Vertiv™ Liebert® IntelliSlot RDU101 Card

Firmware Release Notes

VERSION 1.5.1.0_0000004, JANUARY 27, 2022

Release Notes Section Outline

1. Version and Compatibility
2. New in this Release
3. Security Issues Addressed
4. Update Instructions
5. Issues Addressed
6. Known Issues
7. Previous Release Updates and Enhancements

1. Version and Compatibility

This release contains firmware version RDU_1.5.1.0_0000004 and is compatible with the following products:

- Compatible with the following Liebert® Communication Card:
  - IntelliSlot RDU101 card
- Compatible with the following power and thermal management equipment:
  - Liebert® GXT5 UPS
  - Liebert® TFX Power and Conditioning System
  - Liebert® RXE
- Compatible with the following sensors:
  - Liebert® SN-T and -TH
  - Liebert® SN-2D
  - Liebert® SN-3C
  - Liebert® SN-Z01, -Z02, and -Z03
  - Liebert® SN-L

This release supports the following browsers:

- Microsoft:
  - Internet Explorer (IE) 10 (version 10.0.9200.17457)
  - IE11 (version 11.557.17763.0)
  - Edge (version 97.0.1072.62)
- Mozilla Firefox (version 59.02)
- Google Chrome (version 79.0.3945.130)
- Safari 13.1.2 (version 15609.3.5.1.3)

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp.

RDU101 Card and Sensors Feature Information

SUPPORTED FEATURES	RDU101 CARD	SENSORS
LIFE™ Services Support	Supported	Not Supported
Sensor Support	Supported	Not Supported
COMMUNICATION PROTOCOLS		
HTTP/HTTPS	Supported	Supported
Velocity Protocol	Supported	Supported
Email	Supported	Supported
SMS	Supported	Supported
THIRD-PARTY COMMUNICATION PROTOCOLS		
SNMP v1, v2c, v3	Supported	Supported
BACnet IP/*MSTP	Supported	Not Supported
Modbus TCP/*RTU	Supported	Not Supported
YDN23	Not Supported	Not Supported

* **NOTE:** BACnet MSTP and Modbus RTU require a USB to RS-485 adapter (part number USB485I).

2. New in this Release

This release adds support for the following enhancements:

- Liebert® GXT5 with Lithium-Ion batteries: data set support
- Remote Services (LSC) connectivity was improved
- Firmware update: user feedback has been improved
- Liebert® DPM, Liebert® TFX, Liebert® RXE: add status data points for Branch PB and sub feed PB reports to annunciate alarms on the web bezel.

3. Security Issues Addressed

The following table details highly publicized security vulnerabilities that have been addressed.

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp.

COMPONENT	DESCRIPTION
ShellShock	The appropriate version of bash is implemented.
Poodle	SSLv3 is disabled.
Cross-Scripting	Cross-Scripting entries via web User Interface are restricted.
Clickjacking	Clickjacking is addressed in this release.
Beast and Logjam	Beast and Logjam vulnerabilities are addressed.
Sweet 32 Birthday Attack	Vulnerability Birthday attacks against TLS ciphers with 64-bit block size vulnerability (Sweet 32) are addressed.
California IoT Security Law, SB-327	User must configure unique administrator credentials to access the card. This was addressed in the 1.2.2.0 release.
CV-2004-0582 Lack of Account Lockout	This vulnerability could allow a brute force ID/Password attack. This was addressed in the 1.4 release. The account lockout time is 15 minutes. If login is attempted during the timeout period, the timeout period will restart.
Password Complexity	Minimum of 8 to a maximum of 30 case-sensitive, printable characters (excluding: \'<>~?#, double quote, and space). Must contain a combination of upper and lower case, digit, and special characters. The password cannot contain the Username.

4. Update Instructions

The Liebert® IntelliSlot RDU101 Communications cards may be updated to this firmware version using the web-based Firmware Upload feature. Please refer to the Firmware Updates and Card Configuration sections of the Liebert® IntelliSlot RDU101 Communications Card User Guide (SL-70352) and the Mass Firmware and Configuration Update Tool.

