

NetSure[™] -48 VDC to -58 VDC Output Converter Upgrade Kit

Installation Manual

Kit Specification Number: 60028248, 60031305, 60031673 For Use in Spec. No. 582137000ZZ001 and 582137000ZZ007 Power Systems The information contained in this document is subject to change without notice and may not be suitable for all applications. While every precaution has been taken to ensure the accuracy and completeness of this document, Vertiv assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Refer to other local practices or building codes as applicable for the correct methods, tools, and materials to be used in performing procedures not specifically described in this document.

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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[™] -48 VDC to -58 VDC Converter Upgrade Kit Installation Instructions

1.1 Kit Description

1.1.1 General

These instructions provide step-by-step procedures to field install these kits into Vertiv[™] NetSure[™] 512 Power System (Spec. Nos. 582137000ZZ001 and 582137000ZZ007). Installation of these kits in other equipment should not be attempted.

1.1.2 Kit P/N 60028248

This kit provides components to change converter module mounting positions for Spec. No. 1C48241500 (-48 VDC to +24 VDC) converter modules to mounting positions for Spec. No. 1C48582000P3 (-48 VDC to -58 VDC) converter modules. It also provides components to change the breaker positions in the distribution cabinet from +24 VDC to -58 VDC. This procedure will change the 582137000ZZ001 or 582137000ZZ007 into a 582137000500 power system. It also assumes that if a DC Generator input kit is installed it is in positions 10-13 of the top row. A backout procedure is also provided.

1.1.3 Kit P/N 60031305

This kit provides components to convert the row 1 (bottom row) distribution panel to -58V positions.

1.1.4 Kit P/N 60031673

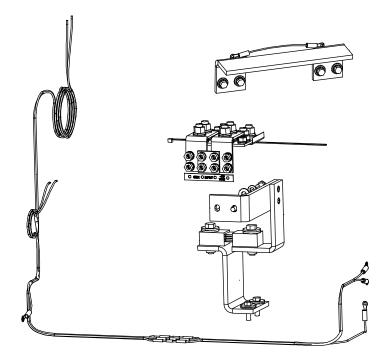
This kit provides components to revert the row 1 (bottom row) distribution panel back to -48V operation.

1.2 Restrictions

You MUST have an NCU Controller in your system to use the Spec. No. 1C48582000P3 (-48 VDC to -58 VDC) converter modules.

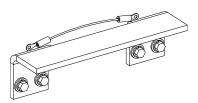
Your system may contain a DC Generator Breaker Kit (see Figure 1.1). If a DC Generator Breaker Kit is installed, DO NOT use these positions for -48 VDC or -58 VDC distribution. If a DC Generator Breaker kit is installed, use of kit P/N 60031305 is NOT permitted.

Figure 1.1 DC Generator Breaker Kit



Your system may contain a DC Generator Bridge Kit (see Figure 1.2) which bridges the -48 VDC or +24 VDC distribution around the generator breaker. If a Generator Bridge Kit is installed, you may need to modify the procedures in this document to accommodate these situations. Contact Vertiv's Technical Assistance Center (TAC) for specific modifications if this is the case.

Figure 1.2 DC Generator Bridge Kit



1.3 Kit Contents

Table 1.1, Table 1.2, and Table 1.3 lists the items furnished as part of the kits. Before installing the kits, check the items furnished against those listed to ensure that there are no shortages.

1.3.1 Kit P/N 60028248

Table 1.1 Kit P/N 60028248 Contents

P/N	Description	Qty.
60028735	Use Only -58 VDC Converters Caution Label	12
10019532	Critical Load Distribution Position Label (4-Position)	6
10019867	Critical Load Distribution Position Label (5-Position)	1
534800	Plug Button	5
10019986	Rectifier/-58 VDC Converter Module Mounting Positions Label	1
60027894	Field Retrofitted for Use with -58 VDC Converters Nameplate Label	1
552423	Hook-and-Loop Fastener (factory attached to storage pouch)	2
150661	USB Memory Device with Storage Pouch (contains new NCU configuration, NCU Clean-up package, and customer documentation)	1

1.3.2 Kit P/N 60031305

Table 1.2 Kit P/N 60031305 Contents

P/N	Description	Qty.
228557100	1/4-20 Hex Nut	2
215111100	1/4" Lock Washer	8
520763	1/8 X 1/16 Round Insulator Spacer	2
521047	1/4 X 9/32 Round Insulator Spacer	2
227643600	5/16-18 X 1 Bolt	4
227640500	1/4-20 X 7/8 Bolt	4
227640300	1/4-20 X 5/8 Bolt	2
227640800	1/4-20 X 1-1/4 Bolt	2
214203300	5/16" Flat Washer	4
214112100	3/8" Flat Washer	2
214203100	1/4" Flat Washer (0.875 OD, 0.063 Thick)	2
214200700	1/4" Flat Washer (0.625 OD, 0.065 Thick)	8
555280	Bottom Row Input Busbar	1
555827	BLVD Shelf Busbar	1
60031304	-58V Row 1 Busbar Link	1
60031132	-58V LVLD Busbar Link	1
60031306	-58V Bus Support Bracket	1
214824900	5/16" Belleville Lock Washer	4
214824700	1/4" Belleville Lock Washer	2
60028292	Load Distribution Position Label (6-Position) (-58V Critical / -58V Non Critical)	5
10120565	Jumper, Alarm	1

1.3.3 Kit P/N 60031673

Table 1.3 Kit P/N 60031673 Contents

P/N	Description	Qty.
534800	Plug Button	5
555282	LLVD Busbar Link	1
10019557	Critical Load Distribution Position Label (6-Position) (-58V / -48V)	5
214200700	1/4" Flat Washer	2
215111100	1/4" Lock Washer	2
227640500	1/4-20 x 7/8" Bolt	2

1.4 Tools and Material Required

Table 1.4 lists the items required to install this kit.

Table 1.4 Tools and Material Required

Description
7/16" Socket
Small Flat-Blade Screwdriver
#2 Phillips Screwdriver
Torque Wrench
Spec. No. 1C48582000P3 (-48 VDC to -58 VDC) Converter Modules (as required)

1.5 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.

1.5.1 Kit P/N 60028248

Procedure

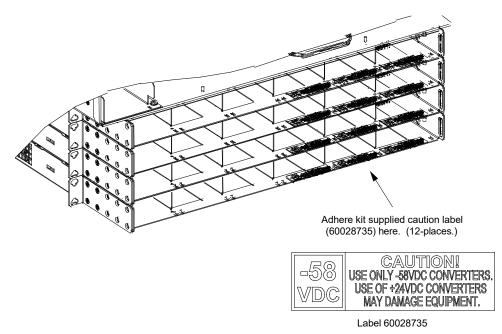


DANGER! This procedure is performed on a LIVE system. Observe the "Important Safety Instructions" starting on page v and those listed in the power system manual.

