RELEASE NOTES FOR *groov* RIO FIRMWARE

June 20, 2025

Applies to the following part numbers:

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

Important note for CODESYS® users: *Before you install this version of firmware, review KB91189 for important instructions about how to preserve your CODESYS licenses through a firmware upgrade or how to recover them if they are lost after a firmware upgrade.*

Important note for GRV-R7-MM2001-10 users: *Before you install this version of firmware, review KB91207 for important instructions about how to preserve your Ignition gateway configuration through a firmware upgrade.*

Selecting the Correct Firmware File

Opto 22 provides a separate firmware download page and firmware installation file for each *groov* RIO model. The filename begins with the part number. For example, the file for version 4.0.0 of firmware for **GRV-R7-MM1001-10** is named **grv-r7-mm1001-10**-*4.0.0-b.106.field.bin*. If you manage different *groov* RIO models and download multiple firmware files, carefully check the filename to make sure you install the correct firmware on each RIO.

For instructions to install the firmware, review the "Updating Firmware on a *groov* RIO" section in the following guides:

- *groov* RIO Universal I/O User's Guide (form 2324)
- *groov* RIO EMU User's Guide (form 2372)

VERSION 4.0.1

June 20, 2025

General New Features, Enhancements, and Bug Fixes

No general new features, enhancements, or bug fixes. Review the sections below for component-specific changes.

groov Manage 4.0.1

Bug fixes

KB91222 - Some pages in *groov* Manage display "server offline" message

(GRV-R7-MM2001-10 only) Ignition Edge 8.1.47 and Cirrus Link Modules 4.0.29

No new features, enhancements, or bug fixes.

Important note for GRV-R7-MM2001-10 users: *Before you install this version of firmware, review KB91207 for important instructions on how to preserve your Ignition gateway configuration through a firmware upgrade.*

Data Service 2.3.1

Bug Fixes

KB91212 - Data Service reports connection errors when scanning string area of Scratchpad

Node-RED 4.0.2

No new features, enhancements, or bug fixes.

CODESYS Runtime Engine 3.5.20.10

No new features, enhancements, or bug fixes.

Important: Before you install this version of firmware, review KB91189 for important instructions on how to preserve your CODESYS licenses through a firmware upgrade or how to recover them if they are lost after a firmware upgrade.

VERSION 4.0.0

June 11, 2025. Updated June 20, 2025.

General New Features, Enhancements, and Bug Fixes

New Features

The *groov* RIO platform has been significantly upgraded with a new Linux® kernel and updated core libraries. This upgrade prepares the platform for the delivery of important features in the future. This release also adds support for Docker® containerization for Secure Shell access (SSH) users. A new section called "Important Information for Shell Access Users" on page 3 has been added to these release notes to provide more details about the upgraded kernel and libraries.

Enhancements

There is an updated list of USB WiFi adapters tested and approved for use with *groov* RIOs. You can find the updated list in the following forms:

- *groov* RIO UIO Data Sheet (form 2317)
- *groov* RIO UIO User's Guide (form 2324)
- *groov* RIO EMU Data Sheet (form 2352)
- *groov* RIO EMU User's Guide (form 2372)

Bug Fixes

- KB89997 - Nslookup with *groov* RIO hostname or localhost fails
- KB91051 - After a WiFi configuration change, reconnection may take a long time

groov Manage 4.0.0

No new features, enhancements, or bug fixes.

(GRV-R7-MM2001-10 only) Ignition Edge 8.1.47 and Cirrus Link 4.0.29

Version 8 of Ignition and Ignition Edge have been updated to version 8.1.47. Version 4 of the Cirrus Link Modules has been updated to version 4.0.29.

Important note for GRV-R7-MM2001-10 users: *Before you install this version of firmware, review* KB91207 *for important instructions about how to preserve your Ignition® gateway configuration through a firmware upgrade.*

Data Service 2.3.0

Bug Fixes

KB91163 - Multiple connections using same client ID to MQTT broker are closed

Node-RED 4.0.2

• Node-RED was updated to version 4.0.2.
• Node.js was updated to version 20.12.2 (from 14.20.0.)

CODESYS Runtime Engine 3.5.20.10

The CODESYS runtime has been updated to version 3.5.20.10. This version requires version 3.1.2.0 of the Opto 22 Library Package for CODESYS Development System.