1. Connecting to the card

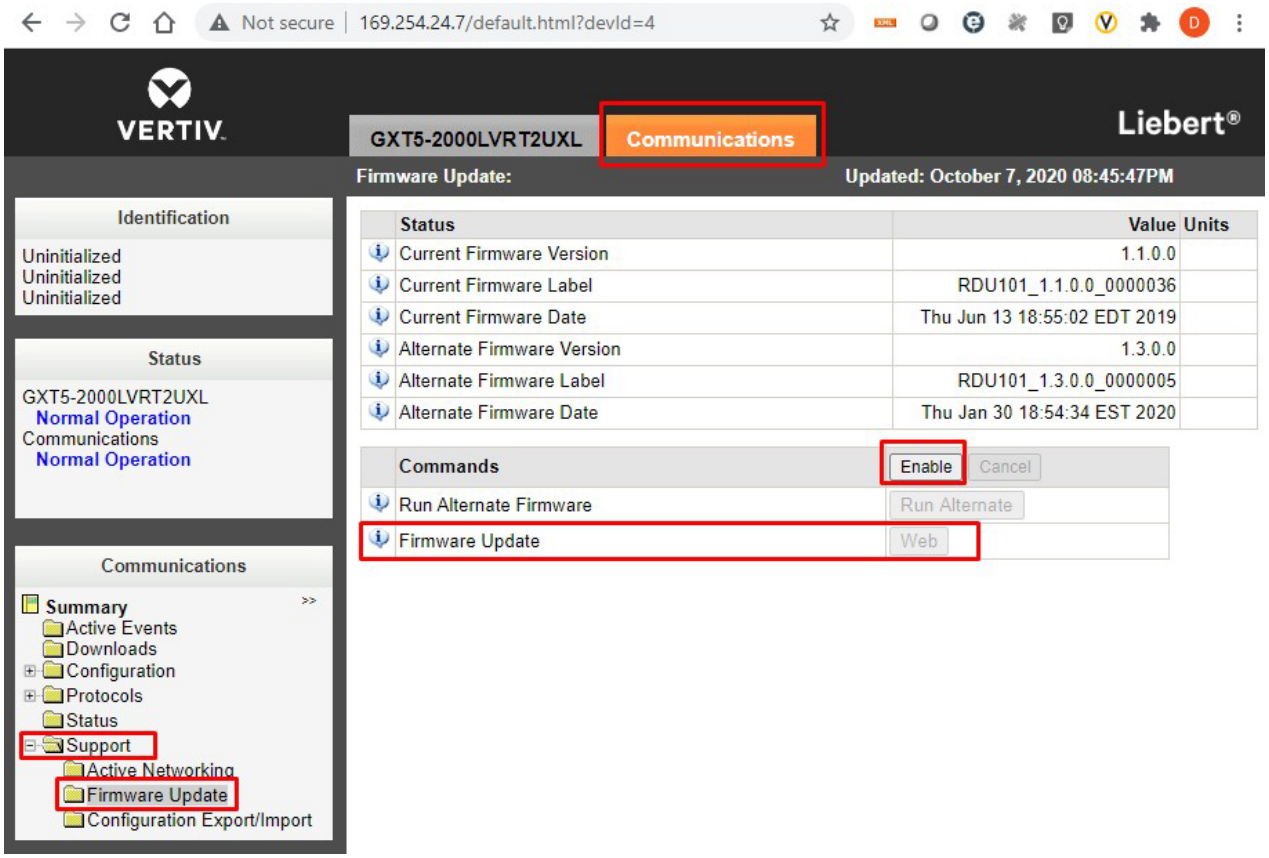
After installing the card, allow time for the card to boot. Connect an Ethernet cable from the card to a PC or Laptop. A link local connect can be established. This is a direct PC-to-card Ethernet connection. The PC acquires a local address, and the card is accessed at 169.254.24.7. Please consult the Quick Start Guide and User Guide for further details if needed.

2. Open a web browser (such as Chrome) and enter 169.254.24.7 in the address bar.

3. Update the card firmware. Navigate to:

- "Communications" tab
- "Support" folder
- "Firmware Update" folder
- Click "Enable"
- Click "Web"

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp.



4. The Firmware Update page will appear.

- Use the “Choose File” button to select the firmware file via Windows File Explorer
- Click the “Update Firmware” button

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp.

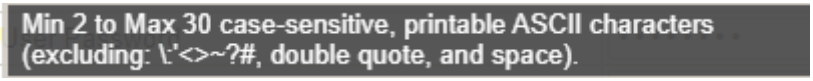
5. Following the firmware update, the "Please Create an Administrator Level Account" dialogue will appear in the browser.

- The customer will provide the credentials.

  -or-

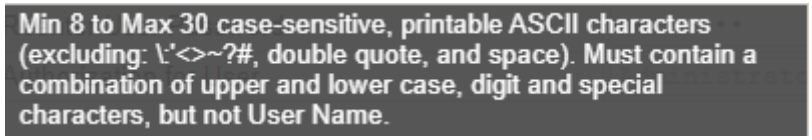
- The installer can choose/create the credentials. The credentials must be communicated to the end customer.

Username – Allowable characters



Minimum of 2 to a maximum of 30 case-sensitive, printable characters (excluding: \'<>~?#, double quote, and space).

