PRODUCT MANUAL

CPS3200U

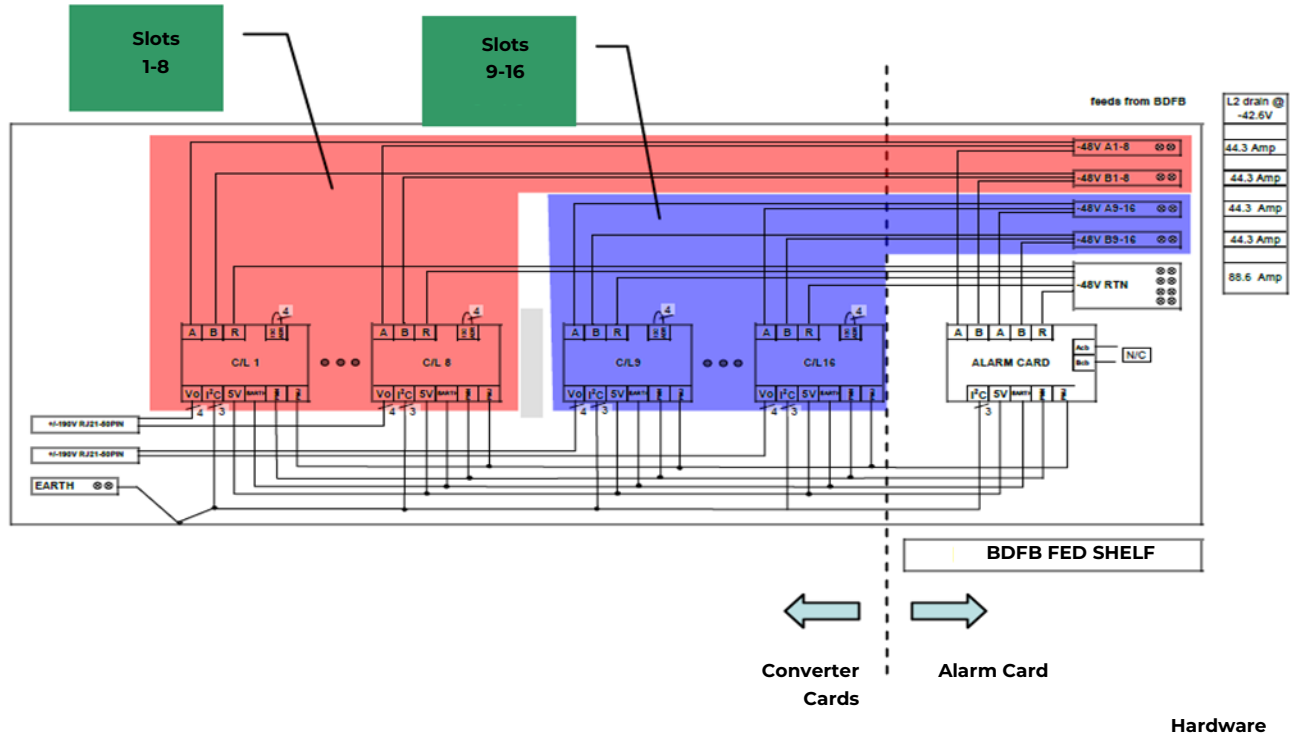## Technical Support Guide

Product Manual
Ordering code CC848853457

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CPS3200U Tech Support_MAN
Rev. 1.3

CPS3200U Technical Support Guide

Hardware

WEB

Front Panel

This document is a compilation of class material aimed at people who provide technical support. Information pulled from product manuals is marked with a reference indicator in brackets.
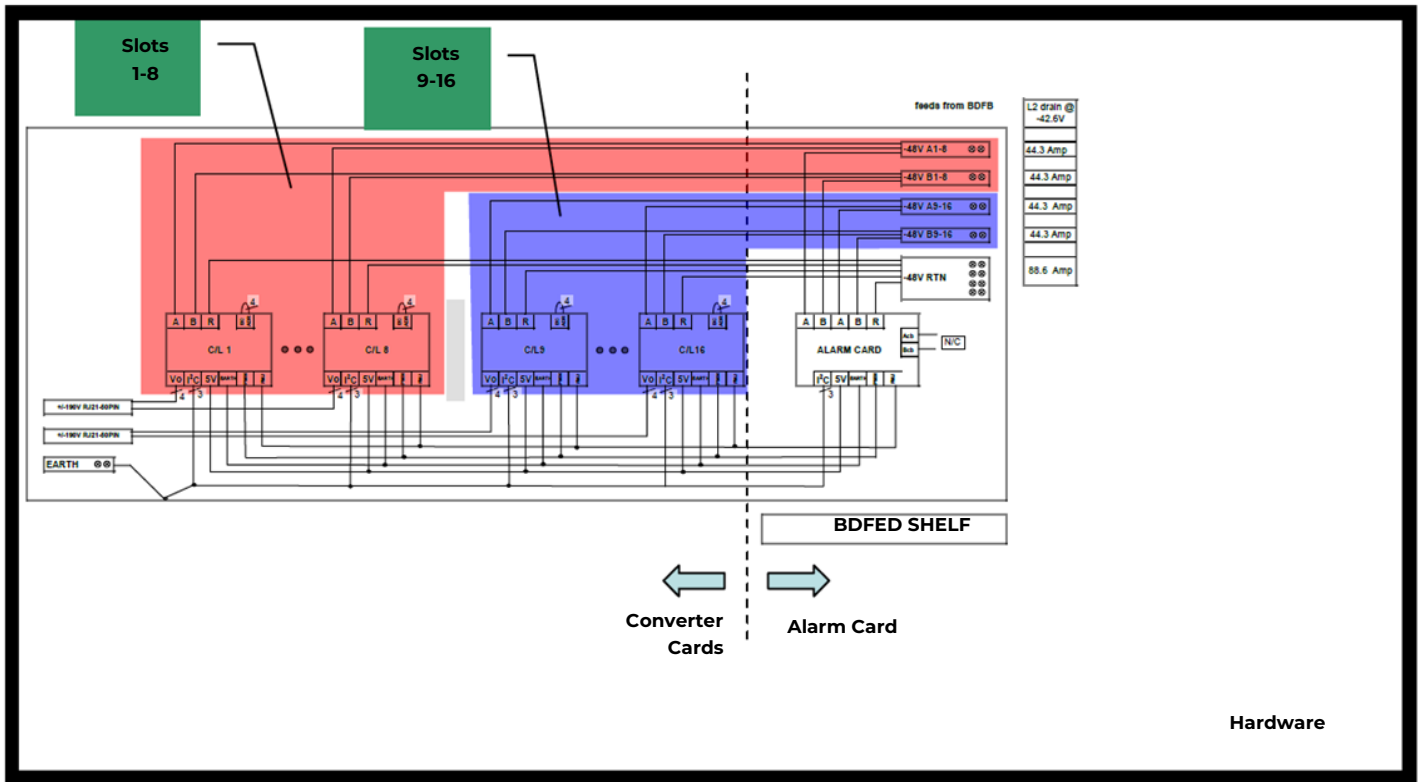
CPS3200U

