NetSure™ 801 Series NCU Retrofit Kit

Installation Manual

Kit Specification Number: 60175008

For Use in Spec. No. 582140001 Power System (Model 801NLEB (List 09, 10, 12, 13, 14), Model 801NLDB (List 12, 13, 14))

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

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Admonishments Used in this Document

DANGER! Warns of a hazard the reader ***will*** be exposed to that will ***likely*** result in death or serious injury if not avoided. (ANSI, OSHA)

WARNING! Warns of a potential hazard the reader ***may*** be exposed to that ***could*** result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)

CAUTION! Warns of a potential hazard the reader ***may*** be exposed to that ***could*** result in minor or moderate injury if not avoided. (ANSI, OSHA) This admonition is not used for situations that pose a risk only to equipment, data, or service, even if such use appears to be permitted in some of the applicable standards. (OSHA)

ALERT! Alerts the reader to an action that ***must be avoided*** in order to protect equipment, software, data, or service. (ISO)

ALERT! Alerts the reader to an action that ***must be performed*** in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)

FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)

SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)

Important Safety Instructions

Safety Admonishments Definitions

Definitions of the safety admonishments used in this document are listed under “Admonishments Used in this Document” on page iv.

Safety and Regulatory Statements

Refer to Section 4154 (provided with your customer documentation) for Safety and Regulatory Statements.

Déclarations de Sécurité et de Réglementation

Reportez-vous à la Section 4154 (fourni avec les documents de votre client) pour les déclarations de sécurité et de réglementation.

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1 Vertiv™ NetSure™ 801 Series NCU Retrofit Kit Installation Instructions

1.1 Kit Description

These instructions provide a step-by-step procedure to field install this kit into a Vertiv™ NetSure™ 801 Series DC Power System (Spec. No. 582140001, Model 801NLEB (List 09, 10, 12, 13, 14), Model 801NLDB (List 12, 13, 14). Installation of this kit in other equipment should not be attempted.

This kit replaces the router circuit card and LMS expansion circuit cards in the existing secondary bay system with the supplemental bay shelf controlled by the NCU controller in the retrofit shelf of the primary bay.

1.2 Kit Contents

Table 1.1 lists the items furnished as a part of this kit. Before installing the kit, check the items furnished against those listed to ensure that there are no shortages.

Table 1.1 Kit Contents

Qty.	P/N	Description
1	10161854	Preassembled Supplemental Bay Control Shelf
1	10121488	Connecting Harness
4	237650200	Cable Tie
1	60212234	Label, Nameplate, NetSure 801 Supplemental Bay, 380 V / 480 V
1	60212235	Label, Nameplate, NetSure 801 Supplemental Bay, 208 V
4	218710500	12-24 x 1/2" Hex Screw
4	215640600	#12 Washer
1	248610900	3 A Fuse
1	102774	Fuse Cover
1	514639	Jumper, Interbay, 36"
1	509070	Cable Assembly, Flx Flt/Conn 6", RJ-45
1	60214529	Label, Blank, NS801 Retrofit Kits

1.3 Tools and Material Required

Table 1.2 lists the items required to install this kit.

NOTE! *Vertiv recommends using proper PPE, including insulated tools and gloves, while performing the retrofit.*

Table 1.2 Tools and Material Required

Description
Nut Driver Set
#1 Phillips Screwdriver
#2 Torx Head Screwdriver
#2 Flat Head Screwdriver
5/16" Hex Head Screwdriver
Fine Tip Permanent Marker

1.4 Installation Procedure

THESE INSTRUCTIONS SHOULD BE READ THROUGH COMPLETELY BEFORE INSTALLING THE KIT.

The following is a step-by-step procedure to install the kit. The procedure has been written for ease of use and to minimize the possibility of contact with potentially hazardous energy. This procedure should be performed in the sequence given, and each step should be completely read and fully understood before performing that step. Observe all “Important Safety Instructions” starting on page v and also those presented in the following procedure. As each step of the procedure is completed, the box adjacent to the respective step should be checked. This will minimize the possibility of inadvertently skipping any steps. If the step is not required to be performed for your site, also check the box to indicate that it was read.

DANGER! This kit can be installed with the system operating. Observe the “Important Safety Instructions” starting on page v and those listed in the power system manual.

CAUTION! When performing any step in procedures that requires removal or installation of hardware, use caution to ensure no hardware is dropped and left inside the unit; otherwise, service interruption or equipment damage may occur.

NOTE! *When performing any step in this procedure which requires removal of existing hardware, retain all hardware for use in subsequent steps, unless otherwise stated.*

Initial Procedure

[ ] 1. Performing this procedure may activate external alarms. Do one of the following. If possible, disable these alarms. If these alarms cannot be easily disabled, notify the appropriate personnel to disregard any future alarms associated with this system while the procedure is being performed.

Removing the Existing System Monitoring and Control Shelf (MCA and LMS) Procedure

[ ] 1. Label each cable attached to the Monitor and Control Shelf. See Figure 1.1 through Figure 1.6.

[ ] 2. Disconnect and insulate each cable.

Figure 1.1 Removing Cables

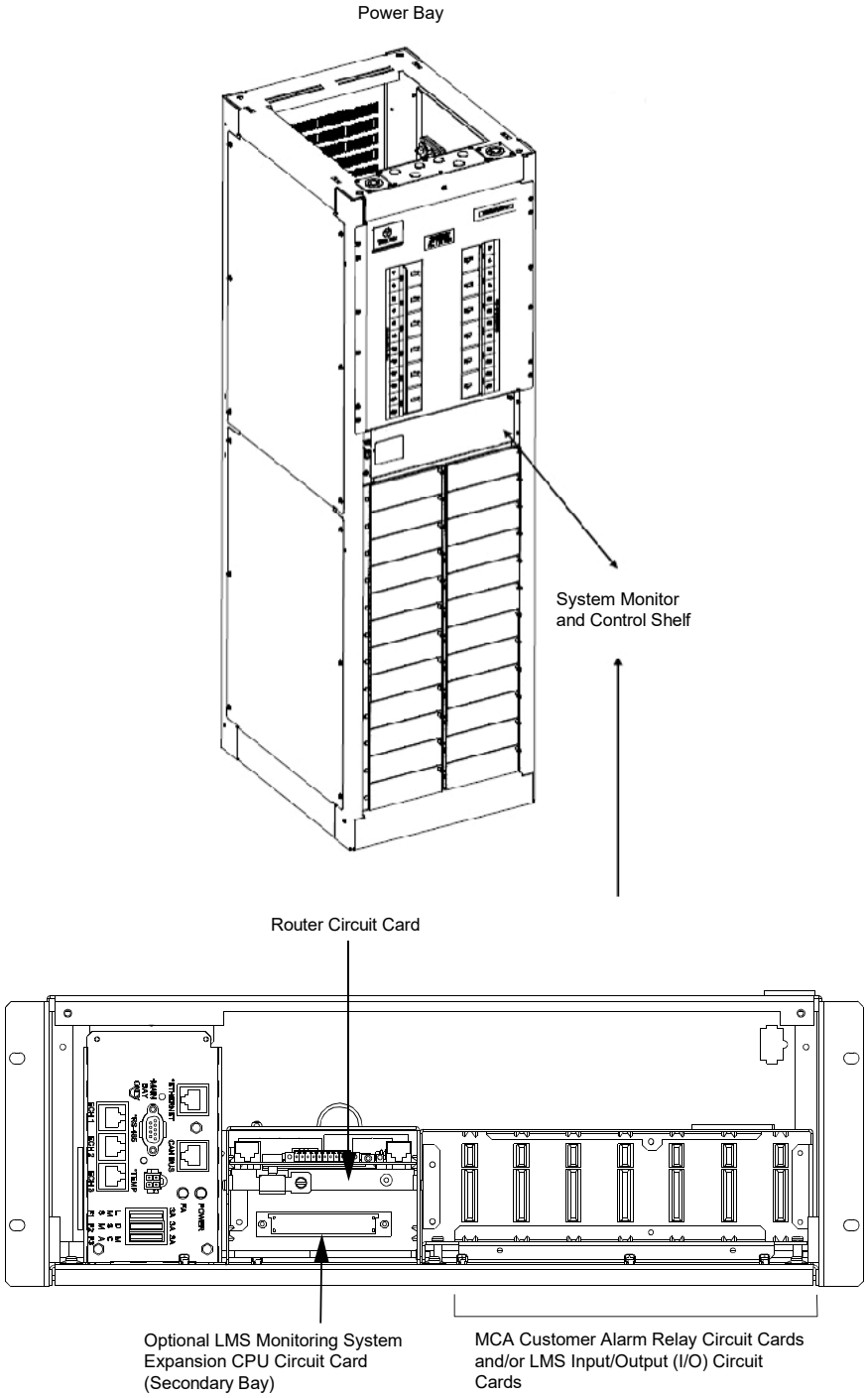


Figure 1.2 Removing Cables – Detail MCA-A

Detail
MCA-A

REMOVE THE MCA NETWORK CABLE.

