM-16/SIM-16 CAN modules. LEDs are visible through the front bezel to indicate the NIC-C configuration. All switch selectable options are displayed here. This allows for easy confirmation of the NIC-C configuration settings.

The NIC-C is compatible with the XNET Bridge. Refer to the XNET Bridge installation instructions, P/N 315-050017, for more details.

	HNET		XNET	
	Class-B/Style 4	Class-X/Style 7	Class-B/Style 4	Class-X/Style 7
PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) (HNET)	Y	Y	*	*
Global PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) (XNET)	*	*	Y	N**
SSD / SSD-C / SSD-REM SSD-INTL / SSD-C-INTL	Y	N	*	*
RPM	Y	N	*	*

Y = Allowed, N = Not Allowed
* Not allowed on this network.
** When installed in a REMBOX2/REMBOX4, otherwise Yes.

NOTE **Class-B/Style 4 = ULC DCLB**
Class-X/Style 7 = ULC DCLC

NOTE **In Canada, ULC S524 requires that all interconnecting data communications links for networks be wired DCLC (style 7) except for dedicated network communication to annunciators.**

Table 1
Module Placement At The End Of a HNET Or XNET Network

OPERATION

Network supervision is accomplished through passive monitoring of the network signals. No additional bandwidth is required. Each NIC-C continuously monitors all networks for activity and reports any problems to the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular). In some cases, a reset at the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) is required to clear network troubles.

Controls and Indicators

The front panel of the NIC-C contains one reset switch, fifteen LEDs, one network port and three HNET address switches as shown in Figure 1.

A reset switch is located on the top of the front panel. Pushing the reset switch re-initializes the NIC-C operation.

The LEDs follow the reset switch and their functions are defined as follows:

POWER	(Green)	Normally ON. When illuminated, indicates that power for the NIC-C is applied to the card.
CARD FAIL	(Yellow)	Normally OFF. When illuminated, indicates that the card microprocessor has failed.
CAN FAIL	(Yellow)	Normally OFF. When illuminated, indicates that all CAN modules connected to the NIC-C are not communicating.
HNET FAIL	(Yellow)	Normally OFF. When illuminated, indicates that the HNET communication with the NIC-C has terminated and the card goes into degrade mode.
XNET FAIL	(Yellow)	Normally OFF. When illuminated, indicates that the XNET communication with the NIC-C has terminated.
GND FAULT	(Yellow)	Normally OFF. When illuminated, indicates that the NIC-C has detected either a negative or positive ground fault on its network.
LOOP A FAIL	(Yellow)	Normally OFF. When illuminated, indicates that the NIC-C has detected a trouble on Loop A (open circuit or short circuit).
LOOP B FAIL	(Yellow)	Normally OFF. When illuminated, indicates that the NIC-C has detected a trouble on Loop B (open circuit or short circuit).
ACTIVE NETWORKS: CAN	(Green)	Normally OFF. When illuminated, indicates that the CAN network is enabled.
ACTIVE NETWORKS: HNET	(Green)	When illuminated, indicates that the HNET network is enabled.
ACTIVE NETWORKS: XNET	(Green)	When illuminated, indicates that the XNET network is enabled.
CLASS-X/STYLE 7	(Green)	When illuminated, indicates that the HNET/XNET is configured as Class-X/Style 7 (see Pre-Installation - S3 on page 4).

CLASS-B/STYLE 4	(Green)	When illuminated, indicates that the HNET/XNET is configured as Class-B/Style 4 (see Pre-Installation - S3 on page 4).
ENABLED	(Green)	When illuminated, indicates that ground fault detection is enabled (see Pre-Installation - on page 4).
DISABLED	(Green)	When illuminated, indicates that ground fault detection is disabled (see Pre-Installation - on page 4).

Three rotary dial switches at the bottom of the front panel are used to set the HNET network address of the NIC-C.

PRE-INSTALLATION

The following components must be set prior to inserting the card into the CC-5 (refer to Figure 2):

S1, Ground Fault Detection Control: Press the lever down to enable ground fault detection. Move the lever to the up position to disable ground fault detection. (Refer to Figure 2.)

NOTE

It is recommended to enable ground fault detection on ONLY one NIC-C in the system. (One for HNET and if used, one for XNET.) If multiple NIC-Cs have ground fault detection enabled, multiple troubles will be reported to the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) when a ground fault is present. In all cases at least one NIC-C must have ground fault detection enabled.

S3, NIC-C Options:

Position 1: Network Selection -
Set this switch to the ON position for HNET. Set to the OFF position for XNET.

Position 2: Network Style -
Set to ON for Class-B/Style 4.
Set to OFF for Class-X/Style 7.

Position 3: CAN Network enable-
Set to ON if CAN network is used. Set to OFF if CAN network is not used

Position 4: Future Use -
Set to OFF.

S4, Reset Switch: Momentarily Closed switch that when pressed will initiate a hard reset to the NIC-C (similar to a cold boot).

NCC-2F-HNET-VNT Jumper Settings: When Class-B/Style 4 wiring is used for an NCC-2F-HNET-VNT application, remove jumper P2 except on the NIC-C that is connected to the NCC-2F card. When Class-X/Style 7 wiring is used for an NCC-2F-HNET-VNT application, remove jumpers P2 and P4 except on the NIC-C that is connected to the NCC-2F card.

