

Vertiv™ Liebert® IntelliSlot™ RDU101 Card

Firmware Release Notes

VERSION 1.8.0.0_0000003, MAY 23, 2023

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_1.8.0.0_0000003 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 Distribution System
 - Liebert® RXA Power Distribution System
- Compatible with the following sensors:
 - Liebert® SN-T
 - Liebert® SN-TH
 - Liebert® SN-2D
 - Liebert® SN-3C
 - Liebert® SN-Z01
 - Liebert® SN-Z02
 - Liebert® SN-Z03

This release supports the following browsers:

- Microsoft Edge (version 112.0.1722.34; 64-bit; Official Build)
- Mozilla Firefox (version 111.0.1; 64-bit)
- Google Chrome (version 112.0.5615.50; 64-bit; Official Build)
- Safari 13.1.2 (version 15609.3.5.1.3)

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 the RDU101 RS-485 Converter Accessory: Part Number USB485I.

2. New in this Release

This release adds support for the following enhancements:

- Updated Remote Services connectivity
- Added NTPv4 support
- Support time server address from DHCP

3. Security Issues Addressed

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

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.

COMPONENT	DESCRIPTION
CVE-2004-0583 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.
CVE-2022-22720	Apache HTTP Server 2.4.52 and earlier fails to close inbound connection when errors are encountered discarding the request body, exposing the server to HTTP Request Smuggling.
CVE-2021-40438	A crafted request uri-path can cause mod_proxy to forward the request to an origin server chosen by the remote user. This issue affects Apache HTTP Server 2.4.48 and earlier.
CVE-2022-0778	An attacker can control the parameter values that are vulnerable to this DoS issue.
CWE-259	The product contains a hard-coded password, which it uses for its own inbound authentication or for outbound communication to external components.
CWE-327	The product uses a broken or risky cryptographic algorithm or protocol.

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](#). The firmware update may take up to 15 minutes depending on network conditions. During this time, you may experience a loss of communications. However, the monitored equipment operation is not affected.

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”

← → ↻ 🏠 ⚠ Not secure | 169.254.24.7/default.html?devId=4 ☆ 🔍 🌐 🛡️ 📄 📌 📁


Liebert®

GXT5-2000LVRT2UXL Communications

Firmware Update:
Updated: October 7, 2020 08:45:47PM

Identification

Uninitialized
Uninitialized
Uninitialized

Status

GXT5-2000LVRT2UXL
Normal Operation
Communications
Normal Operation

Communications

- 📁 Summary >>
- 📁 Active Events
- 📁 Downloads
- 📁 Configuration
- 📁 Protocols
- 📁 Status
- 📁 Support
- 📁 Active Networking
- 📁 Firmware Update
- 📁 Configuration Export/Import

Status	Value	Units
📌 Current Firmware Version	1.1.0.0	
📌 Current Firmware Label	RDU101_1.1.0.0_0000036	
📌 Current Firmware Date	Thu Jun 13 18:55:02 EDT 2019	
📌 Alternate Firmware Version	1.3.0.0	
📌 Alternate Firmware Label	RDU101_1.3.0.0_0000005	
📌 Alternate Firmware Date	Thu Jan 30 18:54:34 EST 2020	

Commands	
📌 Run Alternate Firmware	Enable Cancel Run Alternate
📌 Firmware Update	Web

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



Web (HTTP) Firmware Update

Parameter	Description
File	Directory and name of the firmware update file. Click the Browse button to navigate and select a valid firmware update file. Note: The maximum length of a file specification is 250 characters including spaces and punctuation.
Update Firmware	Click this button to initiate the firmware update.

File: No file chosen

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

Min 2 to Max 30 case-sensitive, printable ASCII characters (excluding: \<>~?#, double quote, and space).

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

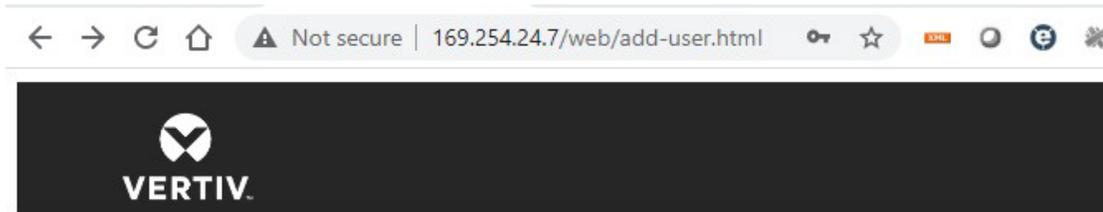
Password – Allowable characters

Min 8 to Max 30 case-sensitive, printable ASCII characters (excluding: \<>~?#, double quote, and space). Must contain a combination of upper and lower case, digit and special characters, but not User Name.

