

README: groov EPIC Processor Firmware 3.2.2

August 16, 2021.

This Readme provides information about changes to firmware and software for the groov EPIC processor (part numbers GRV-EPIC-PR1 and GRV-EPIC-PR2) and all of its components:

- groov EPIC
- PAC Control Engine
- groov Manage
- groov View
- Node-RED
- Ignition and Ignition Edge*, supported by the following Cirrus Link modules:
 - Opto 22 groov EPIC and SNAP PAC Driver Module
 - MQTT Transmission Module
- MQTT
- CODESYS Runtime Engine

* See "[For Ignition/Ignition Edge Users: Installing the Correct groov EPIC Processor Firmware File](#)" (below) for special instructions regarding Ignition and Ignition Edge.

Each Fixed Bug is identified by its bug tracking number. If a number listed here has KB as the prefix, click the link to see a KnowledgeBase article with more information.

Some fixes or enhancements may require that you install a corresponding module firmware update. If a fix or enhancement falls into this category, the corresponding module firmware update is listed in the description of the fix or enhancement.

For PAC Project Users: For information on PAC Project Software Suite updates, see the [PAC Project Readme](#).

Questions? If you have questions, see "[How to Get Help](#)". To learn where you can find version numbers for the firmware and software components, see "[Finding Version Numbers](#)".

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For Ignition/Ignition Edge Users: Installing the Correct groov EPIC Processor Firmware File

Beginning with firmware version 3.0.0, Opto 22 provides different firmware files differentiated by the version (7 or 8) of Ignition and Ignition Edge included in the firmware:

- For GRV-EPIC-PR1, there are two versions of the firmware file:
 - Firmware that includes version 7 of Ignition and Ignition Edge contains "ignition7" in the file name. For example:
grv-epic-pr1-ignition7-3.0.1-b.89.field.bin.

- Firmware that includes version 8 of Ignition and Ignition Edge contains "ignition8" in the file name. For example:
grv-epic-pr1-ignition8-3.0.1-b.89.field.bin
- If the current firmware version on the GRV-EPIC-PR1 is lower than 3.0.0, then you must do the following to install the firmware file that includes version 8 of Ignition and Ignition Edge:
 1. Install the version of the firmware file that includes version 7.
 2. Install the corresponding firmware file that includes version 8.
- For GRV-EPIC-PR2, there is only one version of the firmware file and it contains version 8 of Ignition and Ignition Edge. For example:
grv-epic-pr2-3.2.2-b.168.field.bin

Note:

- To fully enable Ignition Edge, you must have the corresponding license (for version 7, see [GROOV-LIC-EDGE](#); for version 8, see [GROOV-LIC-EDGE8](#)). Otherwise, the software runs on a 2-hour trial basis and you can restart it as often as you want.
- To fully enable Ignition, you must have the full Ignition license. Contact our [Pre-Sales](#) team for details on the full license. Otherwise, the software runs on a 2-hour trial basis and you can restart it as often as you want.

For instructions on installing firmware, see "Updating Firmware on a groov EPIC" in the [groov EPIC User's Guide](#), form 2267.

groov EPIC Processor Firmware 3.2.2

August 16, 2021.

groov EPIC 3.2.2

Enhancement

Improved diagnostic logging.

Bug Fixes

- [KB89818](#) - *groov* EPIC processor may become unresponsive
- [KB89868](#) - *groov* EPIC processor may become unresponsive when writing to the memory map
- [KB89876](#) - *groov* EPIC processor may become unresponsive
- [KB89890](#) - User repeatedly prompted to change password

PAC Control Engine 10.4f

Bug Fixes

- [KB89819](#) - Viewing the message queue may cause a PAC controller reset

groov Manage 3.2.2

No new features, enhancements, or bug fixes.

groov View 4.3d

You can find a list of enhancements and bug fixes in the [groov View Readme Notes](#).

Ignition and Ignition Edge 7.9.17/8.1.7

Ignition and Ignition Edge version 8 has been upgraded to version 8.1.7.

Cirrus Link Modules 3.4.11/4.0.8

The modules that work with Ignition and Ignition Edge version 8 have been upgraded to version 4.0.8.

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 CA-signed or self-signed root certificate
- [KB89859](#) - MQTT OptoMMP device status is erratic

CODESYS Runtime Engine 3.5.15.50

No new features, enhancements, or bug fixes.

Additional updates

No new features, enhancements, or bug fixes.

Release History of *groov* EPIC Firmware

Component Versions in *groov* EPIC Processor Firmware 3.2

[groov EPIC Processor Firmware 3.2.2](#)

- *groov* EPIC 3.2.2
- PAC Control Engine R10.4f
- *groov* Manage 3.2.0
- *groov* View R4.3d
- Node-RED 1.2.9
- Ignition and Ignition Edge 7.9.17/8.1.7
- Cirrus Link Modules 3.4.11/4.0.8
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.6.0
- CODESYS Runtime Engine 3.5.15.50

[groov EPIC Processor Firmware 3.2.1](#)

- *groov* EPIC 3.2.1
- PAC Control Engine R10.4e
- *groov* Manage 3.2.0
- *groov* View R4.3c
- Node-RED 1.2.9
- Ignition and Ignition Edge 7.9.17/8.1.5
- Cirrus Link Modules 3.4.11/4.0.7
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.6.0
- CODESYS Runtime Engine 3.5.15.50

[groov EPIC Processor Firmware 3.2.0](#)

- *groov* EPIC 3.2.0
- PAC Control Engine R10.4d
- *groov* Manage 3.2.0
- *groov* View R4.3b
- Node-RED 1.2.9
- Ignition and Ignition Edge 7.9.17/8.1.1
- Cirrus Link Modules 3.4.11/4.0.6
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.6.0
- CODESYS Runtime Engine 3.5.15.50

Component Versions in GRV-EPIC-PR1 Firmware 3.1

[GRV-EPIC-PR1 Firmware 3.1.0](#)

- *groov* EPIC 3.1.0
- PAC Control Engine R10.4b
- *groov* Manage 3.0.0
- *groov* View R4.3a
- Node-RED 1.1.3

- Ignition and Ignition Edge 7.9.16/8.0.16
- Cirrus Link Modules 3.4.10/4.0.5
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.5.3
- CODESYS Runtime Engine 3.5.15.10

GRV-EPIC-PR1 Firmware 3.0.1

- *groov* EPIC 3.0.1
- PAC Control Engine R10.4a
- *groov* Manage 3.0.0
- *groov* View R4.2d
- Node-RED 1.1.3
- Ignition and Ignition Edge 7.9.16/8.0.16
- Cirrus Link Modules 3.4.10/4.0.5
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.5.3
- CODESYS Runtime Engine 3.5.15.10

GRV-EPIC-PR1 Firmware 3.0.0

- *groov* EPIC 3.0.0
- PAC Control Engine R10.4a
- *groov* Manage 3.0.0
- *groov* View R4.2d
- Node-RED 1.1.3
- Ignition and Ignition Edge 7.9.16/8.0.16
- Cirrus Link Modules 3.4.10/4.0.5
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.5.3
- CODESYS Runtime Engine 3.5.15.10

Component Versions in GRV-EPIC-PR1 Firmware 2.0

GRV-EPIC-PR1 Firmware 2.0.2

- *groov* EPIC 2.0.2
- PAC Control Engine B10.3b
- *groov* Manage 2.0.2
- *groov* View R4.2b
- Node-RED 1.0.3
- Ignition and Ignition Edge 7.9.14
- Cirrus Link Modules 3.4.10
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.5.1
- CODESYS Runtime Engine 3.5.15.10

GRV-EPIC-PR1 Firmware 2.0.1

- *groov* EPIC 2.0.1
- PAC Control Engine R10.3b

- *groov* Manage 2.0.1
- *groov* View R4.2b
- Node-RED 1.0.3
- Ignition and Ignition Edge 7.9.13
- Cirrus Link Modules 3.4.9
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.5.1
- CODESYS Runtime Engine 3.5.15.10