- [] 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.
- [] 2. If your system has an ACU+ controller, replace it with an NCU controller.
- [] 3. If your system ORIGINALLY had an NCU controller, refer to "Backing Up the NCU Configuration" on page 25 and backup the controller configuration.
- [] 4. Ensure that there are no loads/cables connected to the +24V circuit breaker positions. Upon completion of this upgrade, the system will no longer support +24V loads. If there are loads tied to the +24V positions, these will need to be removed and connected to a separate +24V system.
- [] 5. Remove all existing +24 VDC output converter modules from the module mounting shelves.
- [] 6. Clear the converter Communication and/or Lost alarms via the controller, if applicable. Via the controller front panel main screen, navigate to the Settings Icon in the upper left of the main screen and press the ENT key. Enter your username and password. Use the arrow keys to scroll to the Alarm Settings Menu and press the ENT key. Use the arrow keys to scroll to the ClrAllConvCommF and press the ENT key. Use the arrow keys to scroll to the ClrConvCommFail and press the ENT key. Use the arrow keys to scroll to the Clear Conv Lost and press the ENT key.

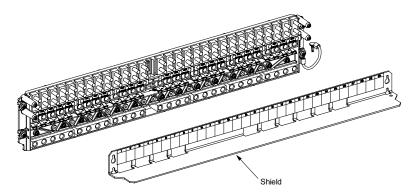
[] 7. Adhere kit supplied "Use Only -58 VDC Converters" caution label (60028735) to each of the twelve (12) module mounting slots shown in Figure 1.3. Orient the labels between the two (2) rectangular slots used for the converter module locking tabs. Align front edge of label to front edge of shelf. **Do Not** cover the converter module locking tab slots.

Figure 1.3 Adhere 60028735 Labels



[] 8. Remove the shield from the top distribution panel by loosening the screws securing it and lifting the shield up and out (see Figure 1.4).

Figure 1.4 Remove Shield

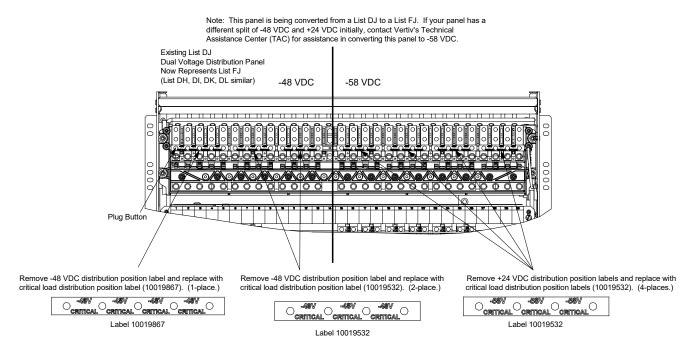


[] 9. Install P/Ns 10019532 and 10019867 labels by following the procedure in Figure 1.5.

Remove the plug buttons securing the +24 VDC distribution position labels located on the top distribution panel. Save the plug buttons after removing them as they will be needed in later steps. Remove the labels. See Figure 1.5. Save these +24 VDC distribution position labels in case the system needs to be converted back for use with +24 VDC output converters. Install kit supplied "Critical" load distribution position labels (10019532) in the places the +24 VDC labels were removed from. Orient so the -58V side is visible. Secure the labels with the plug buttons previously removed. See Figure 1.5.

Remove the plug buttons securing the -48 VDC distribution position labels located on the top distribution panel. Save the plug buttons after removing them as they will be needed in later steps. Remove the labels. See Figure 1.5. Save these -48 VDC distribution position labels in case the system needs to be converted back for use with +24 VDC output converters. Install kit supplied "Critical" load distribution position labels (10019867 and 10019532) in the place the -48 VDC labels were removed from. Orient so the -48V side is visible. Secure the labels with the plug buttons previously removed. See Figure 1.5. If a DC Generator input kit is installed in positions 10-13 then do not change the label on those (4) positions.

Figure 1.5 Install 10019532 and 10019867 Labels



[] 10. Replace the top distribution panel shield.

[] 11. Adhere kit supplied module position label (10019986) to the OSP cabinet the power system is installed in. See Figure 1.6.

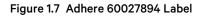
Figure 1.6 Adhere 10019986 Label

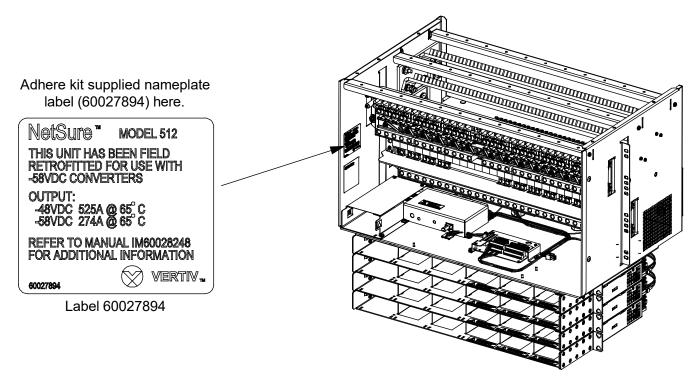
Adhere kit supplied module position label (10019986) to OSP cabinet.

RECTIFIER SLOT DESIGNATION (FRONT VIEW)										
SHELF 1	RECTIFIER 1	RECTIFIER 2	RECTIFIER 3	RECTIFIER 4 OR -58VDC CONVERTER 1	-58VDC CONVERTER 2	-58VDC CONVERTER 3				
SHELF 2	RECTIFIER 1	RECTIFIER 2	RECTIFIER 3	RECTIFIER 4 OR -58VDC CONVERTER 1	-58VDC CONVERTER 2	-58VDC CONVERTER 3				
SHELF 3	RECTIFIER 1	RECTIFIER 2	RECTIFIER 3	RECTIFIER 4 OR -58VDC CONVERTER 1	-58VDC CONVERTER 2	-58VDC CONVERTER 3				
SHELF 4	RECTIFIER 1	RECTIFIER 2	RECTIFIER 3	RECTIFIER 4 OR -58VDC CONVERTER 1	-58VDC CONVERTER 2	-58VDC CONVERTER 3				
						10019986 REV 1X				

Label 10019986

[] 12. Adhere kit supplied nameplate label (60027894) above the existing nameplate label. See Figure 1.7.





[] 13. Reverse the wiring to J3-3 (DI2-) and J3-4 (DI2+) on the IB2 board (connect existing wire in J3-3 to J3-4; and connect existing wire in J3-4 to J3-3). See Figure 1.8.