Password – Allowable characters

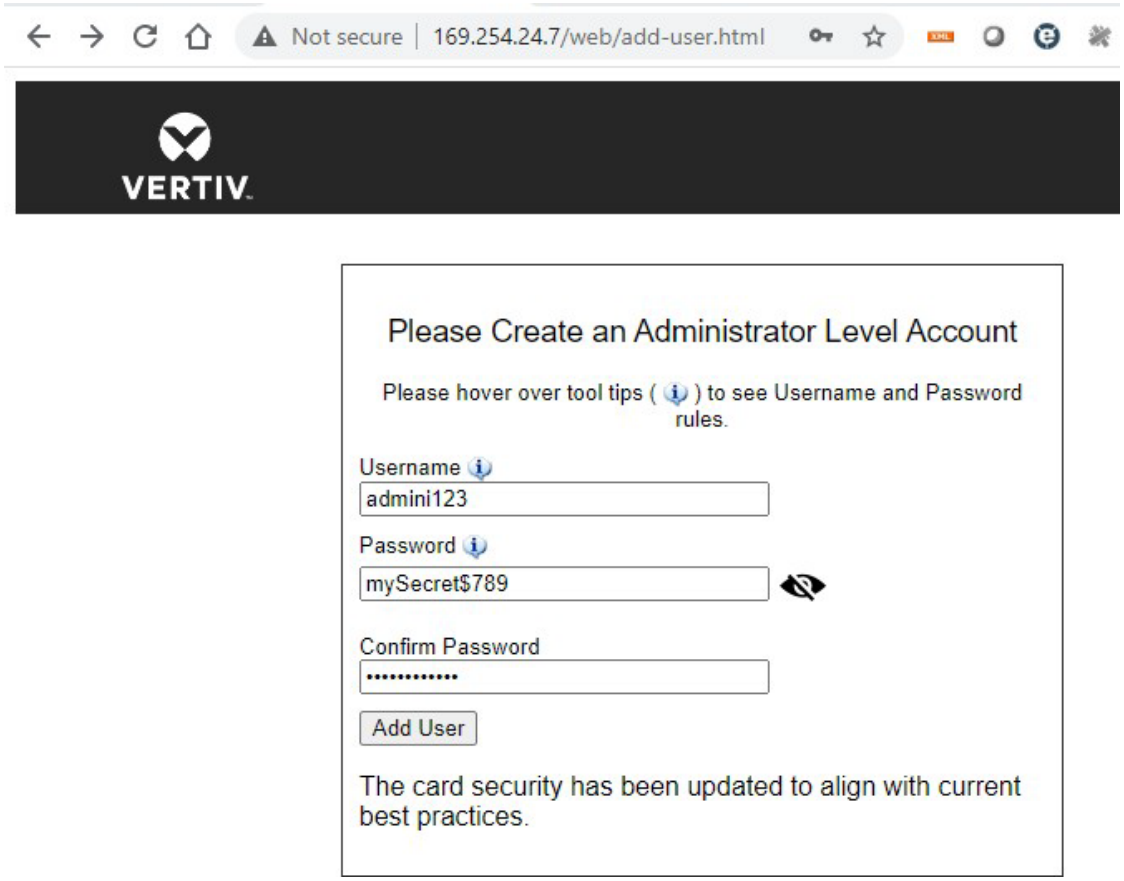


Minimum of 8 to a maximum of 30 case-sensitive, printable characters (excluding: \'<>~?#, double quote, and space). Must contain a combination of upper and lower case, digit, and special characters. The password cannot contain the Username.

6. Create an Administrator account as shown in the example below:

- Username = admini123
- Password = mySecret$789

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp



7. Take careful note of the actual credentials that are entered in the dialogue shown above.

Note: If the Administrator credentials are lost or forgotten, the card must be reset to a Factory Default state to regain access. Please reference the User Guide for instructions to reset the card.