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



Please Create an Administrator Level Account

Please hover over tool tips () to see Username and Password rules.

Username 

Password 
 

Confirm Password

The card security has been updated to align with current best practices.

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".

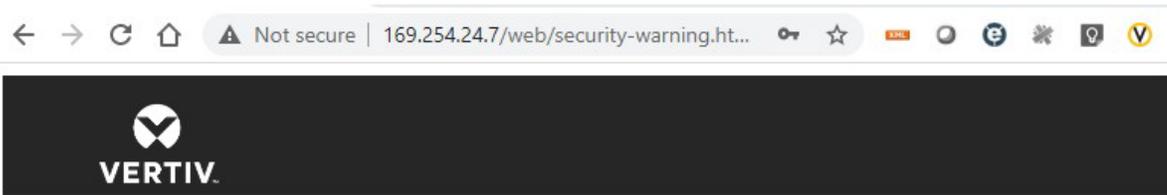
9. The dialogue will briefly indicate - "Waiting on response from server..."

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.



Recommended Security Updates

The card security has been updated to align with current best practices.

Please add a User Level Account (optional)
An existing default User Level account will be deleted.

Username

Password 

Confirm Password

Please add an SNMP Access Community String (optional)
Any existing default SNMP Community string will be deleted.

Community String

Password Protect Site

Password Protected Site mode is **strongly recommended**. This mode requires a user login to access the web pages.