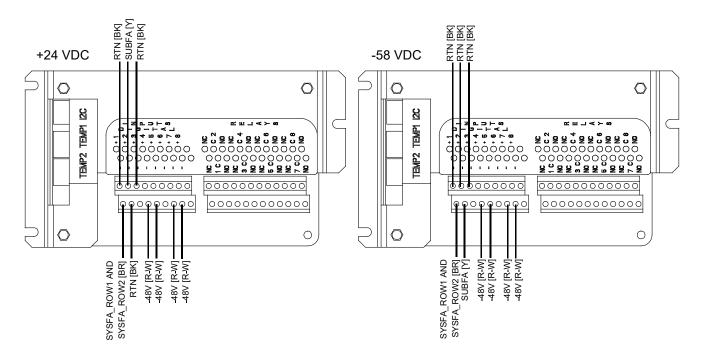


Figure 1.8 IB2 Board

[] 14. Update the controller configuration file as follows.

NOTE! When using the Web interface to update an NCU containing firmware that is revision level 1.2.51B or less to version 1.2.60B or greater, the NCU requires its flash memory to be refreshed. The Clean-up Tool package frees enough flash so that the controller can be updated to 1.2.60B or greater while maintaining the Web user interface.

Starting with version 1.2.60B and later, software is loaded using a different strategy, so this clean-up process is not needed once a controller is updated to 1.2.60B. See the main page (Figure 1.9) to determine software version.

- a) Copy the Application "All" package file and the Clean-up Tool package (ncu_cleanup_V1.1.tar or later) located on the kit-supplied USB drive to your computer. The name of the Application "All" package file ends in either .tar or .tar.gz. The name of the Clean-up Tool package ends in .tar.
- b) Log in to the Web user interface page.
- c) Click "Advanced Settings." See Figure 1.9.

Figure 1.9 Advanced Settings



d) Go to the SW Maintenance tab. Click on "Stop Controller." See Figure 1.10.

Figure 1.10 Stop Controller

	😢 All Alarms(2) 🛆 Observation(0) 🕰 Major(0) 🔮 Critical(2) 🗾 🛃 Auto Popup	& Welcome: admin SIGN OUT
NetS		
ft.	Ethernet Users SNMP Language SW Maintenance Alarms DI Alarms DO(relays) Shunts Fuses Alarm Report Generator Power It Auto Config	Split Monitor Protocol Clear Data
Home ☆	This function will automatically configure SM units and motibus devices that have been connected to RS485 bus. Auto Config II Restore Factory Defaults	Output Voltage Output Current 0.0A
Settings	Restore default configuration? The system will reboot. Restore Defaults Reboot controller	System Specifications System Name NCU
History Log	It Retrieve SettingParam.tar Retrieve the current settings of the controller's adjustable parameters. Retrieve File	Controller Specifications Product Model M830D
System	Retrieve Diagnostics Package Retrieve a diagnostics package to help troubleshoot controller issues Retrieve File	Serial Number 03221000021 Hardware Version A20
Inventory	Upload/Download Upload/Download Upload/Download needs to stop the Controller. Do you want to stop the Controller?	Software Version 1.2.40B Config Version 1.01
Advanced Settings		Site Information Site Name G3 Site Location Europe
		Saw Cocabon Europe
22/02/2024 17:26	30	©2021 Vertiv Tech Co.,Ltd.All rights reserved.

e) After the following window opens, click "OK." See Figure 1.11.

Figure 1.11 Upload/Download - Controller Stopped

< Ethernet Users	SNMP	Language	SW Maintenance	Alarms	DI Alarms	DO(relay)			Alarm Report	Power Split	Monitor Prot
Upload/Downloa	d File										
			s with extension .tar o OLLER button before			ded. If the do	wnloaded	file is NO	T correct, the Co	ntroller will run	
Select File			Bro	wse	Download	to Controller			_		
File in controller	Configur	ation Pa Con	troller was stopped su	uccessfully	. You can upl	oad/download	I the file.	ОК			
Start Controller											
				St	art Controller						
											Þ

ALERT! Never navigate away from this Web page without first clicking on "Start Controller" after loading the appropriate file(s). If you do, you will not have Web access. A manual system reset is required to restore Web access.

NOTE! If the original software version is 1.2.60B or higher, go to step k.

f) After the following window appears (Figure 1.12), browse and select the Clean-up Tool package (ncu_cleanup_V1.1.tar or later) you copied earlier to your computer. Click "Download to Controller." This process may take several minutes. The following screen displays, indicating a successful upload. Click "OK" and then click "Start Controller" to reboot the NCU. This process could take several minutes.

Figure 1.12 Download Clean-Up Tool Package and Start Controller

👩 Al Alama(3) 🔥 Otservadori(3) 🔥 Major(9) 🔮 Otliscal(3) 😪 Auto Popup	
NetSure [™] control unit	
Image: Construction Image: Construction	Non-tor Protocoll Chear Data System Status Output Voltage Output Commit 0.0A System Specifications Byolam Specifications System Neerle NOUI Controller Specifications NESSOD Benet Neerle NESSOD Benet Neerle NESSOD Hordsare Version A20 Software Version L2.458 Config Version L01 Size Name O3 Size Name O3 Size Name O3
26/02/2024 18:37:56	2023 Verity Tech Co., M.AB rights reserved.

- g) Log in to the Web user interface page.
- h) Click "Advanced Settings." See Figure 1.13.

Figure 1.13 Advanced Settings



i) Go to the SW Maintenance tab. Click on "Stop Controller." See Figure 1.14.

Figure 1.14 Stop Controller

	😰 All Alarms(2) 🕰 Observation(0) 🛧 Major(0) 🕕 Critical(2) 🖉 Auto Popup	& Welcome: admin SIGN OUT
NetS		
ft Home		Split Monitor Protocol Clear Data
*	This function will automatically configure SM units and modibus devices that have been connected to RS485 bus. Auto Config II Restore Factory Defaults	Output Voltage Output Current 0.0A
Settings	Restore default configuration? The system will reboot. Restore Defaults Reboot controller If Retrieve SettingParam.tar	System Specifications System Name NCU
History Log	Retrieve the current settings of the controller's adjustable parameters. Retrieve File	Controller Specifications Product Model M830D
System	It Retrieve Diagnostics Package Retrieve a diagnostics package to help troubleshoot controller issues Retrieve File	Serial Number 03221000021 Hardware Version A20 Software Version 1.2.408
	If Uplead/Download Uplead/Download needs to stop the Controller. Do you want to stop the Controller? Stop Controller	Config Version 1.01 Site Information
Advanced Settings		Site Name G3 Site Location Europe
22/02/2024 17:20	30	©2021 Vertiv Tech Co.,Ltd All rights reserved.

j) After the following window opens, click "OK." See Figure 1.15.