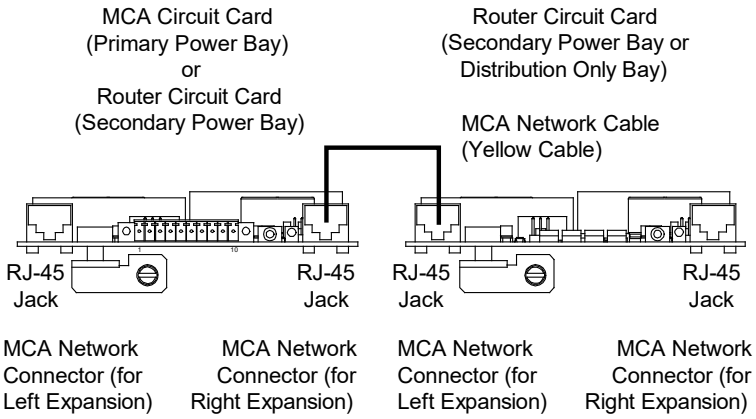
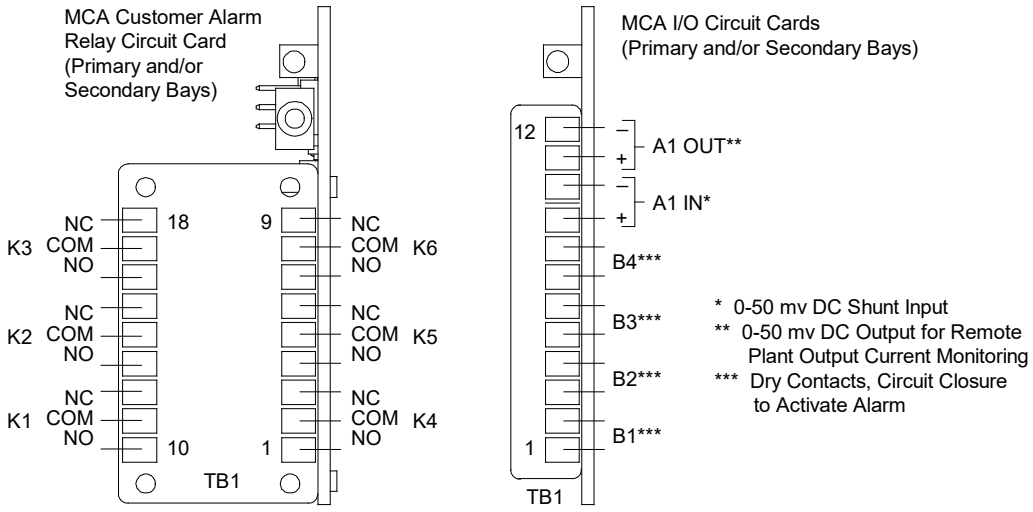


Figure 1.3 Removing Cables – Detail MCA-B

IF THE LEADS IN THE BELOW CARDS WILL NOT BE REUSED:
DISCONNECT AND REMOVE THESE LEADS FROM THE BAY OR INSULATE AND TIE BACK THESE LEADS PER YOUR COMPANY POLICIES.

IF THESE LEADS WILL BE RECONNECTED TO THE NCU INTERFACE CARDS:
LABEL THE LEADS THEN TEMPORARILY DISCONNECT, INSULATE, AND TIE BACK THESE LEADS.

IF REQUIRED TO RECONNECT, THESE LEADS WILL BE RECONNECTED TO THE SM-DUE BOARD OF THE NEW SUPPLEMENTAL BAY RETROFIT SHELF (P/N 10161854) THROUGH ONE OF THE CABLE ENTRY LOCATIONS WITH GROMMETS OR FROM THE BACK. SEE UM60172578 FOR DETAILS.



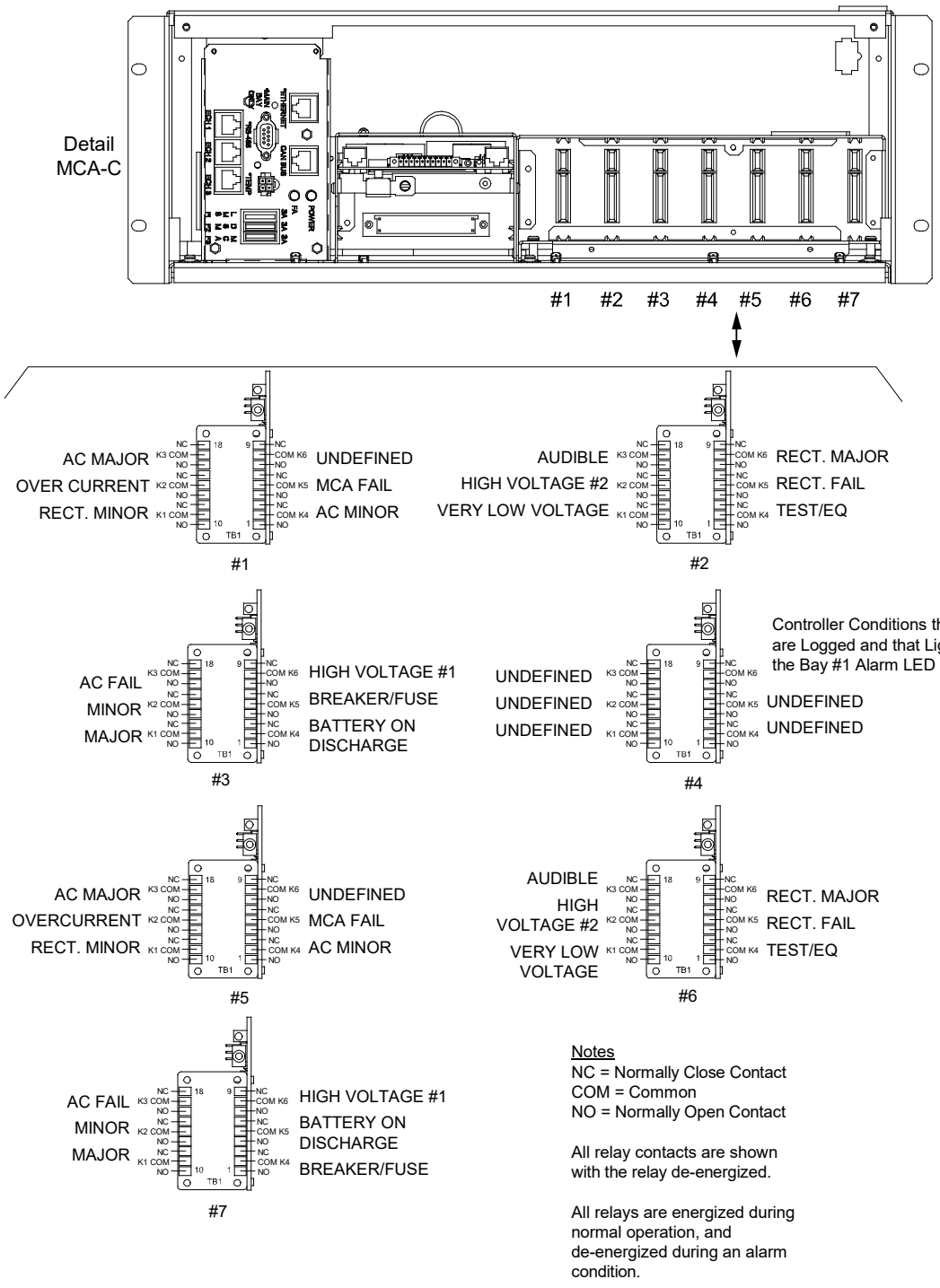
Detail MCA-B

Figure 1.4 Removing Cables – Detail MCA-C

IF THE LEADS IN THE BELOW CARDS WILL NOT BE REUSED:
DISCONNECT AND REMOVE THESE LEADS FROM THE BAY OR INSULATE AND TIE BACK THESE LEADS PER YOUR COMPANY POLICIES.

IF THESE LEADS WILL BE RECONNECTED TO THE NCU INTERFACE CARDS:
LABEL THE LEADS THEN TEMPORARILY DISCONNECT, INSULATE, AND TIE BACK THESE LEADS.

IF REQUIRED TO RECONNECT, REFER TO THE C-DRAWING PROVIDED IN THE USB DRIVE FOR CONNECTION OPTIONS.



Notes
NC = Normally Close Contact
COM = Common
NO = Normally Open Contact

All relay contacts are shown with the relay de-energized.

All relays are energized during normal operation, and de-energized during an alarm condition.