IMPORTANT: *Before you install this version of firmware, review* KB91189 *for important instructions about how to preserve your CODESYS licenses through a firmware upgrade or how to recover them if they are lost after a firmware upgrade.*

Important Information for Shell Access Users

A major upgrade to the *groov* RIO software platform includes the following updates:

• The Linux kernel version has been updated to version 5.15.91 (from 4.1.15).
• GLIBC has been updated to version 2.35 (from 2.22)
• Python has been updated to version 3.10.14 (from 2.7.9)

A *groov* EPIC and RIO Developer Guide–a set of resources to help shell users learn more about the shell development environment in *groov* RIO–is available on our developer website developer.opto22.com. You can also discuss shell development topics with other *groov* EPIC and RIO users in the SSH category of the OptoForums.

VERSION 3.6.1

February 10, 2025

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 (for example, a fix for a *groov* analog channel issue).

Bug Fixes

KB90928 - CODESYS: OPC UA client runs for only 30 minutes

KB90977 - GRV-R7-I1VAPM-3 module incorrectly reports quality code 7

KB90978 - Quality code 8 persists until power to GRV-R7-I1VAPM-3 module is cycled

KB91081 - TCP connection attempts to port 2001 (OptoMMP) or port 502 (Modbus) may fail

KB91119 - Delta phase following faulting phase incorrectly reports valid data

groov Manage 3.6.1

Bug Fixes

KB91013 - I/O Services link is missing from *groov* Manage on GRV-R7-I1VAPM-3 module

Data Services 2.2.1

Bug Fixes

KB91014 Data Services not writing to PID output

(GRV-R7-MM2001-10 only) Ignition Edge 8.1.21 and Cirrus Link 4.0.21

No new features, enhancements, or bug fixes.

Node-RED 3.1.7

No new features, enhancements, or bug fixes.

CODESYS Runtime Engine 3.5.20.0

No new features, enhancements, or bug fixes.

VERSION 3.6.0

June 17, 2024

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 (for example, a fix for a *groov* analog channel issue).

New Features

You can now configure wireless connections to Wireless Access Points (WAP) that support the WPA2-Enterprise protocol. For instructions to enable WPA2-Enterprise, review the following guides:

– *groov* RIO Universal I/O User's Guide (form 2324)
– *groov* RIO EMU User's Guide (form 2372)

Enhancements

• Improvements to security.
• Logging has been improved in the following ways:
  – More information has been added to *groov* Manage logs to aid in troubleshooting.
  – The timestamp resolution of I/O Services logging has been changed from seconds to milliseconds to more accurately reflect the order and time-length of OptoMMP operations.

- More module information has been added to the I/O Services log file to aid in troubleshooting.
- More information has been added to the Data Service logs when the Data Service MQTT client fails to connect to the MQTT server (broker).
- For secure shell (SSH) users, the open-sftp-server tool is preinstalled. The sshpass and expect packages have been added to the package repository.
- The Java JDK has been updated to version 8.0.402.

Bug Fix

KB90881 - Some channels not set to zero on *groov* RIO EMU module

groov Manage 3.6.0

Bug Fixes

- KB90767 - Can't view unsecured files on *groov* RIO
- KB90833 - When downloading "Support Download", file contents may be truncated
- KB90837 - Status fields on *groov* Manage pages might display explosion/collision emoji characters

Data Services 2.2.0

Enhancements

The Data Services MQTT client has been updated.

Bug Fixes

- KB90644 - When MQTT Sparkplug sends out updates stored in historical queue, other protocols may slow down
- KB90648 - MQTT string protocol fails to write floats to analog outputs, timers, and float variables
- KB90789 - MQTT and OPC UA may display a variety of symptoms due to scan/communication timeout
- KB90875 - Tags deleted/modified on *groov* EPIC/RIO continue to show valid value in OPC UA client
- KB90892 - Data Services OPC UA server may not report new values after PAC Control strategy download or I/O reconfiguration

(GRV-R7-MM2001-10 only) Ignition Edge 8.1.21 and supporting modules

Cirrus Link modules have been updated to version 4.0.21.

Node-RED 3.1.7

Node-RED has been updated to version 3.1.7.

