Wi-Fi Module

VCM8002V5031

Frequently Asked Questions

General

Q: Why is my RC8000 not detecting the Wi-Fi module?

A: Check the firmware version of the Room Controller. It must be version 2.2.0 or higher to detect the Wi-Fi module.

Room Controllers with firmware version 2.0 or 2.1 may be upgraded to support the Wi-Fi module using the RC8000 Uploader Tool 3.x.

Older Room Controllers with firmware version 1.x.x do not support the Wi-Fi module.

Wi-Fi Networks

Q: What Wi-Fi networks can the Wi-Fi module connect to?

A: The Wi-Fi module can connect to networks with the following settings:

- Security:
  - WPA2-PSK (**Recommended**)
  - WPA-PSK (Not recommended)
  - WEP (Not recommended)
  - No security (Not recommended)
- Frequency:
  - 2.4GHz
  - 5GHz is not supported
- Protocol:
  - IEEE 802.11 b/g/n

Q: What common issues does someone using Wi-Fi run into?

A: The following is a list of typical issues that may occur:

- Network security needs to be considered, with strong and carefully-managed passwords.
- Configuration of devices can become complex – managing IP addresses, sub-nets, ports etc.
- Wireless network performance can degrade in environments with many networks and heavy traffic loads.

Q: Why are the web pages still inaccessible after connecting my device to the Wi-Fi module's access point?

A: Check the IP address of your device for the wireless connection to the access point. It should be in the range of 192.168.71.x.

If it is not:

- Ensure that DHCP is enabled for your Wi-Fi client. The Wi-Fi module runs a DHCP server, and will automatically assign a valid IP address to your device.
- Or, assign an IP in the range of 192.168.71.x to your Wi-Fi client. Do **not** use the same address as the Wi-Fi module.

NOTE: If the problem persists, refer to "Web Pages" on page 2.

Q: Why are the web pages still inaccessible after connecting my Wi-Fi module to the building Wi-Fi network?

A: Make sure the IP address you are accessing is correct. The Wi-Fi module has different IP addresses for its access point and Building Wi-Fi network connections.

Your device must be connected to the same Wi-Fi network, or have another access to the sub-net.

Q: My Wi-Fi module is indicating it has an Auto IP address. What does this mean?

A: If the Wi-Fi module is configured to receive an IP address via DHCP but does not receive one, it will assign one for itself automatically. Typically, this will happen if there is no DHCP server preset on the network, it is not responding, or has run out of IP addresses.

Check your DHCP server or assign your Wi-Fi module a static IP address. Typically, a device with an automatically assigned IP address indicates the system has not been correctly configured and will not work as expected.

Security

Q: Can someone hack into my Wi-Fi module?

A: Whilst it is impossible to guarantee against possible future vulnerabilities in Wi-Fi or embedded software components:

- The VCM8002 was developed within the guidelines of Schneider Electric's cyber security process.
- Possible threats were analyzed and designed for:
  - Wi-Fi access point is secured with WPA2.
  - Web page communication is secured using HTTPS with unique self-signed certificates.
  - Web page access is authenticated with a user name and password.
  - All features are disabled by default, and must be individually enabled by the user based on their requirements.
  - Firmware updates are signed via Schneider Electric's Public Key Infrastructure, ensuring only authentic software provided by Schneider Electric can be loaded onto the device.
- Penetration testing was performed to ensure the product is not vulnerable to common attacks known at the time of testing.

Q: Is my data freely available to anyone or is it protected?

A: The VCM8002 stores all user data in an encrypted file system.

Configuration data is only available via the configuration web pages, where users must authenticate with a user name and password, and sessions are protected via HTTPS.

All user data can be entirely removed by factory resetting the module.

Q: When planning my network, what should I consider to protect data or equipment (router, firewall, etc.)?

A: There are no requirements on the infrastructure, as the VCM8002 is secure, with all ports closed by default.

