

RELEASE NOTES FOR *groov* RIO FIRMWARE

August 22, 2022.

Applies to the following part numbers:

- GRV-R7-MM1001-10
- GRV-R7-MM2001-10
- GRV-R7-I1VAPM-3

Selecting The Correct Firmware Update File

Beginning with version 3.2.0, Opto 22 provides a separate firmware download page and firmware file for each *groov* RIO model. The file name begins with the part number; for example, the file for version 3.2.0 of firmware for **GRV-R7-MM1001-10** is named **grv-r7-mm1001-10-3.2.0-b15.field.bin**. If you are managing different *groov* RIO models and you download multiple firmware files, make sure you install the correct firmware file for each model by carefully checking the file name.

For instructions on installing the firmware, see “Updating Firmware on a *groov* RIO” in the [groov RIO Universal I/O User’s Guide](#) (form 2324).

groov RIO FIRMWARE 3.4.1

August 22, 2022.

General New Features, Enhancements, and Bug Fixes

This section lists new features, enhancements, and bug fixes that either affect multiple components (for example, support for a new protocol) or are not related to a component listed on page 1 (for example, a fix for a *groov* analog channel issue).

New Feature

A new field has been added to the Status Area Read section of the OptoMMP memory map. The new field starts at address 0xFFFF F030 0250 and it keeps track of the number of writes to permanent storage since the last power up. You can find more information about the field in the [OptoMMP Protocol Guide](#), form 1465.

Bug Fixes

- [KB90239](#) Frequently writing unchanged values to some OptoMMP areas may cause excessive writes to permanent storage
- [KB90395](#) Internal values unnecessarily saved to permanent storage

groov Manage 3.4.3

Bug Fixes

- [KB90358](#) Ignition Edge may restart twice or not start after uploading a new server certificate

Data Services 2.0.5

Bug Fixes

- [KB90350](#) MQTT service may fail to connect (out of memory)
- [KB90382](#) Can't view or write to energy tags
- [KB90384](#) Some *groov* EPIC/*groov* RIO device tags are missing from Sparkplug B payloads
- [KB90386](#) Some tag properties for *groov* EPIC/*groov* RIO with Sparkplug B payloads are missing/incorrect
- [KB90388](#) Tag browsers display channel features that are not public
- [KB90390](#) MQTT/Data Service may not issue Death Certificate when MQTT service restarted
- [KB90400](#) 32-bit integers that represent boolean values aren't presented as booleans
- [KB90434](#) Data from *groov* EPIC/RIO reported as stale; *groov* Manage reports Data Service is running

Ignition Edge 8.1.17 and supporting modules

No new features, enhancements, or bug fixes.

Additional updates

No additional updates.

groov RIO FIRMWARE 3.4.0

July 5, 2022. Section updated: July 7, 2022.

General New Features, Enhancements, and Bug Fixes

New Features

- A native OPC UA server for local I/O and Scratch Pad has been added to *groov* RIO. This expands your *groov* RIO's ability to integrate into your SCADA software or any other OPC UA-compliant client software.
 - A new user permission has been added, Data Service OPC UA Server. This user permission helps authenticate a user that can read or read-write data through the native OPC UA server.
 - Configuration of the OPC UA server and corresponding certificate management are available through the Data Service page (formerly the MQTT page) of *groov* Manage.
 - If you downgrade firmware, you cannot transfer Data Service configuration settings to firmware lower than 3.4.0.
- The port redirect feature has been added. This optional feature uses network address translation (NAT) to make a specified service on one network (for example, ETH0) available to hosts on another network (for example, WLAN0). For important information about port redirecting, see:
 - [Guide to Networking *groov* Products](#) (form 2161) for an overview of networking topics in industrial automation.
 - [groov EPIC Security Design and Best Practices Technical Note](#) (form 2310) for important information on trusted vs untrusted networks and other security best practices.
 - [groov RIO Universal I/O User's Guide](#) (form 2245) for instructions on how to enable this feature.
- Support for SNMP connections has been added. This enables management of *groov* RIO and its connected field devices from SNMP-enabled systems.