8. Click "Add User".

9. The dialogue will briefly indicate - "Waiting on response from server…"

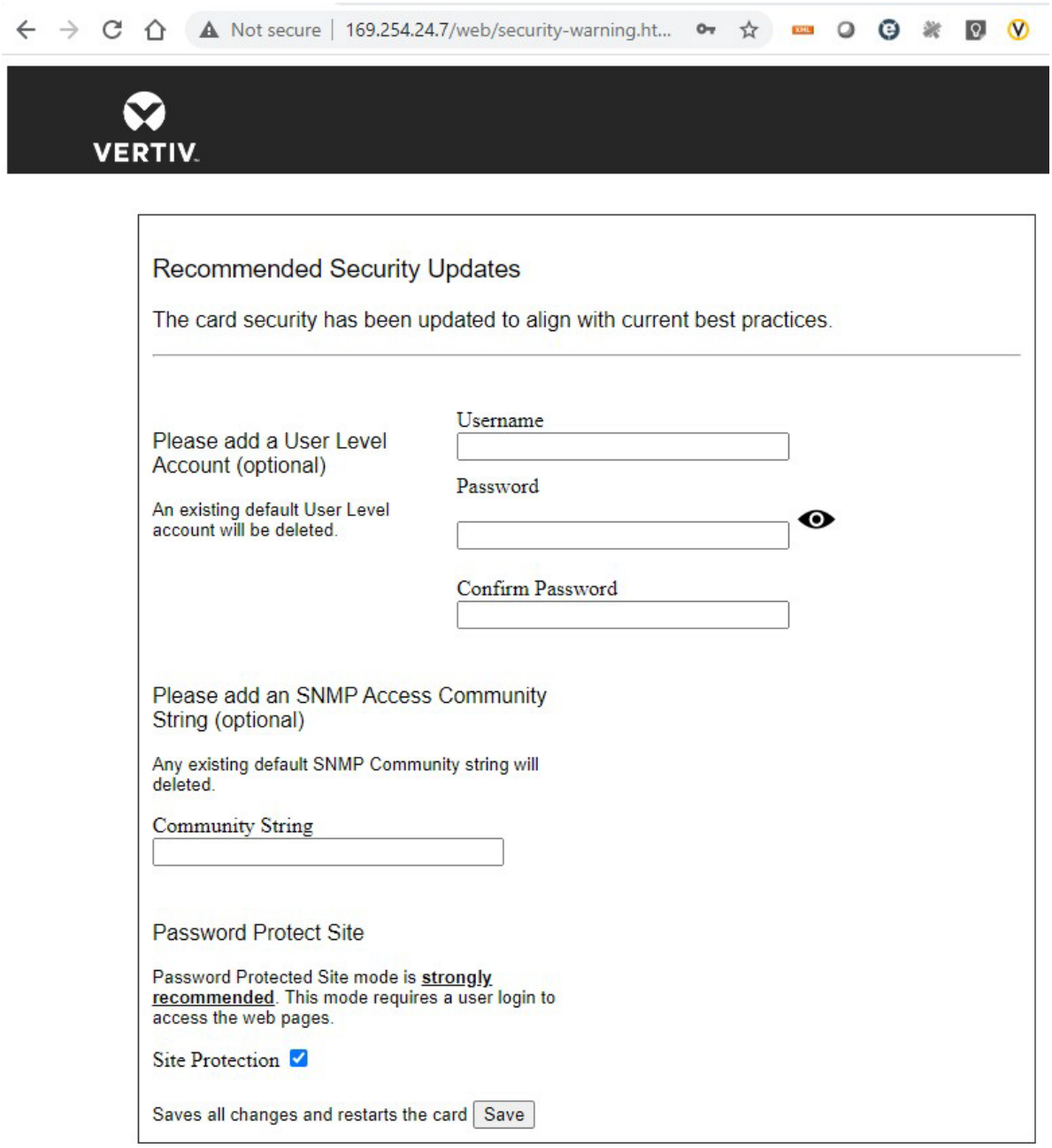
10. Next, the dialogue will briefly indicate – "Applying Updates…."

Note: Do not click the "Back" button in the web browser

If the card appears to be unresponsive in the web browser at any point, please re-enter the 169.254.24.7. in the address bar.

11. A second dialogue – "Recommended Security Updates" may appear. If it does, just click the "Save" button at the bottom to continue.

