INTRODUCTION

The *groov*® RIO Learning Center Package is designed for the *groov* RIO Learning Center (part numbers GRV-RIO-LC and GRV-RIO2-LC). The package contains a *groov* RIO backup file you can restore to the *groov* RIO that interacts with the *groov* RIO I/O and the load panel on the Learning Center. The Learning Center and this file complement the *groov* RIO® Training Series, our FREE online training course, which will be available soon at training.opto22.com.

VERIFY VERSION COMPATIBILITY

Because the online training courses evolve along with the Opto 22 product line, it's important to make sure that the version of the Learning Center Package that you downloaded is compatible with the firmware installed on your Learning Center.

The Opto 22 website always provides the most recent version of the package. If you want to keep older versions available for your reference, save a local copy of the older versions of the package.

Version 1.0.0 or later of the *groov* RIO Learning Center Package requires *groov* RIO firmware version 3.0.1 or later.

Check the version of firmware on the *groov* RIO module mounted on your Learning Center:

1. If your *groov* RIO Learning Center is not on, turn it on and log in with a user ID with system level privileges.

    If this is the first time you turn on the groov RIO Learning Center, you'll need to create the first system user ID. For important information regarding this user ID, see "Creating the First System User ID and Finding the Hostname" on page 2.

2. In *groov* Manage, click or tap Info and Help > About.

3. In the *groov* RIO section, if the System Version is 3.0.1-b43 or higher, your *groov* RIO is at the correct level of firmware. If it is lower, you'll need to update the firmware. For instructions, see "Updating Firmware on a *groov* RIO" in the *groov* RIO User's Guide (form 2324).

WORKING WITH THE *groov* RIO LEARNING CENTER PACKAGE

The files in the package are for your reference and development. Here are a few ideas on how to work with them:

*   If you have working knowledge and experience with the software and firmware listed in "Verify Version Compatibility" on page 1, you can probably skip the instructions in "Restoring the Backup File on groov RIO" on page 2, which provide step-by-step instructions on installing and running the backup files. You can install the system backup on your own, then inspect the configuration, programming, and functionality featured in this backup.

*   If you have expert knowledge, you can install the backup configuration and modify it to give yourself a jump-start on creating a Proof of Concept project.

Dependencies and Prerequisites

Node-RED—The Email Alert flow in the Node-RED project writes an email using data from *groov* RIO I/O. If you want to run this flow, you must already have an email address, preferably one that's used just for

Node-RED. With a separate email account, you can track email activity and not impact your business or personal email account settings.

Uncompressing the *groov* RIO Learning Center Package

The Learning Center Package is a compressed file. Uncompress the file to your computer, making note of the path where you uncompressed the files. You will need this path information when you restore the backup file in the package.

Backing up Previous Work

If you already worked with your *groov* RIO Learning Center and want to save any work you've done, review the instructions in "Backing up Your *groov* RIO Settings" in the *groov* RIO User's Guide (form 2324) to create a backup of your work.

CREATING THE FIRST SYSTEM USER ID AND FINDING THE HOSTNAME

In any of the following situations, you need to create a new system user ID:

- Turning on a new *groov* RIO Learning Center for the first time.
- Turning on a *groov* RIO Learning Center after installing a firmware update.
- Resetting a *groov* RIO to factory defaults.

To create a system ID for the first time, see "Initializing *groov* RIO" in the *groov* RIO User's Guide (form 2324). Create this user ID with a password that follows strong security recommendations. This user ID is the first administrator-level user for your Learning Center. **Remember it!** *groov* RIO does not provide a way to recover a lost password or username.

You can find the *groov* RIO's *hostname* if you did not note it when you turned on the Learning Center for the first time. It's on the Network page of *groov* Manage (Home > System > Network) or the label on the side of the module.

RESTORING THE BACKUP FILE ON *groov* RIO

The instructions in this section take you step-by-step through restoring the backup file and running the Node-RED project.

Restoring the Backup File on *groov* RIO

Before you start, if you have worked with your *groov* RIO and would like to save your work, see "Backing Up Your *groov* RIO Settings" in the *groov* RIO User's Guide (form 2324).

Connect to your *groov* RIO from a browser

1. Open a browser on your computer and type in the hostname of your Learning Center in the URL bar:
    `https://<hostname>`
2. Log in with the system user ID and password you created in "Creating the First System User ID and Finding the Hostname" on page 2.