Some recommendations should be followed:

- Security should be enabled on the Wi-Fi network:
  - WPA2 is recommended.
  - Strong and unique passwords should be used and carefully managed.
  - MAC white listing can be used to ensure only the intended devices can access the network.
- Updates should be done regularly to ensure devices are protected with the latest security features and patches.
- If email notifications are used, SSL or TLS security should be used to authenticate the SMTP server and encrypt messaging.
- If BACnet/IP is to be used, network access should be carefully considered (see below for more details).

Q: Is there anything special I need to add into the project to protect the Building Management System (BMS)?

A: BACnet/IP may be enabled for integration with a Building Management System. If BACnet/IP is used, the following points should be considered:

- BACnet/IP opens a port on the VCM80002, which allows any device with access to the subnet (the Wi-Fi network) to discover and control the RC8000 using the BACnet/IP protocol.
- This means access to the network should be strictly managed, as any device on the network (even a smartphone with a BACnet app) can control the RC8000.

Q: I want to decommission my Wi-Fi module. What should I do to ensure all my data is erased?

A: Factory reset the Wi-Fi module via the "Wi-Fi Reinitialization" screen of the RC8000. This will erase all user data from the device and return it to the state in which it was originally shipped from the factory.

Web Pages

Q: I lost the user name and password for the configuration web pages. What can I do?

A: There are no security backdoors in the Wi-Fi module. You will need to Factory Reset the Wi-Fi module and re-commission it.

Q: My IP addresses are correct, but I cannot see anything on the web pages. What can I do?

A: Check the security configuration of your web browser. To access the configuration web pages, you must accept the self-signed certificate. Some browsers, particularly in corporate configurations, may not allow access to a web page with a self-signed certificate. In this case, contact your IT support department.

Q: Why does my web browser warn me the connection is insecure when I access the configuration web pages?

A: In fact, the connection to the web pages is secured with HTTPS, but the browser is warning you that it is unable to verify the identity of the Wi-Fi module. This occurs as the Wi-Fi module uses a self-signed certificate, which is not verified by a Certificate Authority (CA).

Q: When I access the configuration web pages, why do I only see some heading components, not the contents of the pages?

A: Make sure JavaScript is enabled in your web browser. It is required to view the configuration web pages.

There are various web sites that can tell you if JavaScript is enabled. Try searching “is JavaScript enabled in my browser”.

BACnet/IP

Q: Can my RC8000 access both BACnet/MSTP and BACnet/IP at the same time?

A: No. Only one BACnet protocol can be used at a time.

BACnet/IP will be used if:

- A Wi-Fi module is installed in the RC8000.
- BACnet/IP is enabled on the Wi-Fi module.

Otherwise BACnet/MSTP is available.

Email Notification

Q: Why does the SMTP server not become “Online”?

A1: Check your SMTP server settings. Reaching online requires the following settings to be correctly configured:

- Server Address
- Port
- Security

A2: Set the time on your RC8000. The RC8000 and Wi-Fi Module need a reasonably accurate time reference to validate security certificates for secured SMTP servers. If the time is not set, or significantly wrong, the certificate validation will fail as the certificate appears to have expired.

Q: Why is the SMTP server “Online”, but the test email does not work?

A: “Online” confirms the SMTP server address, port and security are correctly set, but to send email the account must be correctly configured. Check the following settings:

- User name.
- Password.
- Security settings of your SMTP server. For example, some webmail type service providers require account settings to be correctly configured for use as an SMTP server:
    - Gmail: Make sure “Allow less secure apps” is enabled.

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Quick Start guide

Email Notifications

This Quick Start Guide explains how to use the 8000-series Room Controller (RC) email notifications with common webmail providers. All information is current as of the date of publication. No guarantees can be given on the future configuration of third-party email providers.

Preconditions

This quick start guide assumes the VCM8002V5045 is:

- Installed into an 8000-series RC.
- Connected to a Wi-Fi network with an internet connection.

Configure the SMTP Server

Sending email requires an SMTP (Simple Mail Transfer Protocol) server to relay emails to the recipients.

