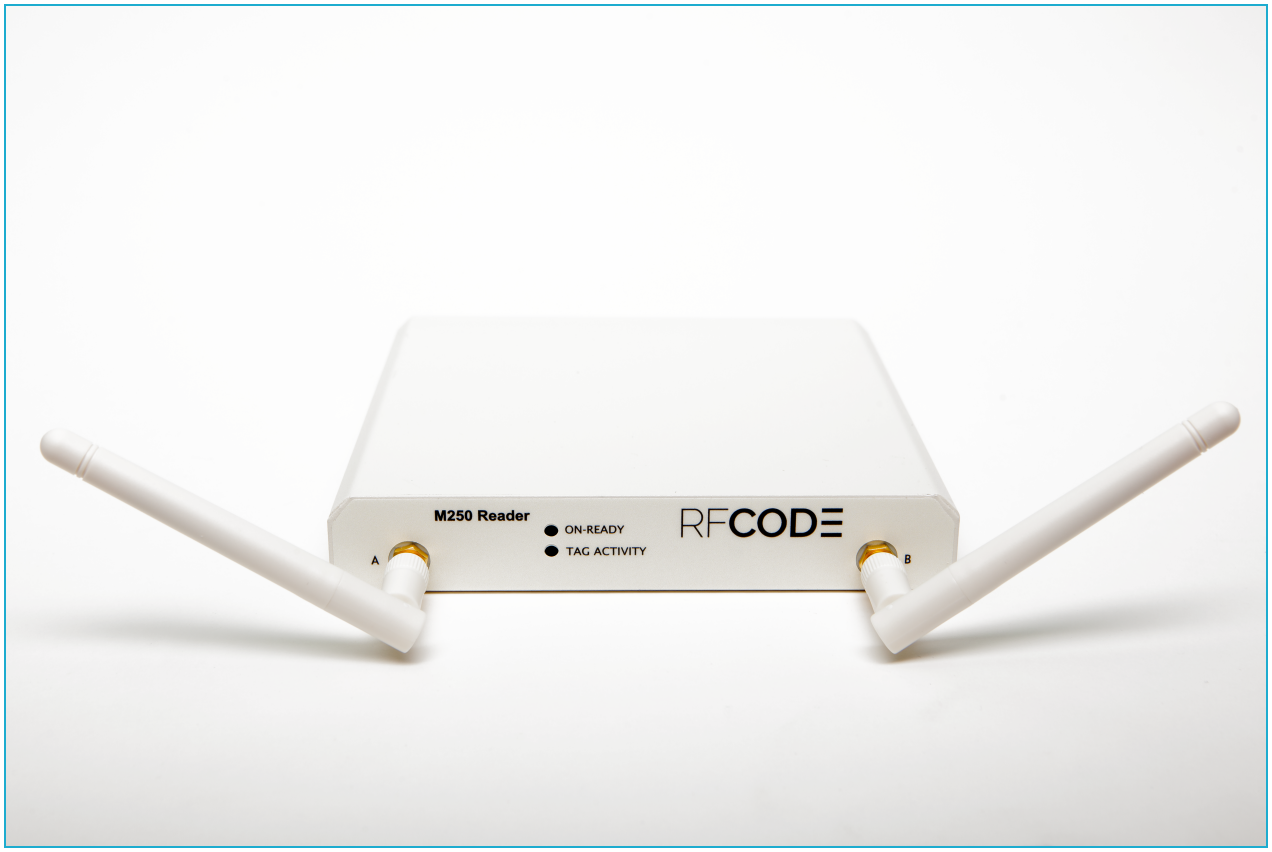
M250 Reader

User Manual



M250 Reader User Manual

M250 Reader **1**
- Introduction 1
- Features 1
- Package Contents 2
- Hardware 2
  - LED Indicators 2
  - Connectors 4
  - Antennas 4
- Environmental Conditions 4
- Upgrading Reader Firmware 6
- Tag Orientation 6
- Antenna Orientation 6
- Getting Started 9
  - Configuring the Reader for DHCP 9
  - Reader Web Console 12
  - Add a Tag Group Code 13
  - Summary 14
  - Tools 15
  - Ping a Server 15
  - Reboot the Reader 15
  - Configuration 16
  - Reader Configuration 17
  - Users 18
  - Up Connect 19
  - Time 20
  - Serial Ports 21
- Resetting the Reader 22
- Mounting the Reader 23

Appendix ..... **I**
- Warranty and Service I
  - Limited Standard Warranty Terms I
  - Standard Warranty Limitations I
  - Obtaining Service & Support I
  - RF Code Customer Support II
- Using the M240 or M250 Reader with Windows 7 III
- RF Code Support and Professional Services XII