Restore the *groov* RIO Backup File

1. From the *groov* Manage Home page, click Maintenance > Restore.
2. Click Upload Backup.
3. Navigate to the folder where you uncompressed the Learning Center Package and open the *groov* RIO Backup folder.
4. Choose one of the following files (where <version_number> is the version number of the package) and click Open.
    –   DegF-groov-rio-backup.v<version_number>.zip file (returns degrees Fahrenheit)
    –   DegC-groov-rio-backup.v<version_number>.zip file (returns degrees Celsius)

    groov Manage displays a message that it will shut down all services and applications, then asks if you want to proceed.
5. Click Restore and Restart. *groov* Manage shows a progress window.
6. When the progress window displays the Next button, click Next.
7. When *groov* Manage displays a message that you may need to log in after the *groov* RIO restarts, click Close.

    Before *groov* RIO restarts, you'll notice the STAT LED on the *groov* RIO is flashing, and *groov* Manage indicates *groov* RIO is offline. This process will take a few minutes.
8. When *groov* RIO has restarted and the STAT LED stops flashing, log back into *groov* RIO.

    Note: The file you just restored does not contain any user accounts.

Running the Node-RED Project

Before you start, make sure you have an email address that's used only by your Node-RED project.

Connect to your *groov* RIO from a browser

1. Open a browser and type the hostname of your Learning Center in the URL bar:
    `https://<hostname>`
2. Log in with the system user ID and password you created in "Creating the First System User ID and Finding the Hostname" on page 2.

If Some Nodes are Missing: Starting with *groov* RIO firmware v3.0.0, Node-RED nodes you installed are included when you restore a project. If Node-RED indicates there are missing nodes, follow these instructions to install them. (Otherwise, continue with "Configure Nodes" on page 4.)

1. From the *groov* Manage Home page, click Node-RED > Open Node-RED Editor.
2. Click the menu button (▤), then Manage Palette.
3. Click the Install tab.
4. Type Opto 22 in the search field.

    a. Find the node-red-contrib-groov-io node, then click Install. In the message box, click Install. Wait for the installation to finish before going to the next step.

    b. In the search field, replace Opto 22 with email.

    c. Find the node-red-node-email node, then click Install. In the message box, click Install. Wait for the installation to finish before going to the next step.

    d. In the search field, replace email with dashboard.

    e. Find the node-red-dashboard node, then click Install. In the message box, click Install. Wait for the installation to finish before going to the next step.

    f. Click Close.

Configure Nodes

You'll configure Opto 22 *groov* I/O input, *groov* I/O output, and *groov* I/O write nodes so that they refer to the *groov* RIO on your Learning Center.
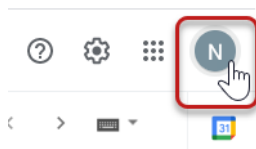
1. Go to the *groov* Manage Home page, then click Accounts.

2. Click Users.

3. Click the system user ID (System-wide Administrator).

4. In the API Key section, select the text in the API Key field and press CTRL+C to copy it to the computer clipboard.

5. Click Cancel, Accounts, and then Home.

6. Switch back to the Node-RED Editor.

7. For the Read temperature, Turn on relay, and Turn off relay nodes in the Simple Control flow, repeat the following steps:

    a. Double-click the node.

    b. Click the modify button next to the Device field.

    c. In the Address field, type `localhost`.

    d. In the API Key field, paste the API key you copied from step 4 (above).

    e. Click Add.

    f. Click Done.

8. For the Read temperature and Bottom Button nodes on the Data Logging flow, repeat the following steps:

    a. Double-click the node.

    b. Click the modify button next to the Device field.

    c. In the Address field, type `localhost`.

    d. In the API Key field, paste the API key you copied from step 4 (above).

    e. Click Add.

    f. Click Done.

9. For the Read temp and Read Counter nodes in the UI Dashboard flow, repeat the following steps:

    a. Double-click the node.

    b. Click the modify button next to the Device field.

    c. In the Address field, type `localhost`.

    d. In the API Key field, paste the API key you copied from step 4 (above).

    e. Click Add.

    f. Click Done.

10. For the Panel Power and Panel Backlight nodes in the Panel and Backlight Power flow, repeat the following steps:

    a. Double-click the node.

MADE IN THE
USA

    b. Click the modify button next to the Device field.

    c. In the Address field, type `localhost`.

    d. In the API Key field, paste the API key you copied from step 4 (above).
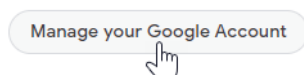
    e. Click Add.

    f. Click Done.

