THE Resource

Reliable controls®
Authorized Dealer

Increase your efficiency with

RC-STUDIO® 3.8

OFFICIAL RELEASE

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

## Increase your efficiency with the offical release of

RC-Studio 3.8

RC-Studio® 3.8, the latest release of our ultimate all-in-one engineering tool, now offers you even more: more options, more languages, and more flexibility.

"RC-Studio is the heart of the Reliable Controls engineering process. Every release is a step forward but also a look back," says software manager Richard Mosher. "Releases bring new features and functionality that enhance the engineering experience and yet work with every product Reliable Controls has ever released. We are proud of our ability to maintain our legacy. Reliable Controls customers know RC-Studio will always be there for them."

Here's what you can expect in version 3.8.

New light theme

If you've used RC-Studio to program, commission, or service equipment outdoors, you know it can be hard to see the screen in sunlight. With version 3.8, when you're out in the field, you can now choose to view RC-Studio in a light theme (Figure 1).
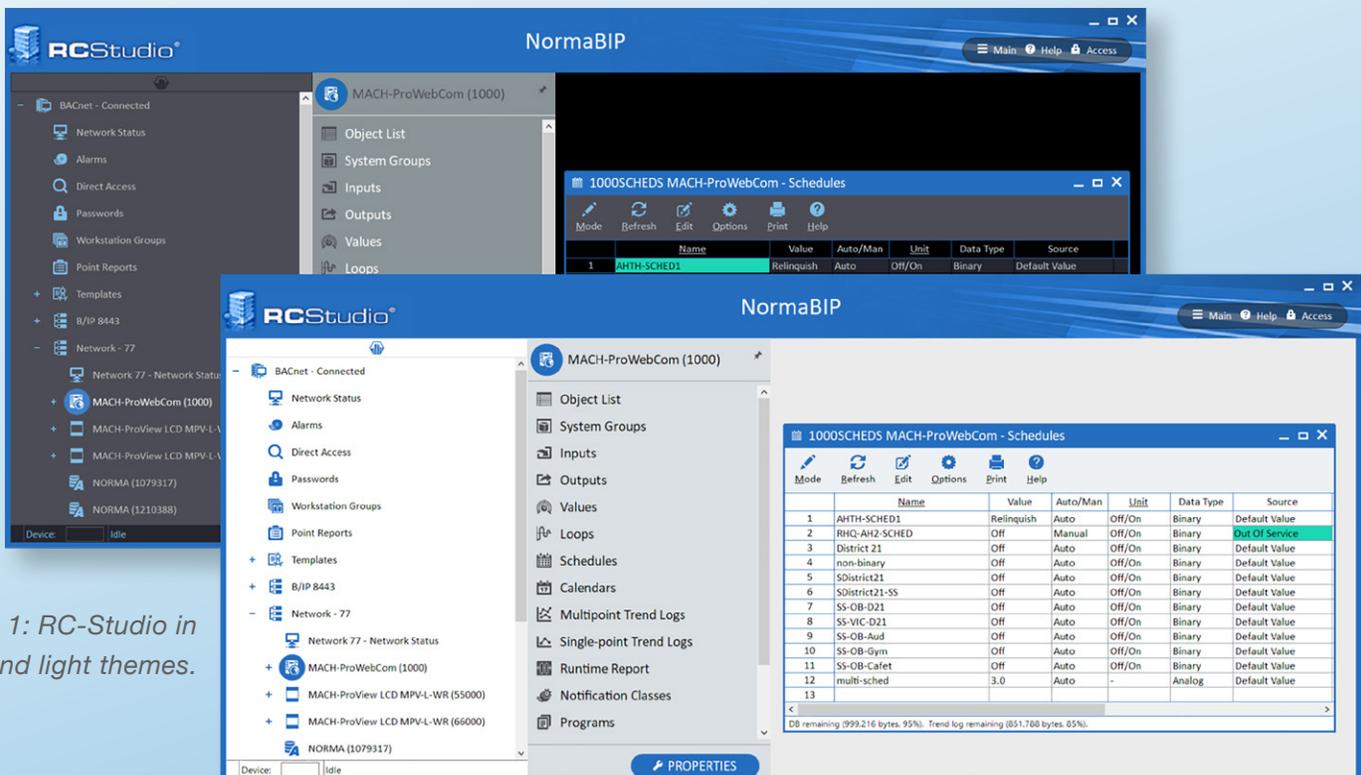
Figure 1: RC-Studio in dark and light themes.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

Save configurable elements in the user interface like table colors and the System Tree for each color theme. When you switch between themes, RC-Studio respects your custom configurations. Currently the light theme is available in English.

To select the light theme, click **Main > PC Setup > Theme Selection > Light** (Figure 2).

Figure 2: Theme selection in the RC-Studio Main menu.

"Hands-down the winner for me with recent updates has been the addition of the light theme. This single addition has made more of an impact on my day-to-day operations than any other. I can now see my screen when working outside," said Steve Rucker, application engineer at Enviromatic Systems. "The software team for RC-Studio has been doing an amazing job this year. Keep the 'hits' coming. Love it!"

To learn more about RC-Studio themes, refer to the "Select a theme" topic in the *RC-Studio Software Manual*.
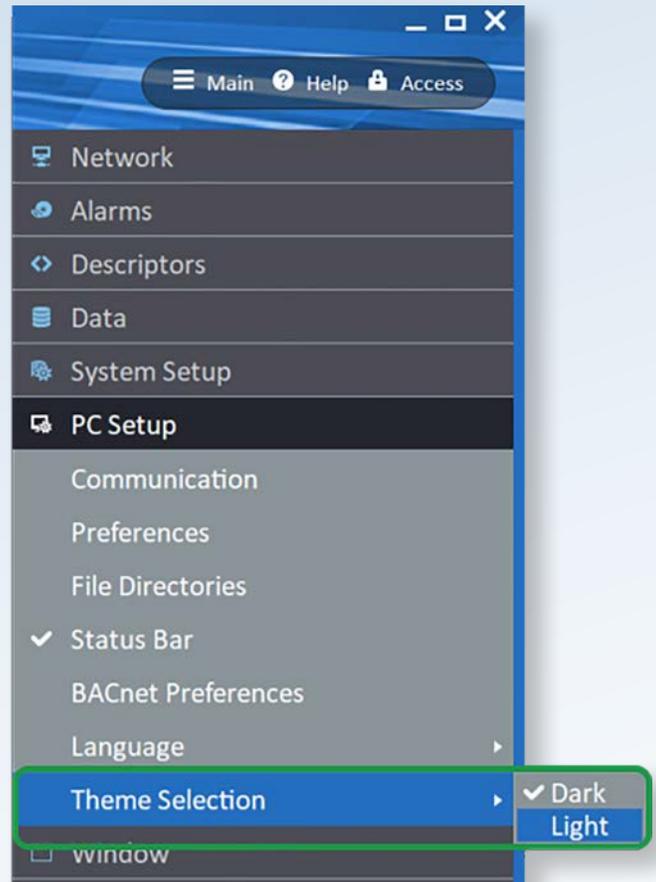
Send Multiple function improvements

Send Multiple System Groups from one Template to others

We're on a mission to improve engineering efficiency. In RC-Studio 3.8, you can now use the Send Multiple function with Templates, making it possible to share System Groups from one Template with other Templates.

To do so, on a System Group for a Panel File Template, enable the toolbar and select **Send Multiple**. The Select Templates dialog box (Figure 3) displays. Select individual Templates or select all Templates using the associated check boxes. Click **OK** to send the System Group to the selected Templates. RC-Studio displays a status dialog box with the results.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

Select Templates

- ☑ 🏢 All templates
  - ☑ 📄 MACH-ProZone 300 template
  - ☑ 📄 MACH-ProAIR 400 template
  - ☑ 📄 MACH-ProZone 600 template
  - ☑ 📄 MACH-ProZone 800 template
  - ☑ 📄 MACH-ProZone 1200 template
  - ☑ 📄 MACH-ProAir 600 template
  - ☑ 📄 · MACH-ProAir 900 template

✔ OK   ⊘ CANCEL
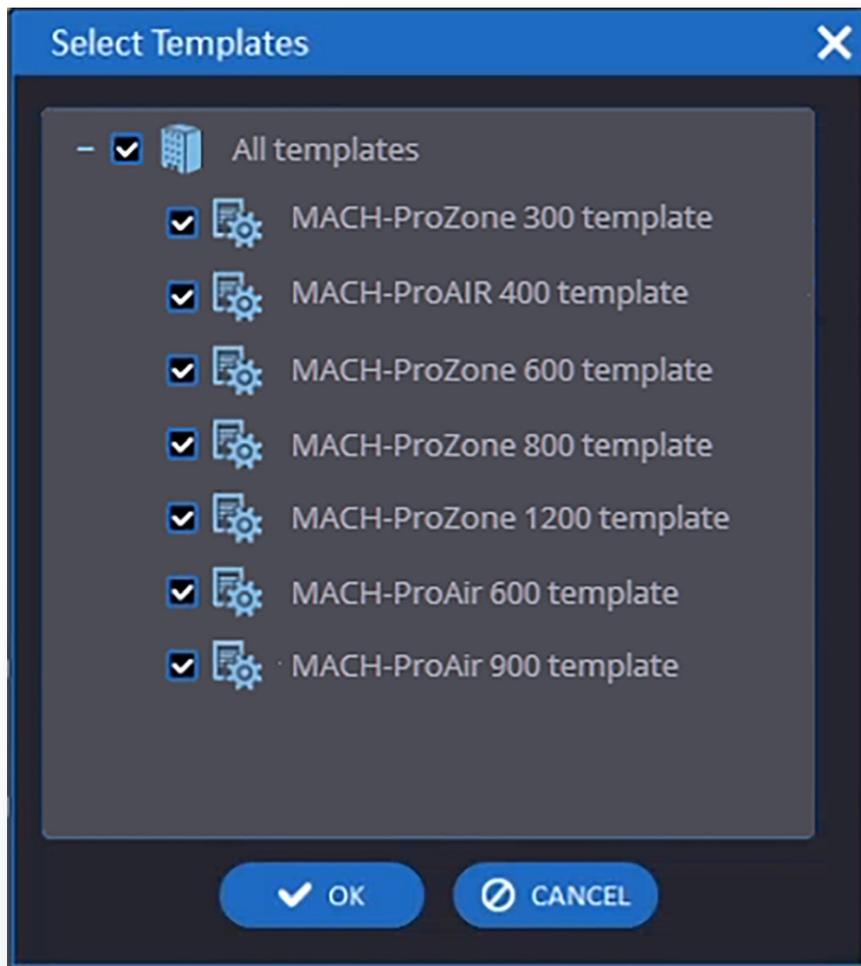
Figure 3: Select Templates dialog box.

The Send Multiple function works with both enhanced and non-enhanced Template System Groups and on both live systems and in Simulate mode.

To learn more, refer to the "Use the Send Multiple function to update System Groups on controllers associated with a Template" topic in the *RC-Studio Software Manual*.

Send tables to multiple devices simultaneously

The Send Multiple function lets you send tables to multiple devices simultaneously. When RC-Studio sends a table to another device, it sends both the data and the units of the table.

A table does not need to exist on the target device for you to send it using the Send Multiple function. The Send Multiple function adds the new table to the tables on the device in the same rows as in the source tables using the default naming convention. If a target table already has a name, RC-Studio updates the data and units of the table, and the name stays the same.

If a table on a target device is locked because it is associated with a Template, the device it is on does not appear in the Select Devices dialog box (Figure 4) for selection.

THE Resource

Figure 4: Use the Select Devices dialog box to send tables to multiple devices.

The Select Devices dialog box includes the following information:

- The number of objects both in the source and in the destination for an enhanced System Group.

- The byte size of the program both on the originating device and in the destination.

- If you use the Send Multiple function with a file that is not yet saved, the dialog box displays the last saved values in the bytes or objects count.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

This information helps you align the source and target Control-BASIC program or System Group so you avoid overwriting the destination with incorrect data.

To learn more, refer to the "Use the Send Multiple function with tables" topic in the *RC-Studio Software Manual*.

Support for Korean

RC-Studio now supports Korean in the user interface. To select this option, click **Main Menu > PC Setup > Language > Korean** (Figure 6).

Figure 6: Choose your preferred language using the Language dialog box.