Figure 1.5 Removing Cables – Detail LMS-A

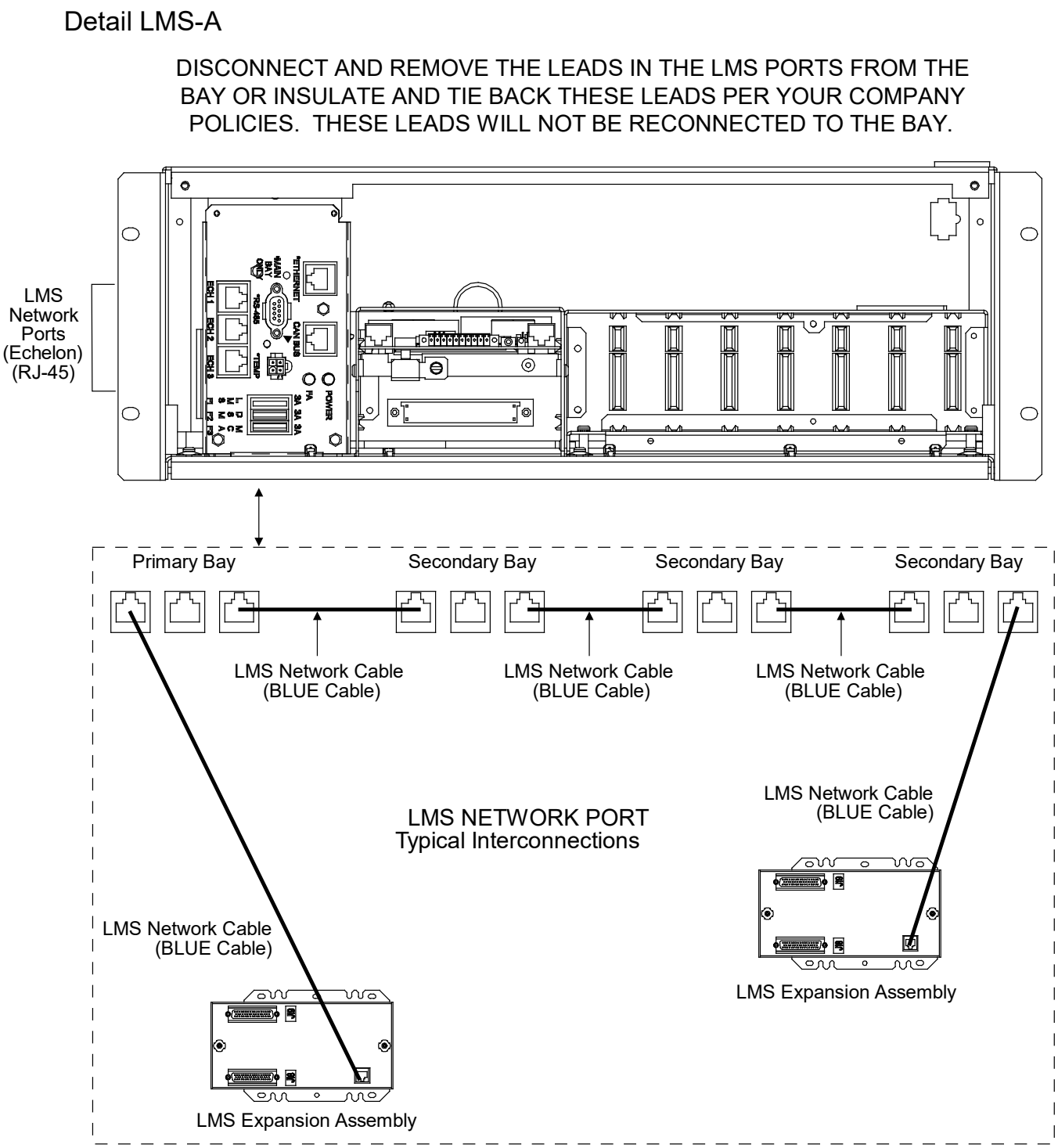
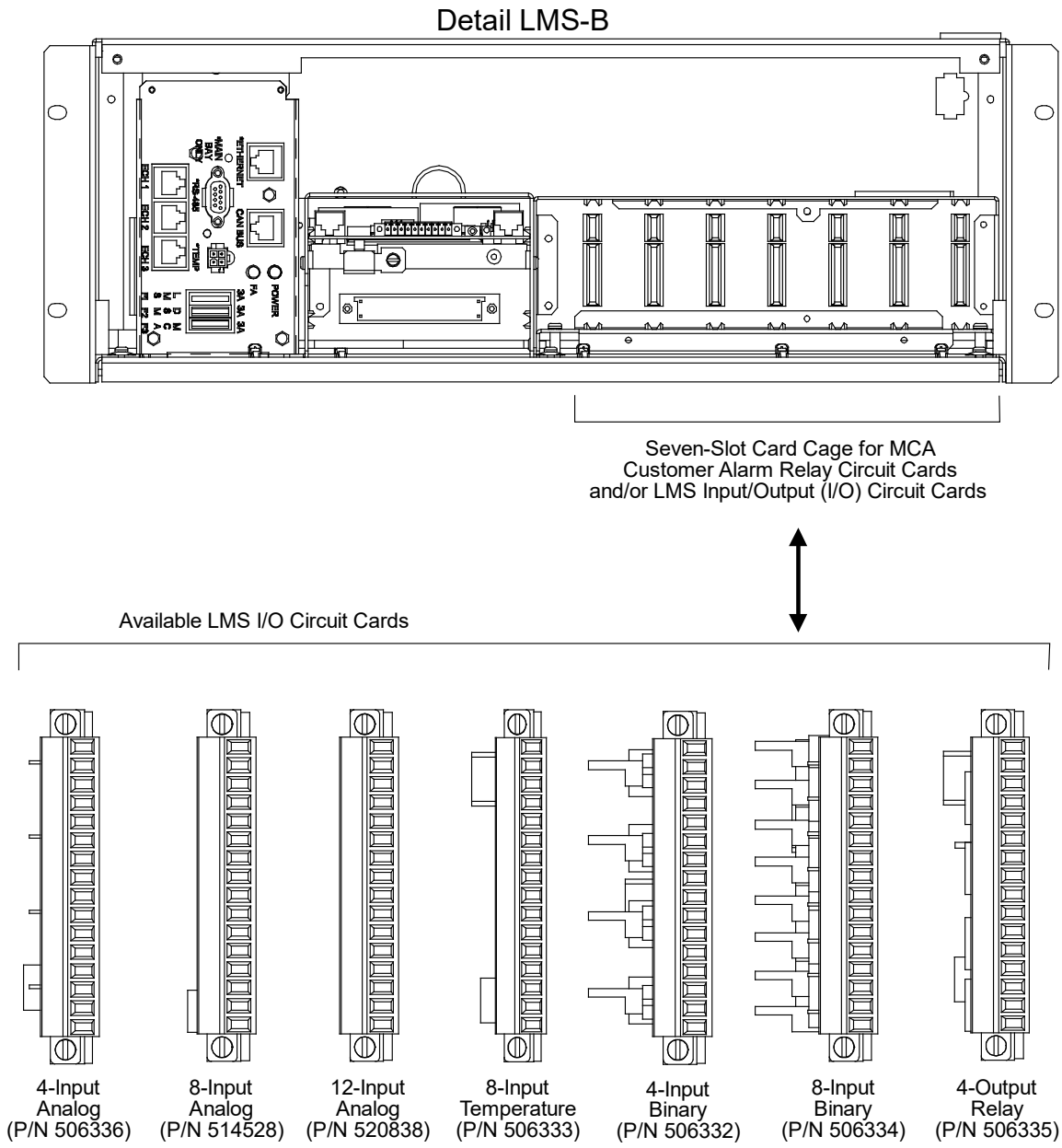


Figure 1.6 Removing Cables – Detail LMS-B



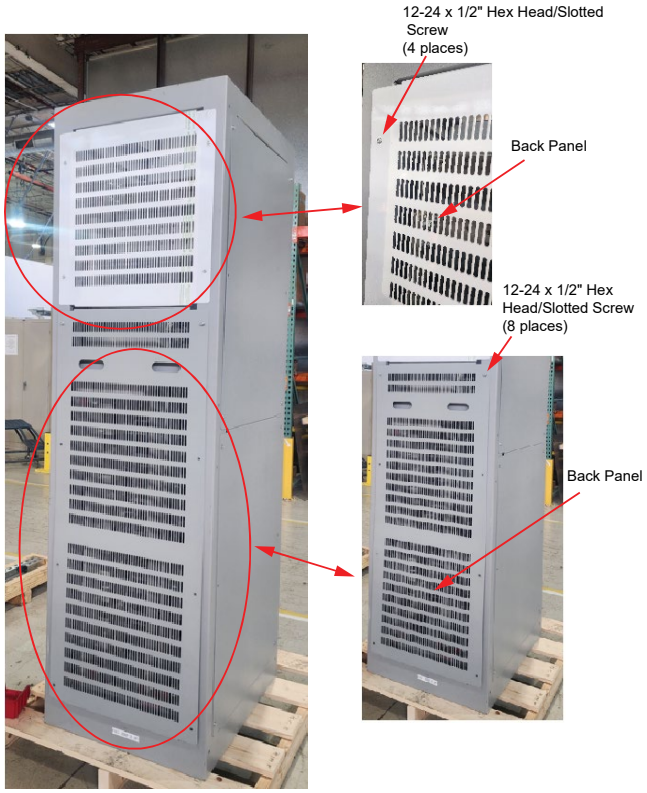
IF THE LEADS IN THE LMS I/O CARDS WILL NOT BE REUSED: DISCONNECT AND REMOVE THESE LEADS FROM THE BAY OR INSULATE AND TIE BACK THESE LEADS PER YOUR COMPANY POLICIES.

IF THESE LEADS WILL BE RECONNECTED TO THE NCU INTERFACE CARDS: LABEL THE LEADS THEN TEMPORARILY DISCONNECT, INSULATE, AND TIE BACK THESE LEADS.

IF REQUIRED TO RECONNECT, THESE LEADS WILL BE RECONNECTED TO THE IB2 AND EIB BOARDS OF THE NEW MAIN BAY RETROFIT SHELF, THROUGH ONE OF THE CABLE ROUTING OPENINGS WITH GROMMETS OR FROM THE BACK. SEE UM60172578 FOR DETAILS.

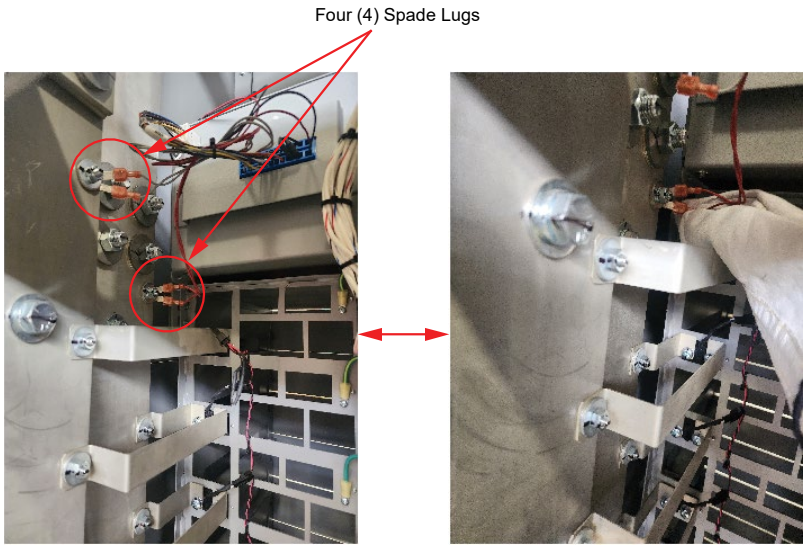
[ ] 3. Remove both back panels by removing the twelve (12) 12-24 x 1/2" hex head/slotted screws using a flat head screwdriver or 5/16" hex head driver. See Figure 1.7. These panels will be reassembled after the retrofit kit installation using the removed hardware.