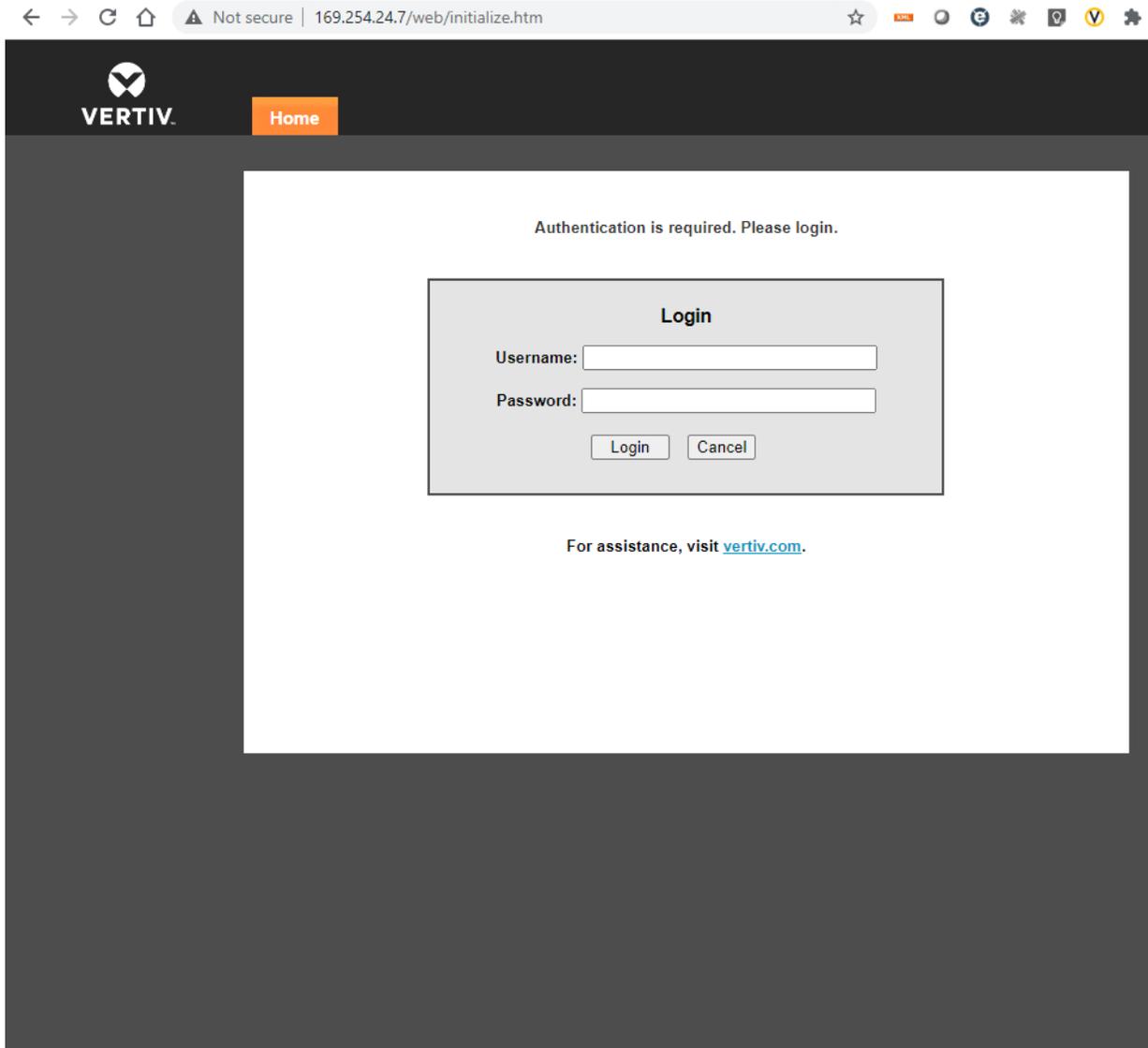
Site Protection

Saves all changes and restarts the card

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 = xxxxxxxxxx



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

Summary: Updated: October 7, 2020 08:08:43PM

Identification: Uninitialized, Uninitialized, Uninitialized

Status: GXT5-2000LVRT2UXL
Normal Operation
Communications
Normal with Warning

Input: L-N 124.6 VAC, Amps 0.9 AAC, Freq 59.9 Hz

Output: L-N 125.0 VAC, Amps 0.0 AAC, Load 0 %, VA 0 VA, Watts 0 W, Freq 59.9 Hz

Battery: Status fully charged, Voltage 54 VDC, Charge 100 %, Time Remaining 720.0 min

ECO Mode: Disabled

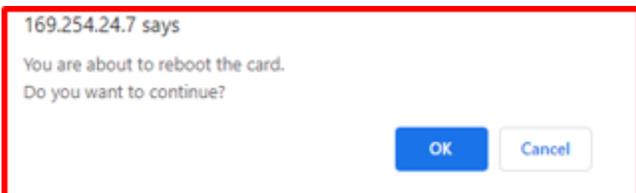
Legend: Normal (Green), Absent (Grey)