GRV-EPIC-PR1 Firmware 2.0.0

- *groov* EPIC 2.0.0
- PAC Control Engine R10.3a
- *groov* Manage 2.0.0
- *groov* View R4.2b
- Node-RED 1.0.3
- Ignition and Ignition Edge 7.9.13
- Cirrus Link Modules 3.4.9
 - MQTT Transmission Module
 - Opto 22 *groov* EPIC and SNAP PAC Driver Module
- MQTT 1.5.1
- CODESYS Runtime Engine 3.5.15.10

Component Versions in GRV-EPIC-PR1 Firmware 1.5

GRV-EPIC-PR1 Firmware 1.5.0

- *groov* EPIC 1.5.0
- PAC Control Engine R10.1a
- *groov* Manage 1.5.0
- *groov* View R4.2a
- Node-RED 1.0.2
- Ignition Edge 7.9.12
- CODESYS Runtime Engine 3.5.13.20

Component Versions in GRV-EPIC-PR1 Firmware 1.4

GRV-EPIC-PR1 Firmware 1.4.4

- *groov* EPIC 1.4.4
- PAC Control Engine R10.0L
- *groov* Manage 1.4.4
- *groov* View R4.1e
- Node-RED 0.20.5
- Ignition Edge 7.9.12
- CODESYS Runtime Engine 3.5.13.20

GRV-EPIC-PR1 Firmware 1.4.3

- *groov* EPIC 1.4.3
- PAC Control Engine R10.0k
- *groov* Manage 1.4.3
- *groov* View R4.1e
- Node-RED 0.20.5

- Ignition Edge 7.9.12
- CODESYS Runtime Engine 3.5.13.20

GRV-EPIC-PR1 Firmware 1.4.2

- *groov* EPIC 1.4.2
- PAC Control Engine R10.0j
- *groov* Manage 1.4.2
- *groov* View R4.1d
- Node-RED 0.20.5
- Ignition Edge 7.9.12
- CODESYS Runtime Engine 3.5.13.20

GRV-EPIC-PR1 Firmware 1.4.1

- *groov* EPIC 1.4.1
- PAC Control Engine R10.0i
- *groov* Manage 1.4.1
- *groov* View R4.1d
- Node-RED 0.20.5
- Ignition Edge 7.9.11
- CODESYS Runtime Engine 3.15.13.20

GRV-EPIC-PR1 Firmware 1.4.0

- *groov* EPIC 1.4.0
- PAC Control Engine R10.0i
- *groov* Manage 1.4.0
- *groov* View R4.1d
- Node-RED 0.20.5
- Ignition Edge 7.9.11
- CODESYS Runtime Engine 3.15.13.20

Component Versions in GRV-EPIC-PR1 Firmware 1.3

GRV-EPIC-PR1 Firmware 1.3.2

- *groov* EPIC 1.3.2
- PAC Control Engine R10.0h
- *groov* Manage 1.3.2
- *groov* View R4.1c
- Node-RED 0.19.5
- Ignition Edge
- CODESYS Runtime Engine

GRV-EPIC-PR1 Firmware 1.3.1

- *groov* EPIC 1.3.1
- PAC Control Engine R10.0g
- *groov* Manage 1.3.1
- *groov* View R4.1b
- Node-RED 0.19.5
- Ignition Edge
- CODESYS Runtime Engine

GRV-EPIC-PR1 Firmware 1.3.0

- *groov* EPIC 1.3.0
- PAC Control Engine R10.0e
- *groov* Manage 1.3.0
- *groov* View R4.1a
- Node-RED 0.19.5
- Ignition Edge 7.9.10
- CODESYS Runtime Engine

Component Versions in GRV-EPIC-PR1 Firmware 1.2

GRV-EPIC-PR1 Firmware 1.2.2

- *groov* EPIC 1.2.2
- PAC Control Engine
- *groov* Manage 1.2.2
- *groov* View R4.0d
- Node-RED 0.18.7
- Ignition Edge 7.9.9

GRV-EPIC-PR1 Firmware 1.2.1

- *groov* EPIC 1.2.1
- PAC Control Engine
- *groov* Manage 1.2.1
- *groov* View R4.0d
- Node-RED 0.18.7
- Ignition Edge 7.9.9

GRV-EPIC-PR1 Firmware 1.2.0

- *groov* EPIC 1.2.0
- PAC Control Engine
- *groov* Manage 1.2.0
- *groov* View R4.0d
- Node-RED 0.18.7
- Ignition Edge 7.9.9

Component Versions in GRV-EPIC-PR1 Firmware 1.1

GRV-EPIC-PR1 Firmware 1.1.0-b47

- *groov* EPIC 1.1.0-b47
- PAC Control Engine
- *groov* Manage 1.1.0
- *groov* View R4.0c
- Node-RED 0.18.7
- Ignition Edge 7.9.5

Component Versions in GRV-EPIC-PR1 Firmware 1.0

GRV-EPIC-PR1 Firmware 1.0.1-b110

- *groov* EPIC 1.0.1-b110
- PAC Control Engine R10.0a
- *groov* Manage 1.0.1
- *groov* View R4.0b
- Node-RED 0.18.4

- Ignition Edge 7.9.5

GRV-EPIC-PR1 Firmware 1.0.0-b71

- *groov* EPIC 1.0.0-b71
- PAC Control Engine R10.0a
- *groov* Manage 1.0.0
- *groov* View R4.0a
- Node-RED 0.18.4
- Ignition Edge 7.9.5

Previous Releases

groov EPIC Processor Firmware 3.2.1

June 14, 2021. Document updated: June 15, 2021.

groov EPIC 3.2.1

Bug Fixes

- [KB88427](#) - Reset I/O to defaults op code (02) does not perform all documented operations
- [KB89636](#) - Modbus/TCP transactions may fail
- [KB89662](#) - Custom Configuration Area of groov EPIC and groov RIO memory map is cleared during power cycle
- [KB89670](#) - TCP connection attempts may fail
- [KB89676](#) - Modbus/TCP transactions may return incorrect exception code
- [KB89707](#) - Expression tags created in Ignition Edge 7.9 do not execute correctly in version 8.1.1

PAC Control Engine 10.4d

Bug Fixes

- [KB89735](#) - Control engine resets on first attempt to communicate with an alternate host task

groov Manage 3.2.0

Bug Fixes

- [KB89667](#) - Can't restore a backup file made by GRV-EPIC-PR1 to a GRV-EPIC-PR2 (or vice versa)
- [KB89680](#) - Encrypted backup may fail if password contains special characters
- [KB89710](#) - Bluetooth incorrectly disabled after a system update
- [KB89711](#) - System update fails: "Failed to import gpg certificate. The system clock may be too far in the past. Update the system clock."

groov View 4.3c

You can find a list of enhancements and bug fixes in the [groov View Readme Notes](#).

MQTT 1.6.0

No new features, enhancements, or bug fixes.

CODESYS Runtime Engine 3.5.15.50

No new features, enhancements, or bug fixes.