Figure 1.7 Removing the Back Panels



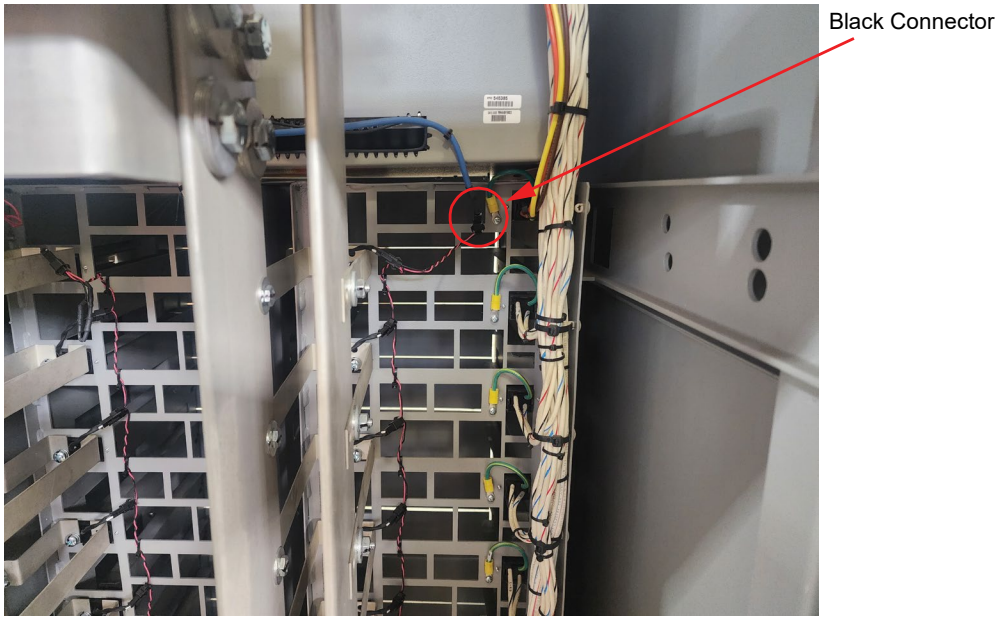
[ ] 4. Remove the two (2) spade lugs (at the end of two red wires) from the quick connect terminal of BAT bus bar. Remove the two (2) spade lugs (at the end of two black or gray wires) from the quick connect terminal of RTN bus bar. See Figure 1.8. This will result in the disconnection of power to the System Monitoring and Control Shelf (MCA and LMS).

Figure 1.8 Removing the Spade Lugs



[ ] 5. Unplug the black connector as shown in Figure 1.9 to disconnect the CAN connection from the rectifiers.

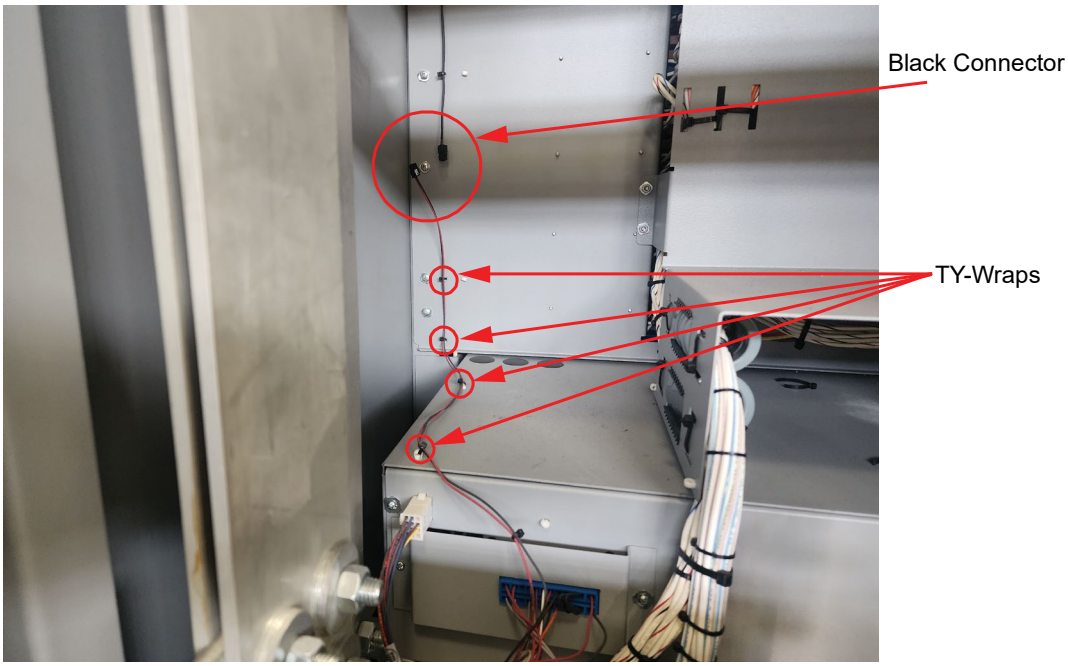
Figure 1.9 Removing the Black Connector to Disconnect the CAN Connection



[ ] 6. Unplug the black connector to disconnect the LED light connection. Then, cut the ty wraps to release the wire routing at the back of the System Monitoring and Control Shelf (MCA and LMS). See Figure 1.10. This completes all disconnections from the back of the System Monitoring and Control Shelf (MCA and LMS).

NOTE! *Make sure that all unplugged cables are coiled and tied to the back of the System Monitoring and Control Shelf (MCA and LMS) to prevent them from snagging while sliding the shelf out.*

Figure 1.10 Removing Black Connector to Disconnect the LED Connection



[ ] 7. If the secondary (supplemental) bay has a system name plate label adhered to the front plate of the System Monitoring and Control Shelf (MCA and LMS) (see Figure 1.11), the system information on this name plate must be written with a fine tip permanent marker on the blank label (P/N 601214529) that is provided in the kit. After confirming the information is written correctly (see Figure 1.12), adhere the new label on the AC panel as shown in Figure 1.11.

NOTE! *This step is not required for power bays that have the system name plate originally adhered on the AC panel.*

Figure 1.11 Adhering System Replacement Label

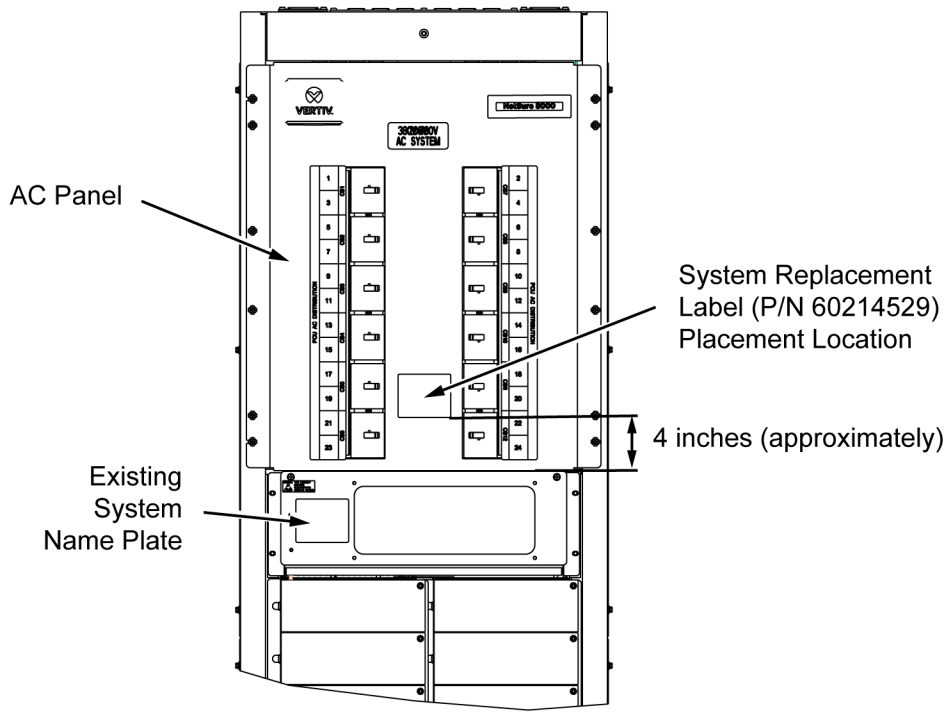
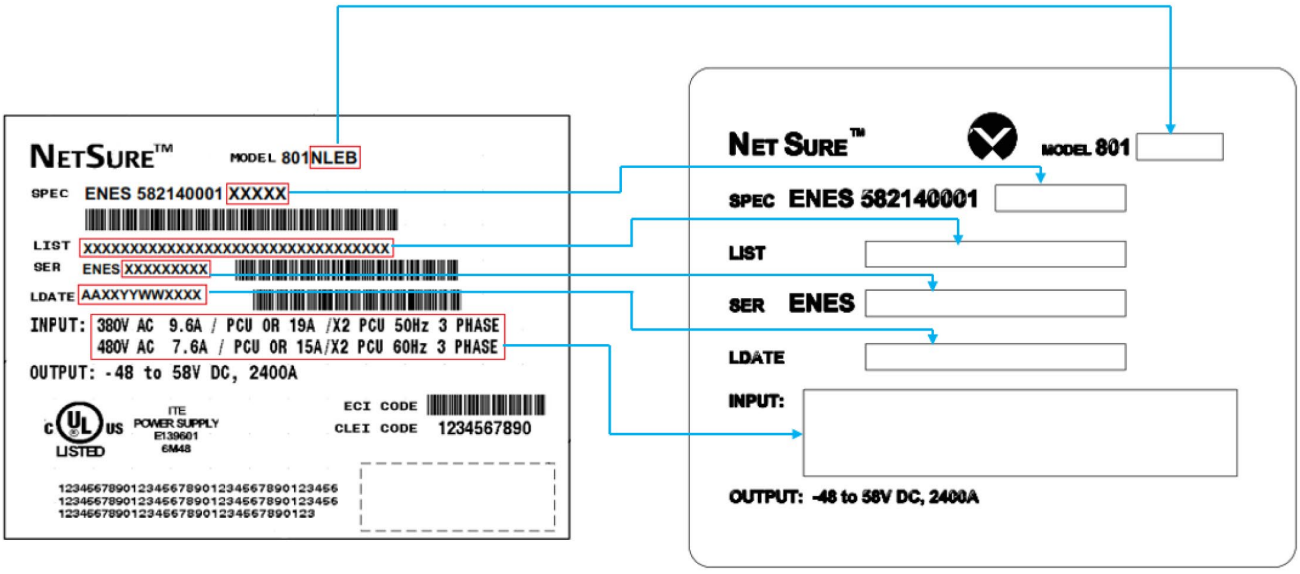