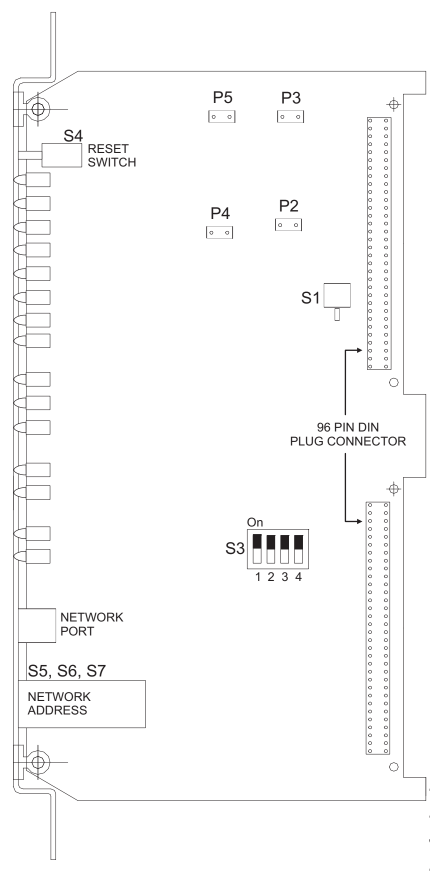
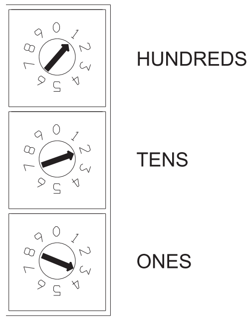


Figure 2 NIC-C Switch Location



HNET

S5, S6, S7, Network Address Switches: Set the three-digit HNET network address for the NIC-C using the three rotary dial address switches located near the bottom of the front panel. (Refer to Figure 1 for the location of the switches.) The address for the NIC-C must be the same as the address selected for it in the Zeus Programming Tool. To set the address, turn the pointers on each of the three dials to the numbers for the selected address. For example, if the address is 123, set the pointer for the HUNDREDS dial to "1," set the pointer for the TENS dial to "2," and set the pointer for the ONES dial to "3." The range of allowable addresses is from 001 to 251 (leading zeros must be used).

WIRING

Remove all system power before installation, first battery then AC. (To power up, connect the AC first, then the battery.)

All HNET/XNET field wiring to the NIC-C is connected to the terminal blocks of the CC-5 card cage slot in which it is installed.

The CAN bus is connected internally to the CC-5 backplane. For CAN modules located on the inner door inside the same enclosure as the NIC-C connect to P3 on the CC-5 using cable CCL. For CAN modules located outside the enclosure connect to TB1 on the PSC-12 or PSC-12M. See Figures 11, 12 and 13.

Internal Repeaters

The NIC-C provides an electrical repeater for each HNET/XNET pair. The diagram in Figure 3 shows the wiring for each pair. Be sure to connect the pairs following the proper polarity. Do not cross the A and B pairs. Removing the NIC-C from the CC-5 will break the network. Removing power from the NIC-C does not break the network.

To Connect the HNET or XNET

1. Loosen the screw of the terminal by turning it counterclockwise.
2. Insert the wire into the side of the terminal block.
3. Tighten the screw of the terminal block by turning it clockwise.

The NIC-C supports Class-B/Style 4 (DCLB) and Class-X/Style 7 (DCLC) HNET/XNET wiring. Check the Zeus configuration for the proper network Style (refer to Figures 4 and 5).

NOTE **The screw terminals can accommodate one 12 -18 AWG or two 16-18 AWG.**

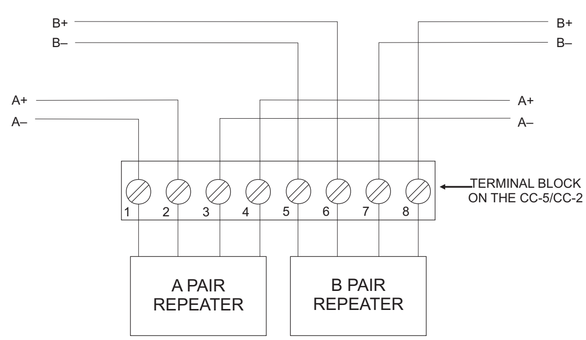


Figure 3
NIC-C Internal Repeaters

NOTES:

1. No EOLR required.
2. 18 AWG min., 12 AWG max.
3. 2000 feet (33.8 ohms) max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
   .25μF max. line to line
   Shielded twisted pair
   .15μF max. line to line
   .2μF max. line to shield
4. Terminate shields at one end only.
5. Power limited to NFPA 70 per NEC 760.
6 CC-5 terminals 9 - 14 are not connected and can be used to tie shields together.
7. Positive or negative ground fault detected at $\leq$10K ohms on pins 1 - 4.

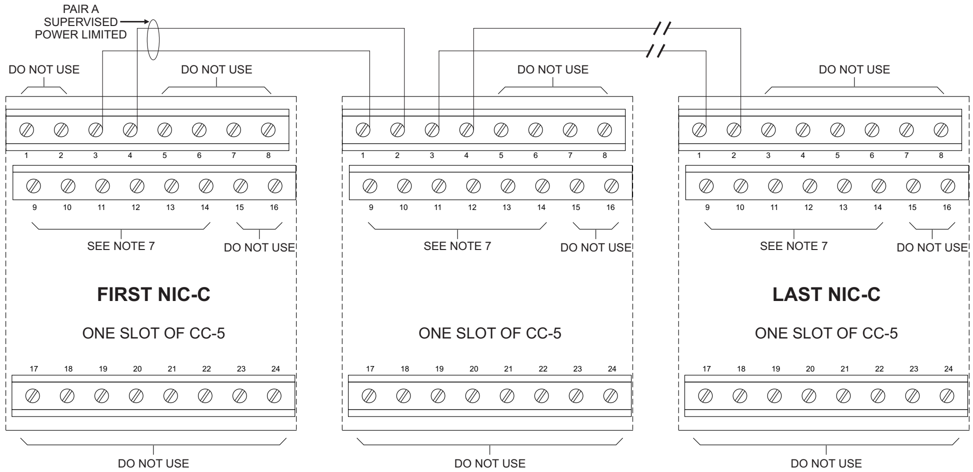


Figure 4
NIC-C Class-B/Style 4 (ULC DCLB) Network Wiring

NOTES:

1. No EOLR required.
2. 18 AWG min., 12 AWG max.
3. 2000 (33.8 ohms) feet max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
   .25μF max. line to line
   Shielded twisted pair
   .15μF max. line to line
   .2μF max. line to shield
4. Terminate shields at one end only.
5. Power limited to NFPA 70 per NEC 760.
6. CC-5 terminals 9 - 14 are not connected and can be used to tie shields together.
7. Positive or negative ground fault detected at $\leq$10K ohms on pins 1 - 8.