Additional updates

No new features, enhancements, or bug fixes.

groov EPIC Processor Firmware 3.2.0

April 15, 2021. Document updated: June 14, 2021.

groov EPIC 3.2.0

New Features

- Support has been added for our newest *groov* EPIC processor: GRV-EPIC-PR2. This processor provides the same capabilities as GRV-EPIC-PR1, with the following differences:
 - More memory and disk space: 3.75 GB RAM and 22 GB user space
 - Ships with Ignition Edge version 8
- Limited support for Bluetooth adapter to connect to Bluetooth-capable field devices has been introduced. For description and instructions, see the [groov EPIC User's Guide](#), form 2267.
- PID public attributes have been added to OptoMMP, making it possible to include information into string or Sparkplug payloads for transmission through MQTT.
- GRV-EPIC-PR1 now ships with Ignition Edge version 7.9.17. You can upgrade to version 8.1 by installing the "ignition8" firmware file. (GRV-EPIC-PR2 ships with Ignition Edge version 8.1.)
- For secure shell access users the following tools/packages have been added to the repository:
 - softether-vpnserver
 - kernel-module-wireguard
 - wireguard-tools

Enhancements

- Node-RED has been upgraded to version 1.2.9.
- Ignition Edge has been updated to versions 7.9.17 (for GRV-EPIC-PR1) and 8.1.1 (for GRV-EPIC-PR2).

Bug Fixes

- [KB88268](#) - Analog Input Readings May Be Incorrect
- [KB88812](#) - Local Touchscreen Responds to Touches When Processor Connected to External Monitor by HDMI
- [KB89201](#) - Loss of Communication on ETH0
- [KB89336](#) - Touchscreen stuck on power up progress screen
- [KB89483](#) - CODESYS Can Only Access GRV-CCANI-2 Module In Slot 0
- [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
- [KB89546](#) - Cannot Browse Below "Resources" Folder on CODESYS OPC UA Server
- [KB89625](#) - Multiple Symptoms When Transmitting CAN Messages using GRV-CCANI-2

PAC Control Engine 10.4d

Important Change

Prior to this release, it may have been possible to use the Opto 22 reserved port 22002 for your application communication needs. Beginning with firmware version 3.2.0, the *groov* EPIC firmware will prevent any use of port 22002. You may need to update your strategies. For more information, see [KB89551](#).

Enhancements

- Support for the following PAC Control commands has been added:

- Get All Module States
- IVAL Get All Module States
- Get Module States
- Set Module States from MOMO Masks
- Get Module Counters
- Get & Clear Module Counters
- Get Module Off-Latches
- Get Module On-Latches
- Get & Clear Module Off-Latches
- Get & Clear Module On-Latches
- You can now do the following actions through COM handles:
 - Create a new directory (without having to open a file)
 - Get current working directory
 - Change to a different directory
 - Delete a directory

Bug Fixes

- [KB89370](#) - Control Engine Host Communication Possibly Unresponsive After Strategy Download
- [KB89402](#) - Errors fill controller's message queue when inspecting channel on unreachable SNAP I/O
- [KB89421](#) - PAC Control Strategy Can't Access Remote groov EPIC I/O Unit After I/O Unit Reboots
- [KB89526](#) - Strategy with SNAP PID may cause PAC Control engine reset
- [KB89551](#) - "Definition Unknown" or Other Errors When Host/Listener Port is 22002
- [KB89624](#) - Control Engine May Freeze When Strategy Calls a Command That Starts an SSL Client Session

groov Manage 3.2.0

New Features

- The port forwarding feature has been added. This optional feature uses network address translation (NAT) to make a specified service on one network available to hosts on a separate network. For important information about port forwarding, 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 EPIC User's Guide](#) (form 2267) for instructions on how to enable this feature.
- 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

- The Files page has been enhanced to provide a template of what a groov Manage REST API call should look like to access a specific file.

- The USB page has been enhanced to prompt users to restart their controller after changing the USB permissions.
- 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.
- For GRV-CSERI-4 and GRV-CCANI-2 modules, the channel configuration page has been enhanced to indicate when these modules have been inserted in unsupported slots.

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

groov View 4.3b

You can find a list of enhancements and bug fixes in the [groov View Readme Notes](#).

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

CODESYS Runtime Engine 3.5.15.50

No enhancements or bug fixes.

Additional updates

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

GRV-EPIC-PR1 Firmware 3.1.0

January 20, 2021.

groov EPIC 3.1.0

Bug Fixes

- [KB89460](#) - GRV-EPIC-PR1 May Stop Functioning
- [KB89482](#) - CODESYS Cannot Access GRV-CCANI-2 Modules

PAC Control Engine 10.4b

Bug Fixes

- [KB89381](#) - Control Engine May Reset When Inspecting Variables and Stepping Through Subroutines
- [KB89408](#) - Serial Communication Handle Parameter String With Spaces Prevents Communication

groov Manage 3.0.0

No enhancements or bug fixes.

groov View 4.3a

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

MQTT 1.5.3

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.15.10

No enhancements or bug fixes.

Additional updates

None.

GRV-EPIC-PR1 Firmware 3.0.1

December 3, 2020.

groov EPIC 3.0.1

Bug Fixes

- [KB89201](#) - Loss of Communication on ETH0
- [KB89377](#) - Last Remaining Sys Admin Can't Change Password
- [KB89394](#) - LDAP Doesn't Authenticate; Control Engine Performance Slows
- [KB89407](#) - PID Output Remains Invalid (QNAN)
- [KB89427](#) - Scaling Values for Analog Channels Revert to Default Values

PAC Control Engine 10.4a

No enhancements or bug fixes.

groov Manage 3.0.0

No enhancements or bug fixes.

groov View 4.2d

No enhancements or bug fixes.

MQTT 1.5.3

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.15.10

No enhancements or bug fixes.

Additional updates

None.

GRV-EPIC-PR1 Firmware 3.0.0

November 2, 2020. Updated: February 19, 2021.

New Features

- 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-EPIC-PR1.
- You can now create PID loops directly through *groov* Manage. You can:
 - Select from a variety of algorithms.
 - Specify from what source (channel on a module, MMP address, control program) the loop obtains input, setpoint, and output values.
 - Change PID parameters and view the results of those changes.
 - View trends/charts for each loop.
- You can now access the Scratch Pad area of GRV-EPIC-PR1 OptoMMP memory map through *groov* Manage. The Scratch Pad area can hold data that you can transfer from one GRV-EPIC-PR1 or PAC controller to another on the same network.
- For web developers, support for Cross Origin Resource Sharing (CORS) has been added to the PAC Controller REST API on GRV-EPIC-PR1. Now, browser applications running on a domain outside of the GRV-EPIC-PR1's domain can read and write tags through PAC Control REST API calls. Simply add the allowed origin (the "outside" domain) in *groov* Manage.

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 or restore either from the Node-RED page in *groov* Manage or your entire GRV-EPIC-PR1.
- 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.
- Ignition/Ignition Edge version 7 has been upgraded to version 7.9.16.
- You can now install Ignition/Ignition Edge 8. For instructions, see [Installing a GRV-EPIC-PR1 Firmware Update](#).
- You can now locate a GRV-EPIC-PR1 on a network with *groov* Find, a utility to locate *groov* RIO modules, *groov* EPIC processors, and *groov* Boxes on your network. The Windows version is available on the Opto 22 website

(search for "groov Find" or get it directly from here). You can find the Mac version through the Mac App Store.