Figure 1.15 Upload/Download – Controller Stopped

	Ethernet	Users	SNMP	Language	SW Maintenance	Alarms	DI Alarms	DO(relay)	Shunts	Fuse	Alarm Report	Power Split	Monitor Prot
	Upload/I	Download	I File										
					s with extension .tar o OLLER button before			ded. If the do	wnloaded f	ile is NO	T correct, the Co	ntroller will run	
Se	elect File			_	Bro	436	Download	o Controller	-		1		
Fil	le in contro	oller	Configur	ation Pa	troller was stopped s	uccessfully	. You can upl	oad/download	i the file.	ок	J		
	Start Co	ntroller											
						St	art Controller						
													Þ

ALERT! Never navigate away from this Web page without first clicking on "Start Controller" after loading the appropriate files. If you do, you will not have Web access. A manual system reset is required to restore Web access.

k) After the following window appears (Figure 1.16), browse and navigate to the folder where the file to download is located. Select the application "All" package you copied earlier to your computer. Click "Download to Controller." This process may take several minutes. The following screen displays, indicating a successful upload. Click "OK" and then click "Start Controller" to reboot the NCU with the downloaded file installed. This process could take several minutes.

Figure 1.16 Download Firmware Package and Start Controller

	😫 All Allema(2) : 🙏 Otservation(3) : 🙏 Major(5) : 🔕 Critical(2)	Z Auto Popup	A Welcome: admi	SIGNOUT
NetSure [™] con	ITROL UNIT			
Home H Uplead/Downtoas Caution: Only the See	Shafe Larguage SW Mainteenance Asims Di Alarnis OQpwaye Sharts Fusio Aanti Report File String-Seamonan or Res with extension 3ar or targe can be downroaded. If the downroaded Ris is NOT connect, the Contro ht the STAPT CONTROLLER busine before isover. Critishepshilage V12 003P29Combe Revise. Configuration Package File downroaded successifiery CK Start Connector		Monitor Protocol Cite System Status Output Valage Output Valage Output Current System Specifications System Namo Controller Specification Product Model Senish Numbor Headware Version Software Version Software Version Software Version Software Version Software Version Software Version Software Version	
26/02/2024 10:37:56			2021 Versy Tech Co. Ltd.Al	inghts reserved.

NOTE! If a V1.260B or greater package file is downloaded in the previous steps to a version 1.2.51B or less revision controller , before using the Clean-up tool, one of the following error messages will display:

Figure 1.17 Error Message 1: "Failed to download file or wrong package type."

	(2) All Alarms(5) A Minor(0) A Major(0) (1) Critical(5)	🛃 Auto Popup	🌲 Welcome: admi	
Net	Sure™ control unit			
Home Settings History Log Pistory Log System System Comparison System System Comparison System System System System Comparison System Syste	Ethernel Users SNMP Language SW Maintenance Aarms Di Alarms DQ(relays) Shurts Fuces Aarms II Upload/Download File Castoon: Only the file SettingParam.run or files with extension. tar or .tar gr can be downloaded. If the downloaded file is NOT correct, admormably You must hit the START CONTROLLER button before leaving this screen. Select File Cirklakepathlapp.V13.2088/P2/Combo Download to Controller File in controller Configuration Package Failed to download file or wrong package type. OK II Start Controller Start Controller Start Controller Start Controller		Citer Data System Status System Status System Current System Current System Specifications System Name Controller Specification Product Model Serial Number Hardware Version Contrg Version Sotivare Version Site Information Site Name Site Location	8000 0.0A NCU 8 M8300 0322100021 A20 1.2.608P29 Default NCU Venty
02/22/2024 14-5			62023 Vertiv Tech Co. J. Id Al	rights reserved
02/22/2024 14-5	252			

OR

Figure 1.18 Error Message 2: "Failed to download file."

	🖪 All Alarms(3) 🛆 Observation(0) 🛕 Major(0) (1) Critical(3) 😿 Auto Popug	Welcome: admin SIGN OUT
Nets	Sure™ control unit	
Home Settings History Log History Log System Inventory	Ethernet Users SIMP Larguage SW Maintenance Aarms Di Aarms Dürelayi Shurts Fude Aarm Report Cenerator Power Spi Upload/Download File Candro: Only the file SettingParan.run or files with extension far or starg can be downloaded. If the downloaded file is NOT correct, the Controller will null acrosmally. You must bit the SARTAC CONTROLLER buildon belaving the screen. Setect File Contiguation Package Tele in controller Contiguation Package Start Controller Start Controller Start Controller	Monitor Protocol Clear Data System Status Cutput Voltage Udput Voltage Udput Current System Specifications System Name Product Model Mattheware Version Product Model Mattheware Version A20 Senai Number G3221000021 Hardware Version 1.0.00 Site Information Site Location Europe
22/02/2024 11:1	5:43	©2018 Vertiv Tech CoLtd.All rights reserved.

- [] 15. If your system ORIGINALLY had an NCU controller, refer to "Reloading a Backed-Up NCU Configuration" on page 28 and restore the backed-up controller configuration file saved in step [] 3.
- [] 16. Install separately ordered converter modules 1C48582000P3 in the far right mounting positions shown in Figure 1.3 and Figure 1.6, as required.
- [] 17. Click on the converter icon in the NCU WEB interface power system status block diagram. This brings up the converter group status page. Check the converter output voltage and the status of each converter installed to verify all converters installed are active.
- [] 18. Enable the external alarms or notify appropriate personnel that this procedure is finished.
- [] 19. Ensure that there are no local or remote alarms active on the system.
- [] 20. If your system ORIGINALLY had an ACU+ controller, refer to "Backing Up the NCU Configuration" on page 25 and backup the controller configuration. Save this configuration file in case the NCU configuration ever needs to be reloaded.
- [] 21. Save these instructions in case a backout procedure needs to be performed at a later date.

1.5.2 Backout Procedure (when kit P/N 60028248 was installed)

If the power system needs to revert back to -48V/+24V operation, perform the following 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.
- [] 2. Remove all existing -58 VDC output converter modules from the module mounting shelves.
- [] 3. Remove the "Use Only -58 VDC Converters" caution labels (60028735).
- [] 4. Remove the shield from the top distribution panel.
- [] 5. Remove the plug buttons securing the -58 VDC distribution position labels located on the top distribution panel. Save the plug buttons after removing them as they will be needed in later steps. Remove the labels.
- [] 6. Install the saved "+24 VDC" distribution position labels in the places the -58 VDC labels were removed from. Secure the labels with the plug buttons previously removed.
- [] 7. Replace the shield to the top distribution panel.
- [] 8. Remove the kit supplied module position label (10019986).
- [] 9. Remove the kit supplied nameplate label (60027894).
- [] 10. Reverse the wiring to J3-3 (DI2-) and J3-4 (DI2+) on the IB2 board (connect existing wire in J3-3 to J3-4; and connect existing wire in J3-4 to J3-3).
- [] 11. Install converter modules 1C48241500 in the far-right converter module mounting positions, as required.
- [] 12. Enable the external alarms or notify appropriate personnel that this procedure is finished.
- [] 13. Ensure that there are no local or remote alarms active on the system.