Technical Support Guide

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1. Hardware

Slots 1-8

Slots 9-16

feeds from BDFB

L2 drain @ -42.6V

-48V A1-8   44.3 Amp
-48V B1-8   44.3 Amp
-48V A9-16   44.3 Amp
-48V B9-16   44.3 Amp
-48V RTN   88.6 Amp

C/L 1   C/L 8   C/L9   C/L16   ALARM CARD

N/C

+/-190V RJ21-00PIN
+/-190V RJ21-00PIN
EARTH

BDFED SHELF

Converter Cards

Alarm Card

Hardware

| Home | Reports | Maintenance | Settings | Installation |

FTTN System Overview

Groups

Description	Circuits	Current	Capacity
FTTN DEFAULT GROUP	20	12mA	5140mA
FTTN GROUP 001	0	0mA	0mA
FTTN GROUP 002	0	0mA	0mA
FTTN GROUP 004	0	0mA	0mA
FTTN GROUP 005	0	0mA	0mA

Circuits

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
a V	382	381	380	379	379	380	382	382	381	381	n/a	n/a	n/a	n/a	n/a	n/a	SH01 1.5 A
mA	1	1	1	1	1	0	1	1	1	1							A 1-8 9-16 CB
b V	379	383	379	382	381	380	381	379	382	384	n/a	n/a	n/a	n/a	n/a	n/a	B 1-8 9-16 CB
mA	1	1	1	1	1	1	1	1	1	1							upper fan / lower fan

.

WEB

Front Panel

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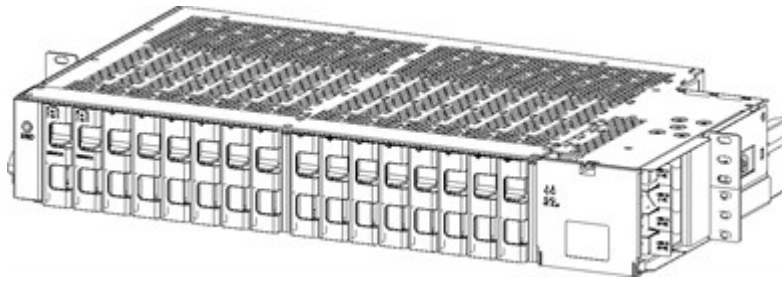
Brief Hardware Orientation

Figure 6-1: QS912A Converter Shelf

(Shown configured with 2 operational circuits and 14 slot fillers for airflow control)

[CPS3200U Page 21]