To learn more, refer to the "Languages dialog box" topic in the *RC-Studio Software Manual*.
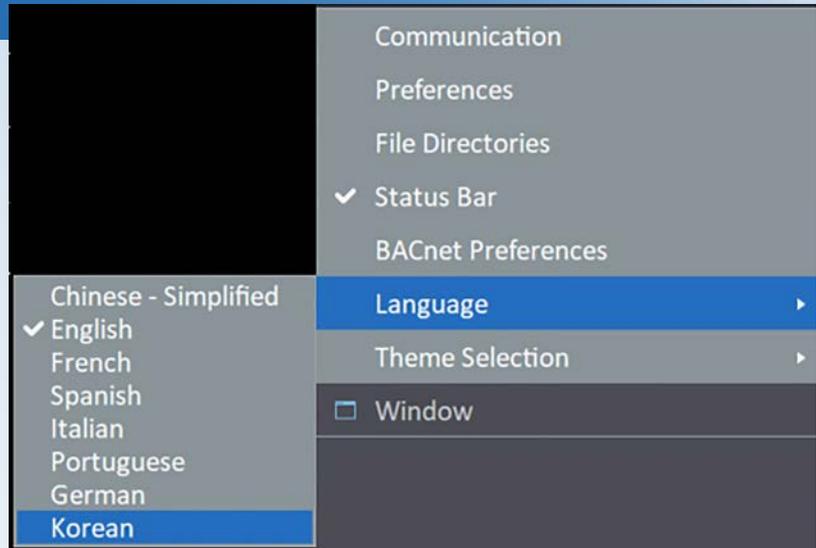
Ability to open local files from STATIC-IMAGE and STATIC-TEXT keywords

RC-Studio 3.8 provides the ability to link System Groups and Workstation Groups to files on a local computer from a STATIC-IMAGE or STATIC-TEXT keyword. Once added to a group, click the STATIC-IMAGE or STATIC-TEXT keyword to open the linked image or text file in a default image or text software.

You can use this feature to create a System Group that shows an animation of your rooftop unit with icons to click to open PDF operating manuals, a Word document, .jpeg or .png photos from the last service visit, and more. This feature expands the functionality of System and Workstation Groups with dozens of cool possibilities.

To access the Keyword dialog box (Figure 7), right-click the background of a System Group and click **Insert**. Select any keyword from the drop-down list or type in the mnemonic of an object to insert it in the System Group.
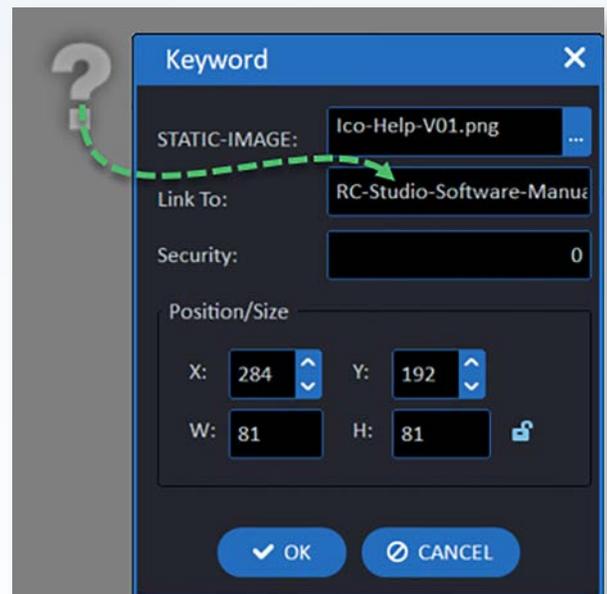
Figure 7: Keyword dialog box with a STATIC-IMAGE keyword linked to a PDF.

THE Resource

In the Link To input box in the Keyword dialog box (Figure 7), enter the object mnemonics, worksheet mnemonics, or a URL. Store the local files in the root of the Job Directory, or if you want to use other folders in the Job Directory, use a relative link to the root directory.

For example: `\Folder-Name\Filename.pdf`

If the file is located in a lower folder, use a relative link in front of the file name.

For example: `pic\RC-Studio-Software-Manual.pdf`

To learn more, refer to the "Keyword dialog box" topic in the *RC-Studio Software Manual*.

Drag multiple objects to Views worksheets

In another efficiency update, you can now drag multiple objects to LISTview, SPACEview, and STATview worksheets (Figure 8), speeding up the process of creating multiple Views and ensuring consistency. If the object type is not a match for the row, RC-Studio skips that row.

Figure 8: Dragging multiple objects to a LISTview worksheet.

To learn more about the newest features and improvements in RC-Studio, check out the "What's new in RC-Studio" topic in the *RC-Studio Software Manual*.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

"In an industry where everything is always changing and evolving, it has become imperative that we are nimble on our feet and fast in our execution," says David Martin, engineering manager at Unify Energy Solutions. "It has taken a partner like Reliable Controls developing features to enable us to be a leader in our market. Features like Send Multiple and Panel File Template have helped us sync controllers on a mass scale within seconds instead of days. With BACnet File Services, we have been able to sync our systems across multiple machines without the need to work from a single workstation. System Group enhancements have now allowed us to insert every object and image on the blank background, making it easy to add, remove, and move items in the heat of a project. Reliable Controls has listened, and the result has been better consistency, faster delivery, improved flexibility, and the ability to create market differentiators." Thank you for the kind words, David!

We hope RC-Studio 3.8 provides efficiencies and functionality that make your job faster and easier. Is there a feature or improvement you'd like to see in a future release? Let us know via an <u>eRequest</u> on the Dealer Support Center, where you can post your ideas and vote on proposals from Authorized Dealers and Reliable Controls insiders.

Purchase RC-Studio 3.8
or renew your subscription today.

Better by design™

Reliable controls Authorized Dealer

synergy
SESSIONS

Virtual meetings for the Reliable Controls
Authorized Dealer network

Reliable controls
Authorized Dealer

Americas/EuroAfrica Synergy Session:
NOV 10 | 8–11 AM PST

RSVP NOW

Asia Pacific Synergy Session:
NOV 10 | 7–10 PM PST

RSVP NOW

On November 10, 2021, Reliable Controls will begin hosting twice yearly virtual dealer meetings. The purpose of these meetings is to provide a regular opportunity for Reliable Controls Authorized Dealers to meet with Reliable Controls managers and product owners in an online environment to discuss topics and share ideas that are of value to all stakeholders. The meetings will be 3 hours in length and hosted during separate times of the day to accommodate the different time zones between the Americas/EuroAfrica and Asia Pacific super-regions.

Agenda for the November 2021 Synergy Session:

Corporate session – presented by Tom Zaban
Sales session – presented by Levi Tully
R+D hardware/firmware session – presented by James Puritch
R+D software session – presented by Richard Mosher
Operations session – presented by Vince Palmer
Marketing session – presented by Cameron Lutz

insight

EFFICIENT EQUIPMENT ROTATION

"Who's on First?" was a 1930s comedy sketch made famous by American comedy duo Abbott and Costello. The premise was that Abbott identified players on a baseball team for Costello, but their names and nicknames could be construed as non-responsive answers to Costello's questions. In the sketch, a statement like "Who's on first" was ambiguous between the question (Which person is on first base?) and the answer (The name of the person on first base is Who). Costello became increasingly confused and frustrated with Abbott's explanations, leaving the audience in stitches at their miscommunication.

Abbott and Costello proved a misunderstanding can be comical, but this isn't always the case. Miscommunication or lack of understanding often produces negative results.

Achieving engineering efficiency and understanding how modern building automation strategies work and operate is the goal of engineers and operators alike. For example, a strategy that involves equipment rotation is quite common in building operation. However, its understanding and practical implementation is often misunderstood. Understanding the core concepts and how to implement this strategy in Control-BASIC helps engineers and operators avoid the frustration and confusion that can occur during implementation.

Specifying and deploying an appropriate equipment rotation strategy depends on a variety of factors. For example, a strategy based solely on equipment runtime ensures all components age equally. Conversely, an approach that rotates at a specific time or date ensures operators are likely to be available and

THE Resource

can accurately estimate when the switchover occurs. Both strategies are effective methods for equipment rotation and could be combined to create a third strategy that builds on their strengths. The first step to increasing energy efficiency is to create a solid, well-understood equipment rotation strategy. With this in mind, use an equipment rotation strategy with a prescribed order and time as a foundation.

All equipment rotation strategies require the same fundamental information, the most essential of which is the number of devices to rotate. In the following program example, local variable A stores the number of devices to be rotated.

```
A = 4 (How many devices?)
```

To add the strength and benefit of knowing *who* is turning on and *when*, determine the day and time. Knowing the who and when serves building operators with a routine schedule during their normal working hours to prevent switching, or possible failures, from occurring during non-working hours. In our example, local variables B and C hold this information:

```
B = TUE (What day to switch?)

C = 8:00:00 (What time to switch?)
```

Once you know these items, determine who the lead is—in other words, which piece of equipment is currently running. To control multiple pieces of equipment properly, it is advantageous to number the equipment accordingly: Who's on first? Who's on second? Third? Fourth? You can then use this lead integer value to program the equipment for each device. Assume any integer higher than the number of actual devices controlling the system will negatively impact the strategy. Use the following code to add a safeguard here that limits this number to the appropriate range of devices:

```
LEAD = INT( LIMIT( LEAD , 1 , A ) )
```

The next step is to prevent the strategy from rotating more than once per week. You can use a simple code example to test if the day of the week (DOW) is greater than the switch day (TUE). If this is true, use another local variable as a flag to prevent the lead integer from indexing more than once each week:

```
IF DOW > B THEN STOP D
```

If the lead has already rotated this week, the strategy has done its job. If the rotation flag is true, end the program as follows:

```
IF D THEN END
```

THE Resource

Now determine if the present day of the week is not the day configured to allow the equipment to rotate:

```
IF DOW <> B THEN END (Is it Tuesday?)
```

If it isn't Tuesday, as in our example, you can end the program.

Similarly, determine if the present time is not the time configured to allow the equipment to rotate:

```
IF TIME < C THEN END (Is it time to switch?)
```

If it isn't 8:00:00, as in our example, you can end the program.

As the strategy progresses line by line, if the program hasn't ended, you can determine the appropriate day and time to rotate the lead. The code below advances the lead integer by 1.

```
LEAD = LEAD + 1
```

To ensure the lead integer doesn't count past the number of rotating devices, index it back to a value of 1 to start the entire process again.

```
IF LEAD > 4 THEN LEAD = 1
```

Once this strategy is complete, set the rotation flag to prevent any additional rotation throughout the week.

```
START D
```

A well-understood and -implemented strategy for equipment rotation increases engineering efficiency by providing a solid communication foundation that engineers and programmers can collaborate on. In addition, knowing the who, when, and how of a control strategy helps you avoid confusion and provides a solution that is no laughing matter.

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

THE Resource

Reliable controls — Authorized Dealer
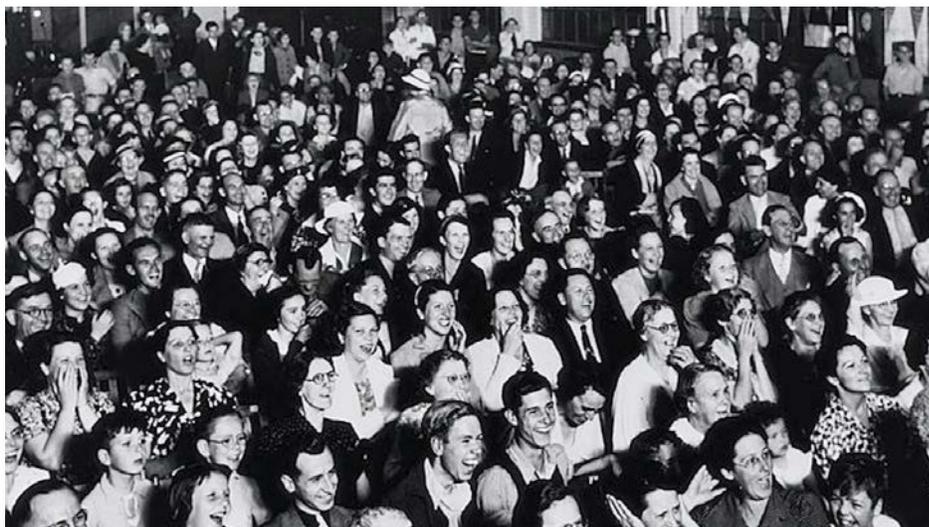
TO ENSURE THE HIGHEST LEVEL OF SUPPORT, PLEASE CONTACT US AT...

helpdesk@reliablecontrols.com

helpdesk is the best way to email the Technical Support team when you are experiencing technical difficulties with Reliable Controls system hardware or software.

aengineering@reliablecontrols.com

aengineering is the ideal way to contact the Application Engineering team for support with system design, specification compliance, solution development, Control-BASIC, and third-party integration.