1.5.3 Kit P/N 60031305

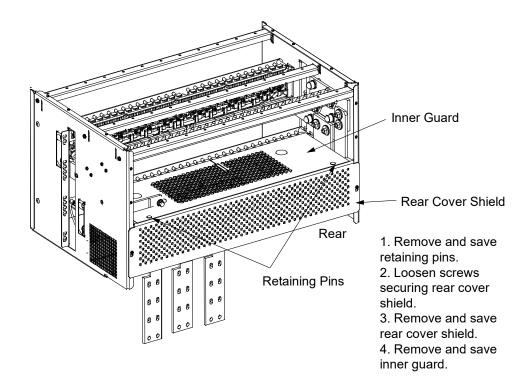
To convert the row 1 (bottom row) distribution panel to -58V positions, perform the following procedure to install kit P/N 60031305.

Procedure



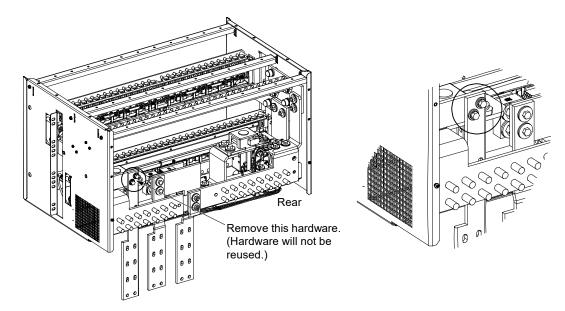
DANGER! This system must be isolated from all AC input power and battery power. All AC input power to the system must be turned off and all AC input disconnects must be locked out / tagged out before installing this kit. All battery power to the system must be turned off or disconnected and all battery disconnects must be locked out / tagged out before installing this kit. Observe the "Important Safety Instructions" starting on page v and those listed in the power system manual.

- [] 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.
- [] 2. Shutdown the power system. Turn off all AC input disconnects to remove AC power to the system. Turn off all battery disconnects to remove battery power from the system or disconnect the batteries from the system. Follow local lockout/tagout procedures to ensure AC and battery disconnects remain off during installation.
- [] 3. Remove the two (2) retaining pins shown in Figure 1.19. Save for reuse.
- [] 4. Remove the rear cover shield by loosening (but do not remove) the two (2) 6/32 x 3/8" screws securing it to the cabinet. Save for reuse. See Figure 1.19.
- [] 5. Remove inner guard. Save for reuse. See Figure 1.19.

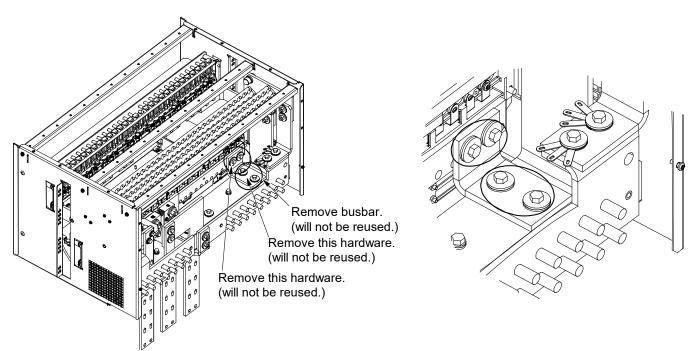


[] 6. Remove 1/4-20 x 7/8" bolts and hardware from +24V/-58V shelf busbar. Hardware will be replaced later in the procedure with longer bolts supplied in the kit. See Figure 1.20.

Figure 1.20

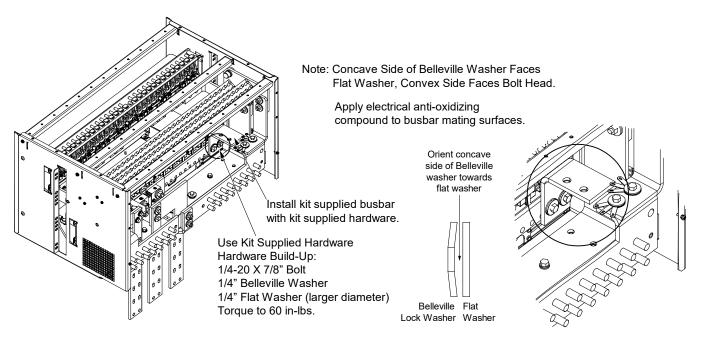


[] 7. Remove hardware and L-shape busbar as shown in Figure 1.21. Parts will not be reused.

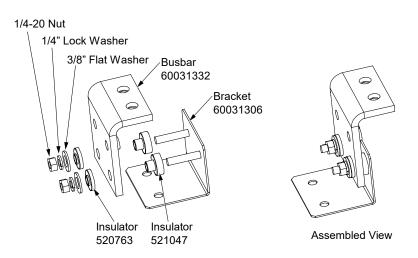


[] 8. Install kit supplied L-shape busbar 555280 with kit supplied hardware as shown in Figure 1.22. Torque as indicated in Figure 1.22.

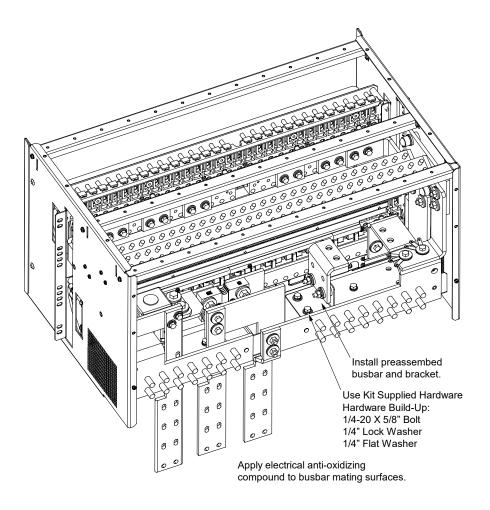
Figure 1.22



[] 9. Preassemble kit supplied L-shape steel mounting bracket 60031306, insulator 521047, L-shape busbar 60031132, insulator 520763, washers and nuts as shown in Figure 1.23. Hand tighten nuts.

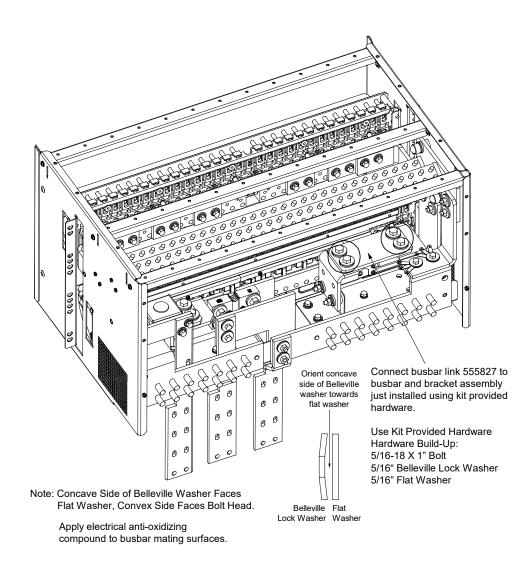


[] 10. Install items preassembled in the above step to the -48V busbar using kit supplied hardware. Hand tighten the bolts. See Figure 1.24.