To distribute airflow across every card in the shelf make sure each slot is filled with either a converter or an empty slot filler. Converter cards and slot fillers are insertedaccording to this diagram:
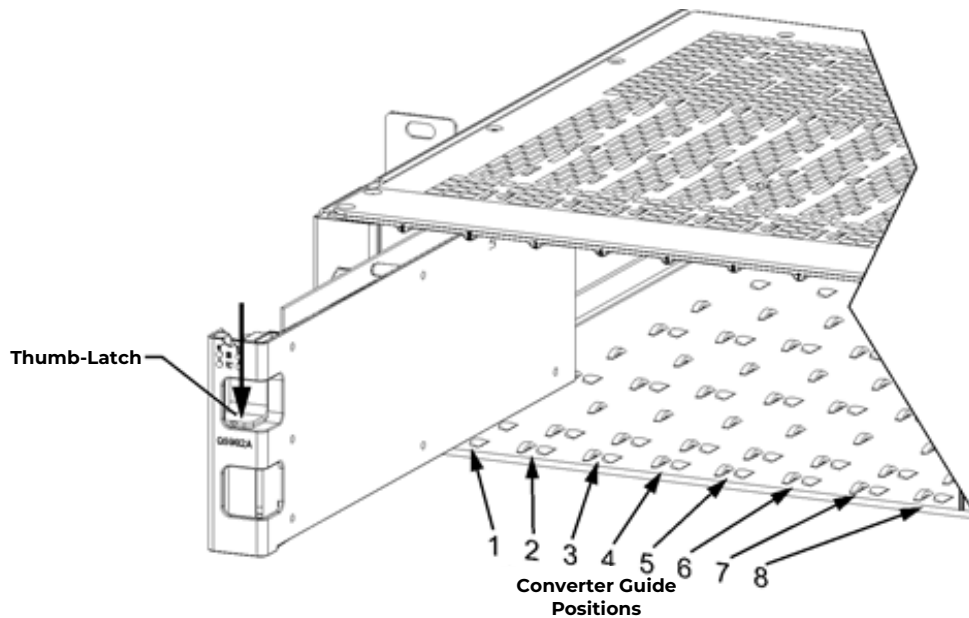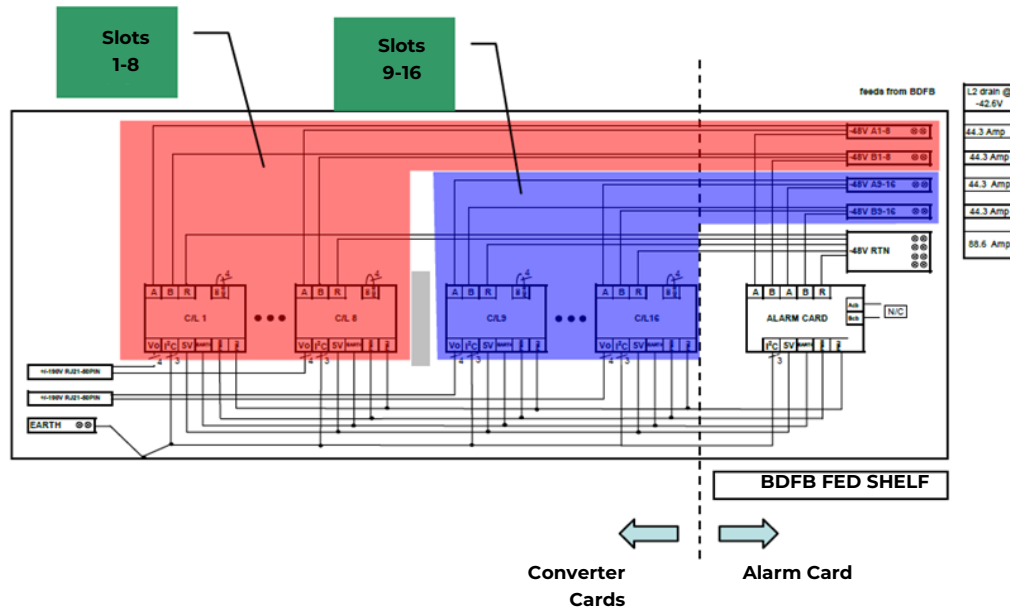

Figure 8-2: Installing Converters

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Please shift focus now to understanding the shelf schematic. This is key to recognizing and correcting errors.

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Always look first at the alarm card to establish valid A and B power feeds to both sides of the shelf.

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The orange and blue regions above indicates that there is an A and a B feed for the left hand side of the shelf (slots 1-8) and an A and a B feed for the right hand side of the shelf (slots 9-16). The letters "A" and "B" labeling the top two alarm card LEDs refer to these -48V input power feeds.

This diagram can be used to diagnose powering faults as indicated by the "A" and "B" LEDs.
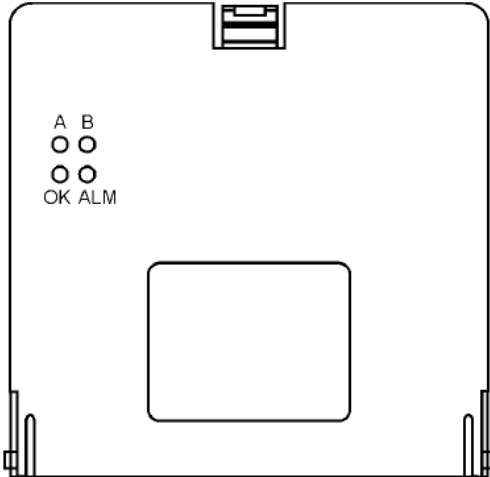
[CPS3200U Page 55]

Energized (E) is the normal state. This makes any failures of power to the relay are alarmed:

	-48 V INPUT BUS				Vin LEDs		STATUS LEDs		ALARM RELAYs	
	A1-8	B1-8	A9-16	B9-16	A LED	B LED	OK LED	ALM LED	PMN	PMJ
1	OK	OK	OK	OK	GRN	GRN	GRN	OFF	E	E
2	LOW	OK	OK	OK	RED	GRN	OFF	YEL	D	E
3	OK	LOW	OK	OK	GRN	RED	OFF	YEL	D	E
4	OK	OK	LOW	OK	RED	GRN	OFF	YEL	D	E
5	OK	OK	OK	LOW	GRN	RED	OFF	YEL	D	E
6	LOW	LOW	OK	OK	RED	RED	OFF	RED	E	D
7	LOW	OK	LOW	OK	RED	GRN	OFF	RED	E	D
8	LOW	OK	OK	LOW	RED	RED	OFF	RED	E	D
9	OK	LOW	LOW	OK	RED	RED	OFF	RED	E	D
10	OK	LOW	OK	LOW	GRN	RED	OFF	RED	E	D
11	OK	OK	LOW	LOW	RED	RED	OFF	RED	E	D
12	LOW	LOW	LOW	OK	RED	RED	OFF	RED	E	D
13	LOW	LOW	OK	LOW	RED	RED	OFF	RED	E	D
14	LOW	OK	LOW	LOW	RED	RED	OFF	RED	E	D
15	OK	LOW	LOW	LOW	RED	RED	OFF	RED	E	D
16	LOW	LOW	LOW	LOW	OFF	OFF	OFF	OFF	D	D

Alarm Relay: E – Energized relay in non-alarm state; D – De-energized relay in alarm state

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Once both the "A" and the "B" input power LEDs are green, other LEDs can be used to diagnose other faults.