If you need help, remember... we've got your back.

RELIABLE CONTROLS eFORUM

37 | 162 | 51,904

BRANDS | POSTS | VIEWS and DOWNLOADS

A moment in the eForum could save you hours of troubleshooting.

reliablecontrols.com/support/forum

People and technology you can rely on™

THE Resource

Did you know?

You can protect and secure the internet traffic to and from RC-WebView®, RC-Reporter®, and the MACH-ProWeb™ using HTTPS.

Smart buildings collect data that facility managers use to monitor, track, and optimize energy, water, waste, comfort, safety, and a variety of other aspects of our daily lives. The more interoperability that occurs between devices, buildings, and infrastructure, the more opportunity for our data and information to be vulnerable. The challenge of cybersecurity is ever present. In this installment of "Did you know?," we dive into how to secure your connection to and from some internet-connected Reliable Controls products using HTTPS (Figure 1).

HTTP 10110100111010 example.com

HTTPS example.com

Figure 1: HTTP vs. HTTPS traffic.

What is HTTPS?

Hypertext Transfer Protocol Secure, or HTTPS, is HTTP traffic that has been encrypted with SSL or TLS protocol to allow for bidirectional encryption of traffic. Encrypting HTTP traffic prevents snooping and human-in-the-middle attacks.

Secure Socket Layer (SSL) protocol evolved into the more secure Transport Layer Security (TLS) protocol used today for HTTPS, with different versions that have each increased protection over the last: TLS 1.0, 1.1, 1.2, and 1.3.

Although the terms SSL and TLS are often used interchangeably, TLS generally refers to the network encryption and connection handshake, whereas SSL refers to the keys and certificates required for the encryption.

About SSL/TLS certificates

Self-signed	
Pros	**Cons**
Free	A scary warning is displayed every time you connect
Quick and easy	The steps to remove that warning are complicated

THE Resource

Certificate authority–signed	
Let's Encrypt	
Pros	**Cons**
Free	Has some limitations, such as not allowing wild card characters like *.example.com; can use only domains
	Needs to "phone home" periodically to keep certificate valid
Other certificate authorities	
Pros	**Cons**
Quick and easy	
Flexible options; often integrate with DNS or web hosting providers	Paid

Before you decide where to get your SSL/TLS private key and server certificate, it's important to understand how certificates are trusted by a device.

Computers, phones, and laptops are preloaded with trusted certificate authorities. While browsing the web, you encounter numerous certificates issued from at least one of those trusted certification authorities, and as a result, your browser displays a padlock icon in the URL bar. Figures 2A and B illustrate what you see—and the work your computer does in the background to verify a certificate—when you click the padlock icon in Google Chrome, then click **Certificate (Valid)**.


Figure 2A: Identifying a secure certificate in Windows.

THE Resource
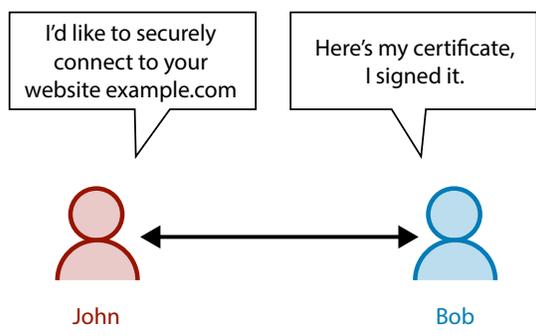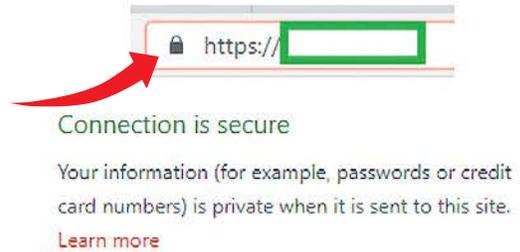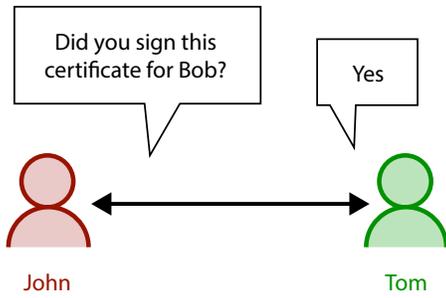
Figure 2B: Identifying an insecure certificate in Windows.

THE Resource
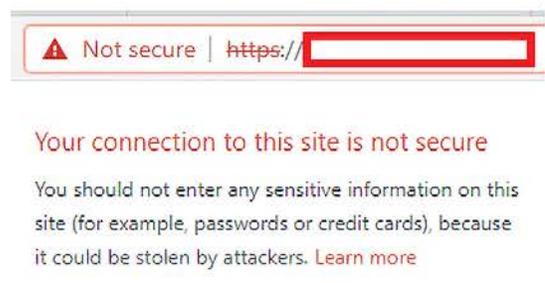
So you've got some SSL certificates. Now what?

Let's examine two options. Most people use Internet Information Services (IIS), but for those who want to use multiple webpages at the same location, a reverse proxy like Caddy is ideal.

	HTTPS using IIS web server	HTTPS using Caddy as a reverse proxy
Pros	• Simple configuration • Comes installed with RC-WebView, RC-Reporter, RC-Archive, and RC-RemoteAccess • Doesn't require a domain name • Officially supported by Reliable Controls	• Advanced configuration • Automatic SSL and HTTPS configuration through Let's Encrypt • Needs only two TCP ports forwarded: 80 and 443 • Works on Windows, Mac, and Linux operating systems • Provides HTTPS connections to web services that are HTTP-only devices such as the MACH-ProWeb
Cons	• Cannot automatically upgrade an incoming connection to HTTPS without the Application Request Routing (ARR) plugin • Configuring plugins and advanced rules is tedious • Each site requires port forwarding	• Manual installation only • Requires a domain (example.com) and DNS to be configured • Uses third-party utilities not officially supported by Reliable Controls
RC-WebView	https://example.com	https://webview.example.com
RC-Reporter	https://example.com:8081	https://reporter.example.com
MACH-ProWeb	Does not support HTTPS; requires ARR plugin	https://proweb.example.com

HTTPS using IIS web server

1. If you have RC-WebView, RC-Reporter, RC-Archive, or RC-RemoteAccess installed, click the Start menu, then type "IIS" to open the Internet Information Services (IIS) Manager app (Figure 3).

Internet Information Services (IIS) Manager

App

Figure 3: IIS Manager app.

THE Resource

2. Find the site you would like to enable HTTPS for. Right-click and select **Edit Bindings...** (Figure 4) to open the Site Bindings dialog box.

3. Click **Add** in the Site Bindings dialog box to open the Add Site Binding dialog box (Figure 5).

4. Select https in the Type drop-down list, and enter a port that is different from the http port. In Figure 5, the port is 8180 + 1.

5. Select an SSL certificate from the drop-down list. If you are using a signed SSL certificate and do not see it in the list, it has not been imported yet. To learn how to import a certificate into IIS, refer to the instructions from the certificate authority that provided the SSL certificates.

*Figure 4: In IIS, right-click the site you would like to enable HTTPS on, then select **Edit Bindings...***
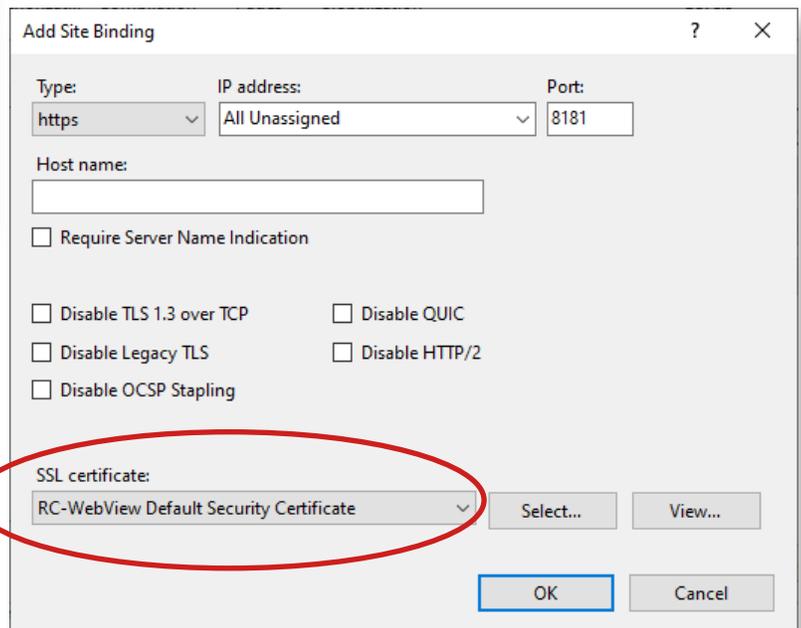
Figure 5: Add Site Binding dialog box.

The RC-WebView Default Security Certificate is a self-signed certificate that is automatically generated during install. You should not use it in production environments, but it is useful for testing HTTPS.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

For increased security, you can disable non-HTTPS connections. Click the SSL Settings icon in IIS (Figure 6) to open the SSL Settings page (Figure 7), where you can modify SSL settings for a website or application. To disable non-HTTPS connections, select the Require SSL check box.
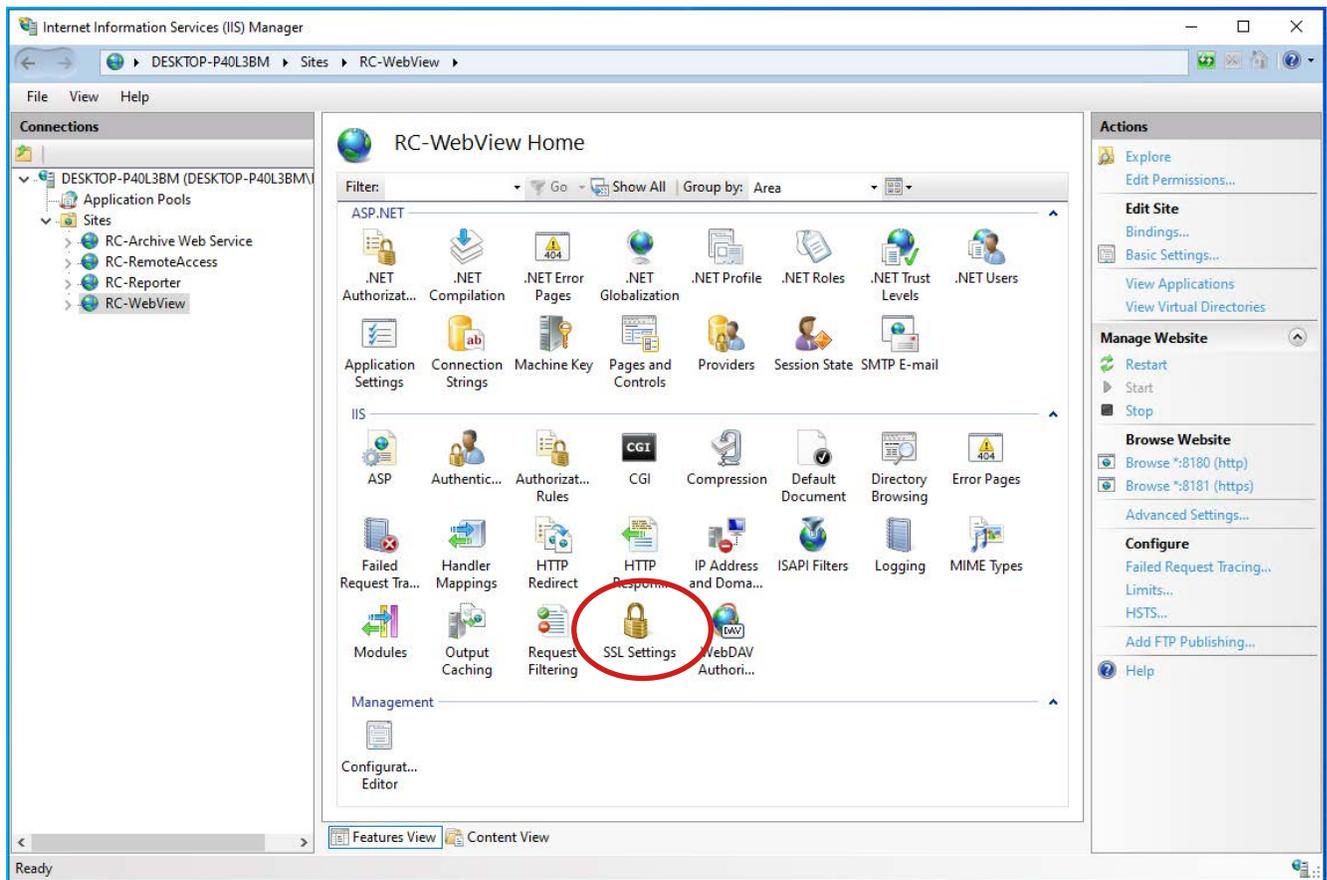

Figure 6: RC-WebView Site Settings in IIS.
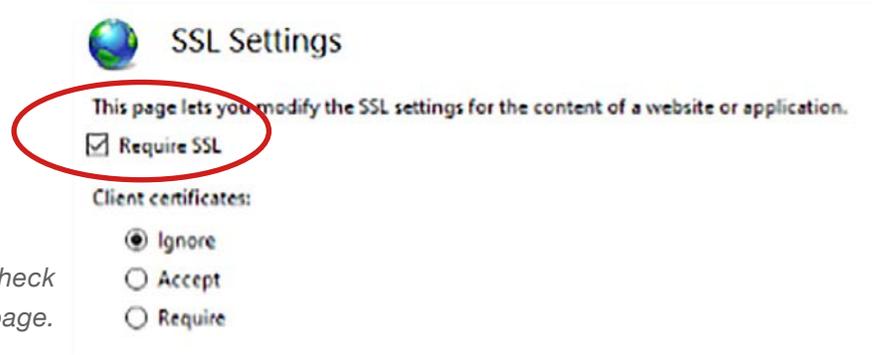
Figure 7: Select the Require SSL check box in the SSL Settings page.