- Ignition And Ignition Edge have been upgraded as follows:
 - 7.9.16 - The firmware with "ignition7" in the file name includes this version of Ignition and Ignition Edge.
 - 8.0.16 - The firmware with "ignition8" in the file name includes this version of Ignition and Ignition Edge.
- Cirrus Link Modules (MQTT Transmission Module & the Opto 22 *groov* EPIC and SNAP PAC Driver Module) have been upgraded as follows:
 - 3.4.10 - The firmware with "ignition7" in the file name includes this version of Cirrus Link Modules.
- 4.0.5 - The firmware with "ignition8" in the file name includes this version of Cirrus Link Modules.

groov EPIC 3.0.0

- [KB88826](#) - Output of TPO with Percentage (Duty Cycle) Above 100% is Not Constantly On
- [KB89037](#) - Firmware Upgrade: Upload Appears to Fail; User Logged Out
- [KB89111](#) - Default Scaling for Analog Channels Not Set Correctly
- [KB89181](#) - Node-RED Behaves Oddly After User Logs Out
- [KB89183](#) - PAC REST API May Time Out When Reading a Range of String Table Entries
- [KB89246](#) - *groov* Analog Totalization Works Incorrectly When Input Goes From Invalid to Valid

PAC Control Engine 10.4a

- [KB89147](#) - Subroutine Variable with Same Name and Type as Global Variable May Cause Control Engine Reset
- [KB89198](#) - PAC Controller May Become Unresponsive During Downloads
- [KB89217](#) - PAC Control Set I/O Unit Configured Flag Command Ignored for Certain I/O Unit Types
- [KB89149](#) - Persistent Float Variables are Reset When Using Background Downloading

groov Manage 3.0.0

- [KB89168](#) - Signing out of *groov* Manage in One Tab Does Not Sign Out of All Tabs
- [KB88896](#) - Incorrect Behavior on Touchscreen When Touch-Sensitive Pad on Module is Touched
- [KB89126](#) - Generic MMP Page Does not Flag Invalid Hexadecimal Value and Displays Empty Error Messages
- [KB89155](#) - Files Downloaded from USB are Prepended with Path
- [KB89167](#) - Invalid MMP Addresses on Generic MMP Page May Cause I/O Server Disconnect

groov View 4.2d

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

MQTT 1.5.3

- [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

CODESYS Runtime Engine 3.5.15.10

No enhancements or bug fixes.

Additional updates

Updates were made to enhance security.

GRV-EPIC-PR1 Firmware 2.0.2

July 13, 2020.

Enhancements

This release includes updates to the following components:

- Ignition and Ignition Edge were updated to 7.9.14.
- Cirrus Link Modules were updated to 3.4.10.

groov EPIC 2.0.2

Bug Fixes

- [KB88417](#) - EPIC Returns Error 500 Instead of 401 for Bad API Keys
- [KB88608](#) - Get and Restart Measurement Commands Don't Restart Measurement Correctly
- [KB88804](#) - Large Arrays Written to Numeric Tables Incorrectly
- [KB88912](#) - Milliseconds Since Powerup Value Incorrect
- [KB89030](#) - Incorrect Lower Limit on Type "B" Thermocouples on GRV-ITMI-8 & GRV-ITM-12
- [KB89048](#) - Node-RED Stops Responding or Behaves Irregularly
- [KB89053](#) - groov Manage Doesn't Correctly Display PAC Control REST API Swagger Configuration File
- [KB89064](#) - Require Password Change Option Doesn't Work
- [KB89066](#) - Quick Start Not Shown After Creating First User
- [KB89079](#) - Unpredictable Behavior With CODESYS Controller
- [KB89099](#) - Writes to Digital Packed Data Area of Memory Map Fail; Discrete Output Not Modified

PAC Control Engine 10.3b

Bug Fixes

- [KB88789](#) - Move I/O Unit to Numeric Table [Ex] Commands May Not Retrieve All Analog Inputs/Outputs
- [KB88880](#) - Incorrect Headers in Response to Authentication Request
- [KB88831](#) - Open Outgoing Communication Command Does Not Create Directory; Returns -417 Error
- [KB88995](#) - 9-bit Addressing Mode Does Not Work
- [KB89035](#) - Configuration Changes Not Sent to RIO I/O

- [KB89056](#) - Enable Communication to I/O Unit Command Does Not Enable EPIC I/O Unit
- [KB89073](#) - If RIO Channels Changed from One Supported Combination to Another Supported Combination, Errors may be Reported
- [KB89074](#) - Can't Communicate with PAC Controller Even Though *groov* Manage Shows Running
- [KB89087](#) - Quadrature Counter Feature Not Set on GRV-IDCIFQ-12 Module
- [KB89102](#) - I/O Point Mismatch Errors Generated by Some Discrete Channels on RIO

groov Manage 2.0.2

No enhancements or bug fixes.

groov View 4.2b

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 1.0.3

No enhancements or bug fixes.

Ignition and Ignition Edge 7.9.14

No enhancements or bug fixes.

Cirrus Link Modules 3.4.10

This section lists enhancements and bug fixes for the MQTT Transmission Module & the Opto 22 *groov* EPIC and SNAP PAC Driver Module.

No enhancements or bug fixes.

MQTT 1.5.1

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.15.10

No enhancements or bug fixes.

Additional updates

Updates were made to enhance security.

GRV-EPIC-PR1 Firmware 2.0.1

May 18, 2020.

groov EPIC 2.0.1

Bug Fixes

- [KB88824](#) - Modified user signed out of GRV-EPIC-PR1
- [KB88978](#) - SSH: Some Vimrc settings changed or missing
- [KB89013](#) - Can save account with no password then login
- [KB89014](#) - Can't run PAC Control Node-RED nodes or REST API; -401 error

PAC Control Engine R10.3b

Bug Fixes

- [KB88970](#) - Move Numeric Table To I/O Unit Ex may move wrong number of points
- [KB89009](#) - Can't enable I/O unit that has missing or incorrect *groov* module
- [KB89010](#) - Can't receive characters from GRV-CSERI-4 module; -39 error

groov Manage 2.0.1

No enhancements or bug fixes.

groov View R4.2b

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 1.0.3

No enhancements or bug fixes.

Ignition and Ignition Edge 7.9.13

No enhancements or bug fixes.

Cirrus Link Modules 3.4.9

This section lists enhancements and bug fixes for the MQTT Transmission Module & the Opto 22 *groov* EPIC and SNAP PAC Driver Module.

No enhancements or bug fixes.

MQTT 1.5.1

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.15.10

No enhancements or bug fixes.

Additional updates

Updates were made to enhance security.

GRV-EPIC-PR1 Firmware 2.0.0

May 4, 2020. Updated: July 13, 2020.

New Features

You can now use the new *groov* RIO (part number GRV-R7-MM1001-10) as remote I/O with your GRV-EPIC-PR1. Learn more about *groov* RIO.

Important Change for Sparkplug Payloads

Some tags have been renamed or deprecated (with information now provided by properties of other tags). Carefully review KB88898 to determine if these changes affect your payload.

groov EPIC 2.0.0

Bug Fixes

- [KB88763](#) - Can't open *groov* View, *groov* Manage, or *groov* Admin from Chrome browser on macOS or iOS
- [KB88780](#) - Writing NaN (Not A Number float value) to analog output is not ignored
- [KB88818](#) - LED on *groov* I/O module stays red; other modules may also show red LED
- [KB88856](#) - No network access through OpenVPN Tunnel 0 interface
- [KB88857](#) - OpenVPN client may crash when disconnected from server
- [KB88859](#) - OpenVPN Tunnel 0 may show connected even if all network cables and WiFi adapters are unplugged
- [KB88865](#) - *groov* EPIC module LED may be red and module may not show up in *groov* Manage
- [KB88874](#) - On an external monitor, top half of screen appears on bottom half of monitor
- [KB88879](#) - PAC Control Seed Random Number creates the same seed value
- [KB88880](#) - Incorrect Headers in Response to Authentication Request
- [KB88892](#) - GRV-EPIC-PR1 may lock up while running certain Node-RED nodes

PAC Control Engine R10.3a

Bug Fixes

- [KB88242](#) - Open Outgoing Communication returns -10 error
- [KB88597](#) - Move Numeric Table to I/O Unit (and Ex) commands do not work with pointer tables
- [KB88602](#) - Move I/O Unit to Numeric Table (and [Ex]) commands do not work with pointer tables
- [KB88835](#) - Flag Lock/Unlock may cause controller to reset
- [KB88872](#) - "Send Email with Attachments" command may not send attachment
- [KB88929](#) - Control engine resets when Node-RED/PAC REST API read recipe
- [KB88937](#) - Move from Pointer Table Element with GRV-EPIC-PR1 I/O unit results in -69
- [KB88945](#) - ReadNumFromIoUnitMemMap command with GRV-EPIC-PR1 I/O units results in -56 error

groov Manage 2.0.0

Bug Fixes

- [KB88771](#) - For built-in firewall rules, tun0 can't be set to "deny"
- [KB88781](#) - Incorrect file operations are displayed on internal and external monitors
- [KB88799](#) - Add/Edit User Page incorrectly shows "PAC Control REST API" permission as NONE
- [KB88864](#) - *groov* Manage Ignition page info on PR1 touch screen or HDMI monitor is missing or incorrect
- [KB88907](#) - Restore fails if Node-RED is disabled before power cycle
- [KB88916](#) - System Time Set Incorrectly
- [KB88947](#) - GRV-EPIC-PR1 locks up after several reboots

groov View 4.2b

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 1.0.3

No enhancements or bug fixes.