Enhancements

- The Java JDK has been upgraded to version 8.0.332.

- Improve identification of *groov* RIO devices to CODESYS applications.

Bug Fixes

- [KB89890](#) - User repeatedly prompted to change password
- [KB90083](#) - *groov* RIO: 0-400k ohm channel type may report quality code 6 for zero ohm input
- [KB90206](#) - MQTT may not scan all public tags after watchdog changes for digital output channels
- [KB90223](#) - Analog *groov* RIO channels and undetected discrete *groov* modules report quality code 0 instead of 30
- [KB90315](#) - Some security certificates are not uploaded
- [KB90328](#) - GRV-R7-I1VAPM-3: energy accumulation channels report 3x the expected value

groov Manage 3.4.0

New Features

- To streamline communication with product support, status and configuration information for your *groov* RIO can now be downloaded as a single file (Home > Info and Help > Support Download).

Enhancements

- The MQTT page has been renamed to Data Service and its function has been expanded:
 - Enable or disable the Data Service runtime. Enabling allows access to I/O data and some OptoMMP areas through OPC UA and MQTT.
 - For MQTT: configure the string or Sparkplug payloads, add one or more MQTT brokers, and add security certificates for authentication to brokers.
 - For the native OPC UA server: view server information, configure the server, and add security certificates for authentication to brokers.
 - Links to other *groov* Manage pages where you can make I/O channels, PID loops, and Scratch Pad areas public.
- Several improvements have been made to ease certificate management:
 - The buttons on the Security page have been renamed to more accurately describe the functions you can access.
 - The page that displays information about a specific certificate now displays more information—eliminating a few clicks/taps to get to that information—and the title was rewritten to more accurately describe the contents of the page. Also, the Delete button is now red, which provides a visual cue regarding its function.
- The About page now lists the version information for more components.
- *groov* Manage now warns you when:
 - You assign multiple network interfaces to the same subnet. Ethernet network interfaces cannot be on the same subnet.
 - You assign multiple static IP addresses to the same subnet. Static IP addresses cannot be on the same subnet.
- If your *groov* RIO module hardware requires a specific minimum version of firmware, the Update page displays this minimum version number. Due to occasional changes to internal hardware components, some *groov* RIO modules have different minimum firmware version requirements. If you ever need to downgrade firmware on your *groov* RIO, this information can help ensure that you don't try to downgrade to a version not supported by the hardware.
- The default level of debugging information provided in some logs has been adjusted.
- You can now make the Scratch Pad area of the *groov* RIO OptoMMP memory map public, which means you can now publish the data in this area through MQTT and OPC UA.

Bug Fixes

- [KB90217](#) - Static Routes page incorrectly uses the term "Next Hop"
- [KB90221](#) - Static Route remains in effect after deletion

Node-RED 2.2.2

Node-RED has been upgraded to version 2.2.2.

Data Services 2.0.1¹

This section lists the new features, enhancements, or bug fixes to the data service, a service that provides access to I/O data and some publicly available OptoMMP areas to protocols like OPC UA and MQTT. For a list of specific supported combinations, see [groov RIO Universal I/O User's Guide](#) (form 2324).

Enhancements

The MQTT Broker Client ID field has been enhanced to support longer names and more characters.

Ignition Edge 8.1.17 and supporting modules

The maximum for the Java heap on a GRV-R7-MM2001-10 has been increased to 512 MB.

Additional updates

Improvements and upgrades have been made to internal services to improve performance, improve security, update security certificates, and close vulnerabilities.

groov RIO FIRMWARE 3.3.1

March 30, 2022.

General New Features, Enhancements, and Bug Fixes

Bug Fixes

- [KB90112](#) WiFi configuration changes don't take effect until after power cycle
- [KB90183](#) Scaling values for analog channels may not be correct
- [KB90196](#) Digital output channel turns off or toggles after downloading and running PAC Control strategy

groov Manage 3.3.0

No new features, enhancements, nor bug fixes.