One fault that may show as a red flashing ALM LED on the alarm card is communications fail. The flashing red ALM light on the alarm card indicates that it is configured to expect a controller and is not seeing one.
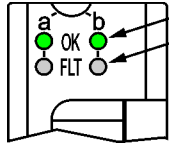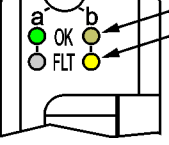

The Shelf ID rotary DIP switches are as shown here:
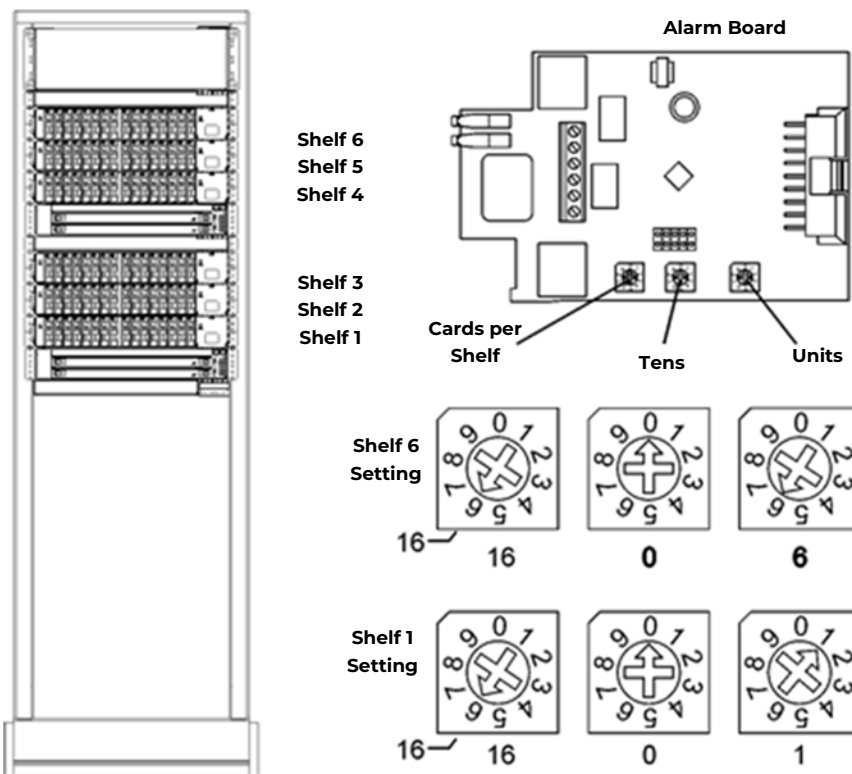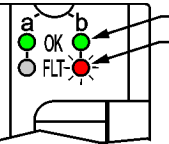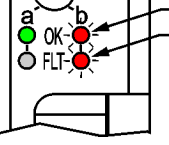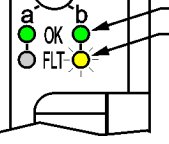
[CPS3200U Page 53]

If there is no controller present, the flashing red LED can be addressed by switching the Tens and Units rotary switches to positions 0 using a small Phillips screwdriver. If a controller is present the signal between the alarm card and the controller is likely broken. Please examine all wiring. Also note: all shelves in a system must have different addresses to be recognized by the controller.

Converter LEDs look like this:

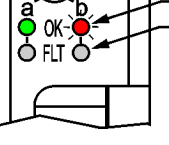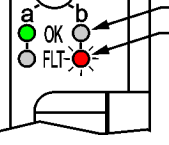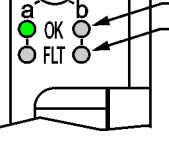| LED Display	Conditions (on b circuit)	Action Required
a b — Green / Off (OK: a green, b green; FLT: both off)	All OK	None
a b — Off / Yellow (OK: a green, b off; FLT: b yellow)	Circuit Placed in Standby	None depending on desired state of circuit b. Standby state can be set using the QS941 controller or web browser.
a b — Green / Red Blinking (OK: a green, b green; FLT: b red blinking)	Loss of comm.	Check seating on Alarm card and converter card
a b — Red Blinking / Red Blinking (OK: a green, b red blinking; FLT: b red blinking)	Ground fault	Check 5 pin protectors and faults to ground
a b — Green / Yellow Blinking (OK: a green, b green; FLT: b yellow blinking)	Overcurrent or undervoltage	Check output lines for shorts to each other
a b — Red Blinking / Off (OK: a green, b red blinking; FLT: off)	OV or internal failure	Replace unit
a b — Off / Red Blinking (OK: a green, b off; FLT: b red blinking)	Thermal Alarm	Solve Thermal problem
a b — Off / Off (OK: a green, b off; FLT: off)	card not powered or input fuse failure	Check source voltage

Page

Converter LEDs look like this:

LED Display	Conditions (on b circuit)	Action Required
a b — Red/Green Alternating OK — Red/Yellow Alternating FLT	Lamps test requested from controller	Observe Lamp Test