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp

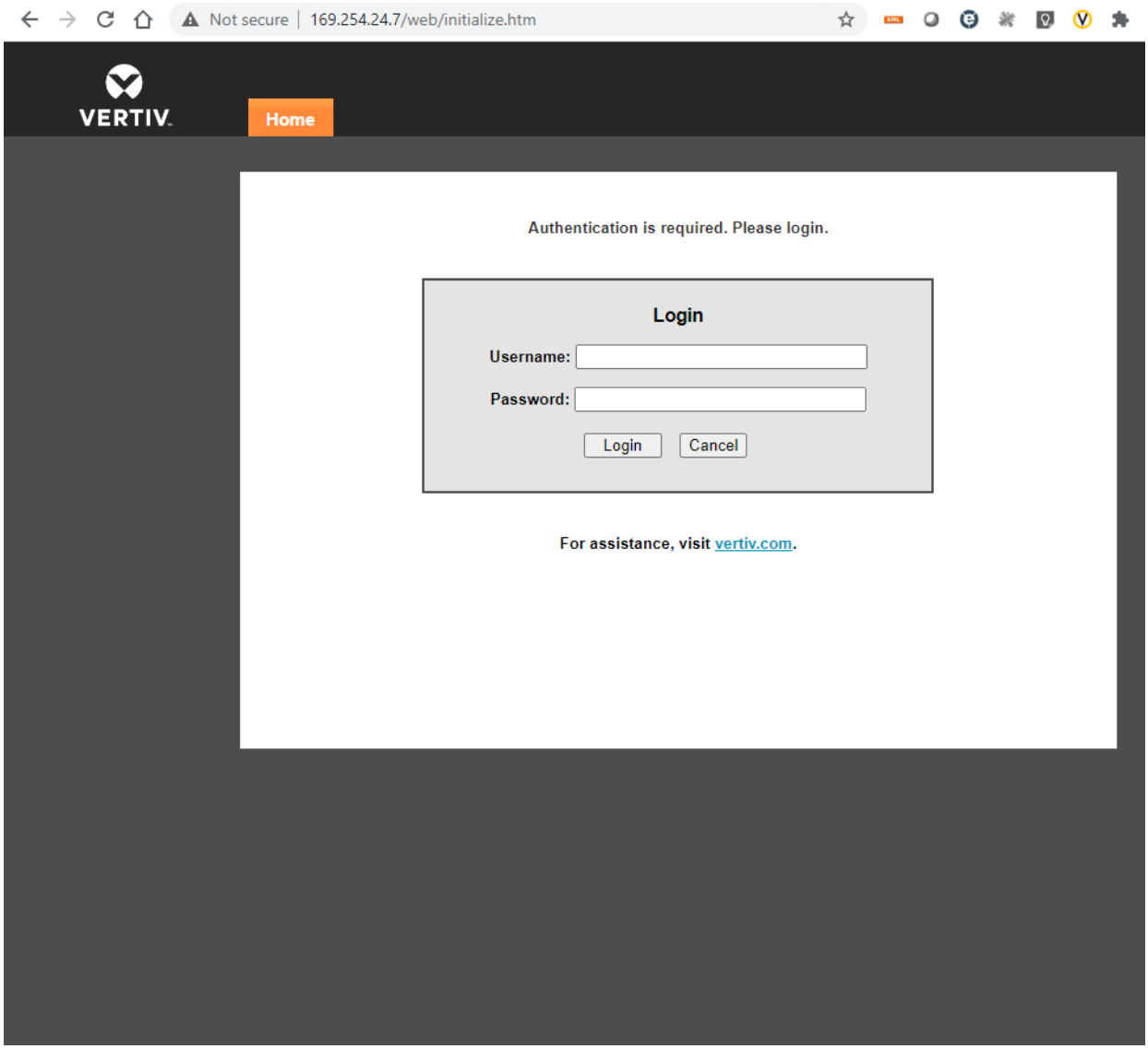


12. The dialogue will briefly indicate - "Waiting on response from server……."

13. The Password Protected Site login screen is presented. Please login with the administrator credentials created above. (Please reference step 7).

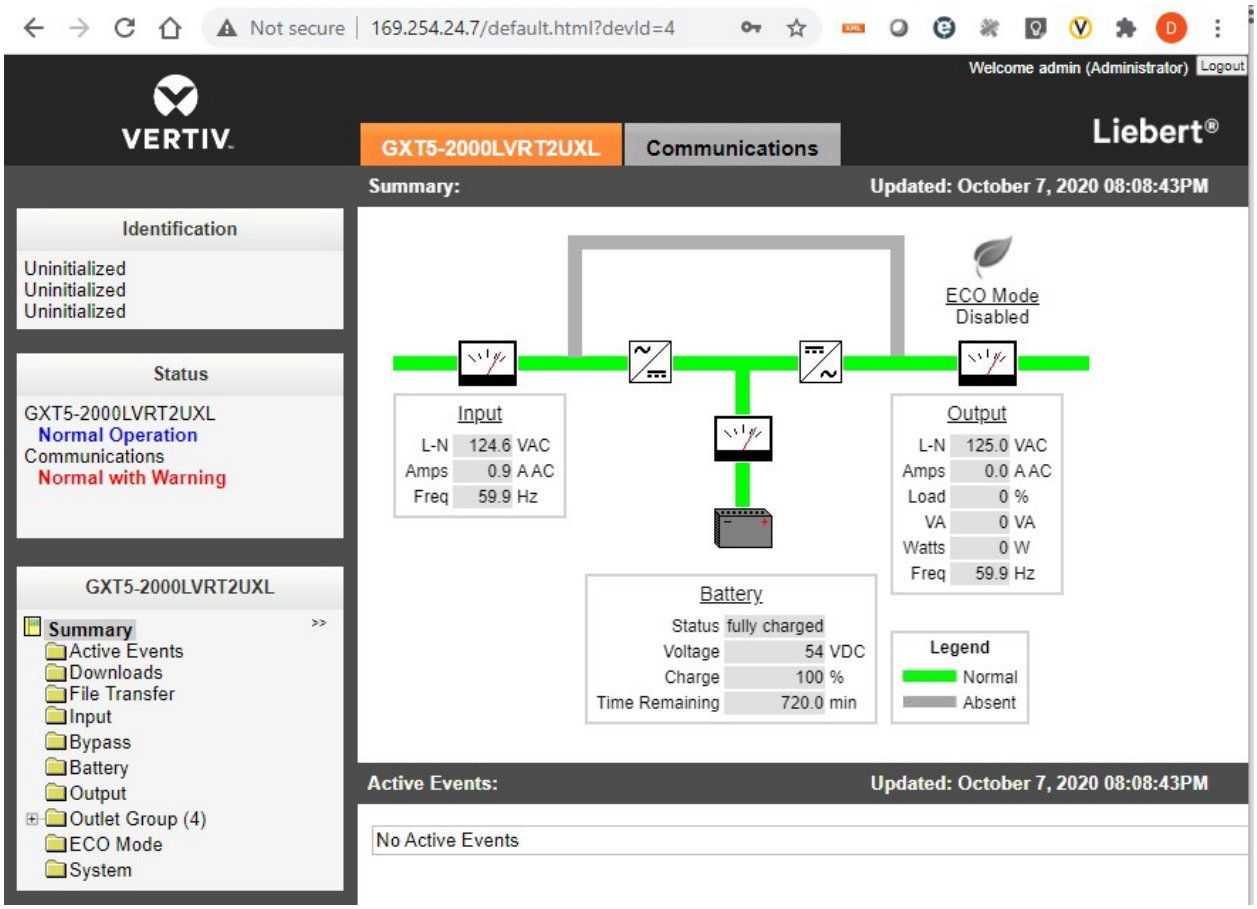
- Username = xxxxxxxxxx
- Password = xxxxxxxxxxx