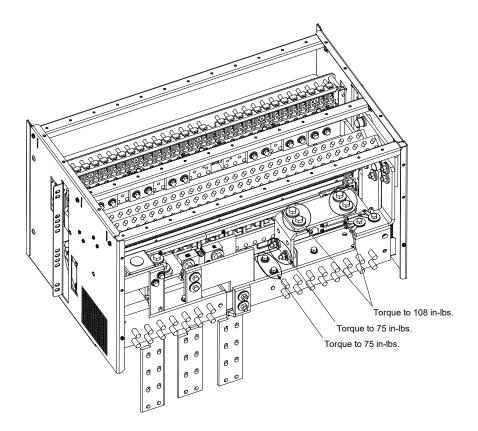
[] 11. Install kit supplied busbar link 555827 using kit supplied hardware as shown in Figure 1.25. Hand tighten the bolts.





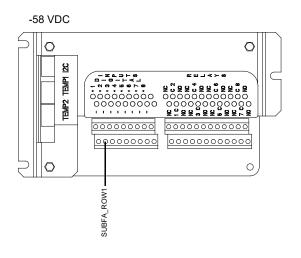
[] 12. Torque all hardware that was installed hand-tight in previous steps as indicated in Figure 1.26.

Figure 1.26

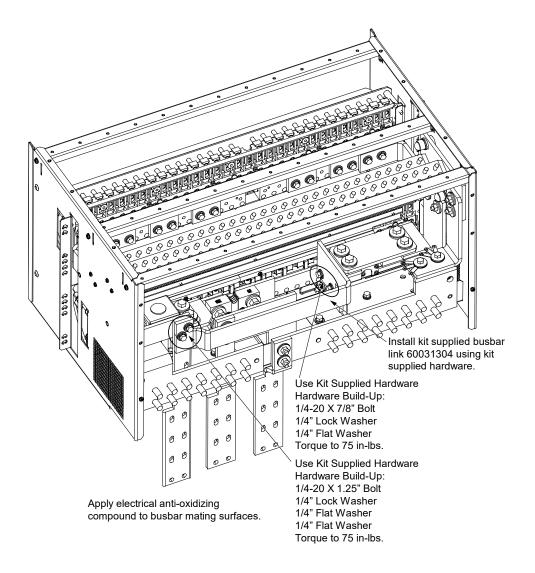


- [] 13. While you have access to the back of the bottom row distribution panel, locate the fuse/circuit breaker alarm lead connected to the bottom row panel.
- [] 14. Remove the lead using a screwdriver and sleeve off the end of the wire.
- [] 15. Connect the new alarm jumper P/N 10120565 provided with the kit. Torque to 9.60 in-lbs.
- [] 16. Route this new alarm jumper P/N 10120565 to the IB2 board and connect the lead to the DI2 negative (DI2-) input as the -58 VDC subsystem alarm input. See Figure 1.27.

Figure 1.27 IB2 Board



[] 17. Install kit supplied busbar link 60031304 using kit supplied hardware as shown in Figure 1.28. Torque as indicated in Figure 1.28.



- [] 18. Reinstall items from steps 3, 4, and 5 in reverse order of disassembly. Tighten rear lexan cover screws (6-32) to 11 in-lbs.
- [] 19. Remove the shield from the bottom distribution panel.
- [] 20. Remove the plug buttons securing the existing "-48 VDC" distribution position labels located on the bottom distribution panel. Save the plug buttons after removing them as they will be needed in later steps. Remove the labels.
- [] 21. Install the kit supplied "-58 VDC Critical / -58 VDC Non Critical" distribution position labels in the places the -48 VDC labels were removed from. Secure the labels with the plug buttons previously removed.
- [] 22. Replace the shield to the bottom distribution panel.
- [] 23. Restore AC input power and battery to the power system. Restart the power system (refer to the power system documentation).

- [] 24. Enable the external alarms or notify appropriate personnel that this procedure is finished.
- [] 25. Ensure that there are no local or remote alarms active on the system.
- [] 26. Save these instructions in case a backout procedure needs to be performed at a later date.

1.5.4 Backout Procedure - Using Kit P/N 60031673 (when kit P/N 60031305 was previously installed)

To revert the row 1 (bottom row) distribution panel back to -48V positions, perform the following procedure to install kit P/N 60031673.

Procedure

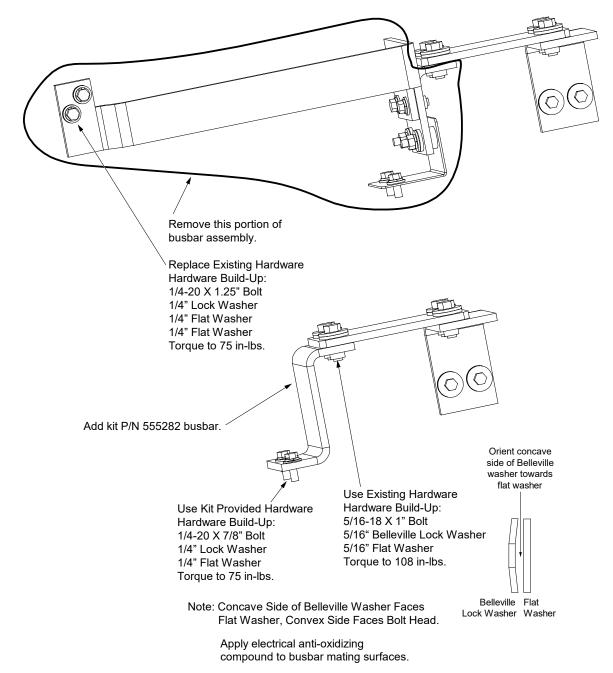


DANGER! This system must be isolated from all AC input power and battery power. All AC input power to the system must be turned off and all AC input disconnects must be locked out / tagged out before installing this kit. All battery power to the system must be turned off or disconnected and all battery disconnects must be locked out / tagged out before installing this kit. Observe the "Important Safety Instructions" starting on page v and those listed in the power system manual.