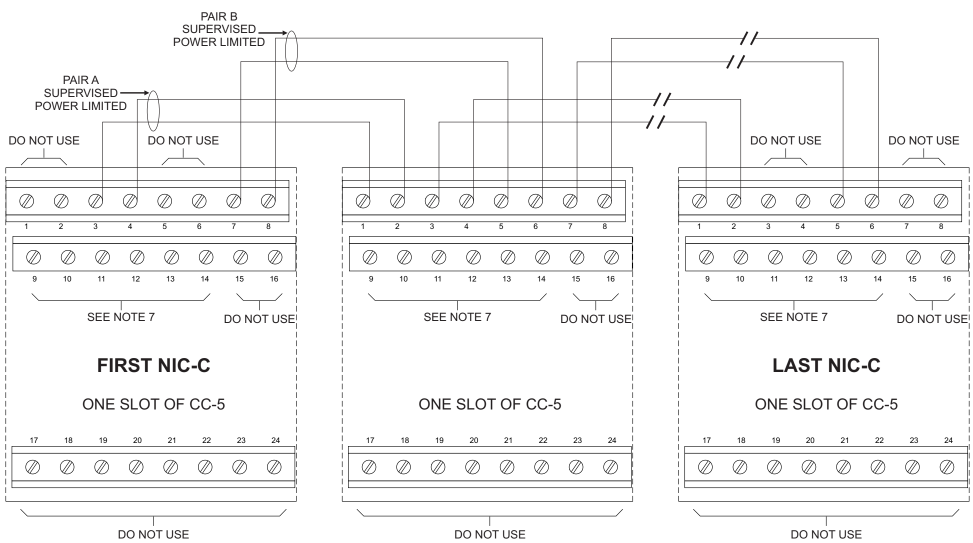
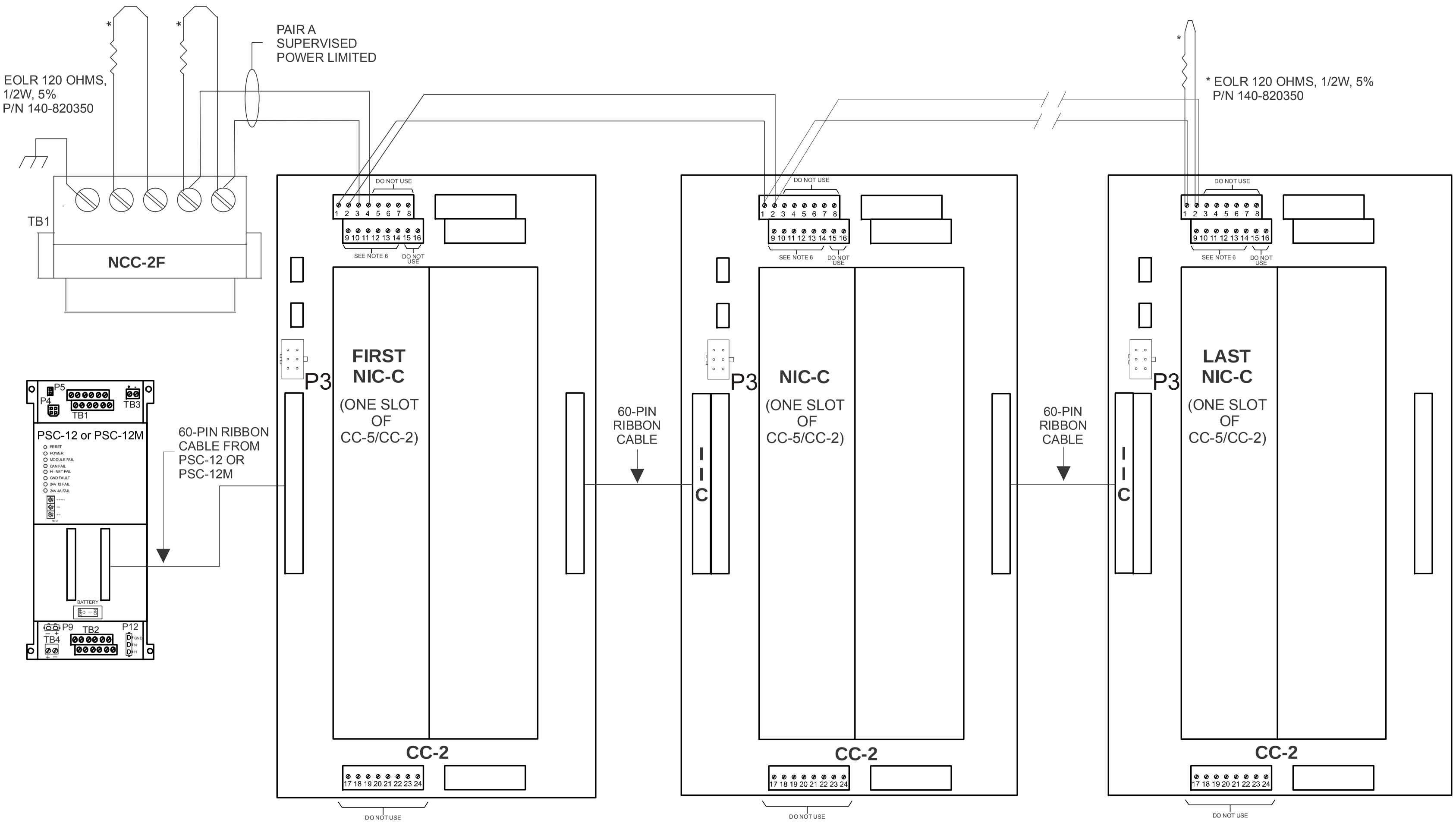