Figure 1.12 Entering System Information on Blank Label (P/N 601214529)

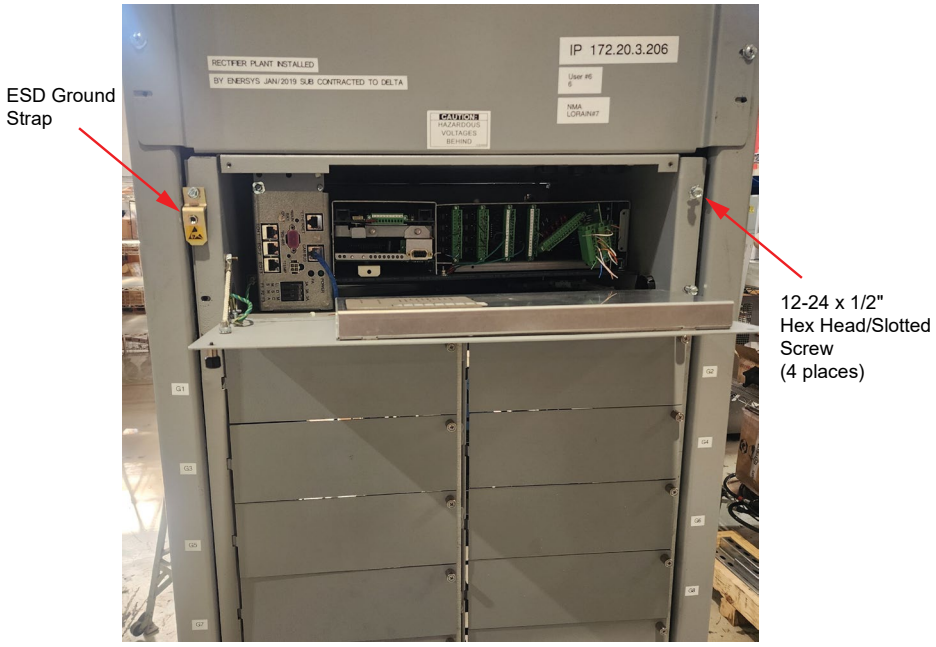


[ ] 8. From the front, remove the four (4) 12-24 x 1/2" hex head/slotted screws from the System Monitoring and Control Shelf (MCA and LMS) mounting brackets using a flat head screwdriver or 5/16" hex head driver. See Figure 1.13. Pull the System Monitoring and Control Shelf (MCA and LMS) from its slot. Remove the System Monitoring and Control Shelf from the front of the system.

WARNING! Shelf is heavy. Use caution when pulling the MCA/LMS shelf out and while lifting.

NOTE! *Keep the ESD ground strap bracket and hardware for later reuse. The ESD ground strap bracket will be re-installed in the same location when the new kit furnished supplemental bay control shelf is installed.*

Figure 1.13 Removing System Monitoring and Control Shelf (MCA and LMS)

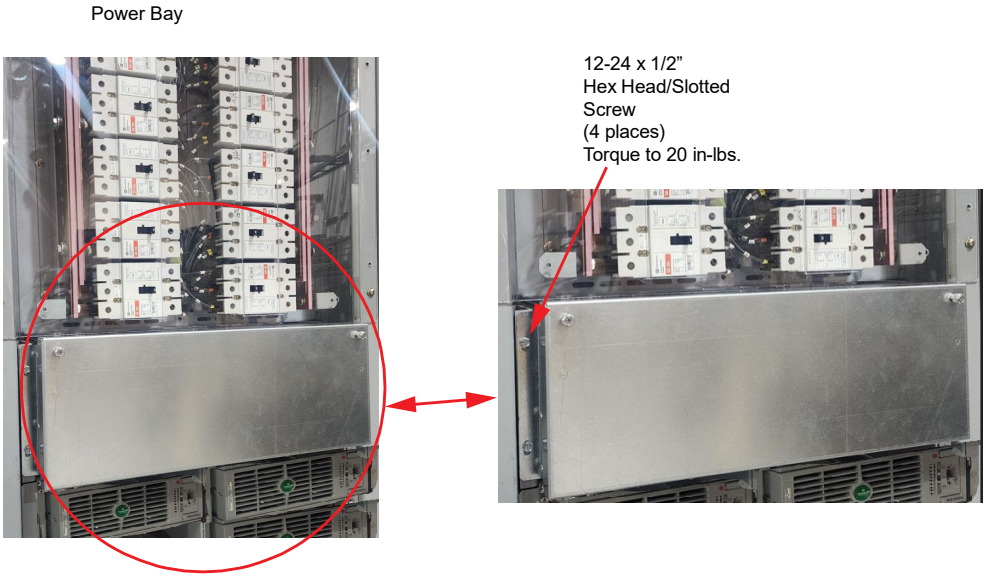


Installing the Kit Furnished Supplemental Bay Shelf Procedure

[ ] 1. Slide the supplemental bay shelf in the same position as the System Monitoring and Control Shelf (MCA and LMS) just removed. See Figure 1.14. Align the shelf mounting brackets to the rack rails. Place the ESD ground strap at one of the mounting hole locations and secure the shelf to the rack rails with the four (4) 12-24 x 1/2" hex head/slotted screws (provided in the package) using a flat head or 5/16" hex head screwdriver.

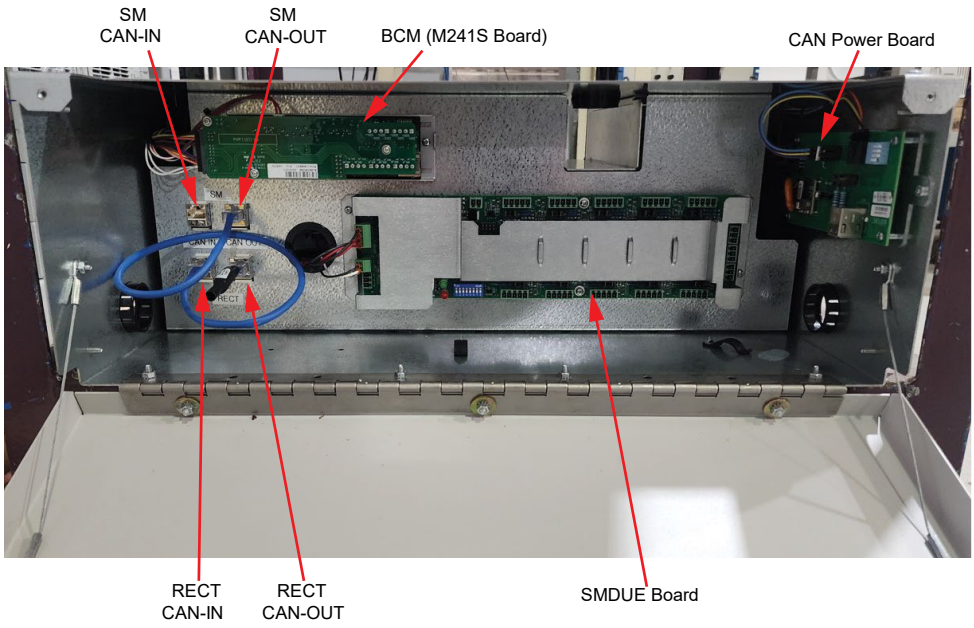
NOTE! *Use the ground strap that was removed during the removal of System Monitoring and Control Shelf (MCA and LMS).*

Figure 1.14 Installing the Kit Furnished Supplemental Bay Shelf



[ ] 2. Open the door by turning both the captive screws on the door counterclockwise. Figure 1.15 shows the component layout inside the supplemental bay shelf.

Figure 1.15 Component Layout



[ ] 3. Set the bay address on the CAN power board. Each bay needs a unique address to communicate with the NCU.

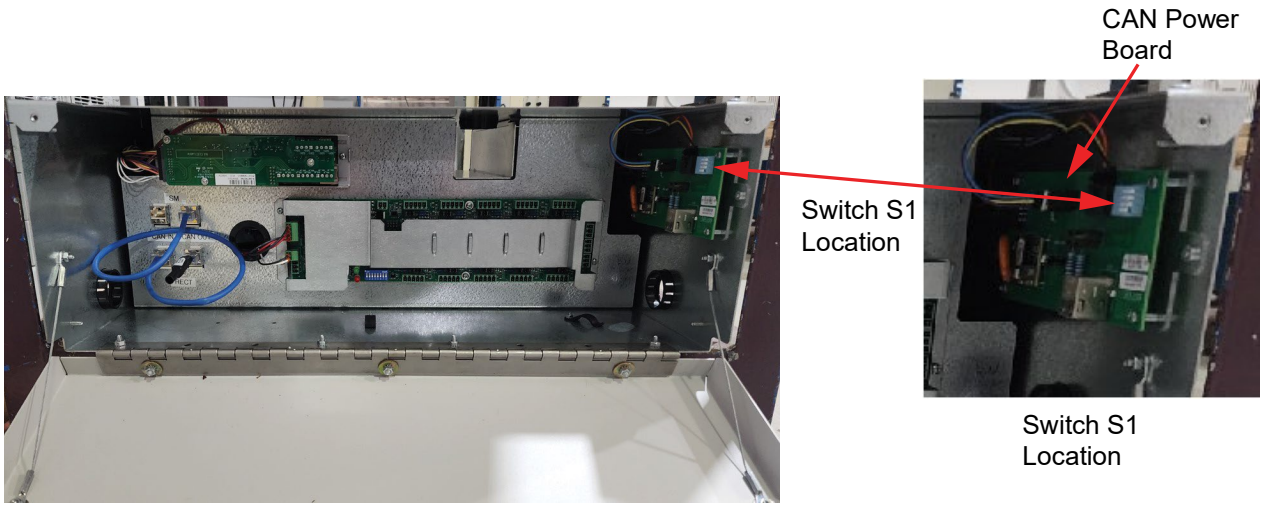
a) Dip Switch S1 is used to set the communications address for each bay. Refer to Table 1.3 for S1 settings. Refer to Figure 1.16 for S1 location.

b) Set the addressing switches on each kit installed in the system to a unique address per Table 1.3.