Node-RED 2.0.6

No new features, enhancements, nor bug fixes.

1. The Data Services section was previously called MQTT.

MQTT 1.6.0

No new features, enhancements, nor bug fixes.

Ignition Edge 8.1.11 and supporting modules

No new features, enhancements, nor bug fixes.

Additional updates

None.

groov RIO FIRMWARE 3.3.0

November 23, 2021.

General New Features, Enhancements, and Bug Fixes

- Static IP routes can be configured using the new Static Routes feature.
- You can now set a timeout on browser sessions.
 - Timeouts can be set globally or per user, from 30 minutes to two weeks.
 - A “Remember me” check box on the sign in page helps you preserve your user session across browser restarts.
 - User sessions can be preserved during firmware updates to eliminate the need for re-authentication.
 - The following areas of the Scratchpad are now accessible through Public Tags: string, float, 32-bit integer, and 64-bit integer.

Bug Fixes

- [KB889924](#) Some analog output channels do not return a value of QNAN when a quality code is present
- [KB89950](#) For temperature input channel types, calibration offset parameter may be applied incorrectly
- [KB90020](#) Digital Inputs and On & Off Time Totalization appear stuck

groov Manage 3.3.0

Enhancements

Some *groov* Manage pages have been reorganized to more closely match the changes recently made to the *groov* Manage pages in *groov* EPIC processors, as well as to group together related tools and features:

- Several tools that were available from the Home page were moved to a new I/O Services page.
- The Network page, which was previously under System, has been moved to the Home page. Several other changes have been made to the Network page:
 - Previously, the network configuration page was nested under the network status page (System > Network > Configure). Now, the status and configuration pages are at the same level and accessible from the Network page (Network > Status; Network > Configure).
 - The Port Forward button and page have been renamed to Port Redirect, as well as moved out of the System page and into the Networking page (Network > Port Redirect).
 - The new Static Routes feature is in the Network page (Network > Static Routes).
- The I/O Channels page has been redesigned to behave and look like the I/O Channels page in *groov* EPIC, where information is grouped under tabs.

When updating firmware:

- The browser displays a warning message when you do either of the following in the browser tab that is displaying the status of the firmware update:
 - Close the browser tab.
 - Enter a URL in the URL bar to navigate to a different page.
- The final message of the firmware update has been enhanced to more clearly explain what will happen and what you must do to continue with the firmware update.
- If you enabled Back Up Settings and a setting or component fails to back up, the update is canceled and the failure and the setting/component that failed are reported in a message window.

Bug Fixes

- [KB89580](#) EPIC or RIO OpenVPN connection may not reconnect after session expiration
- [KB89612](#) MMP Calculator shows some invalid Modbus Addresses
- [KB89613](#) Available disk space decreases significantly after a failed system restore
- [KB89736](#) Browser may fill in groov Manage fields (autocomplete)
- [KB89758](#) Viewing invalid float values on Generic MMP or Scratch Pad page causes incorrect behavior
- [KB89762](#) Backup file missing a component; no error message

Node-RED 2.0.6

- Node-RED has been upgraded to version 2.0.6.
- You can now copy Node-RED flows between *groov* EPICs and *groov* RIOs by using the Node-RED project upload features (from the *groov* Manage Home page, click Node-RED > Project Management > Upload). This does not copy the nodes.
- You can now set up a Node-RED Dashboard as an HMI on your *groov* RIO:
 - You can quickly launch your Node-RED dashboard from the Node-RED page in *groov* Manage.
 - You can select your Node-RED dashboard as the first application to load when your *groov* RIO starts up.
 - A new user access level has been added: Node-RED Dashboard.
Note that you need to install the Node-RED Dashboard nodes separately.
- Node.js has been upgraded to 12.22.1.