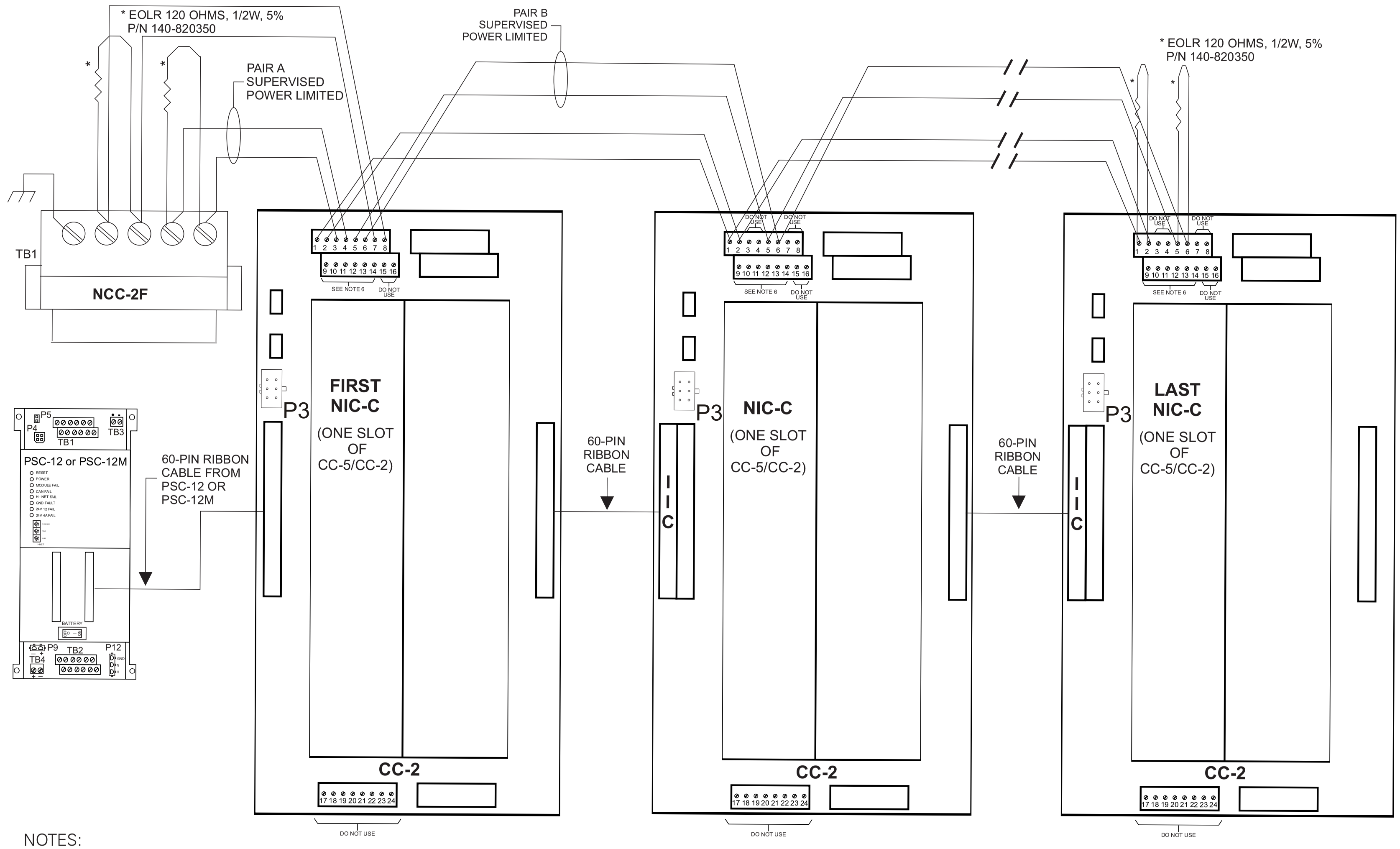
Figure 5
NIC-C Class-X/Style 7 (ULC DCLC) Network Wiring



NOTES:

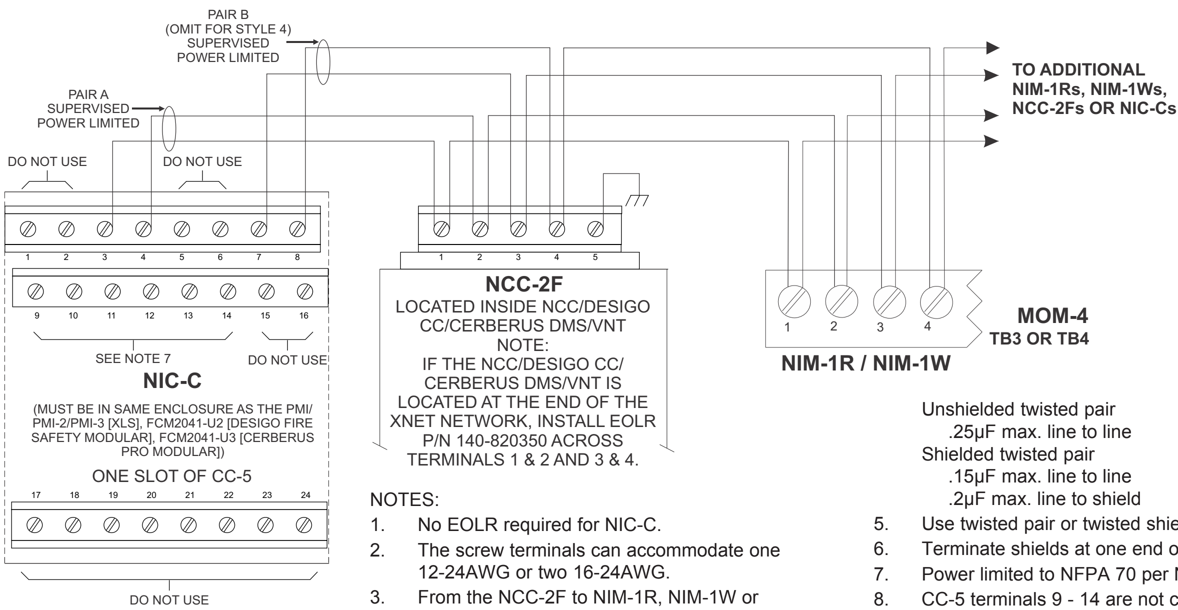
1. EOLR required.
2. 18 AWG min., 12 AWG max.
3. 2000 feet (33.8 ohms) max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
   .25μF max. line to line
   Shielded twisted pair
   .15μF max. line to line
   .2μF max. line to shield
4. Terminate shields at one end only.
5. Power limited to NFPA 70 per NEC 760.
6 CC-5/CC-2 terminals 9 - 14 are not connected and can be used to tie shields together.
7. Positive or negative ground fault detected at ≤10K ohms on pins 1 - 4.
8. Remove jumper P2 from all NIC-Cs in this wiring configuration except on the NIC-C that is connected to the NCC-2F card.

Figure 6
NCC-2F-HNET-VNT Class-B/Style 4 Wiring



NOTES:
1. EOLR required.
2. 18 AWG min., 12 AWG max.
3. 2000 feet (33.8 ohms) max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
   .25µF max. line to line
   Shielded twisted pair
   .15µF max. line to line
   .2µF max. line to shield
4. Terminate shields at one end only.
5. Power limited to NFPA 70 per NEC 760.
6. CC-5/CC-2 terminals 9 - 14 are not connected and can be used to tie shields together.
7. Positive or negative ground fault detected at ≤10K ohms on pins 1 - 8.
8. Remove jumpers P2 and P4 from all NIC-Cs in this wiring configuration except on the NIC-C that is connected to the NCC-2F card.

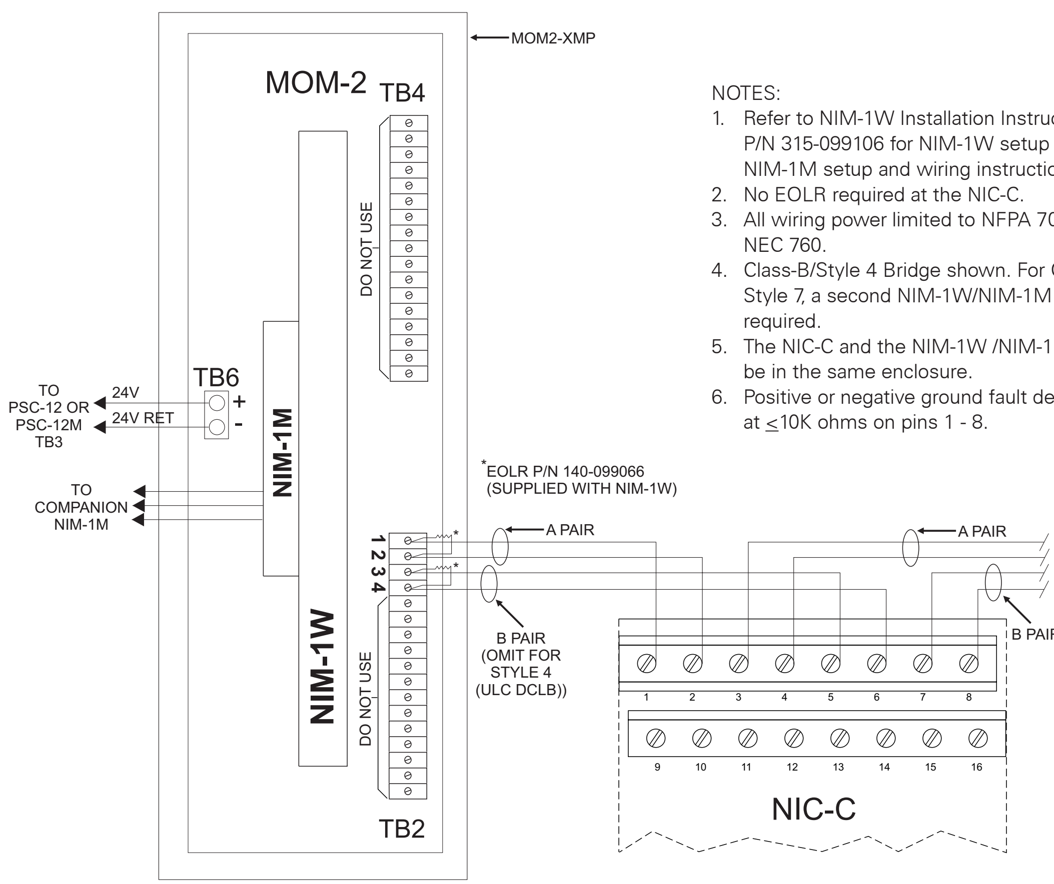
Figure 7
NCC-2F-HNET-VNT Class-X/Style 7 Wiring