Alarm Reference Table

This Alarm Table shows how FTTN Alarms are categorized by the QS941 Controller. Many alarms are best processed at the converter shelf alarm card and converter card level. In other words columns 4, and 5, can be used to select the appropriate action from column 6.
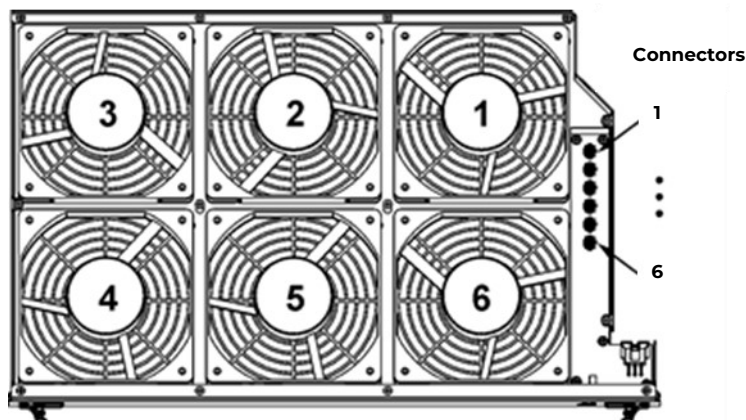
		3. QS941		4.Alarm Card		5.Converter Card		6.Human Response
1. Alarm Display	2. What it means	LED State	Relay State	Alarm LED State	Relay State	OK LED State	Alarm LED State	Corrective Action
Circuit Fail	Short + to -	Yellow	Min	Yellow	Min	Green	Flashing Yellow	Make sure each converter has an independent isolated send and return path.
Circuit Fail	Short to Ground	Yellow	Min	Yellow	Min	Flashing Red	Flashing Red	Make sure each converter has an independent isolated send and return path.
Comm. Fail	1 Card Removed	Yellow	Min	Yellow	Min	Green	Off	Check to see that all cards are seated. Replace non- functioning cards.
Comm. Fail	2 Cards Removed	Red	Maj					Check to see that all cards are seated. Replace non- functioning cards.
Comm. Fail	Comm. Cable Removed	Red	Maj	Flashing Red		Green	Off	Check communication path from alarm cards to QS941 controller. If no controller is present, set alarm card rotary switch to position 0 for contact closures only communication.
Comm. Fail	Alarm Card Removed	Red	Maj			Green	Flashing Red	Replace Alarm card.
None	Standby	Green		Green			Yellow	Remove unit from standby if desired using QS941 or Ethernet interface

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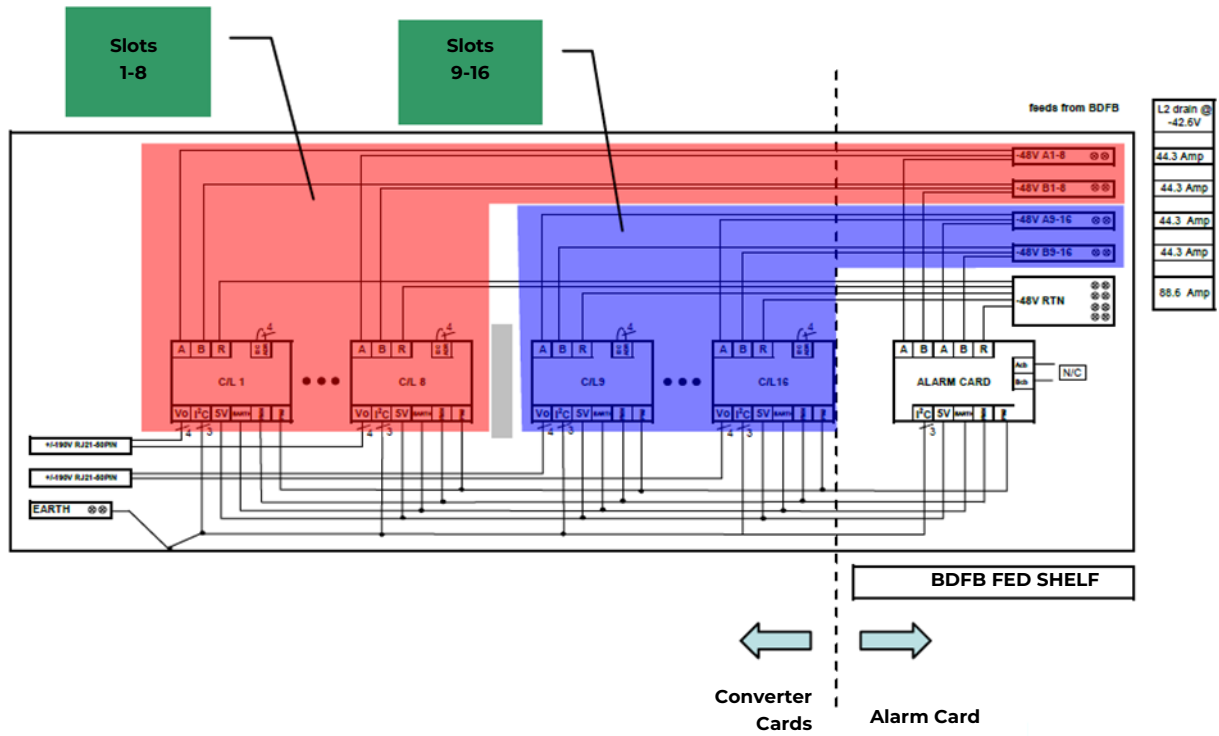| 1. Alarm Display	2. What it means	3. QS941		4. Alarm Card		5. Converter Card		6. Human Response
		LED State	Relay State	Alarm LED State	Relay State	OK LED State	Alarm LED State	Corrective Action
Circuit Fail	Open Fuse	Yellow	Min	Yellow	Min	Green	Flashing Yellow	Replace unit. Note: Restoring service to one line will interrupt service to the other line served by that card.
Circuit Fail	Under Voltage	Yellow	Min	Yellow	Min		Flashing Yellow	Replace unit. Note: Restoring service to one line will interrupt service to the other line served by that card.
Fan Fail	1 Fan Tray Failed	Yellow	Min	Yellow	Min	Green	Off	Replace fan tray.
Fan Fail	1 of 6 fans Failed on one Fan Tray	Yellow	Min	Yellow	Min	Green	Off	Replace fan tray.
Fan Fail	2 Fan Trays Failed	Red	Maj	Red	Maj	Green	Off	Replace fan trays.
Input Power	A1-8 Power Fail	Yellow	Min	A Red	Min	Green	Off	Reconnect DC input power flowing to the A1-8 input terminal.
Input Power	B1-8 Power Fail	Yellow	Min	B Red	Min	Green	Off	Reconnect DC input power flowing to the B1-8 input terminal
Input Power	A9-16 Power Fail	Yellow	Min	A Red	Min	Green	Off	Reconnect DC input power flowing to the A9-16 input terminal
Input Power	B9-16 Power Fail	Yellow	Min	B Red	Min	Green	Off	Reconnect DC input power flowing to the B9-16 input terminal.
Input Power Mul Circuit Fail	A1-8 & B1-8 Power Fail	Red	Maj	A Red B Red	Maj	Green	Off	Reconnect DC input power flowing to the A1-8 input terminal and Reconnect DC input power flowing to the B1-8 input terminal
Input Power Mul Circuit Fail	A9-16 & B9-16 Power Fail	Red	Maj	A Red B Red	Maj	Green	Off	Reconnect DC input power flowing to the A9-16 input terminal. Reconnect DC input power flowing to the B9-16 input terminal.