MQTT 1.6.0

Bug Fixes

- [KB89847](#) Unstable connection to MQTT broker using CA-signed or self-signed root certificate
- [KB89849](#) Cannot connect to MQTT broker using root CA-signed or self-signed certificate
- [KB89859](#) MQTT OptoMMP device status is erratic
- [KB89904](#) MQTT string payloads missing part number; hardware date code only

Ignition Edge 8.1.11 and supporting modules

Enhancement

Ignition Edge version 8 has been upgraded with a recent patch release: 8.1.11. The supporting Cirrus Link modules have been upgraded to version 4.0.9.

Additional updates

None.

groov RIO FIRMWARE 3.2.1

June 17, 2021.

General New Features, Enhancements, and Bug Fixes

Bug Fixes

- [KB89636](#) - Modbus/TCP transactions may fail
- [KB89670](#) - TCP connection attempts may fail
- [KB89676](#) - Modbus/TCP transactions may return incorrect exception code

groov Manage 3.2.1

Bug Fixes

- [KB89711](#) - System update fails: "Failed to import gpg certificate. The system clock may be too far in the past. Update the system clock."

MQTT 1.6.0

No new features, enhancements, or bug fixes.

Ignition Edge 8.1.5 and supporting modules

No new features, enhancements, or bug fixes.

Additional updates

None.

groov RIO FIRMWARE 3.2.0

May 13, 2021.

General New Features, Enhancements, and Bug Fixes

New Features

- Support has been added for our newest *groov* RIO: GRV-R7-MM2001-10. This module provides the same capabilities as GRV-R7-MM1001-10, with the following differences:
 - More memory and disk space: 2 GB RAM and 7 GB user space
 - Ships with Ignition Edge version 8.1.4
- Limited support for Bluetooth adapter to connect to Bluetooth-capable field devices has been introduced. For description and instructions, see the [groov RIO Universal I/O User's Guide](#) (form 2324).

- PID public attributes have been added to the memory map, making it possible to include information into string or Sparkplug payloads for transmission through MQTT.
- For secure shell access users, the following tools/packages have been added to the repository:
 - kernel-module-wireguard
 - wireguard-tools

Enhancements

- Node-RED has been upgraded to version 1.2.9.
- Another range has been added to the Current Input channel type: 4 to 20 mA.

Bug Fixes

- [KB88427](#) - Reset I/O to defaults op code does not perform all documented operations
- [KB89405](#) - Digital input channel set for continuous frequency doesn't report 0 Hz when input stops toggling
- [KB89480](#) - OptoMMP server resets when writing to Modbus/TCP holding register(s) with unit ID greater than 1
- [KB89490](#) - LDAP: Internal server error when valid user is entered
- [KB89493](#) - LDAP Authentication fails when LDAP server returns a referral
- [KB89500](#) - No Indication When Component in Backup File Fails to Restore
- [KB89662](#) - Custom Configuration Area (0xF0D50000) does not persist

groov Manage 3.2.1

New Features

- You can now download all log files through one button. Previously, you had to download log files individually.
- The Generic MMP page has been enhanced to support 64-bit integers.
- The Backup page has been enhanced with the option to encrypt/decrypt backup files.

Enhancements

- When you upload a client certificate for Node-RED, *groov* Manage will prompt you to return to the Node-RED status page to restart the Node-RED service so that the new certificate can be used.
- The Logs page has been enhanced:
 - A message appears to indicate when a log file doesn't exist.
 - Logs related to Ignition software have been added.
- The MMP Calculator now has a link to the Generic MMP page so that you can open the MMP area displayed on the calculator.
- The Time section of the System Status has the following improvements:
 - A Boot Time field has been added, indicating the last time the *groov* EPIC processor was restarted.
 - The text along the bottom more clearly states that the time listed is specific to the time zone assigned to the *groov* EPIC processor.