NOTES:

1. No EOLR required for NIC-C.
2. The screw terminals can accommodate one 12-24AWG or two 16-24AWG.
3. From the NCC-2F to NIM-1R, NIM-1W or NCC-2F:
   80 Ohms max. per pair.
   Unshielded twisted pair - .5µF line to line
   Shielded twisted pair - .3µF line to line, .4µF line to shield
4. From the NCC-2F to NIC-C:
   2000 feet (33.8 ohms) max. per pair between CC-5s/CC-2s.
   Unshielded twisted pair
   .25µF max. line to line
   Shielded twisted pair
   .15µF max. line to line
   .2µF max. line to shield
5. Use twisted pair or twisted shielded pair.
6. Terminate shields at one end only.
7. Power limited to NFPA 70 per NEC 760.
8. CC-5 terminals 9 - 14 are not connected and can be used to tie shields together.
9. Positive or negative ground fault detected at ≤10K ohms on pins 3-4, 7-8 of the NIC-C.
10. Each pair independently supervised.
11. Maximum voltage 8V P-P.
12. Maximum current 75mA during message transmission.

Figure 8
Connecting To An XNET



NOTES:

1. Refer to NIM-1W Installation Instructions, P/N 315-099106 for NIM-1W setup and NIM-1M setup and wiring instructions.
2. No EOLR required at the NIC-C.
3. All wiring power limited to NFPA 70 per NEC 760.
4. Class-B/Style 4 Bridge shown. For Class-X/ Style 7, a second NIM-1W/NIM-1M is required.
5. The NIC-C and the NIM-1W /NIM-1M must be in the same enclosure.
6. Positive or negative ground fault detected at ≤10K ohms on pins 1 - 8.

Figure 9
Wiring The NIC-C To An XNET Bridge

To Connect the Internal CAN Bus

1. Install the CCL cable into P3 of the CC-5 in the upper left corner of the enclosure.
2. Install the other end of the CCL cable into the first CAN module on the inner door.
3. Observe the location of the CAN termination devices. Install one CAN terminator P/N 110-134215 in the last CAN module on the inner door. Install the 120 Ohm CAN termination resistor P/N 140-820150 into TB1 10 and 11 on the PSC-12 or PSC-12M.
4. The NIC-C may be installed into any open slot of a CC-5.

To Connect the External CAN Bus

1. Loosen the screw of the terminal by turning it counterclockwise.
2. Insert the wire into the side of the terminal block
3. Tighten the screw of the terminal block by turning it clockwise.
4. Observe the location of the CAN termination devices. Install one CAN terminator P/N 110-134215 in the last CAN module on the inner door. If no CAN modules are installed on the inner door inset the CAN terminator into P3 of the CC-5 where the NIC-C is installed.
5. Install the second CAN terminator in the last CAN module in the remote enclosure.
6. The NIC-C may be installed into any open slot of a CC-5.

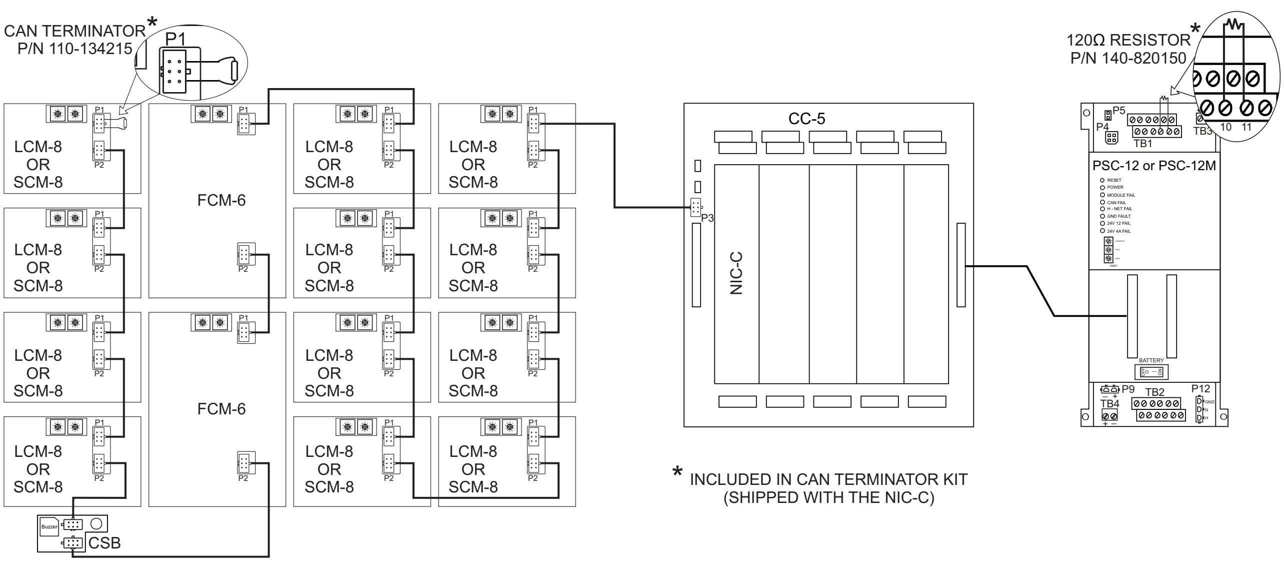


Figure 10
CAN Wiring - Single Enclosure

NOTES:
1. 18 AWG min., 12 AWG max.
2. 15 ohms max. for CAN network.
3. Use twisted pair or twisted shielded pair.
4. Power limited to NFPA 70 per NEC 760.
5. All field wiring supervised.