THE Resource

It's important to note that when you use this method to secure your communications, you must always type "https://" and the port number (if you are not using the standard port :443) with your URL. IIS does *not* automatically upgrade an HTTP connection to an HTTPS one, and the connection could fail without explanation.

HTTPS to a reverse proxy

A reverse proxy plugin is available for IIS, but it is difficult to configure if you have more than one web server installed. Caddy is a good alternative.

What is a reverse proxy, and why do you need it?

A reverse proxy is a web server that redirects all incoming traffic elsewhere. In this example, we will install Caddy on a computer that hosts multiple Reliable Controls web services so you can connect without the IP addresses or port number.

Caddy features:
• Load balancing
• High availability
• Automatic SSL certificate generation via Let's Encrypt
• Automatic HTTP to HTTPS redirect
• URL-based routing
• SSL termination

Requirements:
• Domain and subdomains, such as example.com, webview.example.com
• DNS configured for that domain (example.com: 12.34.56.78)
• TCP ports 80 and 443 forwarded to your server
• A third-party utility such as Non-Sucking Service Manager (NSSM) to create a Windows service

Caddy is both a flexible, efficient static file server and a powerful, scalable reverse proxy. Follow these steps to install it.

1. To download Caddy, choose your platform from the drop-down list on the Caddy website (Figure 8).
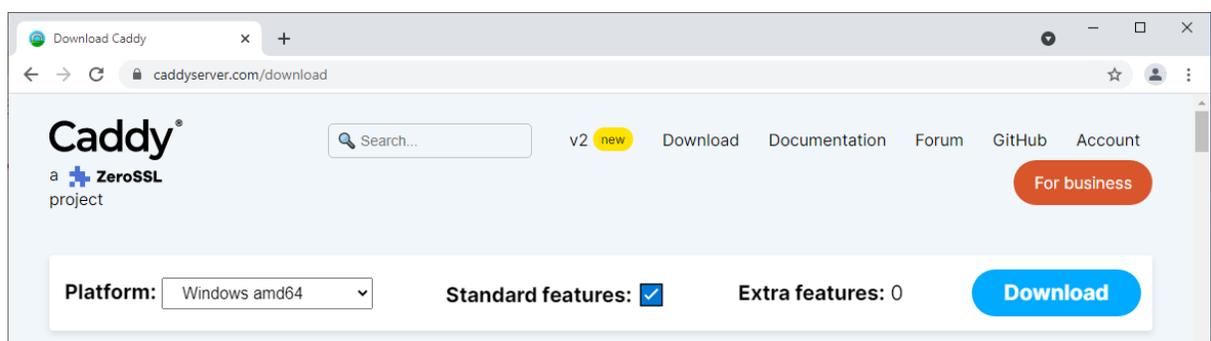

Figure 8: Choose your platform on the Caddy website.

THE Resource

2. Locate and copy the caddy_server executable file in the Downloads folder on your computer (or wherever your browser stores downloaded files). For our example, the file is called caddy_windows_amd64.exe.

3. Create a new folder on your C: drive called Caddy.

4. Paste the caddy executable in the new Caddy folder.

5. In File Explorer, click **View**, and select the File Name Extensions check box (Figure 9).
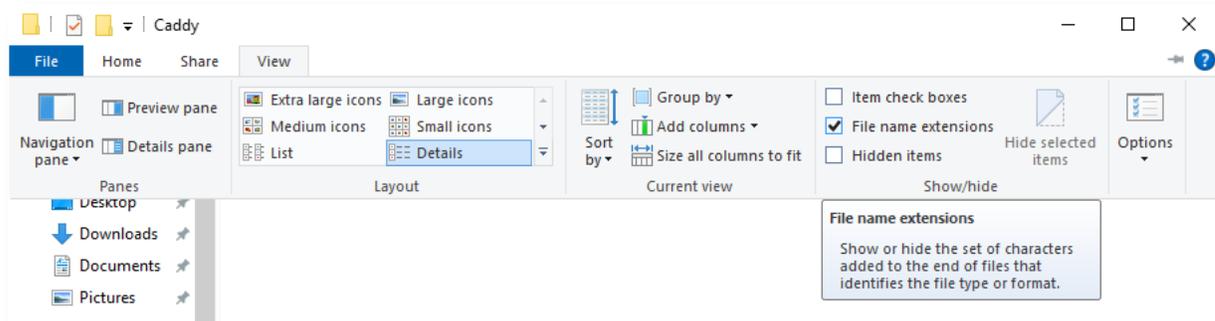
Figure 9: Select the File Name Extensions check box.

6. Create a new .txt file in the Caddy folder, and open it in Notepad.

7. Configure Caddy in the .txt file as shown in Figure 10. Add or remove entries as needed, then save the .txt file.

```
# This Caddyfile is an easy way to configure your Caddy web server/proxy.
#
# Unless the file starts with a global options block, the first
# uncommented line is always the address of your site.
#
# To use your own domain name (with automatic HTTPS), first make sure your domain's
# A/AAAA DNS records are properly pointed to this machine's public IP.

reporter.example.com {
    reverse_proxy 127.0.0.1:8080
    encode gzip
}

webview.example.com {
    reverse_proxy 127.0.0.1:8180
    encode gzip
}

proweb.example.com {
    reverse_proxy 192.168.68.104 {
}
    encode gzip
header {
    Transfer-Encoding chunked
    Cache-Control no-store
}
}

# Refer to the Caddy docs for more information:
# https://caddyserver.com/docs/caddyfile
```

Figure 10: Caddyfile configuration.

Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

8. Save the newly created .txt file with the name Caddyfile. Note the file has no extension.

9. Click the Start menu, and type **Allow an app**. Open **Allow an app through Windows firewall** (Figure 11). The Allowed Apps page displays.
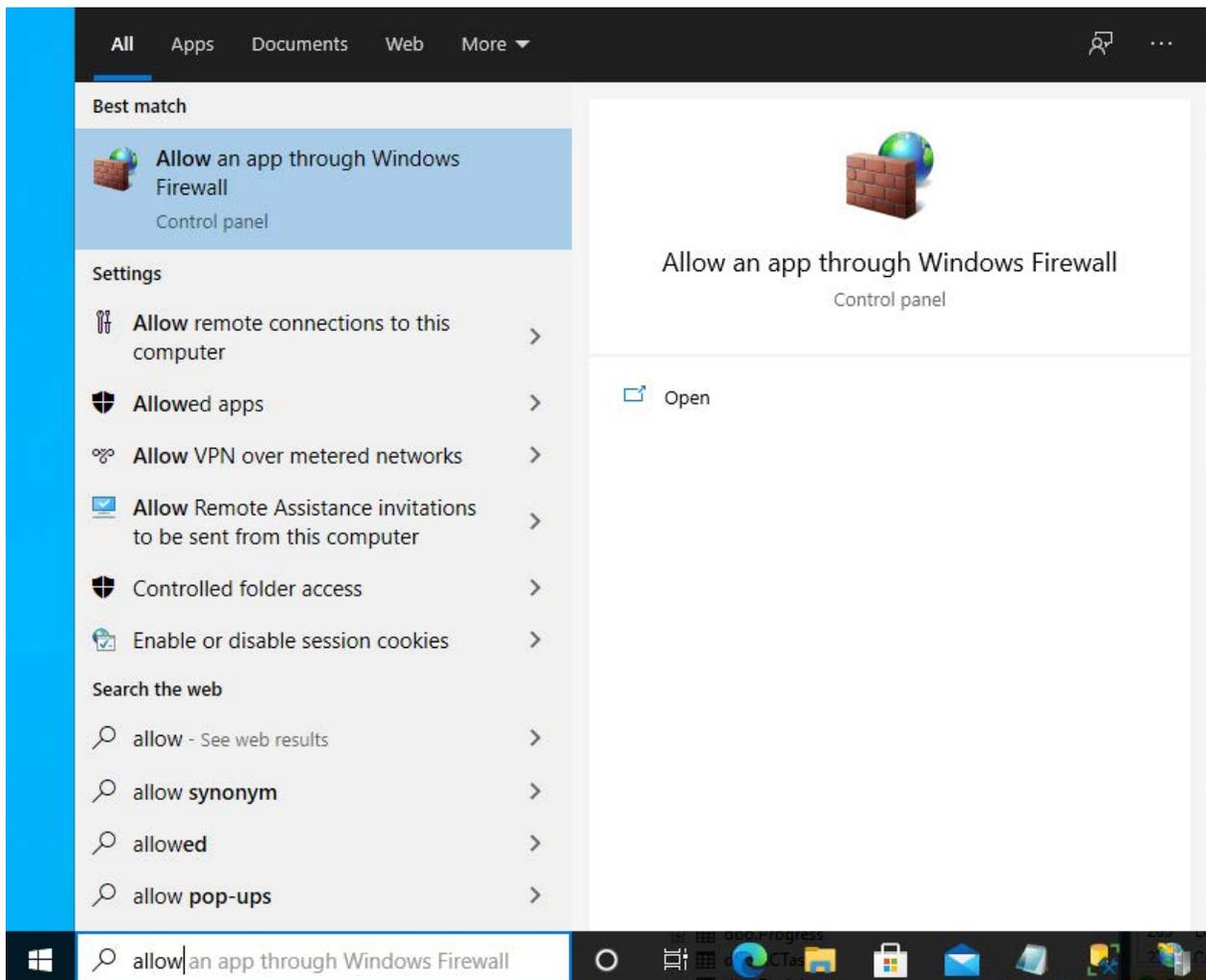
Figure 11: Start menu > Allow an app through Windows Firewall.

THE Resource

10. In the Allowed Apps page (Figure 12), click **Change settings**, then click **Allow another app...** to open the Add an App dialog box.
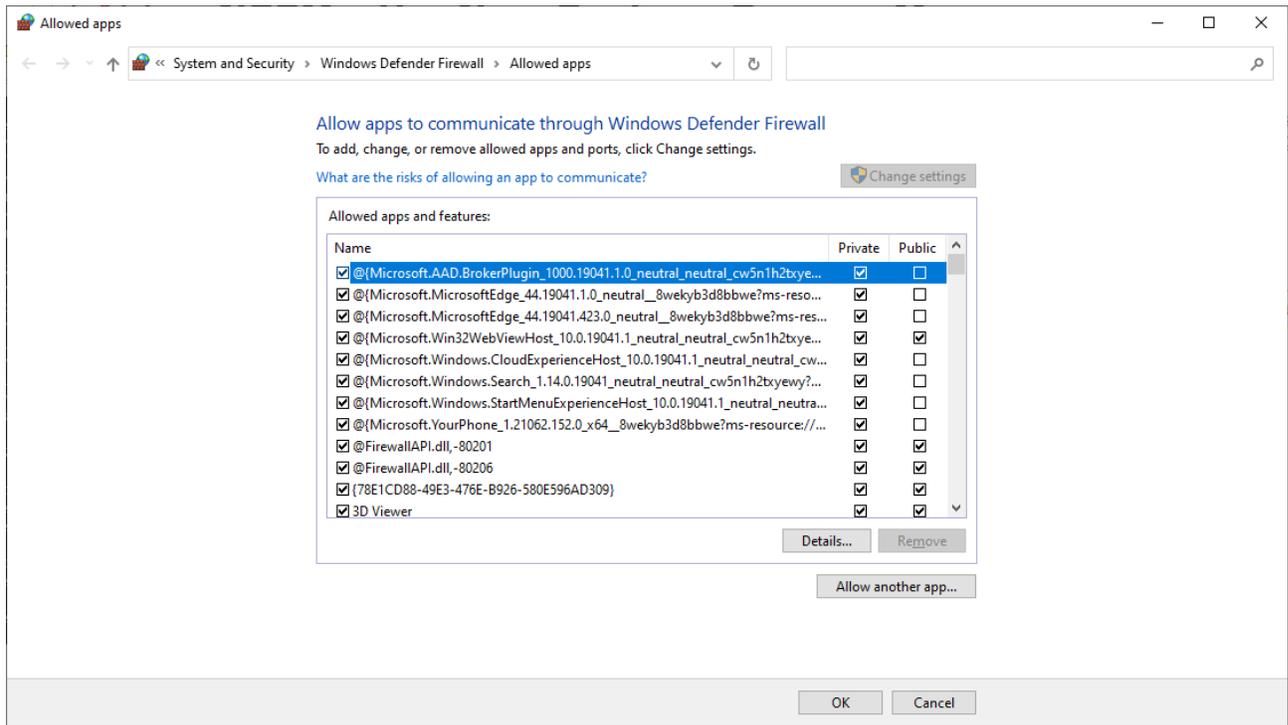
Figure 12: Allowed apps page.