1. Enable email notifications.
2. Enter the SMTP server address: smtp.myEmail.com.
3. Enter the port: 465.
4. Enter the user name of the webmail account. For example, “myUserName” if the account is myUserName@myEmail.com.
5. Enter the account password.
6. Select SSL/TLS security.
7. Set the sender address. This field is optional and can be left blank.
8. Set the destination addresses (recipients) who will receive the email notifications.

   NOTE: Each of these addresses can then be individually selected/deselected for each type of email notification.
9. Save your settings.

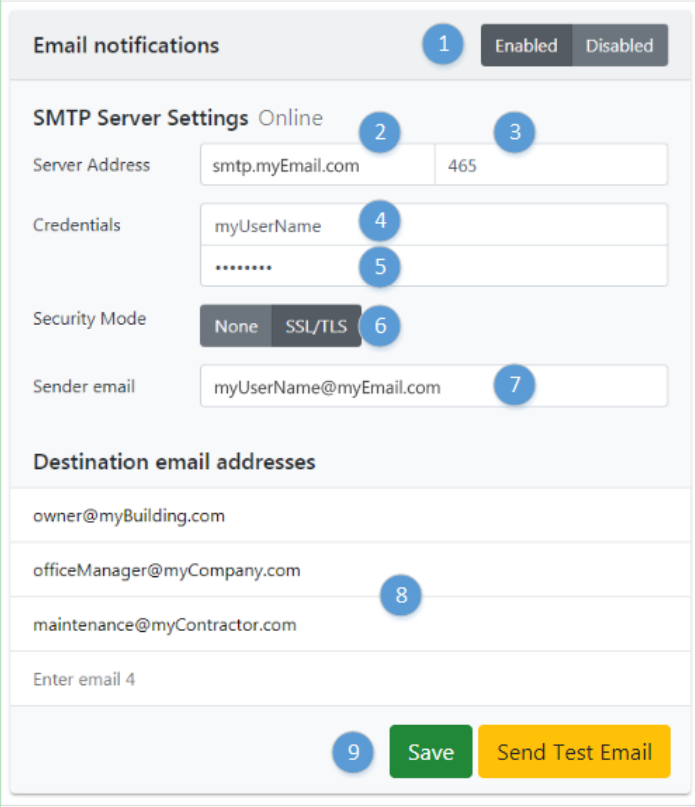

Figure 1: SMTP Server Configuration

Once saved:

- The status shown next to “SMTP Server Settings” should change to “Online”, indicating the device can connect to the SMTP server.

  If not, check your SMTP server settings.
- The “Send test email” button can be used to send a test email to each destination and confirm that the configuration is working correctly.

  If not, check SMTP server is online and user name and password are valid.

Webmail

NOTICE

It is not recommended to use free webmail accounts for email notifications in a professional installation. Webmail providers may change their functionality or security settings at any time, and this may result in service disruption or failure.

If you do use a webmail account for email notifications, **it is strongly recommended to create a dedicated account for each site** to contain security risks and limit the scope of devices affected by changes to the account settings or password.

Do not use your personal email account.

No guarantees are given for the future compatibility of third-party email providers; however, some options are listed below. To find guides for these email services, try searching for "using Gmail as an SMTP server" or similar.

- **Gmail** (as demonstrated in this guide) – Refer to "Use G Suite settings to set up a device or app to send email": https://support.google.com/a/answer/176600?hl=en
- **Yahoo Mail** – Refer to "POP access settings and instructions for Yahoo Mail": https://help.yahoo.com/kb/SLN4724.html
- **Outlook.com** – "POP, IMAP, and SMTP settings for Outlook.com": https://support.office.com/en-us/article/pop-imap-and-smtp-settings-for-outlook-com-d088b986-291d-42b8-9564-9c414e2aa040

The following table shows alternative webmail configurations:

Server Address	Port	Security Mode
smtp.gmail.com	465	SSL/TLS
smtp.gmail.com	587	SSL/TLS
smtp.mail.yahoo.com	465	SSL/TLS
smtp.mail.yahoo.com	587	SSL/TLS
smtp-mail.outlook.com	587	SSL/TLS

Create a Gmail Account

Create an account for the Room Controller(s) of a site by following the procedure from Gmail: https://support.google.com/mail/answer/56256?hl=en

NOTE: To use Gmail, you MUST enable "Less Secure Apps" on the account.