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp



14. Communications Status = “Normal with Warning” may appear as shown in the example page below.

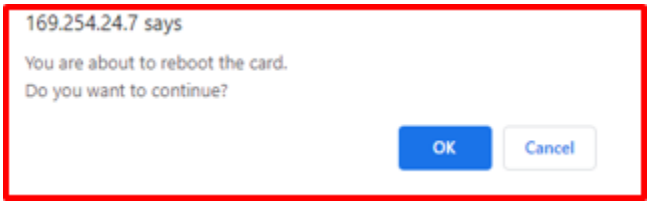
PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp



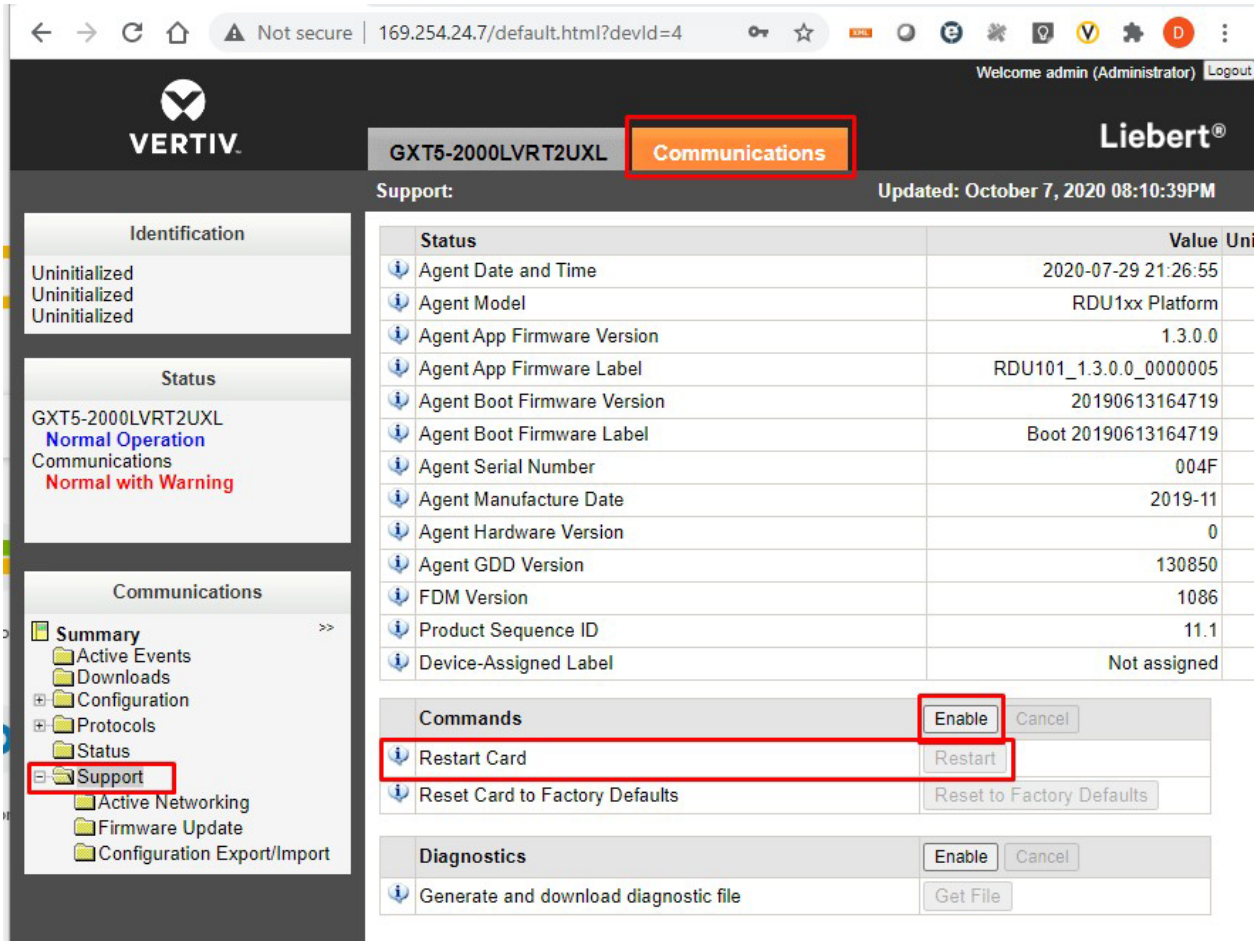
15. The "Normal with Warning" message can be cleared by Restarting the card.