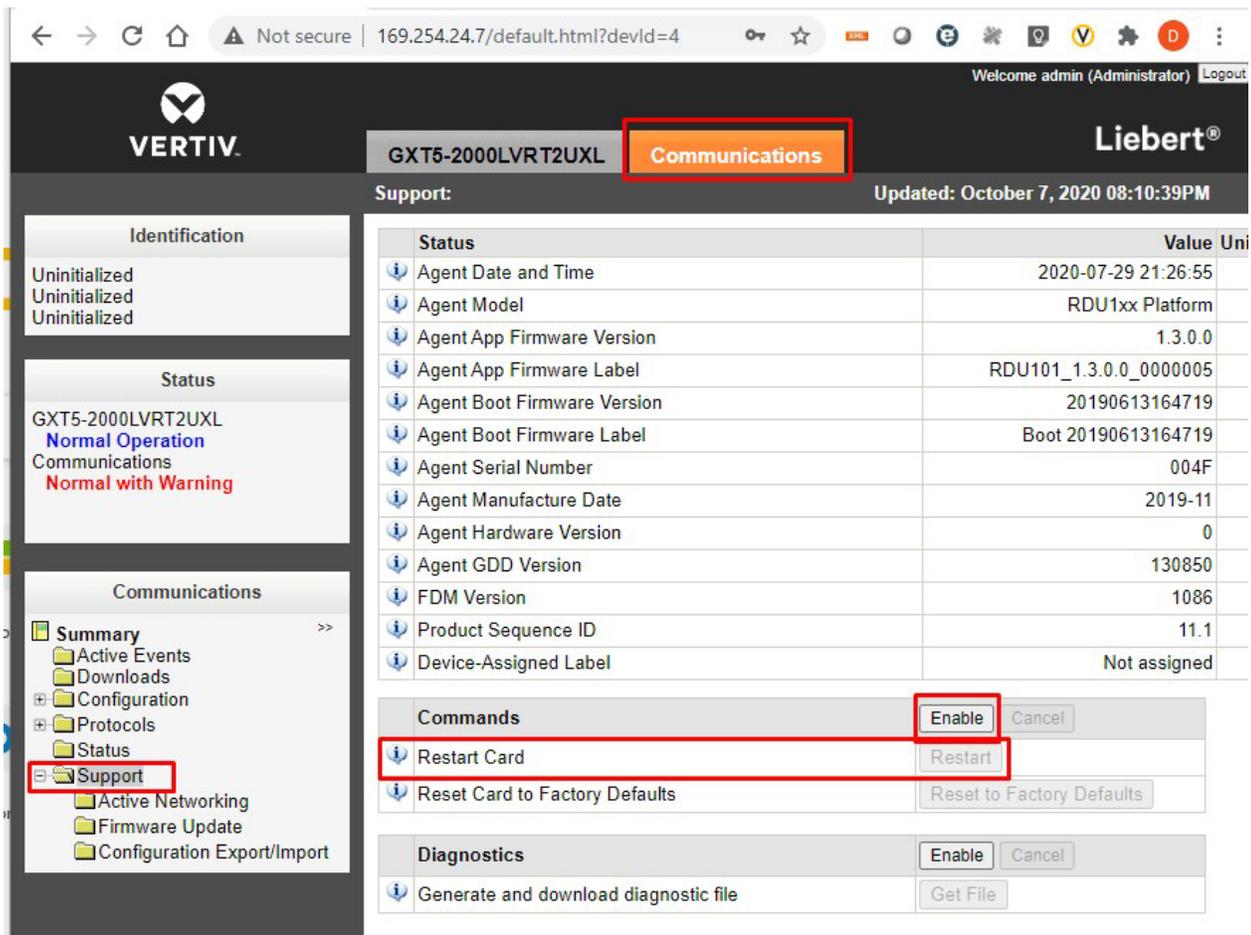
Active Events: Updated: October 7, 2020 08:08:43PM
No Active Events

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





Browser address bar: 169.254.24.7/default.html?devId=4

Page title: GXT5-2000LVRT2UXL **Communications** Liebert®

Support: Updated: October 7, 2020 08:10:39PM

Identification

Uninitialized
Uninitialized
Uninitialized

Status

GXT5-2000LVRT2UXL
Normal Operation
Communications
Normal with Warning

Communications

- Summary >>
- Active Events
- Downloads
- Configuration
- Protocols
- Status
- Support**
- Active Networking
- Firmware Update
- Configuration Export/Import

Status	Value	Unit
Agent Date and Time	2020-07-29 21:26:55	
Agent Model	RDU1xx Platform	
Agent App Firmware Version	1.3.0.0	
Agent App Firmware Label	RDU101_1.3.0.0_0000005	
Agent Boot Firmware Version	20190613164719	
Agent Boot Firmware Label	Boot 20190613164719	
Agent Serial Number	004F	
Agent Manufacture Date	2019-11	
Agent Hardware Version	0	
Agent GDD Version	130850	
FDM Version	1086	
Product Sequence ID	11.1	
Device-Assigned Label	Not assigned	

Commands

Diagnostics

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.

← → ↻ 🏠 ⚠ Not secure | 169.254.24.7/default.html?devId=4 ☆ 🔒 🌐 ⚙️ 📄 📄 📄

Welcome admin (Administrator) [Logout](#)

VERTIV **GXT5-2000LVRT2UXL** **Communications** **Liebert®**

Summary: Updated: October 7, 2020 08:23:31PM

Identification

Uninitialized
Uninitialized
Uninitialized

Status

GXT5-2000LVRT2UXL
Normal Operation
Communications
Normal Operation

GXT5-2000LVRT2UXL

- 📁 **Summary** >>
- 📁 Active Events
- 📁 Downloads
- 📁 File Transfer
- 📁 Input
- 📁 Bypass
- 📁 Battery
- 📁 Output
- 📁 Outlet Group (4)
- 📁 ECO Mode
- 📁 System