11. In the Add an App dialog box, browse to C:\Caddy and select the .exe file (Figure 13).
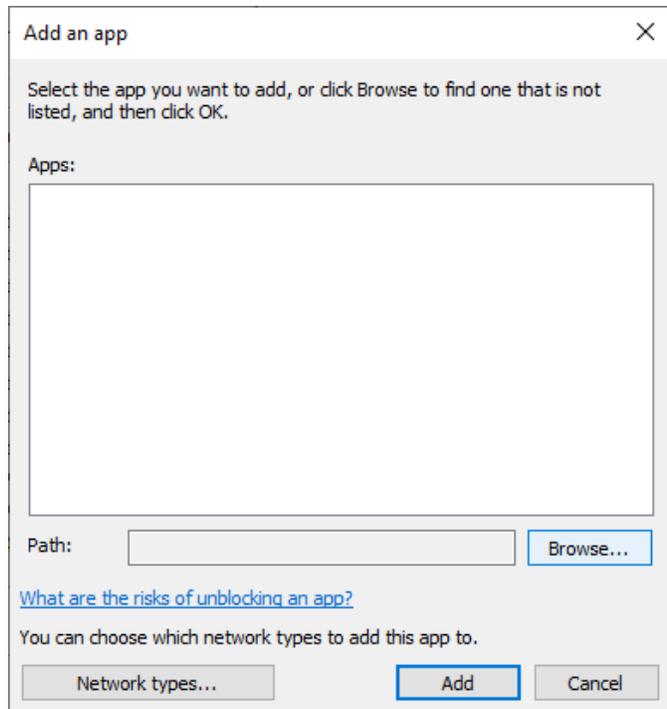
Figure 13: Browse to select the app you want to add in the Add an App dialog box.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

Caddy is installed, but now you need to configure it as a service that automatically starts. To do so we will use NSSM. You could use another third-party utility; the process is very similar.

Follow these steps to install NSSM:

1. Download the latest release of NSSM.
2. Open the downloaded .zip file, and navigate to the win64 folder within it. Copy the nssm.exe file in the win64 folder.
3. On your C: drive, right-click the Windows folder and select **Paste**.

If a Destination Folder Access Denied pop-up message displays, select **Continue** to finish the installation.

Once NSSM is installed, follow these steps to configure Caddy as a service:

1. In the Start menu, search for the Command Prompt app (Figure 14). Run the cmd.exe file as an administrator.
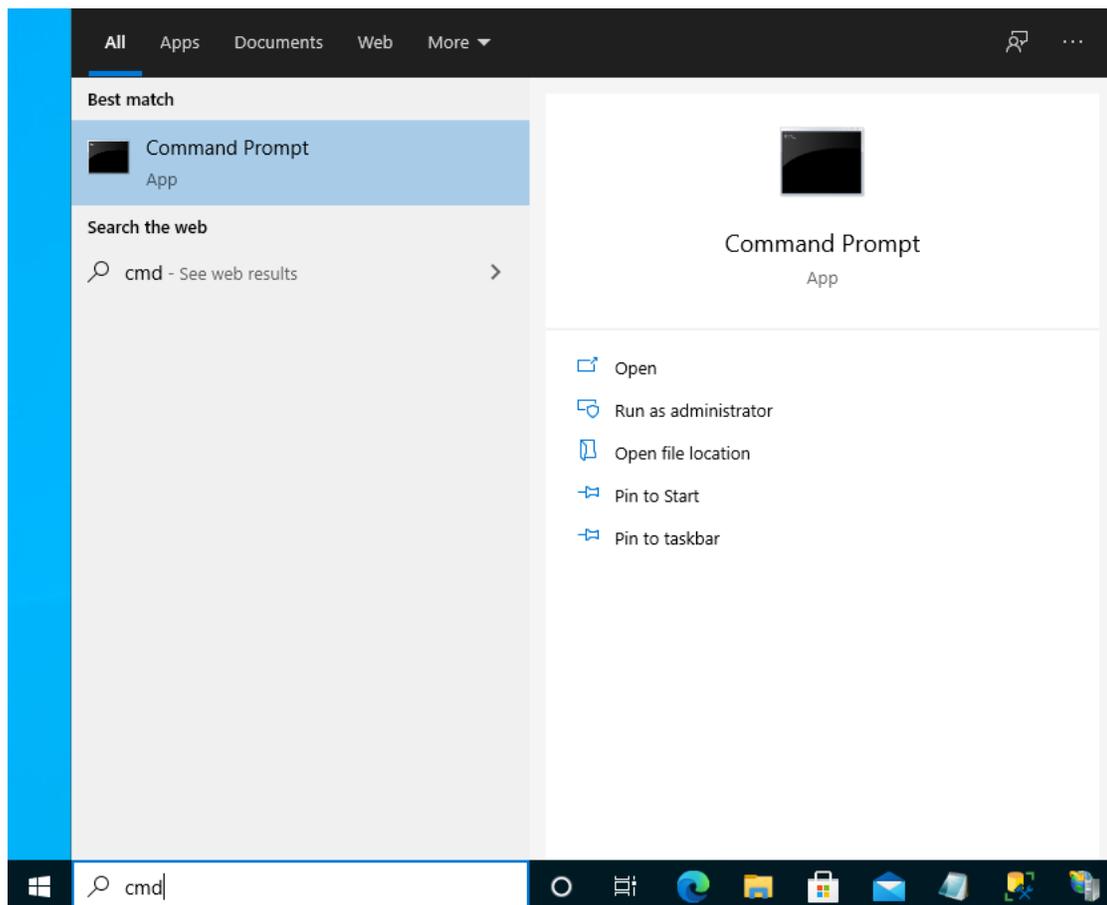
Figure 14: Command Prompt app.

THE Resource

2. In the Administrator Command Prompt window, type **nssm** and press the Enter key. If a list of commands for NSSM appears, NSSM was successfully installed (Figure 15).

```
C:\Windows\system32>nssm
NSSM: The non-sucking service manager
Version 2.24-101-g897c7ad 64-bit, 2017-04-26
Usage: nssm <option> [<args> ...]

To show service installation GUI:

        nssm install [<servicename>]

To install a service without confirmation:

        nssm install <servicename> <app> [<args> ...]

To show service editing GUI:

        nssm edit <servicename>

To retrieve or edit service parameters directly:

        nssm dump <servicename>

        nssm get <servicename> <parameter> [<subparameter>]

        nssm set <servicename> <parameter> [<subparameter>] <value>

        nssm reset <servicename> <parameter> [<subparameter>]

To show service removal GUI:

        nssm remove [<servicename>]

To remove a service without confirmation:

        nssm remove <servicename> confirm

To manage a service:

        nssm start <servicename>

        nssm stop <servicename>

        nssm restart <servicename>
```

Figure 15: List of commands for NSSM in the Administrator Command Prompt window.

THE Resource

3. Copy all the commands in Figure 16, then right-click to paste them in the Command window. Note: Keyboard shortcuts for copy and paste do not work in the Command Prompt app.

```
nssm.exe install caddy C:\Caddy\caddy_windows_amd64.exe

nssm.exe set caddy AppParameters "run --environ --config Caddyfile --watch"

nssm.exe set caddy AppDirectory C:\Caddy

nssm.exe set caddy AppExit Default Restart

nssm.exe set caddy AppNoConsole 1

nssm.exe set caddy AppStdout C:\Caddy\stdout.log

nssm.exe set caddy AppStderr C:\Caddy\stderr.log

nssm.exe set caddy AppTimestampLog 1

nssm.exe set caddy Description "Caddy Server"

nssm.exe set caddy DisplayName Caddy

nssm.exe set caddy ObjectName LocalSystem

nssm.exe set caddy Start SERVICE_AUTO_START

nssm.exe set caddy Type SERVICE_INTERACTIVE_PROCESS
```

Figure 16: Caddy configuration commands.

4. Caddy is now configured to automatically start at boot. To start Caddy now, type **nssm start caddy** (Figure 17).
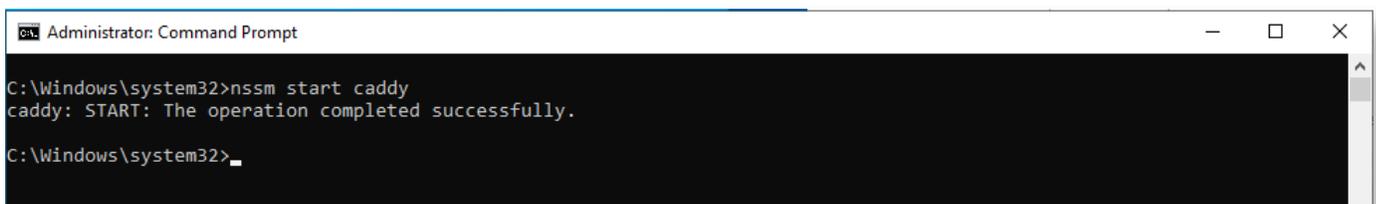
Figure 17: Caddy successfully started.

You can now enter a domain, such as example.com, in your browser URL bar and be directed to the site that was configured in Caddy (Figure 18). Make sure you test the connection externally, not internally, as your modem or router may block a connection that loops back on itself.

THE Resource

To find your configuration, refer to `C:\Caddy\Caddyfile`. Changes to the configuration are automatically applied to Caddy shortly after.

Figure 19 on page 28 illustrates the process that occurs when you connect to a web server. The server must have a different address. Your computer uses a DNS to get to that address, as in:

"Hello, DNS. I'm looking for Tom's house."

"Tom's house is at 25 Block Road."

Figure 18: Successful installation.

In this example, the URL for Tom's house is example.com, and the IP address of 25 Block Road is 91.51.22.8. By default your computer uses HTTP traffic, and by default HTTP is configured for port 80. So your computer sends a request over port 80 to 91.51.22.8, which contains the domain example.com.

Ports 80 and 443 need to be forwarded on the server with the reverse proxy for the next part of the process to happen.

Your computer reaches the reverse proxy at 91.51.22.8 over port 80. The reverse proxy returns a message that tells you to change your connection to HTTPS with the default port 443. When your browser receives this message, it does exactly that, and it sends the same request over HTTPS.

The request hits the reverse proxy, which looks at the TCP packet for the URL. If the URL starts with example.com and is in its configuration file, it will accept the connection and send your computer its certificate. If you accept the connection, you finish the handshake, and it sends you to the correct back end:

you --> webview.example.com --> 127.0.0.1:8180

THE Resource

http://example.com

DNS

http://example.com
http://91.51.22.8

DNS

Figure 19: The process that occurs when you connect to a web server.

http://example.com
http://91.51.22.8

91.51.22.8

Reverse Proxy

https://example.com
https://91.51.22.8

91.51.22.8

Reverse Proxy

reporter.example.com   webview.example.com   proweb.example.com

127.0.0.1:8080   127.0.0.1:8180   192.168.1.200:80

We hope this information helps you install and configure Caddy and NSSM to better secure your internet connections between RC-WebView, RC-Reporter, and the MACH-ProWeb. If you have any trouble, our Tech Support team is always here to help at techsupport@reliablecontrols.com.