- [] 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.
- [] 2. Shutdown the power system. Turn off all AC input disconnects to remove AC power from the system. Turn off all battery disconnects to remove battery power from the system or disconnect the batteries from the system. Follow local lockout/tagout procedures to ensure AC and battery disconnects remain off during installation.
- [] 3. Remove the shield from the bottom distribution panel.
- [] 4. Remove the plug buttons securing the -58 VDC distribution position labels located on the bottom distribution panel. Save the plug buttons after removing them as they will be needed in later steps. Remove the labels.
- [] 5. Install the kit supplied "-48 VDC" distribution position labels in the places the -58 VDC labels were removed from. Secure the labels with the plug buttons previously removed.
- [] 6. Replace the shield to the bottom distribution panel.
- [] 7. Remove the two (2) retaining pins shown in Figure 1.19 on page 15. Save for reuse.
- [] 8. Remove the rear cover shield by loosening (but do not remove) the two (2) 6/32 x 3/8" screws securing it to the cabinet. Save for reuse. See Figure 1.19 on page 15.
- [] 9. Remove inner guard. Save for reuse. See Figure 1.19 on page 15.
- [] 10. Remove portion of busbar assembly P/N 60032210 (installed as part of kit P/N 60031305) indicated in Figure 1.29.
- [] 11. Remove the subsystem fuse alarm wire from the back of the bottom row panel and sleeve it off. Remove the sleeve and connect the system fuse alarm wire to this attachment point. Torque to 9.60 in-lbs. Remove the other end of this wire from DI2- on the IB2 board and sleeve it off.
- [] 12. Replace the hardware to the +24V/-58V shelf busbar. Torque as indicated in Figure 1.29.
- [] 13. In place of the removed portion of busbar assembly P/N 60032210, install kit furnished busbar P/N 555282. See Figure 1.29. Torque as indicated in Figure 1.29.
- [] 14. Reinstall items from steps 7, 8, and 9 in reverse order of disassembly. Tighten rear lexan cover screws (6-32) to 11 in-lbs.
- [] 15. Return panel alarm wires to the IB2 board to their +24V positions. See Figure 1.8.
- [] 16. Restore AC input power and battery to the power system. Restart the power system (refer to the power system documentation).
- [] 17. Enable the external alarms or notify appropriate personnel that this procedure is finished.

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

Figure 1.29 Reverting Back to -48V Distribution Positions



1.6 Backing Up the NCU Configuration

1.6.1 NCU Version 1.1.80, or Later

General

To back up the NCU configuration, simply save the file named "SettingParam.tar".

Saving the "SettingParam.tar" File

Local Menu Navigation:

None.

Web Menu Navigation:

Advance Settings Menu / SW Maintenance Tab.

Procedure

1. Click on the "Retrieve File" button to save the file named "SettingParam.tar" to your computer. Select where you want the file to be copied to on your computer.

To aid in file management, you may change the name of the "SettingParam.tar" file to differentiate it from other "SettingParam.tar" files saved. The new name can use alpha and numeric characters preceding the original "SettingParam.tar" name (the end of the new file name **must** always be "SettingParam.tar"; for example, an acceptable filename would be "seville4SettingParam.tar").

Figure 1.30 Retrieve "SettingParam.tar" File

TT Home	# Auto Config			System Status	
	This function will automatically configure SM units and modbus devices that have been connected to RS485 bus.		Auto Config	System Voltage	53.9
\$	Restore Factory Defaults			System Current	0.0/
ettings	Restore default configuration? The system will reboot.	Restore Defaults	Reboot controller	System Specifications	
	Retrieve SettingParam.tar	Restore Belduits		System Name	NC
)				Rectifiers	
og	Retrieve the current settings of the controller's adjustable parameters.		Retrieve File	Controller Specification	ons
	Retrieve Diagnostics Package			Product Model	M830
	Retrieve a diagnostics package to help troubleshoot controller issues		Retrieve File	Serial Number	0319030769
y y	# Upload/Download			Hardware Version	A1
1	Upload/Download needs to stop the Controller. Do you want to stop the Controller?			Software Version	1.2.20P0
a 📗			Stop Controller	Config Version	GEN_Defau
				Site Information	
				Site Name	NC
				Site Location	Verti
- 11					
- 11					
- 11					
- 11					

1.6.2 NCU Version 1.1.70, or Earlier

General

There are two steps in backing up the system's NCU configuration:

- Save the NCU configuration package. This package includes the base configuration and any changes made to alarm severity levels, relay assignments, signal names and site information.
- Save a file named "SettingParam.run". This file contains changes made to alarm setpoints and other settings such as float/ equalize voltage, etc. A file named "SettingParam.run" is automatically created/appended by the controller whenever a User (or the factory at the time of shipment) makes changes to parameter settings via the local display or Web Interface. This file can be saved to your computer so you can restore any custom settings you may have made.

Saving the Configuration Package

Local Menu Navigation:

None.

Web Menu Navigation:

Advance Settings Menu / SW Maintenance Tab.

Procedure

You can upload (from the controller to your computer) a configuration package.

1. To upload a file, you need to shut down the controller first. When you select the SW Maintenance Tab, click on the "Stop Controller" button.

Figure 1.31 Upload - Stop Controller

Upload/Download		
	Upload/Download needs to stop the Controller. Do you want to stop the Controller?	
	Stop Controller	

2. The following window opens.

Figure 1.32 Upload - Controller Stopped

Upload/Dow	mload F	ile							
-									
				les with extension .tai ou must hit the STAR					IOT
							Denere rearri	ig and core	
Select File				5.11. X					
		Con	troller was sto	opped successfully. Y	ou can upio	bad/download	the file.	ОК	
		Configurat	ion Package	Upload to C	Computer]			
File in control	ler (
File in control	ler (

- 3. Click "OK".
- 4. The following window opens.

Figure 1.33 Upload File

Advance > Advance	ed Settings > SW Main	tenance				🚨 We	lcome:	admin	Logout
Ethernet User	s SNMP Language	SW Maintenance	Alarms	DI Alarms	DO(relay)	Shunts	Fuse		>>
II Upload/Downloa	d File								^
	file SettingParam.run or fil oller will run abnormally. Y		T CONTRO		before leavin			TOT	
File in controller	Configuration Package	Vpload to C	computer						
Start Controller									
		Start	Controller						

ALERT! Never navigate from this Web page without first clicking on "Start Controller". If you do, you will not have Web access. A manual system reset is required to restore Web access.

5. To **upload** a file to your computer, select "Configuration Package" from the "File in Controller" drop-down list box, and click on the "Upload to Computer" button to save the file to your computer. Select where you want the file to be copied to on your computer. Click "Start Controller" to restart the Controller.

Saving the SettingParam.Run File

Local Menu Navigation:

None.

Web Menu Navigation:

Advance Settings Menu / SW Maintenance Tab.

Procedure

1. Click on the "Retrieve File" button to save the file named "SettingParam.run" to your computer. Select where you want the file to be copied to on your computer.

To aid in file management, you may change the name of the "SettingParam.run" file to differentiate it from other "SettingParam.run" files saved. The new name can use alpha and numeric characters preceding the original "SettingParam.run" name (the end of the new file name **must** always be "SettingParam.run"; for example, an acceptable filename would be "seville4SettingParam.run").