Table 1.3 DIP Switch S1 (Bay Addressing)

DIP Switch S1				
Communication Address			Reserved	Description of Status
1	2	3	4	
DOWN	DOWN	DOWN	DOWN	Address 1# (Setting for 1st Bay in System)
UP	DOWN	DOWN		Address 2# (Setting for 2nd Bay in System)
DOWN	UP	DOWN		Address 3# (Setting for 3rd Bay in System)
UP	UP	DOWN		Address 4# (Setting for 4th Bay in System)
DOWN	DOWN	UP		Address 5# (Setting for 5th Bay in System)
UP	DOWN	UP		Address 6# (Setting for 6th Bay in System)
DOWN	UP	UP		Address 7# (Setting for 7th Bay in System)
UP	UP	UP		Address 8# (Setting for 8th Bay in System)
DOWN	DOWN	DOWN	UP	Address 9# (Setting for 9th Bay in System)
UP	DOWN	DOWN		Address 10# (Setting for 10th Bay in System)
DOWN	UP	DOWN		Address 11# (Setting for 11th Bay in System)
UP	UP	DOWN		Address 12# (Setting for 12th Bay in System)
DOWN	DOWN	UP		Address 13# (Setting for 13th Bay in System)
UP	DOWN	UP		Address 14# (Setting for 14th Bay in System)
DOWN	UP	UP		Address 15# (Reserved)
UP	UP	UP		Address 16# (Reserved)

Figure 1.16 DIP Switch S1 (Bay Addressing)



[ ] 4. Set DIP switch SW1 on the SM-DUE per site requirements. Refer to Table 1.4 for switch settings. See also Figure 1.17.

NOTE! *Set each SM-DUE to a different communications address.*

Table 1.4 SM-DUE Switch Settings

Communication Address (Use Switch 1, 2, and 3 of SW1) 1	2	3	Function Descriptions
Off	Off	Off	SM-DUE #1 (Default Setting)
Off	Off	On	SM-DUE #2
Off	On	Off	SM-DUE #3
Off	On	On	SM-DUE #4
On	Off	Off	SM-DUE #5
On	Off	On	SM-DUE #6
On	On	Off	SM-DUE #7
On	On	On	SM-DUE #8

Baud Rate for Serial Port Communication (RS-485 Port) (Use Switch 4 of SW1) 4	Function Descriptions
Off	19200 (Default Setting)
On	9600

Parameter of Shunt Setting Configured by Hardware or Software (Use Switch 5 of SW1) 5	Function Descriptions
Off	Shunt parameter is set through software. (Default Setting)
On	Shunt parameter is set through DIP switch.

Shunt Voltage (Use Switch 6 of SW1) 6	Function Descriptions
Off	25 mV (Default Setting)
On	50 mV

Shunt Current (Use Switch 7 and 8 of SW1) 7	8	Function Descriptions
Off	Off	500 A (Default Setting)
Off	On	1000 A
On	Off	1500 A
On	On	2000 A

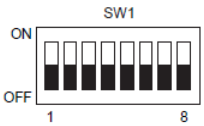
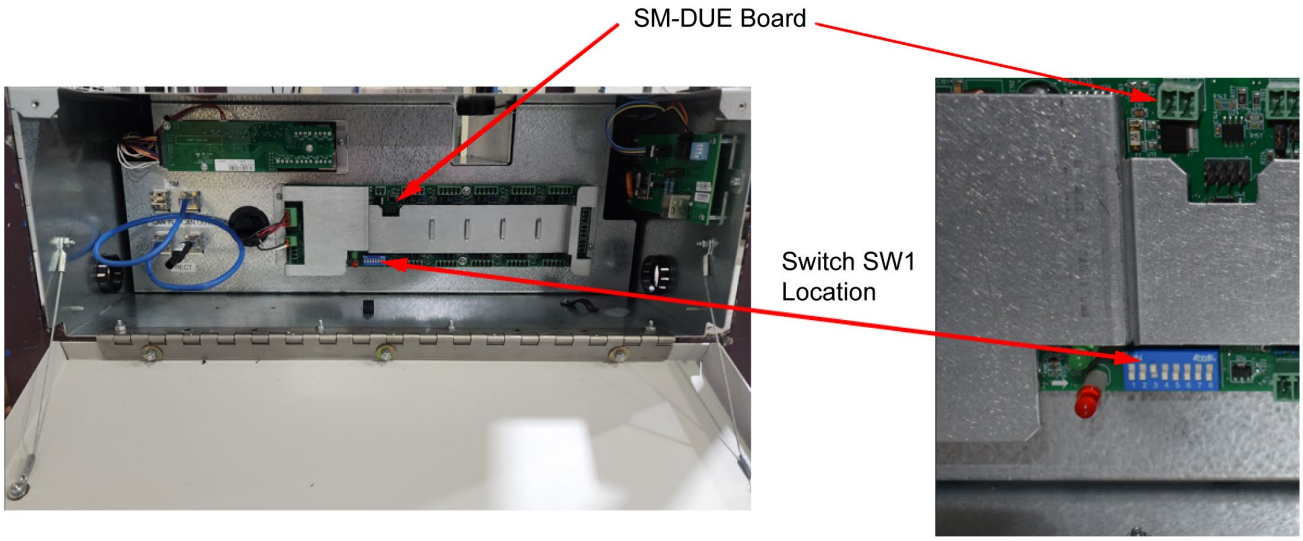
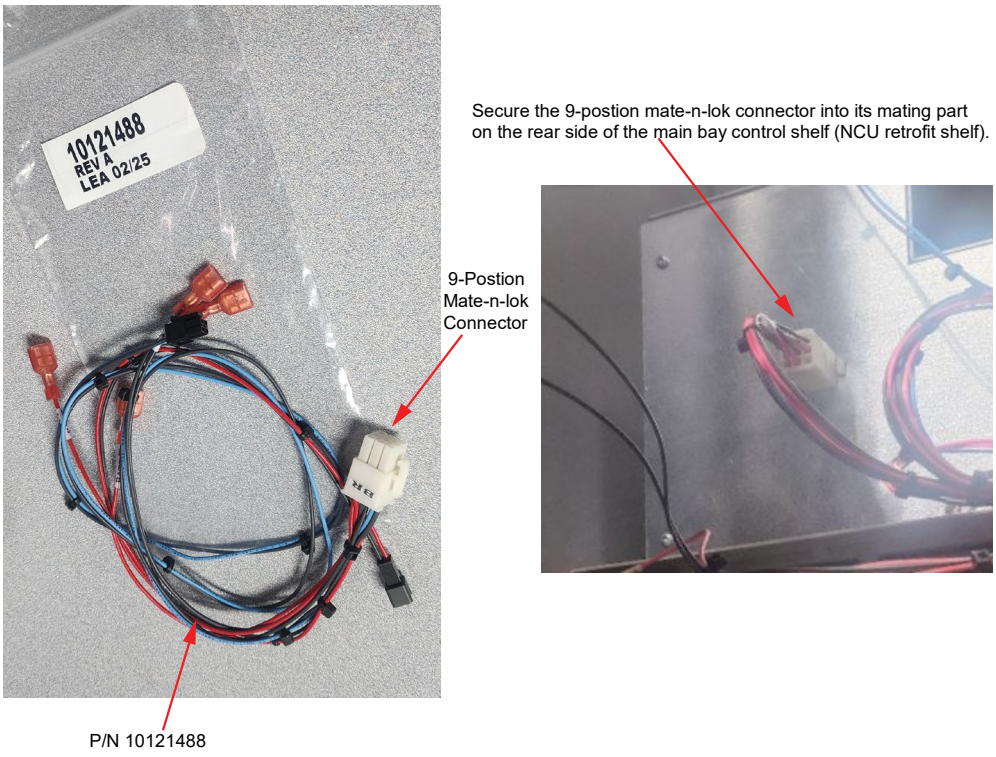


Figure 1.17 Switch SW1 Location



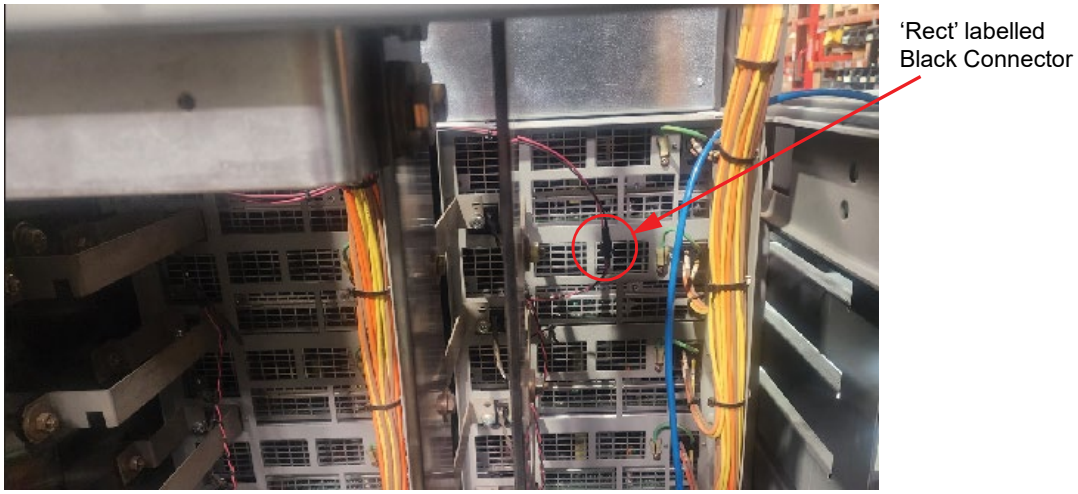
[ ] 5. Take out harness P/N 10121488 from the kit/package and secure the 9-postion mate-n-lok connector into its mating part on the rear side of the main bay control shelf (NCU retrofit shelf) as shown in Figure 1.18.