CODESYS Runtime Engine 3.5.20.0

- The CODESYS runtime engine has been updated to version 3.5.20.0. On your CODESYS Development System, update the Opto 22 Library Package for CODESYS Development System to version 3.1.1.0.
- The mapping between IEC task priorities and Linux real-time priority and scheduling policies has been improved to reduce the jitter that you may observe, particularly when you change the IEC task priority and the *groov* RIO processor is very busy. The information you see when you click on the "More information" icon of the Priority field includes the corresponding Linux priority and scheduling policy.

In addition, the default priority for *groov* RIO devices has been changed to 31. For instructions to change the priority of a task, review the Task Configuration section of the CODESYS online help.

VERSION 3.5.0

August 17, 2023

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 (for example, a fix for a *groov* analog channel issue).

New Feature

- The CODESYS Runtime Engine has been added to *groov* RIO modules. By default, the runtime engine runs for a limited time (trial mode). To remove trial mode, purchase the GROOV-LIC-CRE-RIO license product. For more information about how to license and use the runtime engine, see the *groov* RIO Universal I/O User's Guide (form 2324). In addition, a new section for the CODESYS Runtime Engine has been added to the release notes.
- Support for TLS versions 1.0 and 1.1 has been removed. To learn more about how this may affect your application, see KB90605.
- Updates have been made to internal services to improve performance and security.

Bug Fixes

- KB90290 - *groov* RIO, *groov* analog, and some *groov* digital modules are unresponsive; *groov* I/O module LEDs are red
- KB90615 - Time does not adjust to Daylight Savings Time (DST) for Egypt
- KB90663 - GRV-R7-I1VAPM-3: Energy accumulation and summation values not restored after reset or restart
- KB90696 - Some GRV-R7-I1VAPM-3 channel configurations may not restore from persistent memory

groov Manage 3.5.1

Enhancements

- A Modbus reference calculator has been added to the I/O Services page. The calculator can help you quickly determine the register number and data type for a channel on a module seated in a specific slot on the chassis.
- You can now configure/view streaming areas of the memory map:
  - You can configure parameters for streaming (parameters are managed through the Streaming Configuration area of the memory map) and view the Streaming area.
  - You can view the CODESYS streaming area, typically used by Opto 22 Product Support to help troubleshoot issues
- There were several changes introduced to improve performance and make it more convenient to do frequent or tedious tasks:
  - Changes you want to make to all channels on a module are now easier with I/O Batch Operations, a new page available through the I/O Services page. You can select from a list of available operations (for example, configuring public access) and then select options for the operation (for example, State/Value (Read)). The operation will be applied to all the channels.

- The Data Services pages have been reorganized to separate status information from configuration tasks. The first (and main) Data Service page now provides status information. To configure the devices and services, click Configure in the upper-right corner.
- Two fields that did not apply to the GRV-R7-I1VAPM-3 module were removed from the channel configuration page.
- The Download Logs button on the Logs page has been moved to the top, making it quicker to access.

Data Services 2.1.1

Enhancements

- The *groov* RIO OPC UA server can now respond through additional IP addresses and hostnames when you add them through a new field called Additional Endpoints. This can be helpful when, for example, your *groov* RIO is behind a router that has its firewall enabled and the router assigns the *groov* RIO a different IP address/hostname.

  These additional endpoints need to be added to the Subject Alternative Name field in OPC UA server certificates. This is done automatically when you create a new OPC UA server certificate.
- Data Service now supports version 3.0 of the Sparkplug specification. You can configure your MQTT Sparkplug device to run with either version 2.0 or version 3.0.
- The hostname is now added to the common name in the OPC UA server certificate. This can help you more easily identify the *groov* RIO module assigned to the certificate.

Bug Fixes

- KB90420 - OPC UA client can't connect through firewall to OPC UA server on *groov* EPIC/RIO; server reports unrecognized client
- KB90490 - Sparkplug tags don't stale immediately after disabling Data Service
- KB90496 - Long delays in responses after MQTT Sparkplug reconnects
- KB90501 - Delay in detecting a communication failure
- KB90669 - Tag status updates from MQTT are erratic or delayed when Sparkplug payload compression is enabled
- KB90675 - Publishing data to MQTT Server may be very slow or may stop
- KB90692 - Data Service performance may slow down on networks with weak connections

(GRV-R7-MM2001-10 only) Ignition Edge 8.1.21 and supporting modules

Ignition Edge has been updated to version 8.1.21. Cirrus Link modules have been updated to version 4.0.16.