Figure 1.34 Retrieve SettingParam.run

Retrieve SettingPa	unnun	
	Retrieve the current settings of the controller's adjustable parameters.	
	Retrieve File	

1.7 Reloading a Backed-Up NCU Configuration

1.7.1 NCU Version 1.1.80, or Later

General

To reload the NCU configuration, simply download a saved "SettingParam.tar" file into the NCU.

Reloading the "SettingParam.tar" File

Local Menu Navigation:

None.

Web Menu Navigation:

Advance Settings Menu / SW Maintenance Tab.

Procedure

1. To download a file, you need to shut down the controller first. When you select the SW Maintenance Tab, click on the "Stop Controller" button.

Figure 1.35 Download - Stop Controller

Ethernet	Users	SNMP	Language	SW Maintenance	Alarms	DI Alarms	DO(relays)	Shunts	Fuses	Alarm Repo	rt Power Split	Mor
🖬 Auto Co	onfig											
This function	on will auto	matically c	onfigure SM u	inits and modbus devi	ces that h	ave been con	nected to RS4	35 bus.			Auto Con	ifig
Restore	Factory D	efaults										
Restore de	fault config	uration? T	he system wil	l reboot.					Restore	e Defaults	Reboot control	ler
Retrieve	e SettingPa	aram.tar										
Retrieve th	e current s	ettings of t	he controller's	adjustable paramete	rs.						Retrieve F	ile
Retrieve	e Diagnost	ics Packa	ge									
Retrieve a	diagnostics	package 1	to help trouble	eshoot controller issue	s						Retrieve F	ile
Upload/	Download											

2. The following window opens.

Figure 1.36 Download - Controller Stopped

<	(E	thernet	Users	SNMP	Language	SW Maintenance	Alarms	DI Alarms	DO(relay)	Shunts	Fuse	Alarm Report	Power Split	Monitor Prote
	:: (Jpload/E)ownload	l File			•							
						s with extension .tar o OLLER button before			ided. If the do	wnloaded	ile is NO	T correct, the Co	ntroller will run	
	Selec	t File		-	_	Bro	owse	Download	to Controller					
	File ii	n contro	ller	Configur	ration Pa Co	ntroller was stopped s	uccessfully	r. You can upl	oad/download	the file.	ок			
		Start Cor	atrollar											
-							Q	art Controller						
							0							

- 3. Click "OK".
- 4. The following window opens.

Figure 1.37 Download File

<	Ethernet	Users	SNMP	Language	SW Maintenance	Alarms	DI Alarms	DO(relay)	Shunts	Fuse	Alarm Report	Power Split	Monitor Prot
	Upload/[Download	File										
l					with extension .tar			ded. If the do	wnloaded 1	ile is NO	T correct, the Co	ntroller will run	
s	elect File				Bi	owse	Download t	o Controller					
F	ile in contro	ller	Configur	ation Package	e 👻 Up	oad to Com	puter						
	Start Co	ntroller											
						St	art Controller						
													Þ

ALERT! Never navigate from this Web page without first clicking on "Start Controller". If you do, you will not have Web access. A manual system reset is required to restore Web access.

5. To download (from your computer into the controller) a "SettingParam.tar" file; click the "Browse..." button and navigate to the folder where the file to download is located. Select the file to be downloaded and then click the "Download to Controller" button. Click "Start Controller" to restart the controller with the downloaded file installed.

1.7.2 NCU Version 1.1.70, or Earlier

General

There are two steps in reloading a backed-up NCU configuration:

- One step to reload the saved NCU configuration package.
- One step to reload the saved "SettingParam.run" file.

Reloading the Configuration Package and the SettingParam.Run File

Local Menu Navigation:

None.

Web Menu Navigation:

Advance Settings Menu / SW Maintenance Tab.

Procedure

You can download (from your computer into the controller) a configuration package (filename has a tar or tar.gz extension) and a SettingParam.run file".

1. To download a file, you need to shut down the controller first. When you select the SW Maintenance Tab, click on the "Stop Controller" button.

Figure 1.38 Download - Stop Controller

III Upload/Download	
	Upload/Download needs to stop the Controller. Do you want to stop the Controller?
	Stop Controller

2. The following window opens.

Figure 1.39 Download - Controller Stopped

Ethernet	s SNMP	Language	SW Maintenance	Alarms	DI Alarms	DO(relay)	Shunts	Fuse	1
Upload/Download	d File								
Onuting Onlytha	El- 0-#D-								IOT
			es with extension .tar						101
correct, the Contro	oller will run a	abnormally. Yo	ou must nit the STAR	I CONTRO	JELEIN DULLON	Delore leavin	iy una acre	cii.	
	oller will run a	abnormally. Yo	ou must nit the STAR	TCONTRO		Delore leavin	ig this sere	ын. -	
			pped successfully. Yo					UII.	
Select File	Cont		pped successfully. Ye	ou can uple					
Select File	Cont	troller was sto	pped successfully. Ye	ou can uple					
Select File File in controller	Cont	troller was sto	pped successfully. Ye	ou can uple					
Select File	Cont	troller was sto	pped successfully. Ye	ou can uple					
Select File File in controller	Cont	troller was sto	pped successfully. Yo	ou can uple				UII.	

- 3. Click "OK".
- 4. The following window opens.

Figure 1.40 Download File

	Ethernet User	rs SNMP	Language	SW Maintenance	Alarms	DI Alarms	DO(relay)	Shunts	Fuse		-
correct, the Controller will run abnormally. You must hit the START CONTROLLER button before leaving this screen. Select File Browse Download to Controller	Upload/Downloa	id File									
Select File Browse Download to Controller	Caution: Only the	file SettingPa	aram.run or file	es with extension .tar	or .tar.gz (an be downlo	aded. If the c	lownloaded	d file is N	NOT	
	correct, the Contr	oller will run a	abnormally. Yo	ou must hit the STAR	T CONTRO	OLLER button	before leavin	g this scre	en.		
File in controller Configuration Package V Upload to Computer	Select File			Brow	/se	Download to	o Controller]			
	JEIELLI IIE										
		Configurat	tion Package	✓ Upload to C	omputer]					

ALERT! Never navigate from this Web page without first clicking on "Start Controller". If you do, you will not have Web access. A manual system reset is required to restore Web access.

- 5. To **download** (from your computer into the controller) a configuration package; click the "Browse..." button and navigate to the folder where the file to download is located. Select the file to be downloaded and then click the "Download to Controller" button.
- 6. To **download** (from your computer into the controller) a "SettingParam.run" file; click the "Browse..." button and navigate to the folder where the file to download is located. Select the file to be downloaded and then click the "Download to Controller" button.
- 7. Click "Start Controller" to restart the controller with the downloaded files are installed.

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