Navigate to:

- "Communications" tab
- "Support" folder
- Click "Enable"
- Click "restart"
- Click "OK" in the browser pop-up dialogue



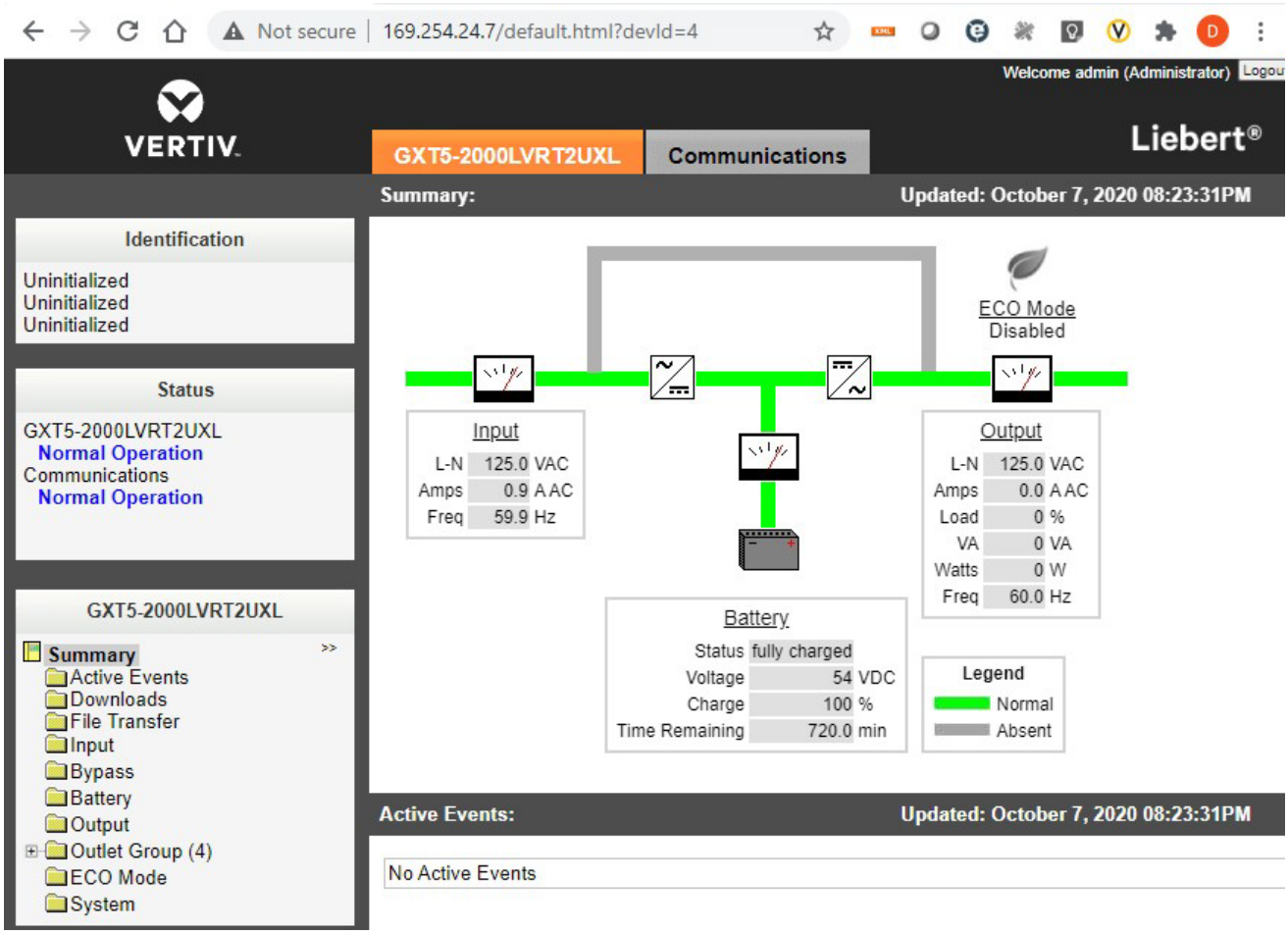
PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp



16. Following the card restart, login to the card again (same as step 10 above).

17. The card web page will be normal as shown below.

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp



18. The administrator account setup is complete.

5. Issues Addressed

COMPONENT	DESCRIPTION
Web - Firmware Update	Empty page after firmware image uploaded successfully on Microsoft Edge browser.
User Access	User Access fails when username is configured as “admin”.
Password Protected Site	Password Protected Site checkbox does not indicate enabled even though the feature is enabled. Following a reboot, the checkbox indicates enabled.
SSL Certificate	Corrected the inability to upload new certificates.
Firmware Update	Improved firmware update performance over high latency network connections such as VPN.

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp

6. Known Issues

COMPONENT	DESCRIPTION
Firmware Update	• Firmware v.1.3.0.0 and below are experiencing firmware update failures over high latency networks connections while the “Password Protect Site” feature is enabled. • A blank page may appear after the firmware file transfer has completed. Please navigate to the IP address of the card to restore connectivity.
Reset to Factory Defaults	The reset to factory defaults can take 90+ seconds to reset to factory defaults on firmware versions.

PROPRIETARY AND CONFIDENTIAL. © 2022 Vertiv Group Corp

7. Previous Release Updates and Enhancements

<table>
<tr><th>RELEASE</th><th>DESCRIPTION</th></tr>
<tr><td>v1.0.0.0</td><td>This is the initial release of the Liebert® IntelliSlot RDU101 Card in support of the Liebert® GXT5.</td></tr>
<tr><td>v1.0.03</td><td>This release contained the following enhancement: the web bezel (power flow diagram) was enhanced to provide a more accurate UPS status. Example: battery charging in addition to battery discharging is now available.</td></tr>
<tr><td>v1.1.0.0</td><td>This release contained the following enhancements: Modbus TCP support was added. Status LED operation was implemented per the following table.
<table>
<tr><th>LED</th><th>DESCRIPTION</th></tr>
<tr><td>Green On</td><td>Full network connectivity, DHCP</td></tr>
<tr><td>Green Off</td><td>No network connectivity</td></tr>
<tr><td>Green Blinking</td><td>Link local address only</td></tr>
<tr><td>Red On</td><td>Web pages for the monitored device are unavailable (ex. Liebert® GXT5)</td></tr>
<tr><td>Red Off</td><td>Web pages for the monitored device are available</td></tr>
<tr><td>Red Blink Fast</td><td>Web pages for the monitored device are initializing. Blink rate is 0.25 sec.</td></tr>
<tr><td>Red Blink Slow</td><td>Device not available. Blink rate is 1.50 sec.</td></tr>
<tr><td>Green and Red Toggling</td><td>Reset to Factory Defaults has been recognized</td></tr>
</table></td></tr>
<tr><td>v1.2.2.0</td><td>This release contained support for BACnet/IP, MSTP, and Modbus RTU.

Note: BACnet MSTP and Modbus RTU require a USB to RS-485 adapter (part number USB485I). This adapter will soon be available for order as an accessory to the RDU1010 card.</td></tr>
<tr><td>v1.3.0.0</td><td>This release contained support for Liebert® TFX Power and Conditioning System.</td></tr>
<tr><td>v1.4.0.0</td><td>This release contained support for Liebert® RXE.</td></tr>
<tr><td>v1.4.0.1</td><td>This release contained the adjustment of scaling factor for several current data points in the Liebert® DPM, Power Distribution Monitoring System (Liebert® TFX, Liebert® RXE, etc.).</td></tr>
<tr><td>v1.5.0.0</td><td>This release contained expanded data set support for Liebert® GXT5.

The following support was added for Liebert® DPM, Liebert® TFX and Liebert® RXE:

• Added BMC data points
• UOM corrected for 3 Peak Demand data points
• Added Sub-Feed Phase Over-Current Warning data points</td></tr>
</table>

© 2022 Vertiv Group Corp. All rights reserved. Vertiv™ and the Vertiv logo are trademarks or registered trademarks of Vertiv Group Corp. All other names and logos referred to are trade names, trademarks or registered trademarks of their respective owners. While every precaution has been taken to ensure accuracy and completeness here, Vertiv Group Corp. assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions. Specifications, rebates and other promotional offers are subject to change at Vertiv's sole discretion upon notice.