Bug Fixes

- [KB88153](#) - System update window stops showing progress
- [KB88471](#) - System update may fail immediately
- [KB89034](#) - System update file upload fails near end of upload
- [KB89435](#) - Firmware update fails for firmware files larger than ~2 GB
- [KB89528](#) - Invalid values in firewall rule dialog appear to be stuck

MQTT 1.6.0

Enhancements

- When you are configuring a string payload, you can leave the group and subgroup topic fields empty.
- The MQTT client has been enhanced to support authentication with SSL client certificates.
- The MQTT client has been enhanced to use the system certificate trust store to authenticate SSL server certificates. Due to these changes, you will see some wording changes in the MQTT pages of *groov* Manage.

Bug Fixes

- [KB89472](#) - Numeric tags published too frequently through MQTT

Additional updates

Security updates were made to bring security up to the latest levels.

groov RIO FIRMWARE 3.0.1

December 8, 2020.

General New Features, Enhancements, and Bug Fixes

Bug Fixes:

- [KB89444](#) - Large Errors with Thermocouple Input Values When Current Outputs Configured

groov Manage 3.0.0

No enhancements or bug fixes.

MQTT 1.5.3

No enhancements or bug fixes.

groov RIO FIRMWARE 3.0.0

January 20, 2021.

General New Features, Enhancements, and Bug Fixes

New Features

- A self-contained PID loop controller has been added to *groov* Manage to help you control up to four PID loops, which run on the module independently. This means you can create and tune PID loops directly in *groov* Manage. You can:
 - Select from a variety of algorithms.
 - Configure the PID loop's parameters.
 - View trends/charts for each loop.
 - Change PID parameters and view the results of those changes.

- The GRV-R7-MM1001-10 now supports thermistors and resistors as inputs on channels 0-7.
- LDAP support has been added, which means your IT department can now manage user accounts and permissions from one central location. In *groov* Manage, you configure its LDAP client with information about how to connect to the LDAP server, how to request authentication of a user, and how to map group membership to permissions on a GRV-R7-MM1001-10.
- You can now access the Scratch Pad area of the GRV-R7-MM1001-10 OptoMMP memory map through *groov* Manage. The Scratch Pad area can hold data that your PAC Control strategy (running on a *groov* EPIC processor or a SNAP PAC controller) can transfer from your GRV-R7-MM1001-10 to another Opto 22 device's Scratch Pad area on the same network.
- You can now apply a *groov* SHELL license ([GROOV-LIC-SHELL](#)) to a GRV-R7-MM1001-10. This *groov* SHELL license lets you access the Linux® operating system on the module through a secure shell (SSH). You'll be able to develop, download, and run control programs built with languages like Python, C/C++, and Java. Carefully review the terms and conditions before installing the license; product support is limited after you install the license.

Enhancements

- Several enhancements have been made to Node-RED:
 - Node-RED has been upgraded to 1.1.3, which provides many enhancements. You can find a list of enhancements at nodered.org.
 - The Node-RED page has been improved with functions to disable or restart the Node-RED Editor, as well as display its status.
 - User-installed Node-RED nodes are now included when you back up and restore either from the Node-RED page in *groov* Manage or your entire GRV-R7-MM1001-10.
- MQTT has been enhanced to support features available on MQTT brokers. For example:
 - Support for more printable characters and spaces.
 - Removing URL length limits.
 - The Log page has been updated to include access to MQTT logs.
- An unmount USB API call has been added to the *groov* Manage REST API.
- Support for another USB WiFi adapter has been added: Netis WF2190.

groov RIO 3.0.0

Bug Fixes

- [KB88826](#) - Output of TPO with Percentage (Duty Cycle) Above 100% is Not Constantly On
- [KB88962](#) - TPO Channel's State Does Not Change With Percentage (Duty Cycle) of 100%, 0%, or Less Than 0%
- [KB89111](#) - Default Scaling for Analog Channels Not Set Correctly
- [KB89181](#) - Node-RED Behaves Oddly After User Logs Out
- [KB89246](#) - *groov* Analog Totalization Works Incorrectly When Input Goes From Invalid to Valid
- [KB89391](#) - Demoted User Shows PAC Control REST API Permissions
- [KB89389](#) - Some Settings Not Saved When Changing Signal Type
- [KB89398](#) - Digital Output (Except Mechanical Relays) May Pulse On Briefly When Strategy Is Started
- [KB89407](#) - PID Output Remains at Invalid (QNAN)