1. Alarm Display	2. What it means	3. QS941		4. Alarm Card		5. Converter Card		6. Human Response
		LED State	Relay State	Alarm LED State	Relay State	OK LED State	Alarm LED State	Corrective Action
Load Drop	Load Drop	Yellow	Min	A, B & OK Green		Green	Off	Check the integrity of the circuits going to the load. Or Adjust load drop threshold to 0 to disable this feature.
Load Share	As set of circuits assigned to one remote destination are not sharing current as would be expected .	Yellow	Min	A, B & OK Green		Green	Off	Check the integrity of the circuits going to the load. Or Adjust load share threshold to disable this feature.
Line Test	OK, Fail or Aborted			A, B & OK Green		Green	Off	Estimated line resistance has increased since last measurement.
Loss Of Redundancy		Yellow	Min	A, B & OK Green		Green	Off	The loss of n additional circuits will cause customers to lose service. Check redundancy threshold in the configuration.

Locating Failed Fans

Fan failures within a tray can be found by correlating the number of LED flashes to this map:

2. WEB

Slots 1-8

Slots 9-16

BDFB FED SHELF

Converter Cards

Alarm Card

Hardware

WEB

Front Panel

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The web page reflects the physical configuration of each shelf.

The right hand side shows the 48V input current and alarm states for each of the DC inputs. Text changes to yellow for power minor and red for power major. Fan tray status is also alarmed on the right hand side of the figure. The output voltage and current of each circuit on each card is also shown on the physical representation of the shelf. The 'a' circuit output is shown on the top and the 'b' circuit output is shown below. The left hand side of the WEB display shows how circuits are grouped, including group name, number of circuits assigned, current draw, and current capacity.
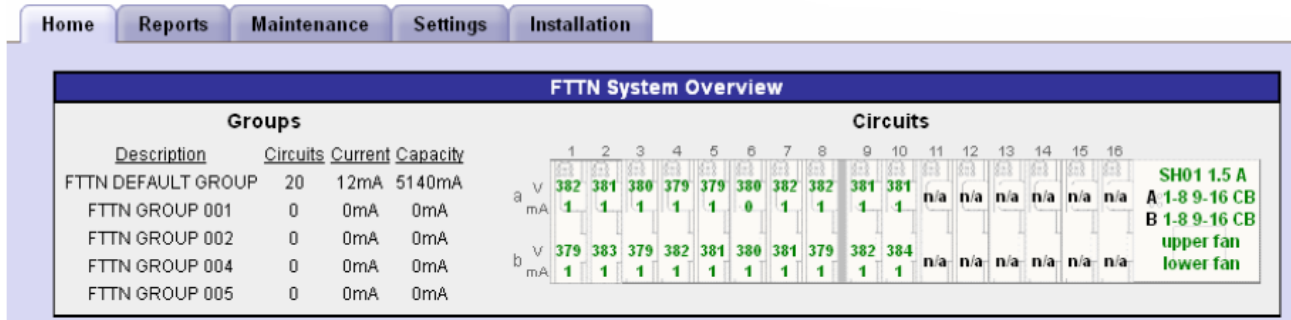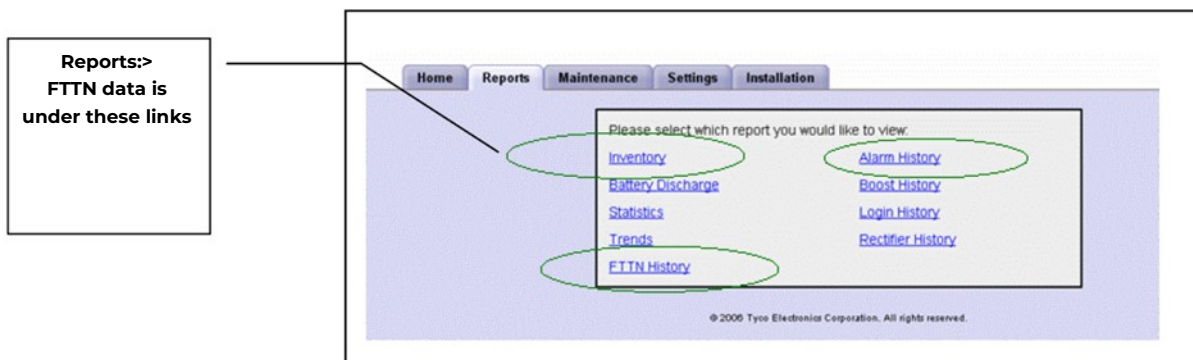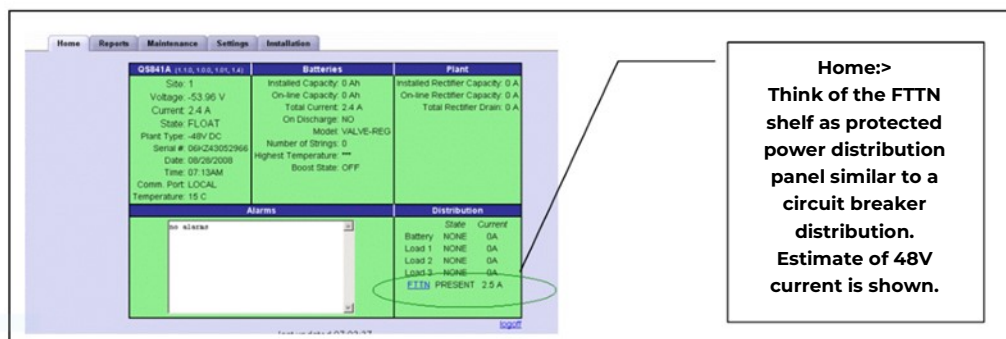