Ignition and Ignition Edge 7.9.13

No enhancements or bug fixes.

Cirrus Link Modules 3.4.9

This section lists enhancements and bug fixes for the MQTT Transmission Module & the Opto 22 *groov* EPIC and SNAP PAC Driver Module.

No enhancements or bug fixes.

MQTT 1.5.1

Important Change

For Sparkplug payloads, some tags have been renamed or deprecated (with information now provided by properties for other tags). Carefully review KB88898 to determine if these changes affect your payload.

Bug Fixes

- [KB88756](#) - GRV-EPIC-PR1 may use additional network bandwidth
- [KB88852](#) - MQTT service not reconnecting

CODESYS Runtime Engine 3.5.15.10

No enhancements or bug fixes.

Additional updates

Updates were made to maintain security at the most recent levels.

GRV-EPIC-PR1 Firmware 1.5.0

December 16, 2019. Updated: March 26, 2019.

New Features

- For supported external monitors, *groov* Manage now supports changing the video mode (resolution) and, for supported touchscreen monitors, calibration of the touchscreen.
- When you set up a device in MQTT, you can specify OptoMMP as a device.
- *groov* Manage now supports plugging in a USB storage device to the USB ports on the GRV-EPIC-PR1 so that you can:
 - Access files from your control programs.
 - Upload files into the secured or unsecured areas of the internal drive.
 - Manage whether secure apps like *groov* Manage, Node-RED, and the REST APIs can access files on the USB storage device.
- This release adds support for the GRV-CCANI-2 module, a serial communication module with two isolated channels that allow *groov* EPIC to communicate through a Controller Area Network (CAN).

Enhancements

This release includes updates to the following components:

- Node-RED was updated to 1.0.2.
- *groov* View was updated to R4.2a.

For a more detailed overview of the new features and enhancements, see OptoBlog post *groov* EPIC 1.5.0 is ready, and here's why you'll want to update.

groov EPIC 1.5.0

Bug Fixes

- [KB87577](#) - GRV-EPIC-PR1 can't use TCP port 502 for the Modbus toolkit slave subroutine
- [KB88377](#) - Certain PID loop options on *groov* EPIC I/O Units may not work
- [KB88407](#) - When input is out of range, PID output may not go to configured value
- [KB88655](#) - Some MQTT String Payload Values Don't Publish
- [KB88662](#) - Sparkplug: Some tags not showing fresh/valid values
- [KB88673](#) - Can't open *groov* View, *groov* Manage, or *groov* Admin from Chrome browser on macOS or iOS

PAC Control Engine R10.1a

Bug Fixes

- [KB88588](#) - Inaccurate readings from frequency measurements in *groov* I/O input modules
- [KB88700](#) - PAC Control Engine becomes disabled when VPN is enabled

groov Manage 1.5.0

Bug Fixes

- [KB87641](#) - *groov* Manage shows quality error when Quality Indicator is turned off
- [KB88411](#) - Resetting GRV-EPIC-PR1 at start or end of RSS session may create unexpected behavior
- [KB88703](#) - Wiring diagrams for GRV-IACI(S)-12 and GRV-IACIHV(S)-12 modules are incorrect

groov View R4.2a

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 1.0.2

No enhancements or bug fixes.

Ignition Edge 7.9.12

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.13.20

Bug Fixes

[KB88649](#) - CODESYS: "Opening Ethernet Adapter Failed" Error with CODESYS PROFINET Controller SL

Additional updates

Updates were made to maintain security at the most recent levels.

GRV-EPIC-PR1 Firmware 1.4.4

November 19, 2019.

groov EPIC 1.4.4

No enhancements or bug fixes.

PAC Control Engine R10.0L

Bug Fixes

[KB88647](#) - PID loops configured for Auto mode may start in Manual mode (or vice versa)

groov Manage 1.4.4

Bug Fixes

[KB88630](#) - Wiring diagram for GRV-IDCSW-12 is incorrect

groov View R4.1e

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 0.20.5

No enhancements or bug fixes.

Ignition Edge 7.9.12

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.13.20

Bug Fixes

[KB88611](#) - CODESYS: Project won't compile

GRV-EPIC-PR1 Firmware 1.4.3

October 14, 2019. Updated: November 19, 2019.

Known Issue

KB88647 - If a PAC Control strategy has PID loops configured with Mode set to Auto, when you run the strategy, the PID may start in Manual mode (or vice versa). Modify the PAC Control strategy and add the Set PID Mode command in the Powerup chart to set the desired PID mode. This issue affects all versions of GRV-EPIC-PR1 firmware prior to 1.4.3.

groov EPIC 1.4.3

Bug Fixes

- [KB88473](#) - On-Pulse, Off-Pulse, and Period Measurement Complete Status don't return correct value
- [KB88545](#) - Tags are not refreshed correctly after a restart
- [KB88572](#) - PID, Analog Ramping, Streaming or CODESYS I/O data stalls when system time is changed

PAC Control Engine R10.0k

Bug Fixes

- [KB88528](#) - *groov* I/O: TPO may not update percent on-time (duty) correctly. This affects the modules GRV-OAC-12, GRV-OACI-12, GRV-ODCI-12, and GRV-ODCSRC-24. To completely fix this bug, you need to apply *groov* I/O module firmware updates to those modules; see the *groov* I/O Modules Firmware readme and look for KB88434.
- [KB88530](#) - SNAP I/O Watchdog not working

groov Manage 1.4.3

No enhancements or bug fixes.

groov View R4.1e

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 0.20.5

No enhancements or bug fixes.

Ignition Edge 7.9.12

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.13.20

No enhancements or bug fixes.

GRV-EPIC-PR1 Firmware 1.4.2

September 24, 2019. Updated: December 9, 2019.

Enhancements

- This release adds support for the following modules:
 - GRV-IVI-12
 - GRV-IRTD-8
 - GRV-IDCSW-12
 - GRV-ITM-12
- The Sparkplug section of the *groov* Manage user interface has been changed to more accurately reflect the relationship between the two types of payloads that GRV-EPIC-PR1 can publish: string and Sparkplug.
- The Ignition Edge software has been upgraded to version 7.9.12.
- The MariaDB Package in *groov* EPIC processor's repository has been upgraded from 5.5 to 10.3.13, bringing it up to a currently supported level.

groov EPIC 1.4.2

Bug Fixes

- [KB88391](#) - I/O unit's Inspect window incorrectly reports channel quality as good for missing module
- [KB88392](#) - *groov* EPIC PID output doesn't go to low limit when input is out of range
- [KB88449](#) - Modbus/TCP does not report a cleared latch as cleared

PAC Control Engine R10.0j

Bug Fixes

- [KB88261](#) - Get Date & Time command doesn't get milliseconds of GRV-EPIC-PR1
- [KB88440](#) - Move Numeric Table to I/O Unit [Ex] on *groov* I/O causes stack error
- [KB88441](#) - Communication to *groov* I/O unit disabled with -56 error
- [KB88453](#) - Move Numeric Table To I/O Unit [Ex] returns invalid address error
- [KB88461](#) - Set I/O Unit from MOMO Masks returns invalid address error for *groov* I/O
- [KB88464](#) - Move Numeric Table To I/O Unit [Ex] has no effect if 32 channels per module are specified
- [KB88498](#) - Including "~" in communication handle results in -417 error

groov Manage 1.4.2

- [KB88506](#) - Unable to save *groov* Manage > Sparkplug changes
- [KB88518](#) - MQTT topics not being published

groov View R4.1d

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 0.20.5

No enhancements or bug fixes.