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

THE Resource

Authorized Dealer — Reliable controls

RC-GrafxSet®
Using the FlexTiles™
MAINTENANCE MONITORING ANIMATION

RCGrafxSet®
Graphical Images & Services
Software

Use the animation called FlexTile-Maintenance-Monitoring-V01.rca, found in the RC-GrafxSet Isometric library (Figure 1), to visually track the time before the next required maintenance on your equipment.
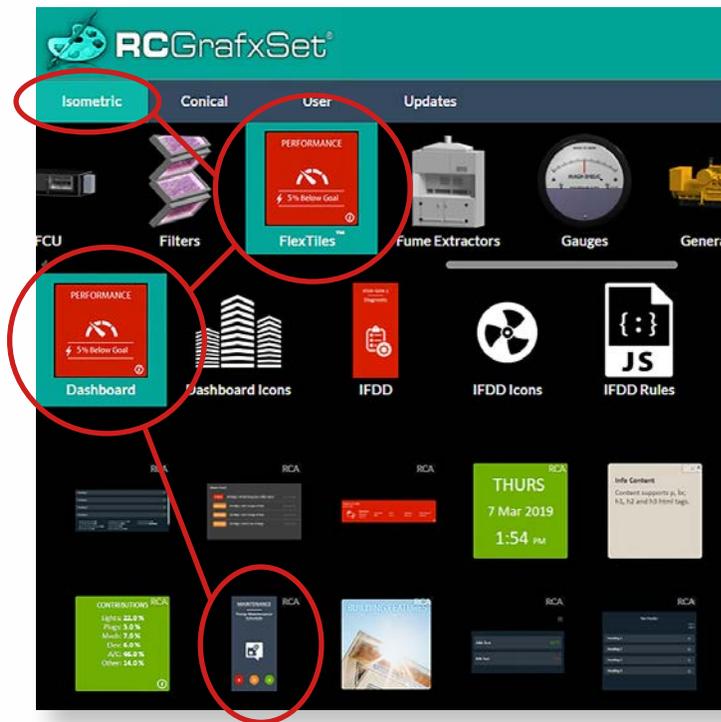
Figure 1: FlexTile-Maintenance-Monitoring-V01.rca animation in the Isometric library.

The tile has two sides (Figure 2). The front displays an overview of the states for all linked objects. When clicked, the tile flips to display the percentage of time remaining for each linked object as a bar of color.
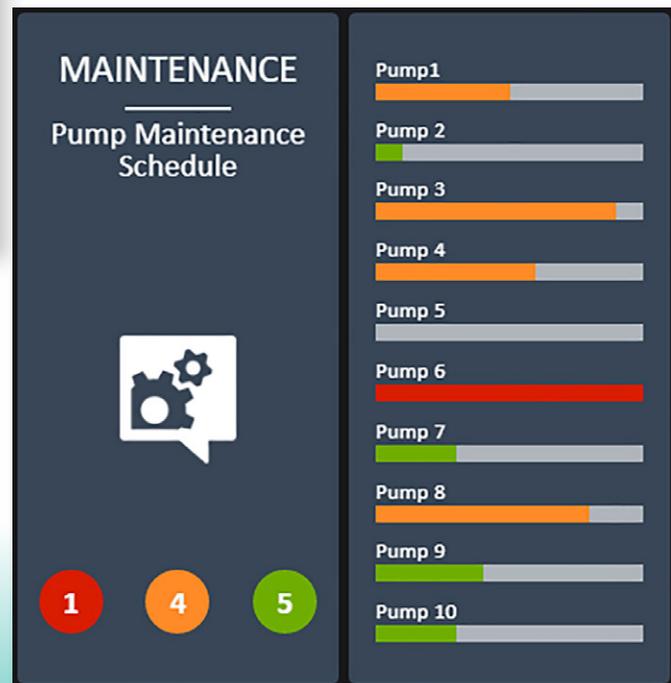
Figure 2: FlexTile-Maintenance-Monitoring-V01.rca animation, front and back.

THE Resource

You can use this animation to display the maintenance status of up to 10 linked objects (Figure 3).

Objects			Attributes	Help
Row	Purpose	Type	Linked Object	Display Name
1	Reminder 1	analog	ANA-Perc1	Pump1
2	Reminder 2	analog	ANA-Perc2	Pump 2
3	Reminder 3	analog	ANA-Perc3	Pump 3
4	Reminder 4	analog	ANA-Perc4	Pump 4
5	Reminder 5	analog	ANA-Perc5	Pump 5
6	Reminder 6	analog	ANA-Perc6	Pump 6
7	Reminder 7	analog	ANA-Perc7	Pump 7
8	Reminder 8	analog	ANA-Perc8	Pump 8
9	Reminder 9	analog	ANA-Perc9	Pump 9
10	Reminder 10	analog	ANA-Perc10	Pump 10

Figure 3: Use the Objects area of the Edit Animation dialog box to choose up to 10 objects for display on the animation.

Linked objects can only be analog, and each must have a display name; otherwise the name of the linked object shows above the percentage bar on the back of the tile. Although you are not required to use the animation to display all linked objects, you should add them sequentially in the Objects area of the Edit Animation dialog box, without skipping rows. The linked values should be programmatically incremented using Control-BASIC.

Types of analog values

Use any analog number in the Values worksheet to represent hours, days, weeks, months, or years (Figure 4).

- An increment of the value by 1 equals an hour.
- An increment of the value by 24 equals a day.
- An increment of the value by 168 equals a week.
- An increment of 730.5 equals 1 month (you can customize this value).
- An increment of 8765.2 equals 1 year (you can customize this value).
- Use an analog value with an hour unit to increment hours for each increase by 1.
- Use an analog value with a days unit to increment days for each increase by 1.
- Use an analog value with a time unit to increment by hours, days, weeks, or months.

THE Resource

Figure 4: In the Values worksheet, enter any analog number to indicate when maintenance is required.

In the Attributes area of the Edit Animation dialog box (Figure 5), for each linked object, select the type of time period to be calculated, with a range for upcoming and required maintenance.

Figure 5: Select the range of time for upcoming and required maintenance in the Attributes area of the Edit Animation dialog box.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

You can choose any analog value to represent an hour or day unit, which counts as 1 day for each increment. All other reminders and warning ranges are standard counts of days, weeks, months, or years. Years and months are generalized durations; to specify the calculation for each, change the hours per month or year values in the Ranges area of the Edit Animation dialog box (Figure 6).

RANGES

Hours Per Month   730.5

Hours Per Year   8765.2
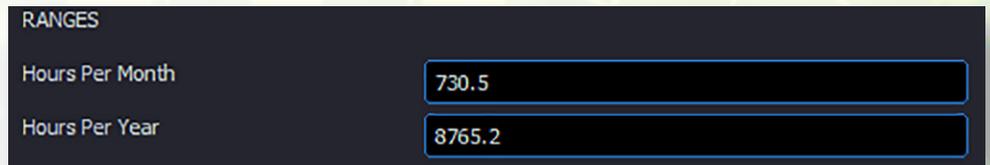
Figure 6: Change the hours per month or year values in the Ranges area of the Edit Animation dialog box.

Visual attributes

In addition to allowing customization of types and ranges, the Attributes area for the animation includes a comprehensive set of options for the three color states displayed on the front of the tile and the percentage bars on the back.

Set the displayed text, font, font size, font color, background color, gradient, opacity, borders, corner style, and more the same way you do for other FlexTiles.

Choose round or square shapes and upload a custom icon to display on the front of the FlexTile (Figure 7), or leave this area blank.
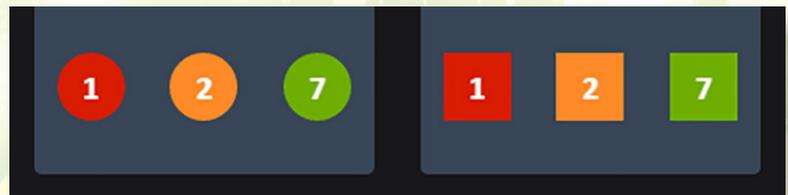
Figure 7: Choose round or square shapes for the front of the FlexTile.

The FlexTile-Maintenance-Monitoring-V01.rca animation is a great addition to our FlexTiles collection and provides an easy way to set up reminders for equipment maintenance.

Empower your creativity.

Do you have suggestions for alternative styles or attributes?

Send a request via the RC-GrafxSet request form.

Subscribe to
RC-GrafxSet today.

Reliable controls
Authorized Dealer

Protect healthcare facilities with

RCPassport®

INTEGRATED SECURITY TECHNOLOGY

Key applications

- HOSPITALS / TRAUMA CENTERS
- BIOPHARMA FACILITES
- OUTPATIENT CARE CENTERS
- NURSING HOMES
- TRAINING INSTITUTES
- MEDICAL CLINICS
- RESEARCH LABS
- MENTAL HEALTH FACILITIES
- PARKING LOTS / GARAGES

Introduce your healthcare clients to proven security solutions.

By integrating BACnet security objects into existing building automation systems, the RC-Passport® security suite enables hospitals and other healthcare facilities to safeguard employees, patients, and visitors while securing critical assets such as pharmaceuticals, medical data, and diagnostic/treatment equipment. Recognizing the complex nature of emerging healthcare challenges, RC-Passport merges access control, video management, and intrusion detection technology in a single user interface. Featuring intuitive, real-time views and a rapid alarm notification scheme, RC-Passport offers complete situational awareness across all portals, cameras, and sensors and allows users to quickly adapt to a changing environment.

RCPassport®
Security Management Software

Learn more—get certified

Contact your Reliable Controls regional sales manager

System advantages

- Protection of business-critical data and equipment while maintaining an open environment for day-to-day activities

- Simple connection to the latest generation of smart locks and access card technologies

- Real-time personnel management, card/door monitoring, and visitor planning via highly automated, schedule-based system

- Cost-effective, modular design allows for easy expansion as healthcare security needs evolve

120 Hallowell Road · Victoria, BC, Canada · V9A 7K2 · Phone: 250-475-2036 · Fax: 250-475-2096 · reliablecontrols.com

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

Meet the Creative Services team

Richard Prevost

Art director
Joined the Reliable Controls team in June 1997

"I am one of the Reliable Controls originals, being the first graphic artist the company brought on to create our marketing collateral, with a focus on product and corporate branding solutions. I was classically trained as a commercial artist in the pre-digital age, but I've thoroughly enjoyed the journey as we have grown our innovative company from a team of six to over 200. I have the honour of being the art director and team leader of our incredible Creative Services department. Our collaborative focus is to make Reliable Controls marketing communications shine on the world stage of controls manufacturing. Our multitalented team covers all the bases: photography, video production, print collateral, tradeshow booth design, technical diagrams, 3D mechanical equipment libraries, logo design, and branding strategy. I am grateful to be a part of Reliable Controls and for the opportunity to contribute to its expansion and influence in the controls industry.
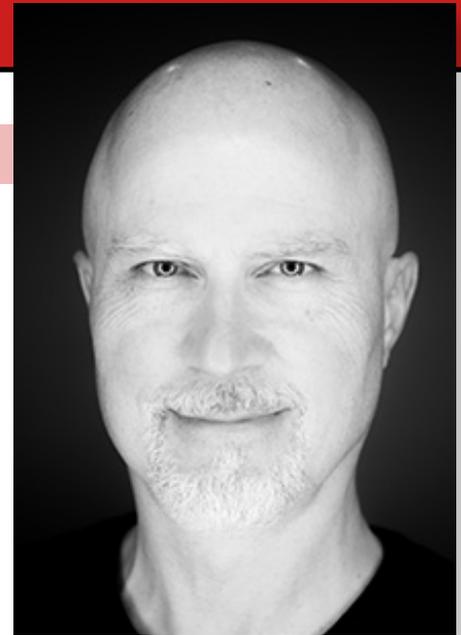
"I enjoy cold water surfing on our wild Pacific Northwest coast, song-writing on the beach with my faithful acoustic guitar, and oil-painting ocean-inspired scenes. My passion for fine carpentry woodwork, home renovations, and growing food to create delicious culinary experiences keeps me busy in my spare time!"

What Richard says about the team:
"Darren has a passion for creating and building, from his wonderous tiki-style backyard to converting his driveway into an urban garden. He loves overland adventures in his 4x4 Tacoma tent camper and always has something on the go.

"Jesse is a pro photographer and fun-loving family guy who can get almost anyone excited about experiencing a winter campout during peak storm season on our rugged coastal beaches. Talk about a getaway! He's a talented bass player and musician. Good vibes are what Jesse shares with all who know him.

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

"Liam is the chronicler of company history and news. He is also a collector and curator of comics, vintage books, movies, and other interesting items. If you need to know the origin story of some comic book defender or about the golden age of black-and-white movies, Liam is the go-to subject-matter expert.