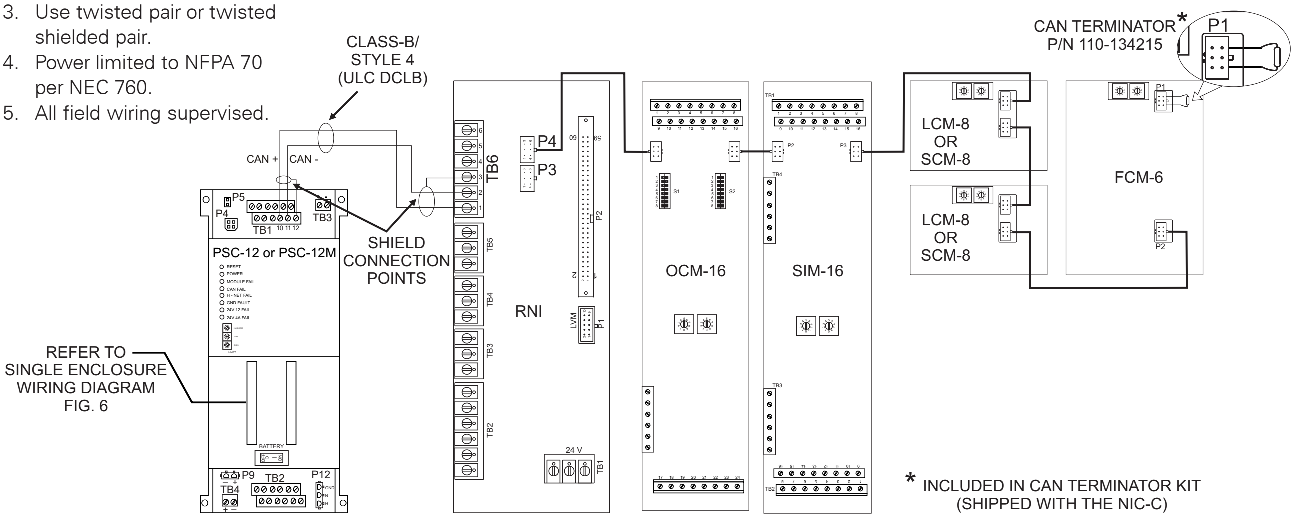
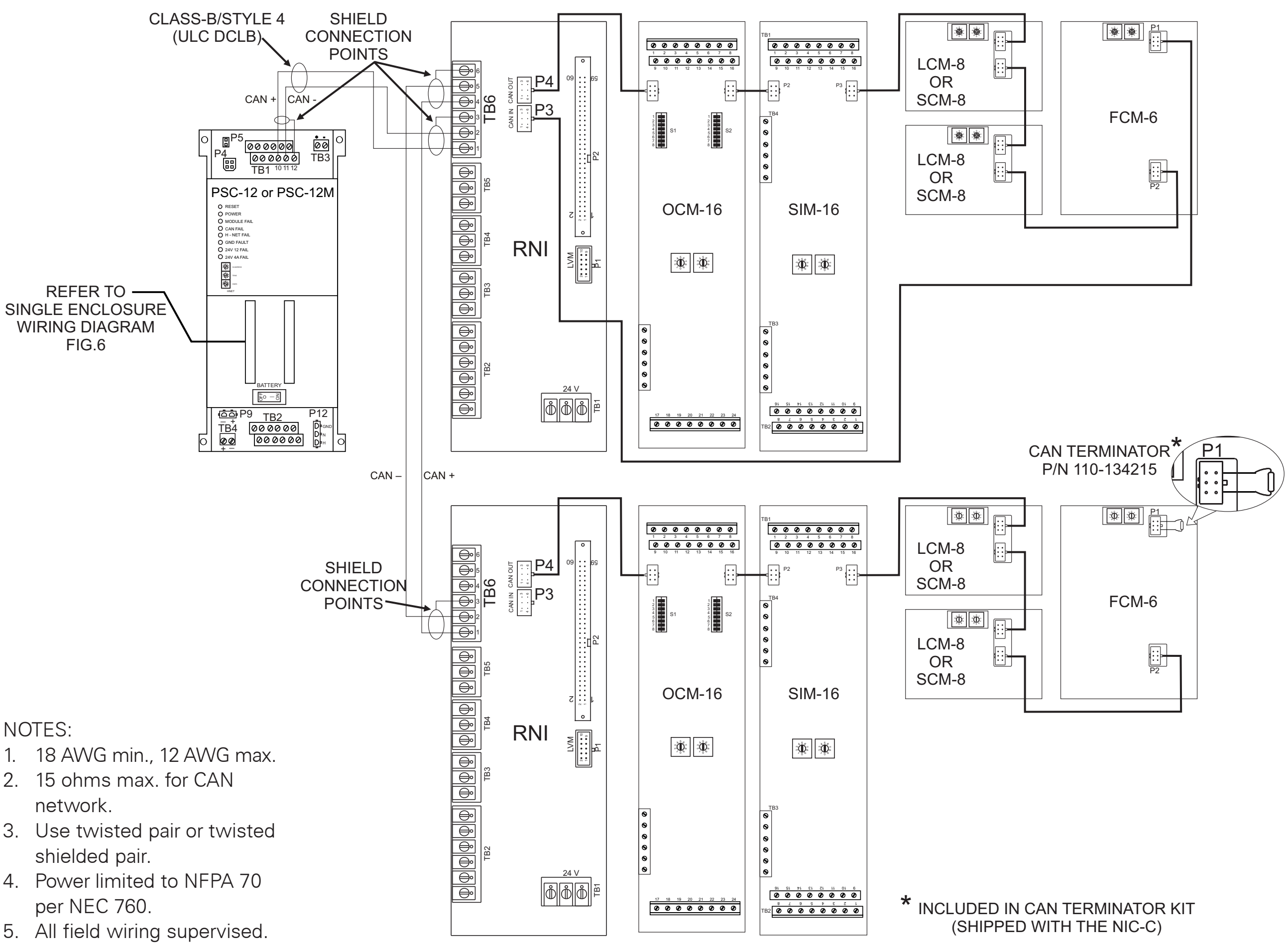
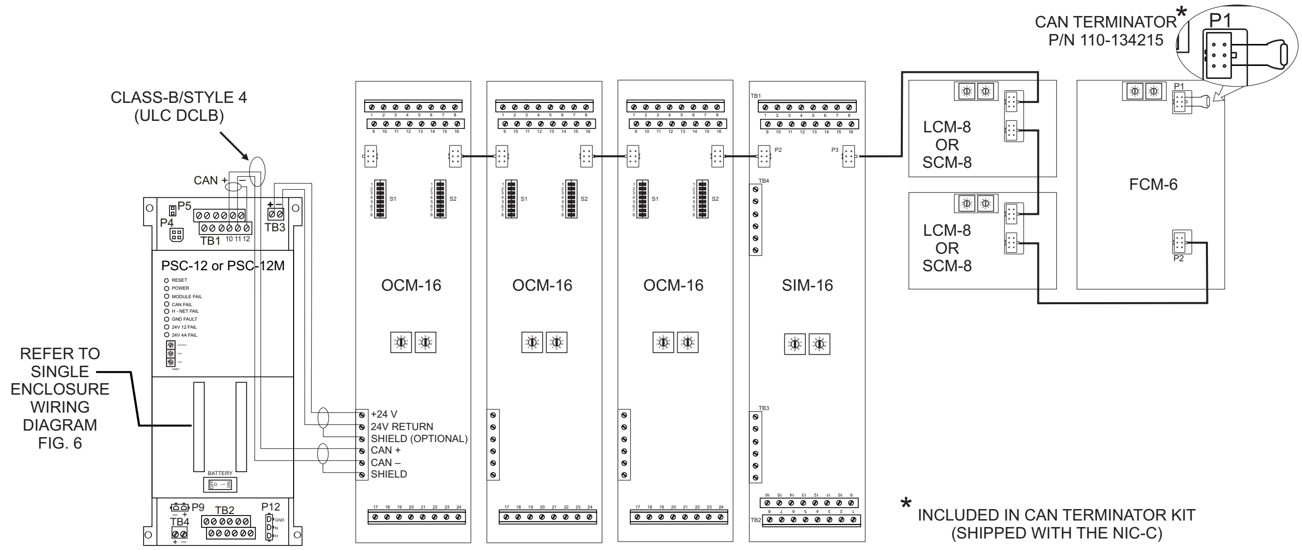