groov Manage 3.0.0

Bug Fixes

- [KB89126](#) - Generic MMP Page Does not Flag Invalid Hexadecimal Value and Displays Empty Error Messages
- [KB89155](#) - Files Downloaded from USB are Prepend with Path
- [KB89171](#) - Certificates Invalidated/Certificate Store Unusable After Binary DER Certificate Uploaded
- [KB89167](#) - Invalid MMP Addresses on Generic MMP Page May Cause groov Manage to Disconnect from I/O Server

MQTT 1.5.3

Bug Fixes

- [KB88935](#) - MQTT Topic Identifiers with Spaces are Truncated at First Space Character
- [KB89007](#) - MQTT Broker Client ID with Non-Alphanumeric Characters or Spaces Not Allowed
- [KB89068](#) - MQTT Client Publishes Topics Erratically
- [KB89070](#) - Whitespace Surrounding Strings is Trimmed During Writes
- [KB89227](#) - No Historic Queuing When Primary Application ID is Not Set

groov RIO FIRMWARE 2.0.2

September 17, 2020.

General New Features, Enhancements, and Bug Fixes

Bug Fixes

- [KB88608](#) – Get and Restart Measurement commands don't restart measurement correctly
- [KB89037](#) - Firmware upgrade: upload appears to fail; user logged out
- [KB89048](#) - Node-RED stops responding or behaves irregularly
- [KB89064](#) - Require Password Change option doesn't work
- [KB89066](#) - Quick Start not shown after creating first user
- [KB89081](#) – Analog input channels with non-zero offset calibration show incorrect values
- [KB89084](#) – I/O configuration between PAC Control and RIO do not match; -56 "Invalid Address" error
- [KB89099](#) - Writes to Digital Packed Data Area of memory map fail; discrete output not modified

groov Manage 2.0.2

Bug fixes

- [KB89106](#) - Channel's Status field does not update for digital inputs on channels 2-7
- [KB89210](#) – After power cycle, groov Manage REST API calls or Node-RED for groov I/O nodes may fail

Node-RED 1.0.3

No enhancements or fixes.

MQTT with Sparkplug B Payload

No enhancements or fixes.

MQTT with String Payload

No enhancements or fixes.

groov RIO FIRMWARE 2.0.1

June 8, 2020. Updated: June 9, 2020.

groov RIO 2.0.1

Known Issue RESOLVED:

- [KB88975](#) – Current Outputs and Discrete Outputs Can Reduce Thermocouple Accuracy

Bug Fixes

- [KB88912](#) – Milliseconds Since Powerup Value Incorrect
- [KB88994](#) – Number of Supported PID loops Value Incorrect in Memory Map
- [KB89039](#) - Can't Communicate with GRV-R7-MM1001-10
- [KB89047](#) - Reconfiguring a DI Channel May Clear the Feature Parameter

groov Manage 2.0.1

Bug Fixes

- [KB89005](#) - MQTT with Broker Using SSL does not Publish Topics
- [KB89011](#) – Instructions for RIO Firmware Update are Incorrect

Node-RED 1.0.3

No enhancements or fixes.

MQTT with Sparkplug B Payload

No enhancements or fixes.

MQTT with String Payload

No enhancements or fixes.

groov RIO FIRMWARE 2.0.0

May 4, 2020. Updated: June 8, 2020.

Initial Release

- [KB88975](#) – Known Issue: Current Outputs and Discrete Outputs Can Reduce Thermocouple Accuracy (RESOLVED in 2.0.1)

groov Manage 2.0.0

Initial release.

Node-RED 1.0.3

Initial release.

MQTT with Sparkplug B Payload

Initial release.