"Erica's a very skilled creative talent. Getting the job done is where she excels. She is passionate about fitness and working out. And if you want to talk fast cars, Erica knows performance wheels for sure.

"Doug is the enthusiastic new kid on the team in the role of video producer. Extreme mountain biking exploits are his free-time jam. Doug knows his way around the rough trails and a few trauma centers; lucky for us he's capable of bouncing back from this high-impact sport."

Jesse Moore

Graphic artist
Joined the Reliable Controls team in June 1997

"As the Swiss Army knife of the Creative Services team, I take on anything and everything Reliable Controls gives me—from photography and video assignments to AutoCAD, Photoshop and Illustrator design, and technical documentation. I get to work with nearly all the departments in the company! After starting in the Operations department in 2007, leaving and returning in 2008 (it's a long story), I made my way into the Creative Services team to take some work off Richard Prevost's plate. The rest is history.

"My joys in life are my amazing family and friends. My passions are anything music and the great outdoors. My church is on a trail with my dog, some giant Vancouver Island trees, and that intoxicating smell of the Pacific Ocean. My future goals are to hike the Juan de Fuca Trail with my daughter and play an instrument on stage in front of real humans!"

What Jesse says about the team:
"A true pioneer at Reliable Controls, Richard is a person of oh-so-many talents. Besides running the creative show, he is a songwriter, surfer, painter, cook, bartender, and great friend, and he has one of the biggest hearts of anyone I know. He is always up for adventure and always there to listen.

Reliable controls
Authorized Dealer

"Liam is a collector of things, knowledge, and random facts. He is a dedicated friend, father, and family man, and I am privileged to be able to work alongside him. If his sharp wit doesn't get you, his kindness will.

"Erica is awesome. Her dry sense of humor always gives me a good chuckle when I need it most! She strives for the best in everything she does and is a wealth of artistic knowledge—as well as being super talented. Fun fact: If you ping Erica on Teams at 6:00 AM, even though she is working out at her home gym, she will answer you. Now that is dedication!

"Darren is the most dedicated craftsperson I have ever met, whether it be professional geocaching; building his own kayak, cabin, and tiki bar; or becoming a novice sommelier. He is another pioneer of Reliable Controls and a 3D master.

"Doug is the newest member of our team—a very cool guy and down to earth. I can already tell he is extremely dedicated to his craft, his family, and mounting biking. He will fit in nicely with the Creative Services crew and the rest of the Reliable Controls team. I look forward to working with Doug for many years to come."

Liam Dicks

Marketing support associate
Joined the Reliable Controls team in July 2010

"I act as a helping hand in the Creative Services department; sometimes I'm helping with technical communications and document translations; other times I'm working with our art director or lending a hand with training-award fabrication. While working with other members of the department is rewarding, my primary responsibilities involve creating content for press releases, project profiles, and newsletters. I often try to bring a bit of levity while working with others as it relieves tension and makes for more candid communications.

"Contributing to the Creative Services group is really great. Everyone works together like a well-oiled machine, and there is nearly always an air of joy and fun. We're a network of friends and family, and I'm happy to be part of it.

"When not at work, I spend most of my time with my soon-to-be 3-year-old daughter and nearly 1-year-old son, but my hobbies are collecting books and comics and watching old movies."

THE Resource

What Liam says about the team:

"Our group leader, Richard, is always willing to lend a hand or provide advice. His coolness keeps us together, his level-headedness keeps us balanced, and his knowledge keeps us on track. He loves to share his surfing exploits every Monday morning. If you ever go camping with him, be sure to bring an instrument so you can join in a jam session.

"If I want a quick turnaround on a .png file or logo adjustment, Erica is my go-to colleague. Always helpful with a smile and skillful with Adobe Illustrator, Erica is fun to work with and very professional.

"Jesse Moore is a personal friend and a long-time camping and hiking buddy. I can always rely on him to help out when I'm in need. He helped me get into rock climbing and introduced me to many of his friends, who have since become friends of mine. I thank Jesse for always being there for me. Jesse's a reliable rock star!

"I've known Darren since before I joined Reliable Controls. He is inventive and highly skilled. He once built a custom kayak in his basement and had to break a window to remove the completed boat. His home-built tiki lounge makes you feel like you're in a tropical paradise every time you visit, and his hospitality is unsurpassed. Camping with Darren is always fun because you never know what new gadget he may bring. Darren has been instrumental in my development at Reliable Controls, and I was honored to assist him with RC-GrafxSet animations for a time.

"Doug is the newest member of Creative Services and just getting to know us all. He's fitting in great with the group, and it seems like we have a common interest: mounting biking. Although I no longer ride and have sold my bikes, it's encouraging to hear that Doug is still out there hitting the trails. Keep it up, Doug!"

Erica Launay

Graphic artist
Joined the Reliable Controls team in December 2019

"I create graphics for the Creative Services team and offer graphical support to various departments at Reliable Controls. I am a detail-oriented person by nature and an enormous seeker of knowledge! I love learning new techniques and programs that enhance my skill set and enable me to offer even more creative support to my Reliable Controls family."

What Erica says about the team:

"Richard is a wealth of graphical knowledge for all things Reliable Controls, past and present! He is a super talented and supportive supervisor and always available to guide you in the right direction.

Sidebar tabs: CORPORATE UPDATE · APPLICATION ENGINEERING · TECHNICAL SUPPORT · RESEARCH & DEVELOPMENT · SALES & MARKETING

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

"Jesse is the best! He has a super chill and relaxed personality and is always fun to work with. He's always available to roll up his sleeves and jump into any project. Jesse is a total Photoshop genius.

"Liam is sweet, witty, and quick to offer assistance. I find his endless knowledge of filmography a constant source of entertainment, which makes him an absolute pleasure to work with!

"Darren is the go-to guy for 3D graphics and never ceases to amaze me with his attention to detail! We share a similar fondness for gardening, and I enjoy sharing photos and swapping seeds with him.

"Doug is the newest member of our team, but I can already tell he's going to be a perfect fit. I'm looking forward to working with him."

Darren McQuitty

3D graphic artist/animator
Joined the Reliable Controls team in April 1997

"I'm employee number 11. I've done a lot of different jobs for Reliable Controls over the years, from stuffing MNC 100 circuit boards in my neighbor's basement to purchasing, shipping, and receiving and many other jobs, until I landed in the Marketing department. My primary job now is to create the 3D graphics and animation frames for RC-GrafxSet software. And I love it! Secondary to this I provide 3D graphics for our building system, 3D graphics for marketing and sales, and 3D graphics for the Training department.

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

"When I'm not working, I love to travel (pre-COVID) and visit tiki bars around the world as well as do overland road/off-road trips around North America. These days I'm most likely working in my extensive veggie garden with my cat and chickens or camping somewhere in the woods on Vancouver Island."

Doug Harrington

Video producer
Joined the Reliable Controls team in July 2021

"Over the past 25 years, I have worked in almost all aspects of multimedia design and in many different roles. I worked on various video projects and product launches, with the most memorable to date being the launch of the Moto360 smartwatch, which premiered in London.

"When my brother in-law Eric, who works on the Final Assembly team, informed me of the video producer role, I knew I had to apply for it. Needless to say I am over the moon to join the team here and look forward to meeting more people and creating some exciting videos.

"I've had a ton of hobbies over the years, with most of them hurting me in some way. I eventually had to settle with one main activity—mountain biking. Which isn't dangerous at all."

What Doug says about the team:
"Having been with Reliable Controls for just over a month now, I have had the pleasure of working with every individual on our team. Everyone is absolutely delightful and easy to get along with, and all are absolute experts in their fields. Joining the team was exciting, and everyone was so welcoming."

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

If you have questions about graphics, animations, or marketing collateral, we'd love to hear from you! Send an email to marketing@reliablecontrols.com.

Reliable controls Authorized Dealer

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

FEATURED PROMOTIONAL PRODUCT

We offer a variety of promotional products to help you look professional.

Reliable Controls is pleased to feature a line of promotional products that are available for order through eBusiness as Category C promotional items.

View promotional products under the Marketing tab in the Dealer Support Center.

Branded Reliable Controls coasters are made from all-natural cork and are 4" in diameter and 1/8" thick.

Absorbent and durable, Reliable Controls coasters are ideal for home or office use.

Purchase promotional products.

THE Resource

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING
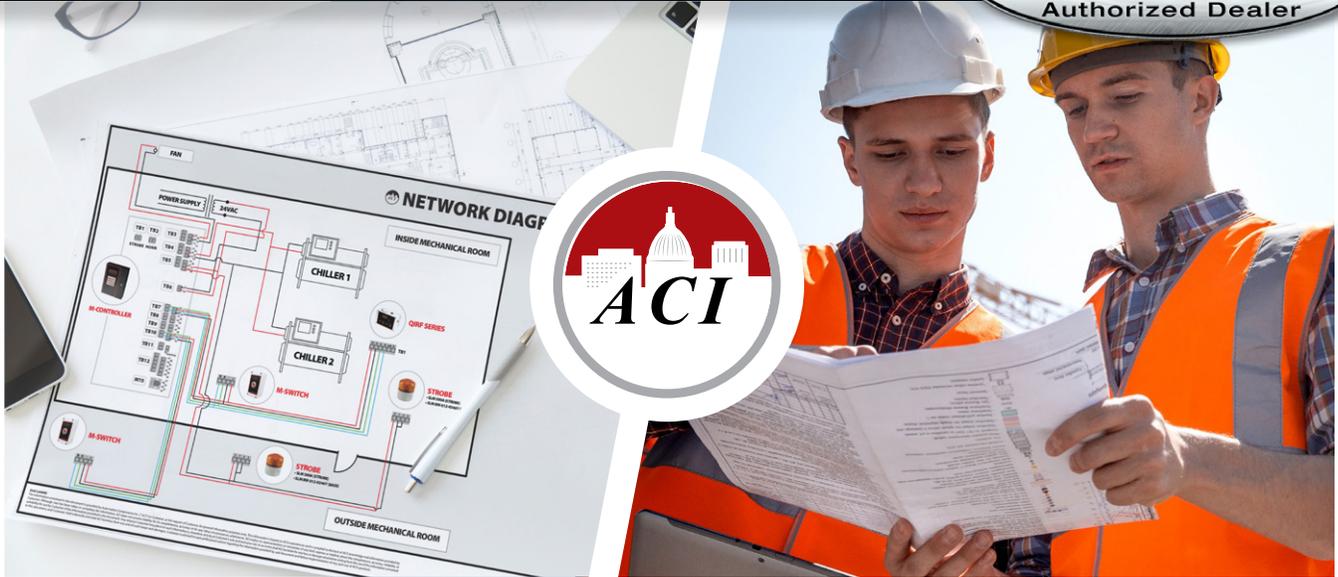
DID YOU KNOW?

ACI's experts can work with you from bid to commissioning to ensure maximum system efficiency and minimize installation time and costs.