Figure 11
CAN Wiring - Single Remote Enclosure



NOTES:
1. 18 AWG min., 12 AWG max.
2. 15 ohms max. for CAN network.
3. Use twisted pair or twisted shielded pair.
4. Power limited to NFPA 70 per NEC 760.
5. All field wiring supervised.

Figure 12
CAN Wiring - Multiple Remote Enclosures



NOTES:
1. 18 AWG min., 12 AWG max.
2. 15 ohms max. for CAN network.
3. Use twisted pair or twisted shielded pair.
4. Power limited to NFPA 70 per NEC 760.
5. All field wiring supervised.

Figure 13
CAN Wiring - Remote Enclosure Without An RNI

NOTE The screw terminals can accommodate one 12 -18 AWG or two 16-18 AWG.

INSTALLATION

The NIC-C plugs perpendicularly into one slot in the CC-5 card-cage via two 96-pin DIN connectors and can occupy any slot in the card cage. (Refer to Figure 14.)

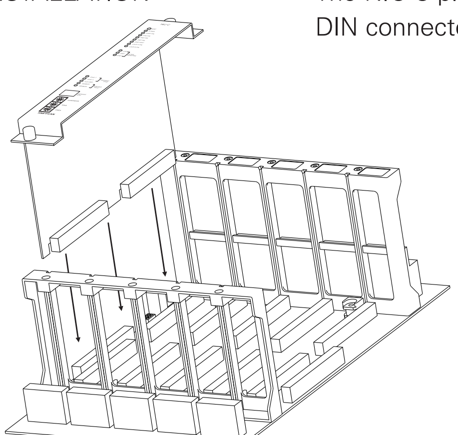


Figure 14
Installing The NIC-C

Insert the NIC-C card into the card guides rightside up (lettering on the front panel is legible)

Slide the card in until the card edge connectors contact the receptacles on the motherboard.

Verify that the DIN connectors of the card and the card-cage aligned properly. The card can only plug in one direction to the card cage, if it does not align, DO NOT FORCE the card.

Place thumbs on the front panel adjacent to the captive screws and gently apply even pressure on the card until the connectors seat in the receptacles on the motherboard. Secure with the captive screws.

ELECTRICAL RATINGS

Input Power		Output Power	
24V Back Plane Current	120mA	Each HNET/XNET And CAN Network Pair	8V peak to peak max.
Screw Terminal 24V Current	0		75mA max. (during msg transmission)
6.2V Back Plane Current	0		
24V Standby Current	120mA		

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You are responsible for preventing unauthorized access to your plants, systems, machines and networks which should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place. Additionally, Siemens' guidance on appropriate security measures should be taken into account. For additional information, please contact your Siemens sales representative or visit https://www.siemens.com/global/en/home/company/topicareas/future-of-manufacturing/industrial-security.html.

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https://www.siemens.com/cert/en/cert-security-advisories.htm.

For CE applications in Cerberus E100 systems refer to
Installation Instruction A24205-A334-B844 (English) or A24205-A334-A844 (German).

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