11. For both Relay One nodes in the Relay Control flow, repeat the following steps:

    a. Double-click the node.

    b. Click the modify button next to the Device field.

    c. In the Address field, type `localhost`.

    d. In the API Key field, paste the API key you copied from step 4 (above).

    e. Click Add.

    f. Click Done.

12. For the Top Button node in the Email Alert flow:

    a. Double-click the node.

    b. Click the modify button next to the Device field.

    c. In the Address field, type `localhost`.

    d. In the API Key field, paste the API key you copied from step 4 (above).

    e. Click Add.

    f. Click Done.

Configure the Send Email Node

Configure the Send email node in the Email Alert flow with properties for the email address you will use in Node-RED. The following is an example for a Gmail account.
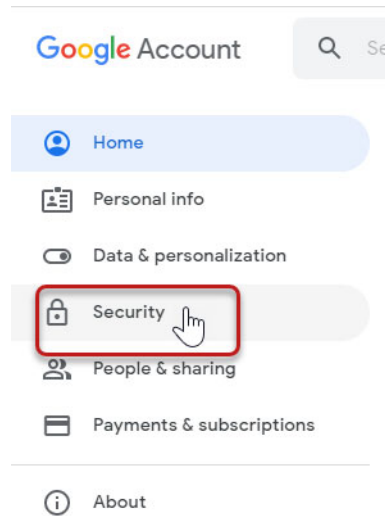
1. In the To field, type the email address.

2. In the Server field, type smtp.googlemail.com.

3. In the Port field, type 587.

4. In the Userid field, type the email address you typed in step 1.

5. The Password field requires an App Password if you have 2-Step Verification enabled for added security. Take these steps in your Google account to generate a 16-character App Password.

    a. Log into the Gmail account for the email address you will use in Node-RED. Look in the upper right corner.
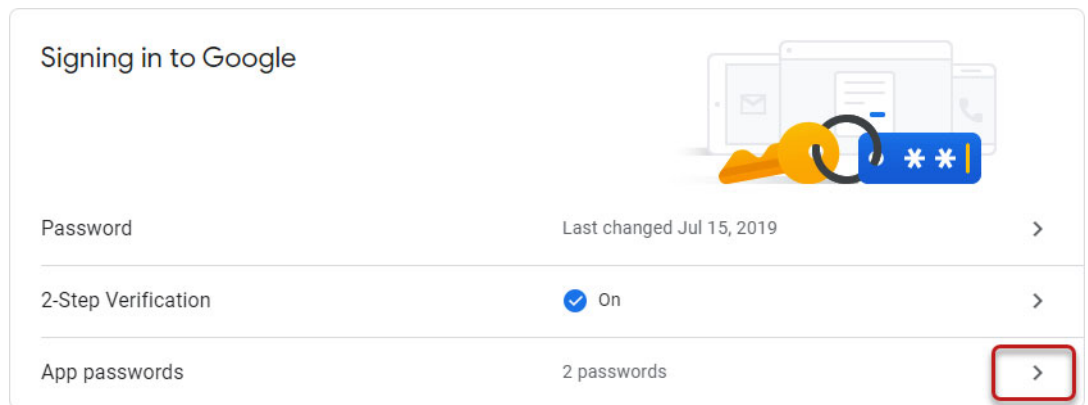

    b. Click Manage your Google Account.

MADE IN THE
USA

c. Click Security in the left navigation panel.

d. Confirm 2-Step Verification is On. If not, turn it on and follow the on-screen steps.

e. Click App Passwords. Enter your email password to continue.

f. Click Select app and choose Other (Custom name).

g. Enter a name for your *groov* RIO, and click Generate.

OPTO 22 • 800-321-6786 • 1-951-695-3000 • www.opto22.com • sales@opto22.com

h. The 16-character App Password is generated. Copy the 16-character password (Ctrl-C).

i. In Node-RED, enter this 16-character App Password in the Password field.

6. In the Use TLS? field, check the box.

7. Click Done.

Deploy the flows

Click Deploy in the upper-right corner of the Node-RED Editor. After a few moments, you may begin to see some activity on your screen. You can interact with the nodes in the flows and switch to the other tabs (for example, the Debug Messages tab) to view notifications.

VERSION HISTORY

Because the Opto 22 product line and online training are always evolving, it's possible that the Learning Center Package you download or saved is incompatible with the version of firmware installed on the processor mounted on your Learning Center, or the software running on your computer. Review the following table to determine compatibility:

If you have this version of the Learning Center Package...	...it works with this version of firmware:
2.0.0 or higher	*groov* RIO firmware 3.2.1 or higher
1.0.0 or higher	*groov* RIO firmware 3.0.1 or higher