Refer to "Allow or disallow less secure apps to access accounts": https://support.google.com/a/answer/6260879

Configure Notifications

An email notification may be configured for the following events:

- Temperature Out of Range:
  - Indoor
  - Outdoor
  - Supply
  - Remote
- CO2 Out of Range
- Humidity Out of Range
- Alarms:
  - Service Alarm
  - Water Leak Alarm
  - Dirty Filter Alarm
  - Wireless Sensor Low Battery
  - Wireless Sensor Communication Failure
  - Clock Alarm
  - Low Temperature Alarm (from wireless sensors)
  - Frost Protection Alarm (8600 only)
  - Fan Lock Alarm (8600 only)
  - Low Fresh Air Alarm (8600 only)

Below is an example of how to configure an out of range notification for the indoor (room) temperature:

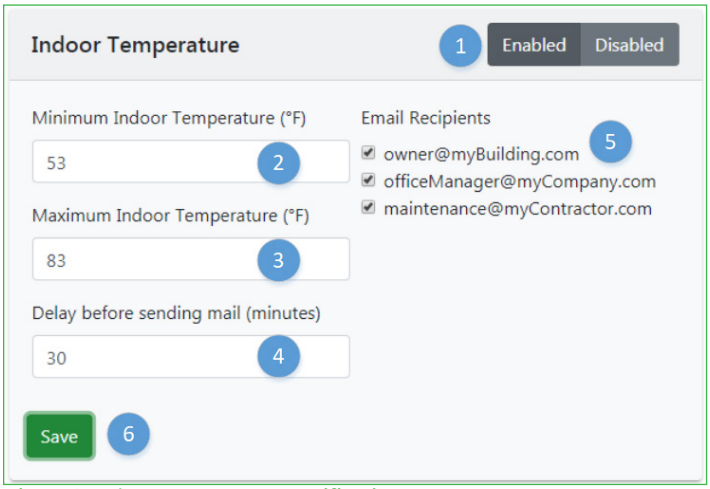

Figure 2: Indoor Temperature Notification

1. Enable the notification.
2. Specify the temperature below which an email notification will be sent.
3. Specify the temperature above which an email notification will be sent.
4. Specify the duration for which the temperature must stay continuously out of limits before an email notification is sent.
   - With the configuration above, the temperature must stay below 53°F or above 83°F for 30 minutes before an email is sent.

- The delay is useful to avoid notifications being sent for short term events such as when a door is left open.
- The delay may be set to zero minutes if immediate notifications are required.
- A notification will be sent immediately when the notification condition is cleared to inform the email recipients the issue is no longer present.

5. Select which of the (up to 4) previously configured email addresses will receive these email notifications.

Email Notification Contents

When an email notification event occurs, each selected recipient will receive an email similar to the example below:

Subject: RC8000 - [DeviceName]: Indoor Temperature out of range (85.0F)

[DeviceName] has detected the Indoor Temperature is out of range:

- Current Indoor Temperature = 85.0C
- Minimum Indoor Temperature Threshold = 53.0F
- Maximum Indoor Temperature Threshold = 83.0FC
- RC8000 Date = 05-Nov-2018
- RC8000 Time = 11:31:04

When an email notification event clears, each selected recipient will receive an email similar to the example below:

Subject: RC8000 - [DeviceName]: Indoor Temperature out of range - Cleared

[DeviceName] has detected the Indoor Temperature is no longer out of range:

- Current Indoor Temperature = 82.5C
- Minimum Indoor Temperature Threshold = 53.0F
- Maximum Indoor Temperature Threshold = 83.0FC
- RC8000 Date = 05-Nov-2018
- RC8000 Time = 11:54:38