Trademarks

RF Code™ and the RF Code logo are trademarks of RF Code, Inc. Microsoft®, Windows, Windows Server, SQL Server, and Internet Explorer are trademarks of the Microsoft Corporation in the United States and other countries. PostgreSQL™ is a registered trademark of the PostgreSQL Global Development Group. Intel Core Duo Processor ™ is a trademark of Intel Corporation in the US and/or other countries. Firefox® is a registered trademark of the Mozilla Foundation. Chrome™ is a trademark of Google, Inc. Safari® is a trademark of Apple Inc., registered in the US and other countries. IBM® and WebSphere® are trademarks of IBM Corporation, registered in the US and/or other countries. Oracle™, Java™, and Java Management Extensions™ are registered trademarks of Oracle and/or its affiliates. BACnet® is a registered trademark of ASHRAE. Modbus™ is a trademark of the Modbus Organization, Inc. Eclipse™ and BIRT™ are trademarks of the Eclipse Foundation, Inc. NetBotz™ is a Registered Trademark of American Power Conversion Corporation. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by RF Code is under license. All other product names are copyright and registered trademarks or trade names of their respective owners.

Bluetooth QD ID: B012541

Copyright Statement

M250 Reader User Manual REV 05

Copyright © 2008-2017 RF Code, Inc. All Rights Reserved.

This document, the hardware, and the firmware described therein are furnished under license and may only be used or copied in accordance with the terms of such license. The information in these pages is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by RF Code, Inc. RF Code assumes no responsibility or liability for any errors or inaccuracies that may appear in these pages.

Information in this document is provided solely to enable system and software users to use RF Code products. RF Code reserves the right to make changes without further notice to any products herein. RF Code makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does RF Code assume any liability arising out of the application or use of any product, and specifically disclaims any and all liability, including without limitation consequential or incidental damages.

The user of this system is cautioned that any changes or modifications to this system, not expressly approved by RF Code, Inc., could void the warranty. Every effort has been made to supply complete and accurate information. However, RF Code assumes no responsibility for its use, or for any infringements of patents or other rights of third parties, which would result.

RF Code, Inc.
9229 Waterford Centre Blvd.
Suite 500
Austin, TX 78758
www.rfcode.com

Regulatory Compliance

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

The system is designed to operate with RF Code RFID Tags – whose operating frequency is 433.92 MHz which have been certified or are in the certification process. These devices comply with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) these devices may not cause harmful interference, and

(2) these devices must accept any interference received, including interference that may cause undesired operation.

a. FCC ID: P6F2005433 for beacon intervals greater than, or equal to 10 seconds.

CE Compliance

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures. This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A, the essential protection requirement of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

WEEE Compliance

Do Not Dispose Product with Municipal Waste. Special Collection/Disposal Required.

Battery Statement

RF Code warrants all to be free from defects in materials and workmanship for a period of one year. Based on the ratings and specifications from the battery manufacturers, RF Code develops usage models to calculate the life of the . Like all models there are assumptions and approximations involved. The values are to be taken as engineering estimates – not guaranteed performance.

RFCODE

M250 Reader

M250 Reader

Introduction

The 433 MHz M250 reader interprets and reports the radio frequency messages emitted by RF Code tags. Tag transmissions can be processed in real-time to quickly locate and identify tagged assets or personnel in defined areas. The M250 reader is compatible with wired and wireless networks for rapid integration into an organization's IT infrastructure. With a modular design and low price, the M250 Reader provides an economical solution to a wide variety of asset tracking problems. RF Code's patented communication protocols allow for very high tag densities. Large populations of tags can be monitored using a single reader. The M250 reader's maximum sensitivity (maximum range) depends upon the installation, location and antenna configuration. This manual provides instructions for the M250 Reader setup and operation.

Features

Some of the features included in the M250 Reader are:

- Instantaneous tag reporting
- Optional Wi-Fi interface
- High throughput performance supports large tag populations
- Patented anti-collision technology to manage high tag densities
- Dual Channel Receiver provides tag signal reception diversity
- Support for up to 32 tag group codes
- Support for multiple connections over the same port

RFCODE

M250 Reader

Package Contents

The M250 Reader System package contents are:

- M250 Reader
- Two ¼-wave helical antennas
- 110/220 VAC to 12VDC Power Supply and Cord

Hardware

The Reader is housed in a 5.79 inch by 0.82 inch by 5.75 inch (14.7 cm by 2.1 cm by 14.5 cm) metal chassis and contains the internal components of an RFID Reader combined with connections to allow for both Ethernet and Wi-Fi (optional) connectivity.

LED Indicators

There are two LEDs mounted on the front of the M250 Reader.