Figure 1.18 Securing the 9-Position Mate-n-lok Connector



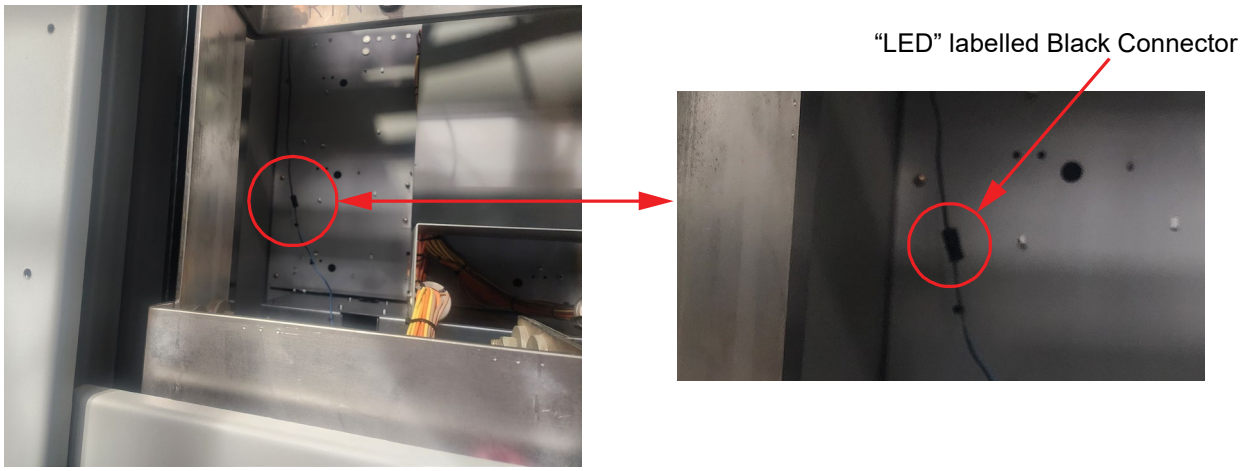
[ ] 6. At the back side of the system, plug in the black connector labelled 'Rect' to its mating connector as shown in Figure 1.19.

Figure 1.19 Connecting 'Rect' labelled Black Connector



[ ] 7. Plug in the black connector labelled 'LED' to its mating connector as shown in Figure 1.20.

Figure 1.20 Connecting 'LED' Labelled Black Connector

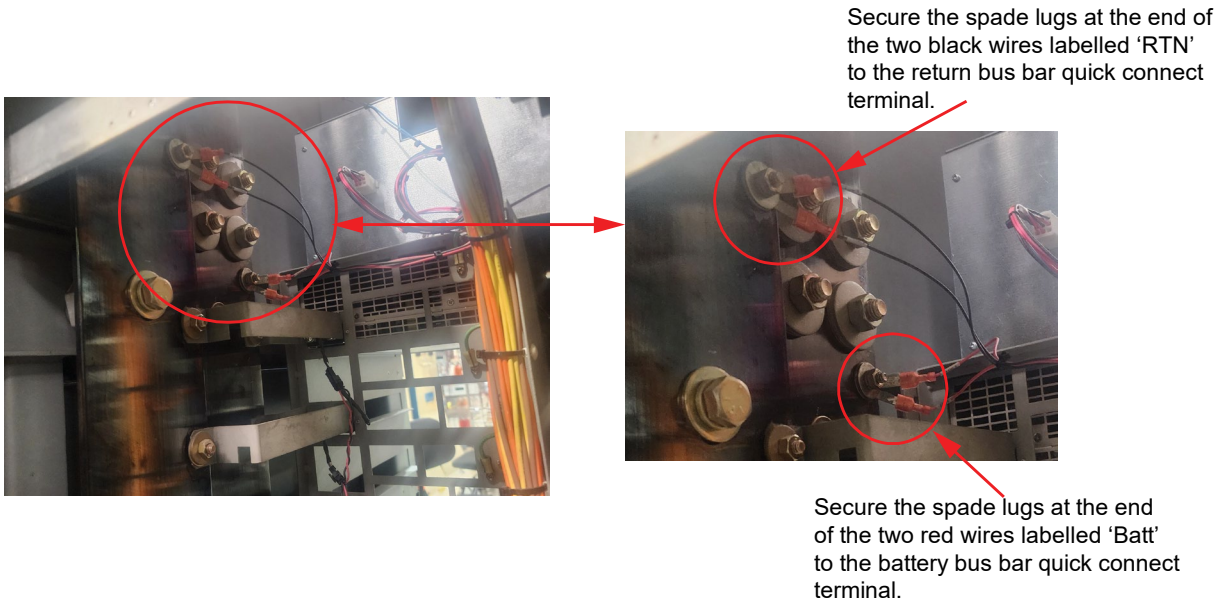


[ ] 8. Secure the spade lugs at the end of the two black wires labelled 'RTN' to the return bus bar quick connect terminal as shown in Figure 1.21.

NOTE! Since the system is live, a spark is generated while installing the 'Batt' wires (red wires) in the next step.

[ ] 9. Secure the spade lugs at the end of the two red wires labelled 'Batt' to the battery bus bar quick connect terminal as shown in Figure 1.21.

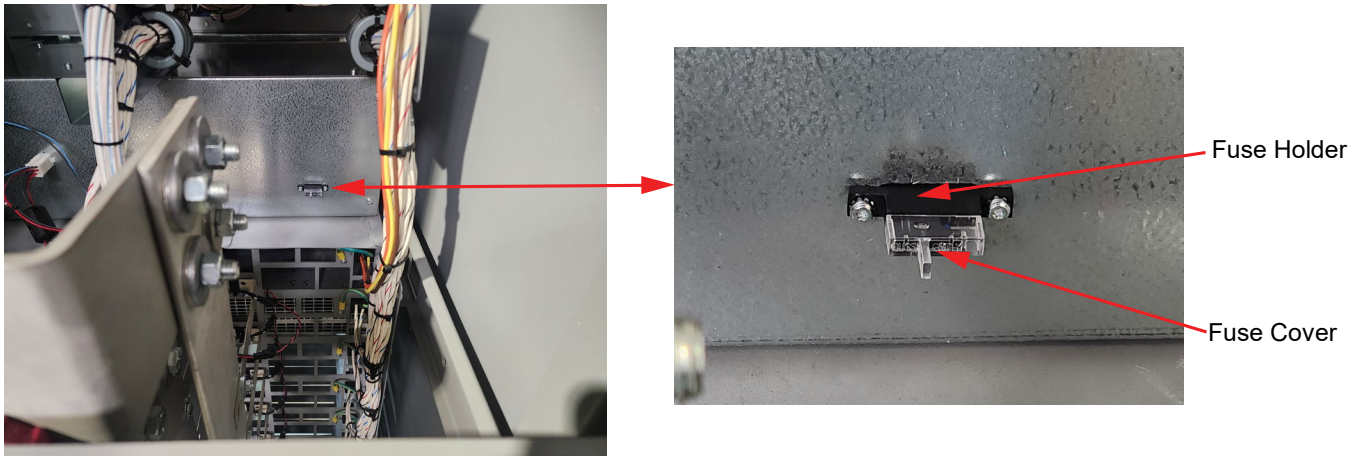
Figure 1.21 Securing the Spade Lugs



[ ] 10. Install the 3 A fuse in the fuse holder (fuse and fuse holder provided in the package) as shown in Figure 1.22. Install the fuse cover.

NOTE! *The retrofit shelf is now energized, and the touchscreen is turned on. The display will show the message 'No Internet'. This message will remain until the NCU is installed and the network cable is connected to the NCU.*

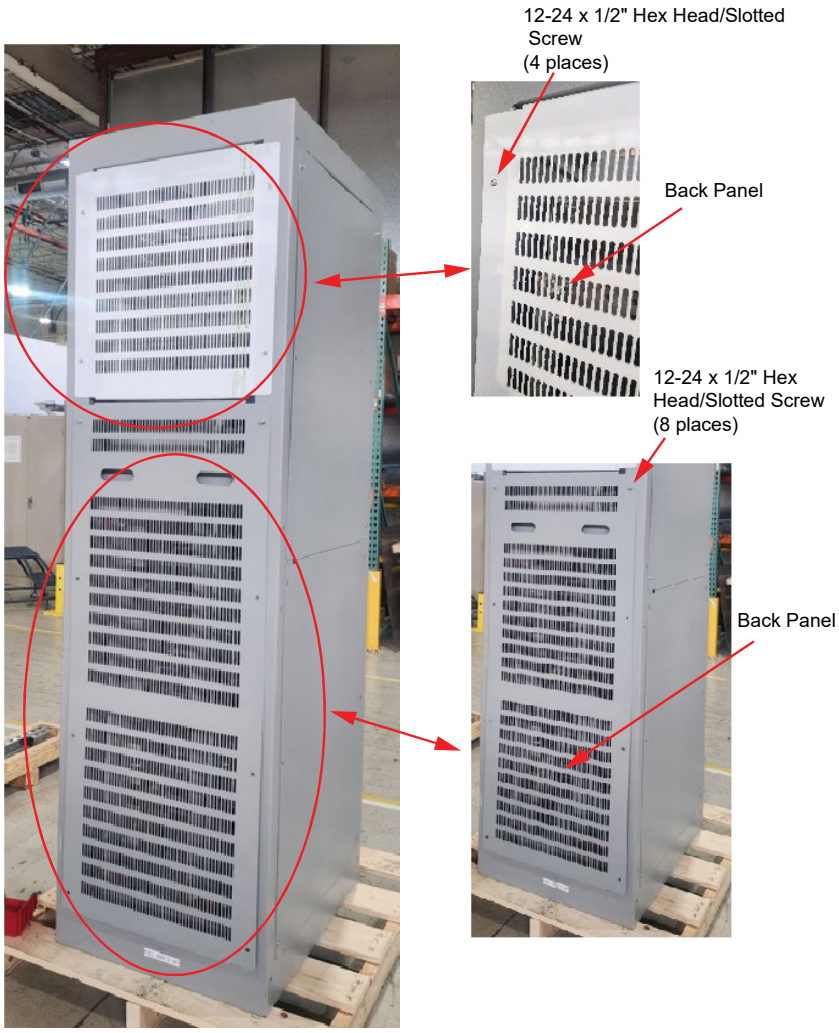
Figure 1.22 Installing 3 A Fuse



[ ] 11. Reinstall the back panels that were previously removed. See Figure 1.23.