Ignition Edge 7.9.12

Bug Fixes

- [KB88503](#) - "publishall" topic doesn't publish all tags
- [KB88514](#) - "status" and "publishall" requests may function erratically

CODESYS Runtime Engine 3.5.13.20

No enhancements or bug fixes.

GRV-EPIC-PR1 Firmware 1.4.1

August 28, 2019.

groov EPIC 1.4.1

Bug Fixes

- [KB88495](#) - Loss of controller host port communication
- [KB88499](#) - Table read returns wrong number of elements or error

PAC Control Engine R10.0i

No enhancements or bug fixes.

groov Manage 1.4.1

Enhancement

You can now configure the GRV-EPIC-PR1 for MQTT with Sparkplug specification or MQTT without Sparkplug specification (plain MQTT).

groov View R4.1d

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 0.20.5

No enhancements or bug fixes.

Ignition Edge 7.9.11

No enhancements or bug fixes.

CODESYS Runtime Engine 3.5.13.20

No enhancements or bug fixes.

GRV-EPIC-PR1 Firmware 1.4.0

August 16, 2019. Updated: August 20, 2019.

groov EPIC 1.4.0

New Features

- You can now configure the character encoding used by the PAC Control REST API to read or write PAC Control variables in strategies running on the GRV-EPIC-PR1.
- Networking features have been added:
 - Diagnostic tools to test Internet connectivity have been added to *groov* Manage: ping, test tcp port, traceroute, and nslookup.
 - Additional configuration options have been added for more complex networking requirements, such as:
 - Setting an order of priority for backup gateways and an order of priority for DNS provisioning according to each network interface.
 - Policy routing is enabled automatically for improved connectivity.
 - Gateway address, name servers, and search domains provisioned by a DHCP server can be manually overridden.
 - You can now connect the GRV-EPIC-PR1 to a virtual private network (VPN) with OpenVPN technology. You configure the GRV-EPIC-PR1 as a client to connect to an OpenVPN server.
- For your convenience, you can now access the console log files for the PAC Controller and CODESYS Controller from their respective controller pages.
- Added CODESYS support for the GRV-CSERI-4 module.
- For Ignition users, you can now select between Ignition and Ignition Edge platforms. The Opto 22 Ignition Edge license (GROOV-LIC-EDGE) works only with the Ignition Edge platform. Contact sales@opto22.com for details.

Enhancements

- After you apply this update, the system update feature will include the following:
- Offer the ability to preserve all *groov* Manage settings, not just the Network settings.
- During a system firmware update, if the auto-restore of settings does not complete successfully, the processor displays better error messages and an option to restart the processor.

- Improvements have been made to provide greater flexibility in configuring the *groov* EPIC processor for more complex networking environments.
- Node-RED has been upgraded to version 0.20.5.

Bug fixes

- [KB87876](#) - Background download setting returns to disabled after power cycle
- [KB88068](#) - *groov* analog input modules may go offline (red LED) when updating firmware on another analog input module on the same chassis
- [KB88273](#) - *groov* analog input values may read low after restarting GRV-EPIC-PR1
- [KB88274](#) - Can't clear or read DO totalization on/off counter through HDD Read and Clear Area (0xF180B000)

PAC Control Engine R10.0i

Bug fixes

- [KB88229](#) - PID mode in IVAL tab may be incorrect for *groov* I/O units
- [KB88259](#) - Condition blocks with the "greater than or equal" condition always evaluate as true
- [KB88265](#) - Controller returns Status Code of -443 or -20 for HTTP Status Code of 204
- [KB88280](#) - Not Equal? condition always evaluates to true
- [KB88375](#) - Control Engine not responding when Ethernet cable disconnected, then reconnected
- [KB88377](#) - Can't set output or switch to manual mode when PID input out of range
- [KB88409](#) - Changes to comm handle values not set correctly on *groov* EPIC Serial Module
- [KB88418](#) - Cannot enable communication to *groov* I/O unit
- [KB88432](#) - *groov* EPIC Host Port performance

groov Manage 1.4.0

Bug fixes

- [KB87569](#) - Gateway IP address from one interface overrides gateway IP address of another interface
- [KB87979](#) - *groov* Manage incorrectly reports Node-RED fails to restart
- [KB87991](#) - GRV-EPIC-PR1 cannot communicate to remote I/O or remote hosts
- [KB87999](#) - Can't set firewall rule on ports 22006 and 22007 for TCP or port 8502 for UDP
- [KB88014](#) - Downgrading firmware may cause firewall rules to revert to defaults
- [KB88016](#) - Downgrading firmware may cause auto-restores to fail
- [KB88030](#) - Automatic restore of network and firewall settings may fail after system update
- [KB88034](#) - Restore from backup fails if NTP configured with no time servers
- [KB88069](#) - System Update: Upload progress bar stops; banner turns red
- [KB88155](#) - Network and Firewall settings may not be restored after update

- [KB88185](#) - UTF-8 string may get truncated when written with *groov* Manage REST API
- [KB88186](#) - Characters missing or incorrect when writing UTF-8 string on the Generic MMP page in *groov* Manage
- [KB88247](#) - Reset I/O to Defaults does not clear TPO or set digital output channels to OFF
- [KB88346](#) - *groov* Manage may crash while watching log files
- [KB88445](#) - *groov* Manage PAC Controller page may not show strategy information

groov View R4.1d

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 0.20.5

Node-RED has been upgraded to 0.20.5.

Ignition Edge 7.9.11

Bug Fixes

[KB88363](#) - All OPC UA and Allen-Bradley devices disconnect and become unresponsive

CODESYS Runtime Engine 3.5.13.20

No enhancements or bug fixes.

GRV-EPIC-PR1 Firmware 1.3.2

May 15, 2019. Updated: May 21, 2019

groov EPIC 1.3.2

Enhancements

Support for the GRV-ITR-12 module has been added.

Bug fixes

- [KB88231](#) - Firewall rules disappear/page is empty
- [KB88232](#) - Inverted scaling of *groov* analog input not working correctly
- [KB88241](#) - *groov* Manage Module page does not show quality error for *groov* analog outputs

PAC Control Engine R10.0h

Bug fixes

- [KB88174](#) - Float values that are NaN incorrectly evaluated as true
- [KB88211](#) - Open Outgoing Communication returns -87 error
- [KB88227](#) - Get I/O Channel Quality instruction always returns Good
- [KB88237](#) - PAC Control Engine on GRV-EPIC-PR1 occasionally fails to start
- [KB88254](#) - Can't change PID loop parameters

groov Manage 1.3.2

Bug fixes

[KB88224](#) - Access Denied error when logging in with *groov* EPIC Shell password that starts with @ symbol

groov View R4.1c

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED 0.19.5

No enhancements or bug fixes.

Ignition Edge 7.9.10

No enhancements or bug fixes.

CODESYS Runtime Engine

Bug fixes

- [KB88122](#) - CODESYS error during download: 1 unresolved reference
- [KB88123](#) - BACNET Server doesn't appear in Add Device dialog in CODESYS. This fix also requires the following:
 - Opto 22 Library Package for CODESYS Development System 1.0.0.1, which is available on the Opto 22 website (www.opto22.com).
 - Version 1.2.1.0 of CODESYS BACnet SL, which is available at the CODESYS Store (under the "Previous Versions" tab). You cannot run with any version higher than 1.2.1.0.