Node-RED 3.0.2

Enhancements

groov Manage has added a couple of features to help you manage your Node-RED environment. These features are available through a new page that is accessible from the Node-RED page in *groov* Manage:

- Install an older version of a node module. This may be helpful if, for example, you want to continue using an older version of the module during development or for troubleshooting.
- Rebuild nodes if the version of Node.js has been upgraded. Occasionally, an upgrade of Node.js may cause issues with some nodes that can be resolved by rebuilding them.

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Bug Fixes

KB90518 - Deploying large Node-RED project causes a 413 error

CODESYS Runtime Engine 3.5.18.40

Initial release.

VERSION 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.

VERSION 3.4.0

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

General New Features, Enhancements, and Bug Fixes

New Features

- A built-in 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 about trusted vs untrusted networks and other security best practices.
  - *groov* RIO Universal I/O User's Guide (form 2245) for instructions about 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 2.0.1[1]

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 the *groov* RIO Universal I/O User's Guide (form 2324).

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1. The Data Services section was previously called MQTT.

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.

VERSION 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, or bug fixes.

Node-RED 2.0.6

No new features, enhancements, or bug fixes.

MQTT 1.6.0

No new features, enhancements, or bug fixes.

Ignition Edge 8.1.11 and supporting modules

No new features, enhancements, or bug fixes.

Additional updates

None.

VERSION 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

- KB89924 - 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.

VERSION 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.

VERSION 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 (SSH) 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

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- 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.

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VERSION 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 new features, enhancements, or bug fixes.

MQTT 1.5.3

No new features, enhancements, or bug fixes.

VERSION 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 GRVR7-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 Prepended 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

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VERSION 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 new features, enhancements, or bug fixes.

MQTT with Sparkplug B Payload

No new features, enhancements, or bug fixes.

MQTT with String Payload

No new features, enhancements, or bug fixes.

VERSION 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 new features, enhancements, or bug fixes.

MQTT with Sparkplug B Payload

No new features, enhancements, or bug fixes.

MQTT with String Payload

No new features, enhancements, or bug fixes.

VERSION 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 4.0

Version 4.0.1

- *groov* Manage 4.0.1
- Node-RED 4.0.2 running on Node.js 20.12.2
- Data Services 2.3.1
- GRV-R7-MM2001-10 only:
    - Ignition Edge with MQTT Transmission Module 8.1.47
    - Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.29
- CODESYS Runtime Engine 3.5.20.10

Version 4.0.0

- *groov* Manage 4.0.0
- Node-RED 4.0.2 running on Node.js 20.12.2
- Data Services 2.3.0
- GRV-R7-MM2001-10 only:
    - Ignition Edge with MQTT Transmission Module 8.1.47
    - Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.29
- CODESYS Runtime Engine 3.5.20.10

Component Versions in *groov* RIO Firmware 3.6

Version 3.6.0

- *groov* Manage 3.6.0
- Node-RED 3.1.7 running on Node.js 14.20.0
- Data Services 2.2.0
- GRV-R7-MM2001-10 only:
    - Ignition Edge with MQTT Transmission Module 8.1.21
    - Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.21
- CODESYS Runtime Engine 3.5.20.0

Component Versions in *groov* RIO Firmware 3.5

Version 3.5.0

- *groov* Manage 3.5.1
- Node-RED 3.0.2 running on Node.js 14.20.0
- Data Services 2.1.1
- GRV-R7-MM2001-10 only:
    - Ignition Edge with MQTT Transmission Module 8.1.21
    - Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.16
- CODESYS Runtime Engine 3.5.18.40

Component Versions in *groov* RIO Firmware 3.4

Version 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

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– Opto 22 *groov* EPIC and SNAP PAC Driver Module 4.0.9

Version 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

Version 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

Version 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

Version 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

Version 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

Version 3.0.1

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

Version 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

Version 2.0.2

- *groov* Manage 2.0.2
- Node-RED 1.0.3
- MQTT with Sparkplug B Payload
- MQTT with String Payload

Version 2.0.1

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

Version 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

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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 **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.

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