Input

L-N	125.0 VAC
Amps	0.9 AAC
Freq	59.9 Hz

Output

L-N	125.0 VAC
Amps	0.0 AAC
Load	0 %
VA	0 VA
Watts	0 W
Freq	60.0 Hz

Battery

Status	fully charged
Voltage	54 VDC
Charge	100 %
Time Remaining	720.0 min

Legend

- Normal
- Absent

ECO Mode Disabled

Active Events: Updated: October 7, 2020 08:23:31PM

No Active Events

18. The administrator account setup is complete.

5. Issues Addressed

RELEASE	COMPONENT	DESCRIPTION
v.1.0.0.3	Web – Active Networking Page	Resolved the issue of the Active Networking Web page indicating incorrect information.
v.1.2.1.0	User Access	User Access fails when username is configured as “admin”.
v.1.2.2.0	Web - Firmware Update	Empty page after firmware image uploaded successfully on the Microsoft Edge browser.
v.1.4.0.0	Password Protected Site	Password Protected Site checkbox does not indicate enabled even though the feature is enabled. Following a reboot, the checkbox indicates enabled.
v.1.4.0.2	SSL Certificate	Corrected the inability to upload new certificates.
v.1.5.0.1	Firmware Update	Improved firmware update performance over high latency network connections such as VPN.
v.1.5.1.0	HTTPS	Disable TLS v1.1 support.
v.1.6.0.0	GXT5 Firmware Update	Unauthorized report when entering credential on File Transfer page.
v.1.7.0.0	Firmware Update	Re-authorization required to get progress update.

6. Known Issues

COMPONENT	DESCRIPTION
Firmware Update	<ul style="list-style-type: none"> 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.
SN-L20	The SN-L20 sensor does not function properly unless another SN-x sensor (ex. SN-T) is connected to the Environmental Sensor Bus.

7. Previous Release Updates and Enhancements

RELEASE	DESCRIPTION																		
v1.0.0.0	This is the initial release of the Liebert® IntelliSlot RDU101 Card in support of the Liebert® GXT5.																		
v1.0.03	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.																		
v1.1.0.0	This release contained the following enhancements: Modbus TCP support was added. Status LED operation was implemented per the following table.																		
	<table border="1"> <thead> <tr> <th>LED</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <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> </tbody> </table>	LED	DESCRIPTION	Green On	Full network connectivity, DHCP	Green Off	No network connectivity	Green Blinking	Link local address only	Red On	Web pages for the monitored device are unavailable (ex. Liebert® GXT5)	Red Off	Web pages for the monitored device are available	Red Blink Fast	Web pages for the monitored device are initializing. Blink rate is 0.25 sec.	Red Blink Slow	Device not available. Blink rate is 1.50 sec.	Green and Red Toggling	Reset to Factory Defaults has been recognized
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v1.2.2.0	<p>This release contained support for BACnet/IP, MSTP, and Modbus RTU.</p> <p>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.</p>																		
v1.3.0.0	This release contained support for Liebert® TFX Power Distribution System.																		
v1.4.0.0	This release contained support for Liebert® RXA.																		
v1.4.0.1	This release contained the adjustment of scaling factor for several current data points in Power Distribution Monitoring System (Liebert® TFX, Liebert® RXA, etc.).																		
v1.5.0.0	<p>This release contained expanded data set support for Liebert® GXT5.</p> <p>The following support was added for Liebert® TFX and Liebert® RXA:</p> <ul style="list-style-type: none"> • Added BMC data points • UOM corrected for 3 Peak Demand data points <p>Added Sub-Feed Phase Over-Current Warning data points</p>																		

RELEASE	DESCRIPTION
v1.5.1.0	<ul style="list-style-type: none">• Liebert® GXT5 with Lithium-Ion batteries: data set support• Remote Services (LSC) connectivity was improved• Firmware update: user feedback has been improved <p>Liebert® TFX, Liebert® RXA: add status data points for Branch PB and sub feed PB reports to annunciate alarms on the web bezel.</p>
v1.6.0.0	<p>VxRail Shutdown Support Integration Power Insight:</p> <ul style="list-style-type: none">• It is recommended to use Local IntelliSlot Authentication when configuring VxRail (Third Party Integration) users.• It is recommended to not use Remote Authentication with the VxRail feature enabled if the Remote Authentication Server is in the shutdown cluster. Please note that Kerberos based authentication is not supported. <p>Liebert® TFX, Liebert® RXA: add high temperature alarm data points</p>
v1.7.0.0	<ul style="list-style-type: none">• Alternate RDU101 PCBA to support a new ETH PHY.• IPv4 DHCP fail-over to a secondary DHCP server.