[QS941A WEB Interface page 8]

Details about the WEB interface can be found in the QS941A Controller WEB Interface. This pdf document can be found at the bottom of the CPS2300U page located at: **omnionpower.com**

To help find the FTTN relevant information on each tab, please use this guide

(ovals show start links):

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Maintenance:>
Clear missing devices declares the current state as good, retiring all alarms.

On/Standby control is available for FTTN starting here, too.

Settings:>
Details of FTTN setting can be found here

Installation:>
This is where one sets the date and time.

Please note: loop resistance measurements only work for a small subset of applications.

To interact with the QS941 Controller through the WEB interface it is possible to connect a computer to the QS941A directly using server mode or through a LAN using client mode.

This section details how to set up the controller as either a server or a Client.

Change LAN to Server Mode

To access the controller directly from a PC, you must first change LAN connection to server mode.

Step	Action
1.	Press Menu or Accept key, ■.
2.	Press down arrow, ▾, to Configuration.
3.	Press the right arrow key, ▸ (or square "accept" key, ■) to advance.
4.	Press down arrow, ▾, to Communications Ports.
5.	Press the right arrow key, ▸ (or square "accept" key, ■) to advance.
6.	Press down arrow, ▾, to Network Settings.
7.	P Press the right arrow key, ▸ (or square "accept" key, ■) to advance.
8.	Press down arrow, ▾, to highlight DHCP.
9.	Press the right arrow key, ▸ (or square "accept" key,) to advance.
10.	Press down arrow, ▾, to toggle to SERVER.
11.	Press save, ■.
12.	Press the Back Arrow, ⬅,to return to the default screen.
13.	Wait 2 minutes.
14.	Activate changes by removing the QS941 controller circuit card from the backplane. Wait untilthe LEDs extinguish.
15.	Reapply power by reinserting the circuit card connection until seated.
16.	Verify Server Mode by pressing Menu>Status>Network Settings>Port 1> to find 192.168.2.1 asthe network address.