NOTE! *Use the hardware that were removed during the removal of the back panels.*

Figure 1.23 Reinstalling the Back Panels

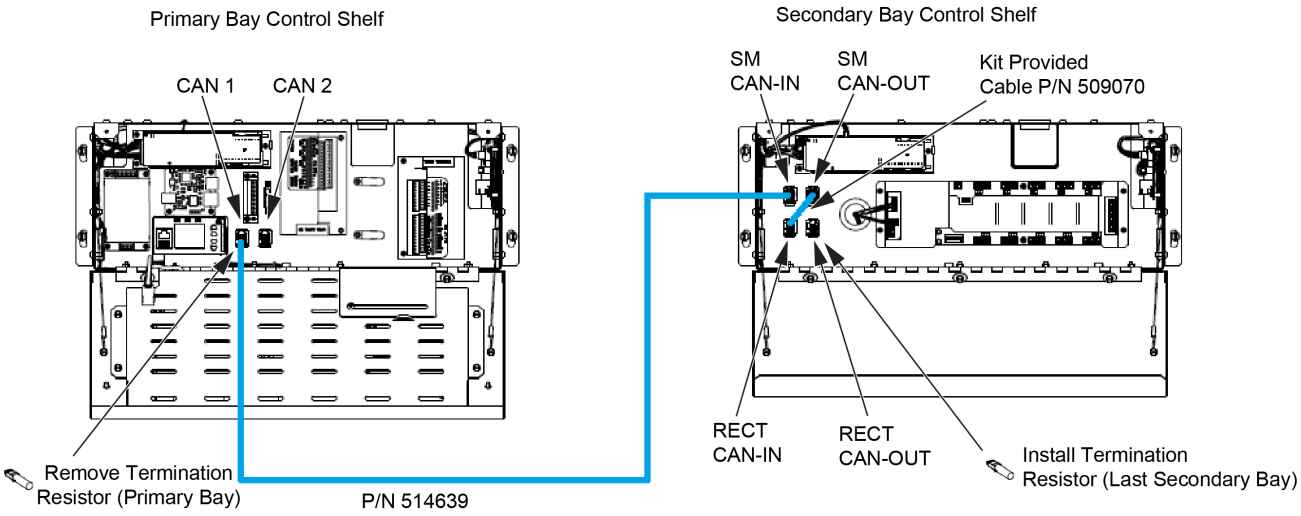


Interconnecting the "Primary Bay Control Shelf to a Secondary Bay Control Shelf" and a "Secondary Bay Control Shelf to another Secondary Bay Control Shelf" Procedure

[ ] 1. For interconnecting the main bay shelf with supplemental bay shelf, remove the terminator resistor from CAN 1 connector from the main bay (this resistor will be reused later). Connect the interconnect cable (blue cable) provided in the kit (P/N 514639) to CAN 1 port of the primary bay control shelf and the SM CAN-IN port of the secondary bay control shelf as shown in Figure 1.24. Route the cable through one of the cable routing locations (grommets) in the shelf. Note that the system can be expanded left or right. Connect the SM CAN-OUT port and RECT CAN-IN port in the supplemental bay with cable (P/N 509070) provided in the kit. Connect a cable between a secondary bay control shelf and another secondary bay control shelf in a similar manner (up to two (2) supplemental bays). Ensure the termination resistor removed from the primary bay CAN connector is installed to the last secondary bay open CAN connector as shown in Figure 1.24.

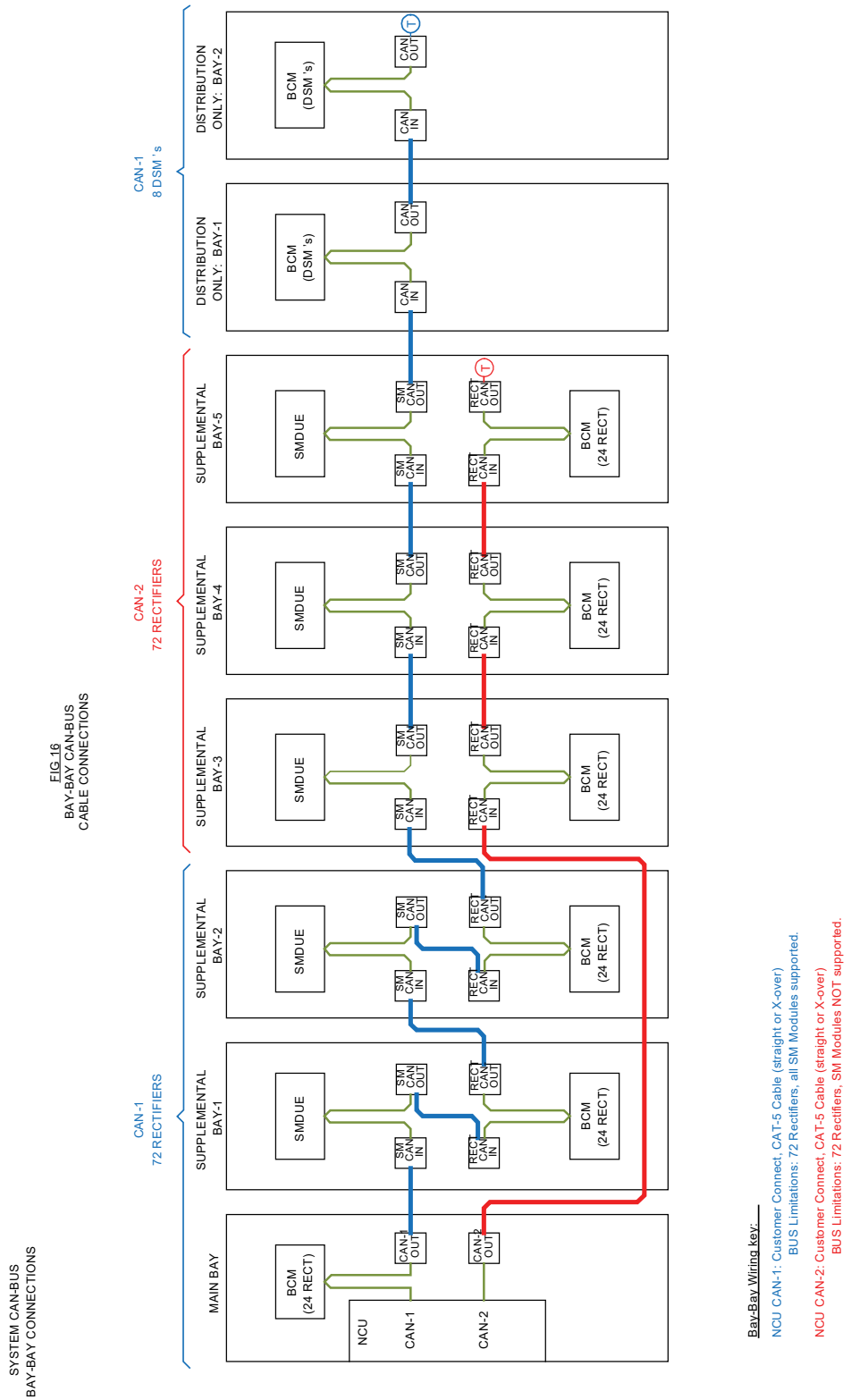
To connect the third supplemental bay (and up to two more supplemental bays), use the CAN2 connector in the main bay by following the same procedure. See Figure 1.25 for bay-to-bay communications cable connections.

Figure 1.24 Interconnecting the "Primary Bay Control Shelf to a Secondary Bay Control Shelf" and a "Secondary Bay Control Shelf to a Secondary Bay Control Shelf"



NOTE! *Refer to the Retrofit Kit User Manual (UM60172578) for the installation limitations of Interconnecting multiple bays.*

Figure 1.25 Bay to Bay Connections



Final Procedure

[ ] 1. For any required external connections to the SMDUE installed in the secondary bay retrofit shelf, refer to the Retrofit Kit User Manual (UM60172578). Refer to the NCU controller manual (UM1M830BNA) for programming information.

[ ] 2. Dress and secure the cables connected to the new supplemental bay retrofit shelf to the bay. Ensure the cables cannot be pinched when the door is closed.

NOTE! *A controller reboot may be required to update controller distribution inventory.*

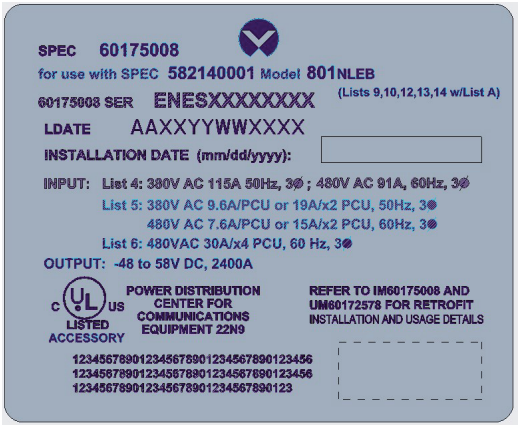
[ ] 3. Ensure that there are no local or remote alarms active on the system.

[ ] 4. Enable the external alarms, or notify appropriate personnel that this procedure is finished.

Adhering Labels

[ ] 1. Select the retrofit name plate label based on the retrofitted system input voltage (801NLEB – 380V / 480V Supplemental Power Bay or 801NLDB – 208V Supplemental Power Bay). Use a fine tip permanent marker to write the Installation date in the appropriate field of the label.

Figure 1.26 Labels



Label for NetSure™ 801NLEB DC Power System (380V / 480V Supplemental Power Bay)

Label for NetSure™ 801NLDB DC Power System (208V Supplemental Power Bay)

[ ] 2. Adhere the selected nameplate label above the existing system name plate label or the replacement label adhered in step [ ] 7 on page 10 on the AC panel cover as shown in Figure 1.27.

Figure 1.27 Location for the Label

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