- ☑ **System layout**—send us your drawings and we'll help with placement to ensure maximum system efficiency.
- ☑ **Cross reference competitive parts to ACI**
- ☑ **Review panel drawings for Power Meter applications**
- ☑ **Installation best practices**
- ☑ **Testing, Calibration / Recalibration, and Documentation services available**
- ☑ **Specification compliance**—send us your specs and we'll find the best devices at the lowest cost to meet the requirements
- ☑ **Troubleshoot challenging applications** (new or retrofit)
- ☑ **Sample / Demo kits available**
- ☑ **Custom solutions available**
- ☑ **Real-time Technical Support** (chat, phone, web-conference or in-person)

1-888-967-5224 • **workaci.com** • **ISO9001 Certified**

120 Hallowell Road · Victoria, BC, Canada · V9A 7K2 · Phone: 250-475-2036 · Fax: 250-475-2096 · reliablecontrols.com

Reliable
controls
Authorized Dealer

Belimo Thermal Energy Meters
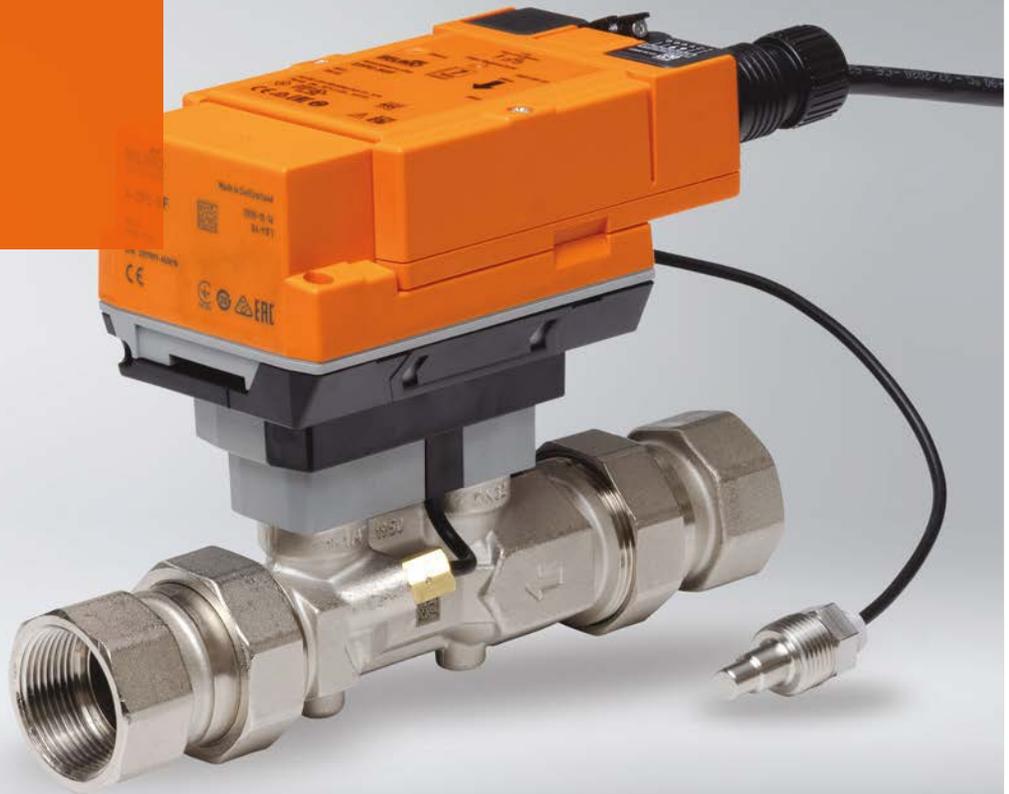
Reliable Energy Management

Belimo's new Thermal Energy Meters are designed according to EN1434/MID to provide reliable energy management. The energy meters have a patented glycol compensation algorithm that automatically compensates based on the amount of glycol in the system, eliminating manual input and inaccuracy. Rethink thermal energy management.

→ **Discover the advantages**
www.belimo.us

BTL
BACnet TESTING LABORATORIES

Modbus

BELIMO CLOUD

BELIMO

THE Resource

Reliable controls
Authorized Dealer

Dwyer

INSERTION THERMAL ENERGY METER
SERIES IEFB

HOT TAP VALVE OPTION
for installation in
operational systems

**INTEGRATED, REMOTE OR
PORTABLE SETUP DISPLAY**
for a variety of application
configurations

SETUP WIZARD
allows a technician to field
configure a system with ease
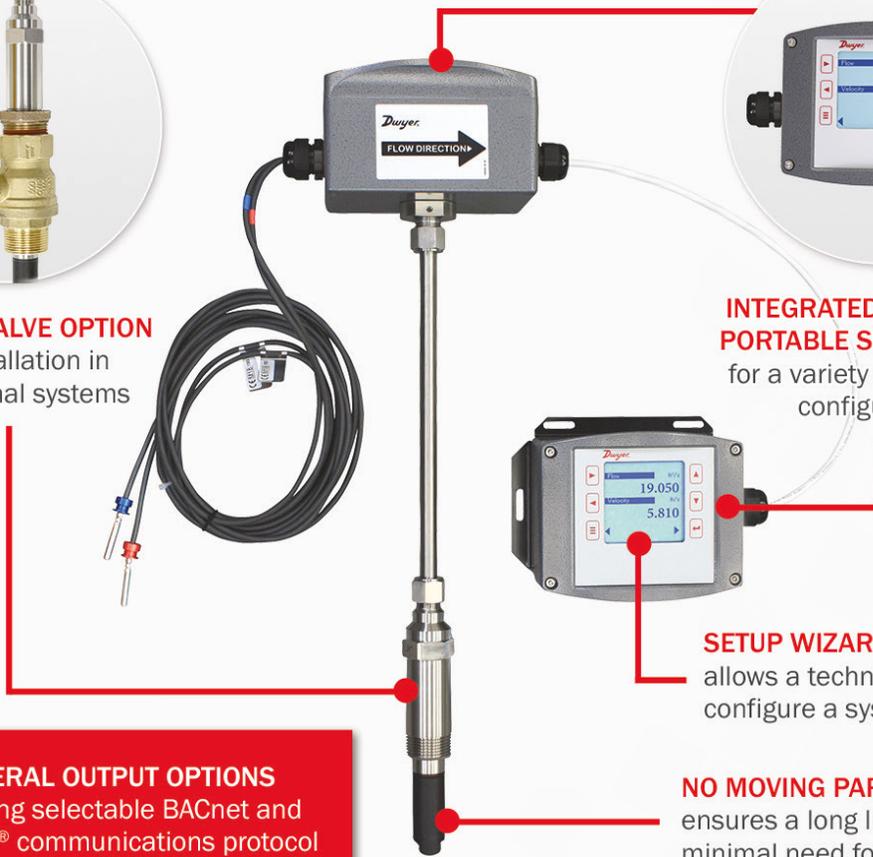
SEVERAL OUTPUT OPTIONS
including selectable BACnet and
Modbus® communications protocol

NO MOVING PARTS
ensures a long lifecycle and
minimal need for maintenance

USED FOR MEASURING FLUID VELOCITY, HEATING AND ENERGY CONSUMPTION
to maximize energy efficiency in applications with pipe sizes from 4 to 36"

CORPORATE UPDATE · APPLICATION ENGINEERING · TECHNICAL SUPPORT · RESEARCH & DEVELOPMENT · SALES & MARKETING

THE Resource

RIB Building Automation

www.functionaldevices.com • 800.888.5538
101 Commerce Drive, PO Box 437, Sharpsville, Ind. 46068

Low Threshold Current Switch

Our Low Threshold Current Switch is designed to sense the increasingly low current consumption of ECM units. This ensures that an accurate status feedback of the ECM unit is transmitted back to the controller.

- Low 0.25 Amp adjustable threshold
- Sense loads up to 150 Amps
- Requires no external power supply
- Normally open (N/O) contact output
- Prepackaged: Terminals, LED indicator
- Can be used in any application with lower than average current consumption
- UL Listed
- Made in the USA

ECM UNIT

Neutral

Line or Load (AC Power)

RIBXGTA-ECM

BAS Controller

RIBXGTA-ECM

RIB TRIFECTA
RELAYS
CURRENT SENSORS
POWER SUPPLIES

UL

MADE IN THE U.S.A.
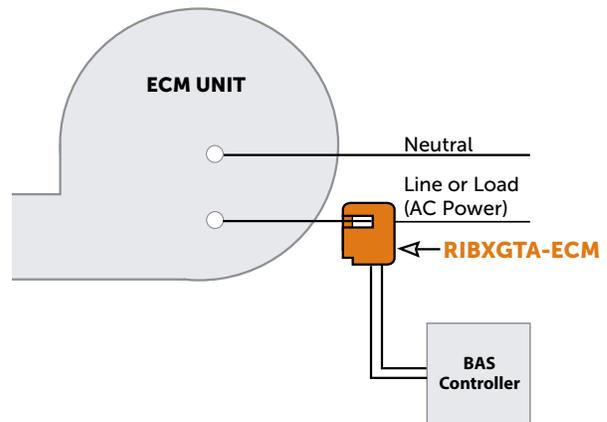
Ratcheting clamp tightens around wire

Foot mounting insert included

Slide opening helps with installation in small spaces

RELAYS • CURRENT SENSORS • POWER SUPPLIES • TRANSFORMERS
POWER CONTROL • UPS POWER SUPPLIES • ENCLOSURES • WIRELESS DEVICES

Functional Devices, Inc.

CORPORATE UPDATE   APPLICATION ENGINEERING   TECHNICAL SUPPORT   RESEARCH & DEVELOPMENT   SALES & MARKETING

THE
Resource

Reliable controls
Authorized Dealer

CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH & DEVELOPMENT

SALES & MARKETING

QCC QUAD CHANNEL CONTROLLER
END OF SALE NOTIFICATION

We are pleased to introduce a 4-channel model of our high performing FCS Flexible Control System. This model replaces the QCC.

Introduced in 2017, the FCS is a proven system controller that offers a more robust user experience with a large, full color LCD resistive touch screen, data logging and an additional relay and horn/strobe connection. The FCS also has a real time clock and offers data logging, enhanced logic control, zoning and extra priority structure capabilities.

The FCS-4 comes standard with 4 Modbus® RTU RS-485 connections for 4 digital transmitters. If analog transmitters are required it can be ordered with 4 analog inputs (option -AI). With the AI option, the FCS-4 can accommodate digital and/or analog transmitters up to a maximum of 4 gas channels.

The FCS-4 offers Modbus® RTU RS-485 (model: FCS-4-M) or BACnet® MS/TP RS-485 (model: FCS-4-B) output for communicating with a BAS or DCC. Other familiar features like the size of the enclosure, audible alarm, ability to connect to the same peripheral devices and option to add a top mounted strobe, manual shutoff switch and internal heater remain the same.

QCC to FCS-4 Equivalency

OLD PART NUMBER	NEW PART NUMBER
QCC-M	FCS-4-M-AI (Option -AI adds 4 analog inputs)
QCC-B	FCS-4-B-AI (Option -AI adds 4 analog inputs)

Should a QCC system in the field need replacing, the FCS-4 can make all the same connections as the QCC, plus it offers more features. If the QCC system has analog transmitters, the FCS-4 will need to be ordered with the -AI option.

Comparison Chart   FCS Features, Options & Remote Devices   QCC End of Sale Notification

SAFER AIR EVERYWHERE

Critical
Environment
Technologies™

Mirza Baig
Western Regional Sales Manager   mirza.baig@cetci.com   +1.604.572.7002

Ron Sweet
Eastern Regional Sales Manager   ron.sweet@cetci.com   +1.905.420.8334

Ronnie Dizon
International Sales Manager   ronnie.dizon@cetci.com   +1.604.616.3576

www.critical-environment.com

THE Resource

Reliable controls — Authorized Dealer

Established in 1994. We specialize in low-voltage cable for the building automation and temperature control markets, today we have become the **WCW** industry standard.

SMARTWIRE.COM IS COMPLETELY REIMAGINED, REDESIGNED & READY!

GREATER SECURITY
two-factor authentication

ENHANCED SEARCH FEATURES
dynamic results from the site search bar and an advanced search function

NEW FEATURES

PRODUCT FILTERS
quickly filter within a product category

QUICK LINKS
access detailed product info

ENTER EMAILED VERIFICATION CODE

VERIFICATION CODE

VERIFICATION CODE HERE...

VERIFY

REL — PRODUCTS (43 RESULTS)
043006REL
043005REL
043000REL
0421006REL
0043280REL

RELIABLE CONTROLS

FILTER BY:
Gauge | Conductor | Shielding | Jacket

0043230REL — 22 AWG 2 Conductor Shielded Plenum ...
0043280REL — 22 AWG 2 Conductor Shielded Plenum ...
043000REL — 22 AWG 1 Pair Shielded Plenum Low-Ca...
043005REL — 22 AWG 1 Pair Shielded Plenum Low-Ca...
043006REL — 22 AWG 1 Pair Shielded Plenum Low-Ca...
1602P-WHT — 16 AWG 2 Conductor Non-Shielded Ple...
1802P-WHT — 18 AWG 2 Conductor Non-Shielded Ple...
1802SP-WHT — 18 AWG 2 Conductor Shielded Plenum ...

ADD 1000' TO CART

0043280REL
22 AWG 2 Conductor Shielded Plenum ...
ADD 1000' TO CART

VIEW OUR NEW WEBSITE NOW!

WINDY CITY WIRE®
CABLE & TECHNOLOGY PRODUCTS, LLC

Jeannette Lindenman · National Account Manager
D 630.633.4537 · jlindenman@smartwire.com

Pat Bell · Sales Representative
D 630.633.4522 · pbell@smartwire.com

SMARTWIRE.COM · 1.800.379.1191 ·

THE Resource

Since 1986 Reliable Controls has developed a global network of highly skilled independent controls contractors: our Authorized Dealer network. *The Resource* newsletter supports our collective efforts to earn and sustain the most satisfied customers in the building automation industry. In each issue of the *Resource* you will find information on the latest Reliable Controls products and services and insight into industry news and trends.

We're here to support you to achieve your goals. Together, we are better by design.

reliablecontrols.com