GRV-EPIC-PR1 Firmware 1.3.1

April 16, 2019. Updated: May 15, 2019.

groov EPIC 1.3.1

Bug fixes

- [KB87885](#) - Get Analog Totalizer Value Returns -1.#QNAN in PAC Control
- [KB87930](#) - GRV-EPIC-PR1 Touchscreen Keyboard Is Missing Parenthesis Characters '(' & ')'
- [KB87941](#) - Can't type a capital 'z' through GRV-EPIC-PR1 touchscreen
- [KB87971](#) - Strategy Information Not Displayed on Control Engine Page
- [KB88018](#) - *groov* Digital Output On-pulse or Off-pulse Performs Inconsistently
- [KB88073](#) - Port Forwarding to TCP Port 443 on GRV-EPIC-PR1 Doesn't Work
- [KB88083](#) - "Is I/O Unit Ready?" command always shows *groov* I/O as ready
- [KB88087](#) - Message Queue Fills With Same 5 Messages Repeatedly
- [KB88091](#) - Incorrect Values Returned When Reading Digital Input Feature Data from Packed Data Area of Memory Map
- [KB88128](#) - Digital feature value readings may be inaccurate
- [KB88144](#) - GRV-EPIC-PR1 may not be able to access itself by hostname

PAC Control Engine R10.0g

This release of *groov* EPIC firmware includes firmware updates from the following, previously-released PAC firmware: 10.0f. A description of the fixes

and enhancements delivered in that release of PAC firmware can be found in the SNAP PAC Controllers and Brains Firmware Readme.

The following PAC Control Engine fixes and enhancements are also part of this *groov* EPIC firmware release:

Bug fixes

- [KB87872](#) - In PAC Control, configuring *groov* EPIC as an I/O unit with both IP addresses configured may cause strategy download to fail
- [KB87882](#) - Downloading a strategy with 50 or more PIDs fails with a -62 (stack full) error
- [KB87987](#) - IVAL may not update if PAC Control strategy was not run
- [KB88036](#) - Changing the clock may result in interruption of established sessions
- [KB88054](#) - For some EPIC channel features, configuration fails with "Point Mismatch" errors
- [KB88071](#) - PAC Control Message Queue is filled with -8612 (Old Response to New Command) errors
- [KB88088](#) - Error Reading Persistent Float Tables via REST API on GRV-EPIC-PR1
- [KB88104](#) - Setting *groov* Digital TPO to Zero Percent Doesn't Stop Pulsing
- [KB88176](#) - Control engine resets when downloading online changes
- [KB88226](#) - Control engine keeps trying to access a *groov* I/O unit that is offline
- [KB87970](#) - Can't connect to control engine on GRV-EPIC-PR1 after disabling and re-enabling control engine in *groov* Manage

groov Manage 1.3.1

Bug fixes

- [KB88001](#) - *groov* Manage does not list CODESYS applications without symbol configuration
- [KB88031](#) - Module Hardware Revision Date Code Off by One Month

groov View R4.1b

You can find a list of enhancements and bug fixes in the *groov* View Readme Notes.

Node-RED

No enhancements or bug fixes.

Ignition Edge 7.9.10

No enhancements or bug fixes.

CODESYS Runtime Engine

No enhancements or bug fixes.

GRV-EPIC-PR1 Firmware 1.3.0

February 13, 2019. Updated: May 15, 2019.

groov EPIC 1.3.0

Enhancements

- The CODESYS Runtime Engine has been added. For information on how to use it, see the *groov EPIC User's Guide*, form 2267. In addition, a new section for the CODESYS Runtime Engine has been added to the readme.
- Licensing options have changed. You no longer need to purchase Plus or Enterprise licenses. The available licenses are:
 - GROOV-LIC-EDGE, for full access to Ignition Edge software.
 - GROOV-LIC-CRE, for full access to the CODESYS Runtime Engine.
 - GROOV-LIC-SHELL, for access through secure shell to the Linux operating system.
- Support for the following modules has been added:
 - GRV-IICTD-12
 - GRV-ITR-12
 - GRV-IMAI-8
 - GRV-IDCIFQ-12
 - GRV-OVMAILP-8

Known Issues

KB88068 - When you are updating module firmware for an individual analog input modules, all of the analog input modules on the chassis will go offline. We recommend you schedule your module firmware update to minimize the impact on your processes.

Bug Fixes

- [KB87781](#) - External HDMI touchscreen monitor may not work properly after rebooting the GRV-EPIC-PR1
- [KB87719](#) - Time difference between GRV-EPIC-PR1 and Control Engine

PAC Control Engine R10.0e

NOTE: This release was delivered only on GRV-EPIC-PR1 firmware.

Bug Fixes

- [KB87957](#) - GRV-EPIC-PR1 I/O unit may go offline
- [KB87887](#) - Cannot Enable Communication to EPIC I/O Unit in PAC Control Strategy
- [KB87905](#) - Cannot Read Directory Listing via FTP Using PAC Control Strategy Logic on EPIC Processor

groov Manage 1.3.0

Enhancements

You can now start and stop a strategy that has been downloaded to your *groov EPIC* processor. From the *groov Manage* Home page, click or tap Controller > PAC Controller. In the Strategy box, you can start or stop a strategy and see how many charts are running.

Bug Fixes

- [KB87793](#) - Attempting to upload 20 MB or larger files to GRV-EPIC-PR1 will fail without error
- [KB87815](#) - Uploading an SSL certificate without the private key file fails without error

- [KB87883](#) - Using *groov* Manage to Reset I/O to Defaults on GRV-EPIC-PR1 I/O Unit does not clear PID Loops
- [KB87974](#) - *groov* module LED stay violet when module firmware update fails

groov View R4.1a

Enhancements and fixes are listed in the *groov* View readme.

Node-RED 0.19.5

Enhancement

Node-RED has been upgraded to version 0.19.5.

Bug Fixes

[KB87993](#) - Wires get duplicated when installing missing node types

Ignition Edge 7.9.10

Enhancement

Ignition Edge has been upgraded to version 7.9.10.

CODESYS Runtime Engine

Initial release.

GRV-EPIC-PR1 Firmware 1.2.2

December 11, 2018. Updated February 4, 2019.

PAC Control Engine

Bug Fixes

- [KB87915](#) - Control engine stops working
- [KB87920](#) - Store Strategy to Flash sometimes fails
- [KB87935](#) - Uploading a file or system update may fail
- [KB87640](#) - Store strategy to flash may store strategy to wrong location

GRV-EPIC-PR1 Firmware 1.2.1

October 10, 2018

groov View R4.0d

The bug fixes and enhancements for this release are documented in the *groov* View readme.

GRV-EPIC-PR1 Firmware 1.2.0

October 8, 2018

groov EPIC 1.2.0

Enhancements

- OptoSupport Remote Support Service
You can now provide secure access for Opto 22 Support to remotely access your GRV-EPIC-PR1 to help diagnose and troubleshoot problems.

- Support for new *groov* serial module (GRV-CSERI-4)
Opto 22 has just released the first serial module for the *groov* system and this firmware update adds support for this module.
- First App Loaded
You can now indicate whether *groov* View or *groov* Manage should be the first app to run when you start GRV-EPIC-PR1.
- Save network configuration through a firmware update
You can now choose to have your network configurations remain intact when you install a firmware update to your *groov* EPIC processor. This is an optional feature.
- Only items with data are saved in a backup file
When you select an item to save in a backup file, but that item does not contain any customizations or only the defaults, it's not saved in your backup file.
- You can now disable or enable navigation to a module page when you touch a module.
- *groov* Manage displays a module as flashing gray if the quality of the module is not known.
- If wireless connectivity is enabled, the *groov* EPIC processor now displays the strength of the wireless connection.