Warning: It is always safer to leave the controller in Client mode. This avoids LAN conflicts should the controller ever be connected to a Local Area Network.
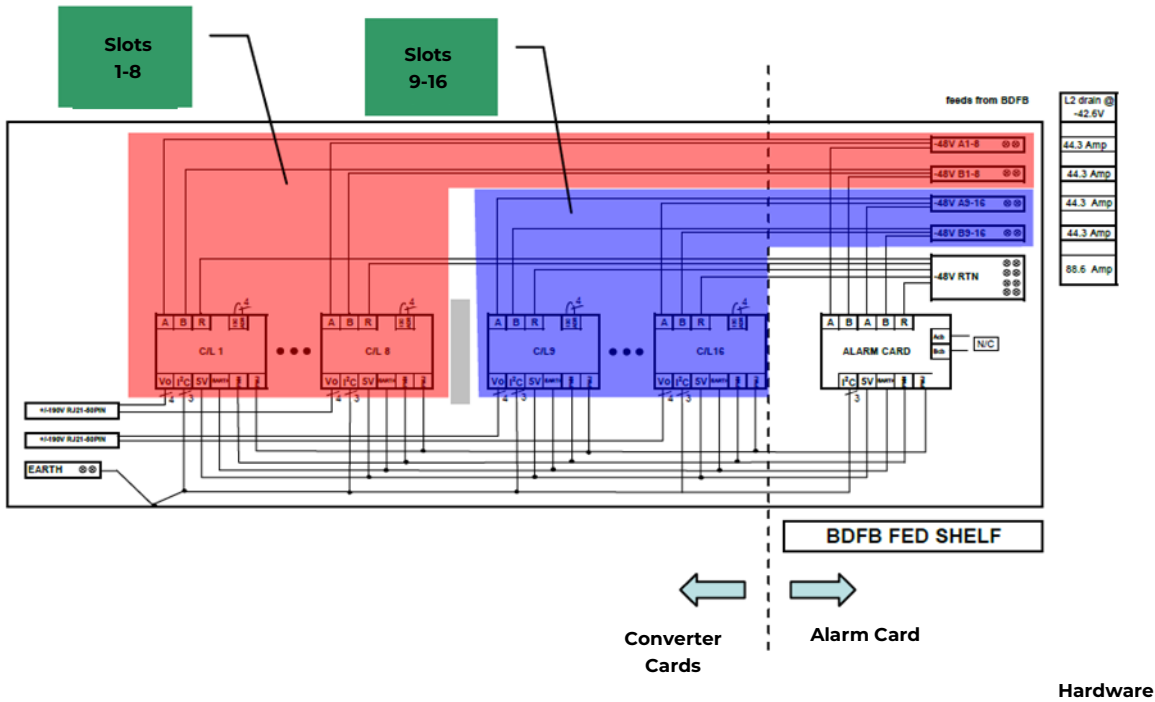
Restore the LAN Connection to Client Mode

As good policy, always leave the controller in Client mode.

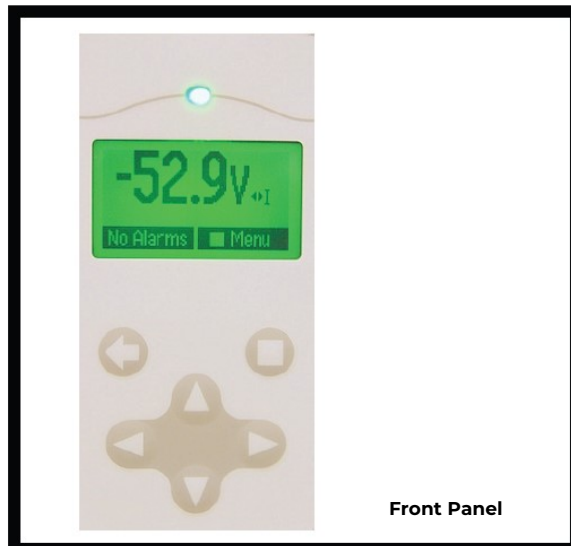| Step	Action
1.	Press Menu or Accept key, ■
2.	Press down arrow, ▾, to Configuration.
3.	Press the right arrow key, ► (or square "accept" key, ■) to advance.
4.	Press down arrow, ▾, to Communications Ports.
5.	Press the right arrow key, ► (or square "accept" key, ■) to advance.
6.	Press down arrow, ▾, to Network Settings.
7.	P Press the right arrow key, ► (or square "accept" key, ■) to advance.
8.	Press down arrow, ▾, to highlight DHCP.
9.	Press the right arrow key, ■(or square "accept" key, ■) to advance.
10.	Press down arrow, ▾, to toggle to CLIENT.
11.	Press save, ■ .
12.	Press the Back Arrow, ⬅, to return to the default screen.
13.	Wait 2 minutes.
14.	Activate changes by removing the QS941 controller circuit card from the backplane. Wait untilthe LEDs extinguish.
15.	Reapply power by reinserting the circuit card connection until seated.
16.	Verify Client Mode by pressing Menu>Configuration>Communications Ports>NetworkSettings> to show Client mode.

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CPS3200U Tech Support_MAN

3. Front Panel

Slots 1-8

Slots 9-16

feeds from BDFB

L2 drain @ -42.6V

-48V A1-8 — 44.3 Amp
-48V B1-8 — 44.3 Amp
-48V A9-16 — 44.3 Amp
-48V B9-16 — 44.3 Amp
-48V RTN — 88.6 Amp

C/L 1 ••• C/L 8 ••• C/L 9 ••• C/L 16 ALARM CARD N/C

+/-190V RJ21-80PIN
+/-190V RJ21-80PIN
EARTH

BDFB FED SHELF

← **Converter Cards**   → **Alarm Card**

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FTTN GROUP 002	0	0mA	0mA
FTTN GROUP 004	0	0mA	0mA
FTTN GROUP 005	0	0mA	0mA

Circuits

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
a V mA	382 1	381 1	380 1	379 1	379 1	380 1	382 0	382 1	381 1	381 1	n/a	n/a	n/a	n/a	n/a	n/a	SH01 1.5 A A 1-8 9-16 CB B 1-8 9-16 CB upper fan lower fan
b V mA	379 1	383 1	379 1	382 1	381 1	380 1	381 1	379 1	382 1	384 1	n/a	n/a	n/a	n/a	n/a	n/a	

WEB

-52.9V

No Alarms   Menu

Front Panel

Most of the detail needed to interact with the front panel is in the QS941A Controller User Interface document available from the website.

Key to getting started is understanding that the top row keys on the faceplate are soft keys. Text on the lower edge of the display indicates key function.

The QS941A Controller User Interface manual is the best reference to use when discussing interacting with the display with a customer. It can be found at this WEB address: **omnionpower.com**

Revision

Revision	Description	Date
1.2	Updated as per template	02/24/2022
1.3	Updated as per OmniOn template	12/14/2023

CPS3200U Tech Support_MAN

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