MQTT with String Payload

Initial release.

RELEASE HISTORY OF groov RIO FIRMWARE

Component Versions in groov RIO Firmware 3.4

groov RIO Firmware 3.4.1

- groov Manage 3.4.3
- Node-RED 2.2.2
- Data Services 2.0.5
- GRV-R7-MM2001-10 only:
 - Ignition Edge with MQTT Transmission Module 8.1.17
- Opto 22 groov EPIC and SNAP PAC Driver Module 4.0.9

groov RIO Firmware 3.4.0

- groov Manage 3.4.0
- Node-RED 2.2.2
- Data Services 2.0.1
- GRV-R7-MM2001-10 only:
 - Ignition Edge with MQTT Transmission Module 8.1.17
 - Opto 22 groov EPIC and SNAP PAC Driver Module 4.0.9

Component Versions in groov RIO Firmware 3.3

groov RIO Firmware 3.3.1

- groov Manage 3.3.0
- Node-RED 2.0.6
- MQTT 1.6.2
- GRV-R7-MM2001-10 only:

- Ignition Edge with MQTT Transmission Module 8.1.11
- Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.9

groov RIO Firmware 3.3.0

- *groov* Manage 3.3.0
- Node-RED 2.0.6
- MQTT 1.6.2
- GRV-R7-MM2001-10 only:
 - Ignition Edge with MQTT Transmission Module 8.1.11
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.9

Component Versions in *groov* RIO Firmware 3.2

groov RIO Firmware 3.2.1

- *groov* Manage 3.2.1
- Node-RED 1.2.9
- MQTT 1.6.0
- GRV-R7-MM2001-10 only:
 - Ignition Edge with MQTT Transmission Module 8.1.5
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.7

groov RIO Firmware 3.2.0

- *groov* Manage 3.2.1
- Node-RED 1.2.9
- MQTT 1.6.0
- GRV-R7-MM2001-10 only:
 - Ignition Edge with MQTT Transmission Module 8.1.4
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.7

Component Versions in *groov* RIO Firmware 3.0

groov RIO Firmware 3.0.1

- *groov* Manage 3.0.0
- Node-RED 1.1.3
- MQTT with Sparkplug B Payload
- MQTT with String Payload

groov RIO Firmware 3.0.0

- *groov* Manage 3.0.0
- Node-RED 1.1.3
- MQTT with Sparkplug B Payload
- MQTT with String Payload

Component Versions in *groov* RIO Firmware 2.0

groov RIO Firmware 2.0.2

- *groov* Manage 2.0.2
- Node-RED 1.0.3

- MQTT with Sparkplug B Payload
- MQTT with String Payload

groov RIO Firmware 2.0.1

- *groov* Manage 2.0.1
- Node-RED 1.0.3
- MQTT with Sparkplug B Payload
- MQTT with String Payload

groov RIO Firmware 2.0.0

- *groov* Manage 2.0.0
- Node-RED 1.0.3
- MQTT with Sparkplug B Payload
- MQTT with String Payload

HOW TO GET HELP

If you have any questions about your *groov* RIO module, you can call or e-mail Opto 22 Product Support:

Phone: 800-TEK-OPTO (800-835-6786 toll-free in the U.S. and Canada)
951-695-3080
Monday through Friday, 7 a.m. to 5 p.m. Pacific Time

E-mail: support@opto22.com

Website: www.opto22.com

When calling or emailing for technical support, be prepared to provide the following information about your system to the Product Support engineer:

- Version information for *groov* RIO
- Specific error messages or other diagnostic indications
- A description of your setup and configuration: how it is connected, external connections, and networks

Finding Version Numbers

To find the version numbers for *groov* RIO firmware components:

1. Log into your *groov* RIO with a user account that has system administrator permissions.
2. From the Home screen, click or tap on Info and Help > About.
 - The version number listed in the System Version section (at the very top) is the version number of the *groov* RIO firmware.

Each component has its own section. The version number for each component is listed in the Version field of each section.