Bug Fixes

- [KB87489](#) - GRV-EPIC-PR1 Display asks for new admin account when one already exists
- [KB87590](#) - Files not accessible between *groov* Manage, Node-RED, and a PAC Control strategy
- [KB87565](#) - Modules disappear or appear incorrectly after hotswapping another module
- [KB87633](#) - Error when backing up: size limit reached
- [KB87643](#) - Sending a file via FTP may cause PR1's controller to stop responding
- [KB87647](#) - Errors in queue and I/O unit won't start
- [KB87674](#) - The module LED remains blue even though module is offline
- [KB87680](#) - NaN values from a PR1 are incorrectly displayed as 0.0
- [KB87682](#) - All *groov* I/O module LEDs turn red and OptoMMP server is unresponsive
- [KB87684](#) - Data in Stream-Read Only area of the memory map is in reverse order
- [KB87693](#) - Channel in analog input module reports incorrect reading
- [KB87718](#) - Simple modules disappear from Modules page after swapping a simple output module

PAC Control Engine

Bug Fixes

- [KB87669](#) - Clamping a persistent variable or table element may disable the PR1 control engine
- [KB87678](#) - Control engine slows down or I/O goes offline

groov Manage 1.2.0

Bug Fixes

- [KB87613](#) - Can't perform a system update after interrupting the previous system update
- [KB87566](#) - Error message appears after system reboot following restore from backup
- [KB87580](#) - Firewall rules are incorrect if multiple browser tabs are open

groov View R4.0d

The bug fixes and enhancements for this release are documented in the *groov View* readme.

Sparkplug

Bug Fixes

[KB87676](#) - Control programs that use Sparkplug with MQTT stop working

Ignition Edge 7.9.9

Enhancements

Ignition Edge has been upgraded to version 7.9.9. This version removes the 500 tag limit; now supports an unlimited number of Ignition tags.

Bug Fixes

[KB87659](#) - Attempts to enable Ignition Edge may fail

Additional updates

Updates were made to maintain security at the most recent levels.

GRV-EPIC-PR1 Firmware 1.1.0-b47

August 2, 2018.

groov EPIC 1.1.0-b47

Enhancements

- WiFi support has been added.
- Access to *groov* I/O through *groov* Manage REST API has been added.
- The following pages in *groov* Manage have been changed to organize the information in a more helpful layout and to include controls for new or updated functions (for example, the addition of WiFi support):
 - Firewall (Home > System > Firewall)
 - Network (Home > System > Network)
 - Backup (Home > Maintenance > Backup)
 - Restore (Home > Maintenance > Restore)
 - Sparkplug Configuration (Home > Sparkplug > Configuration)
 - Info and Help (only if viewed through computer or mobile device)

Bug Fixes

- [KB87406](#) - Touching a *groov* module does not turn on the touchscreen
- [KB87435](#) - *groov* I/O module loses custom configuration
- [KB87499](#) - *groov* digital output modules with TPO settings do not accept changes

This fix requires that you also install a module firmware update. See the *groov* I/O Module Firmware readme.

- [KB87514](#) - *groov* EPIC PR1 host port may stop responding, causing PAC Control to freeze
- [KB87518](#) - *groov* digital input module may return a zero
- [KB87544](#) - GRV-EPIC-PR1 locks up at high temperature
- [KB87606](#) - Opto 22 application logs use up excessive disk space

PAC Control Engine

Bug Fixes

KB87620 - PAC Control: PID "Set" instructions write corrupted data

groov Manage 1.1.0

Bug Fixes

- [KB87390](#) - *groov* Manage does not show current strategy running on Control Engine
- [KB87433](#) - *groov* Manage: text on Download Backup button disappears
- [KB87453](#) - Slow firewall port validation with large port range
- [KB87495](#) - In Generic MMP page, a String value causes an invalid value message
- [KB87502](#) - Status shows no progress when you drop something other than a file into the upload area
- [KB87503](#) - System Status Page shows error message when multiple browser tabs or windows try to access it
- [KB87541](#) - *groov* Manage may not display MAC address on Network page
- [KB87570](#) - Manual DNS entries are lost after a reboot

groov View R4.0c

The bug fixes and enhancements for this release are documented in the *groov* View readme.

Sparkplug

Bug Fixes

- [KB87536](#) - Erratic responsiveness
- [KB87546](#) - Sparkplug doesn't reconnect to MQTT broker
- [KB87548](#) - Tags are valid but values don't change

Node-RED 0.18.7

Enhancements

Node-RED has been upgraded to version 0.18.7.

Bug Fixes

[KB87507](#) - Can't access USB-to-serial converter from Node-RED

Additional updates

Updates were made to maintain security at the most recent levels.

GRV-EPIC-PR1 Firmware 1.0.1-b110

June 14, 2018

groov EPIC 1.0.1-b110

Bug Fixes

- [KB85353](#) - Cannot communicate to GRV-EPIC-PR1 through Modbus/TCP
- [KB87424](#) - No warning generated in error queue if strategy I/O configuration does not match physical I/O

86674, 87326, 87421, 87423, 87432

PAC Control engine R10.0a

Bug Fixes

- [KB87494](#) - GRV-EPIC-PR1 host task locks up when examining errors on certain channel types
- [KB87630](#) - PAC Control: PID "Set" instructions write corrupted data

groov Manage 1.0.1

Bug Fixes

- [KB87450](#) - Changing PR1 Ethernet from DHCP to Manual does not take effect until user restarts the unit
- [KB87442](#) - Accounts page shows "null" for first user's email

87434

groov View R4.0b

The bug fixes and enhancements for this release are documented in the *groov View* readme.

GRV-EPIC-PR1 Firmware 1.0.0-b71

May 18, 2018

Initial Release. These are the version numbers for the firmware and software components in this initial release:

- PAC Control Engine R10.0a
- *groov* EPIC 1.0.0-b71
- *groov* Manage 1.0.0
- *groov* View R4.0a
- Node-RED 0.18.4
- Ignition Edge 7.9.5

How to Get Help

If you have any questions about the *groov* EPIC processor, you can call, fax, or e-mail Opto 22 Product Support. Hours are Monday through Friday, 7 a.m. to 5 p.m. Pacific Time.

Phone: 800-TEK-OPTO (800-835-6786) or 951-695-3080

Fax: 951-695-3017

Email: support@opto22.com

Opto 22 website: www.opto22.com

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

- Version information for *groov* EPIC, PAC Control Engine, *groov* View, *groov* Manage, and, if applicable, Node-RED and Ignition Edge
- A description of your system equipment:
- Computer CPU type, speed, memory, and operating system
- Controller model and firmware version
- Module types and their firmware versions
- A description of your Setup and Configuration: how it is connected, the purpose of each device, external connections, and networks
- Specific error messages or other diagnostic indications

Finding Version Numbers

You can find the version numbers for the *groov* EPIC firmware and software components in the following locations:

***groov* EPIC Firmware**

Log into your GRV-EPIC-PR1 as a user with administrator authority. From the Home screen, click or tap on Info and Help, then click or tap on About. The version number is listed under "System Version".

PAC Control Engine

In PAC Control, make sure you have a strategy with your GRV-EPIC-PR1 as the control engine. While the strategy is running, click on Control Engine > Inspect.

***groov* Manage**

Log into your GRV-EPIC-PR1 as a user with administrator authority. From the Home screen, click or tap on Info and Help, then click or tap on About. You might have to scroll down the screen to see the version information.

***groov* View**

Log into your GRV-EPIC-PR1 as a user with administrator authority. From the Home screen, click or tap on *groov* View. While *groov* View is loading, you'll see the version number in the middle of the screen. If you miss it, you can also click or tap on the cog (upper right corner) and select About *groov* View.

Node-RED

Log into your GRV-EPIC-PR1 as a user with administrator authority. From the Home screen, click or tap on Node-RED. You might have to scroll down the screen to see the Node-RED version information.