- **On-Ready LED:** This LED indicates the Reader has power applied through an external power adapter.
- **Tag Activity LED:** This LED is used for two purposes: (1) to show the status of the Reader while in standby mode and (2) to show Tag detections while in operation.
    1. **Operating:** The Tag Activity LED flashes intermittently, indicating the Reader has read one or more Tags each time it flashes. Because the Reader can decode Tags faster than the light can be turned on and off, a single flash may indicate more than one Tag being decoded.
    2. **Standby Mode:** The Tag Activity LED turns on and off at a distinctive rate that indicates the Reader is in standby mode.

There are four LEDs mounted on the back of the M250 Reader.

- **Link/Activity:** This LED indicates that the M250 Reader is connected to the network. The Link light stays solid when there is no network activity and flashes when activity is present.
- **100/10:** When on, this LED indicates a 100MBit Ethernet connection. When off, this LED indicates a 10MBit Ethernet connection.
- **In Use:** This LED indicates there is a connection to the M250 Reader and tag data is being read from the reader.
- **Status:** This LED indicates that the M250 Reader is connected and receiving power.

Connectors

Several connectors are housed on the back of the M250 Reader.

- **Power - DC barrel jack:** allows for connection to an AC power brick that outputs 12VDC.
- **Power - DC terminal block:** allows for direct connection to DC power sources. Power requirements are 12 to 24 VDC.

Note: Direct AC power connection is not supported for this device.

- **Wi-Fi (not available on the Standard version):** A Wi-Fi antenna connection port allows for connection of an external Wi-Fi antenna that is available with the Wi-Fi Enabled M250 Reader. The M250 Reader supports 802.11b and 802.11g protocols.
- **Ethernet:** RJ-45 Ethernet jack.
- **USB-A:** Future expansion.
- **USB-B:** A plug that allows for serial connectivity for configuration and tag event output.

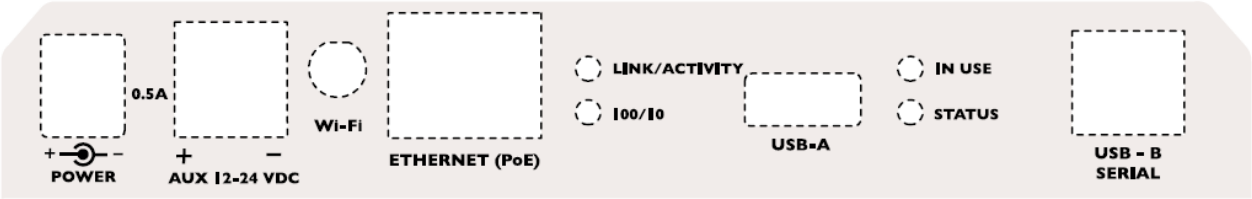


Figure 1: Reader Data Connectors

Antennas

Each M250 Reader comes with two ¼-wave helical antennas. These antennas provide a tag read-range of approximately 100 meters (open air when no background RF interference is present). The reader's maximum sensitivity (maximum range) depends upon the operating environment.

Environmental Conditions

The M250 Reader is approved for use within the temperature ranges set forth below.

- **Operation:** -4 to +158 degrees Fahrenheit (-20 to +70 degrees Celsius)
- **Storage:** -40 to +176 degrees Fahrenheit (-40 to +80 degrees Celsius)

Upgrading Reader Firmware

The M250 Reader has the ability to be updated as new firmware is released. To upgrade the firmware, launch the Reader Configuration Utility, found on the RF Code Reader Utilities downloadable image. For information regarding this process, please refer to the Reader Configuration Utility User Manual available from the RF Code support website. Firmware can also be upgraded by downloading the latest version from the support site:
http://www.rfcode.com/support_downloads

Important: It is vital these updates be obtained directly from RF Code or its authorized partners, since these files define the operation of the Reader. Corrupted files will render the Reader inoperable.

Tag Orientation

Wherever possible, RF Code Tags should be placed in the same orientation (plane) in order to optimize the Reader's ability to receive transmissions from the tags. The tags should not be placed closer than 1/2 inch in proximity to one another.

Other tag considerations are:

- Tag transmissions, signal propagation, and read-range are diminished when tags are mounted very close to the ground.
- Read-range will vary when tags are mounted to metal objects; the signals will ***not*** penetrate solid metal.
- Care should be taken when mounting tags near metal racks, rails, or conveyor belts.
- Tag performance is diminished near water; signals are not propagated through water.

Antenna Orientation

The M250 Reader has two receiver channels (Channel A and Channel B) that can operate independently or jointly to provide diversity for signal reception from active RFID tags.

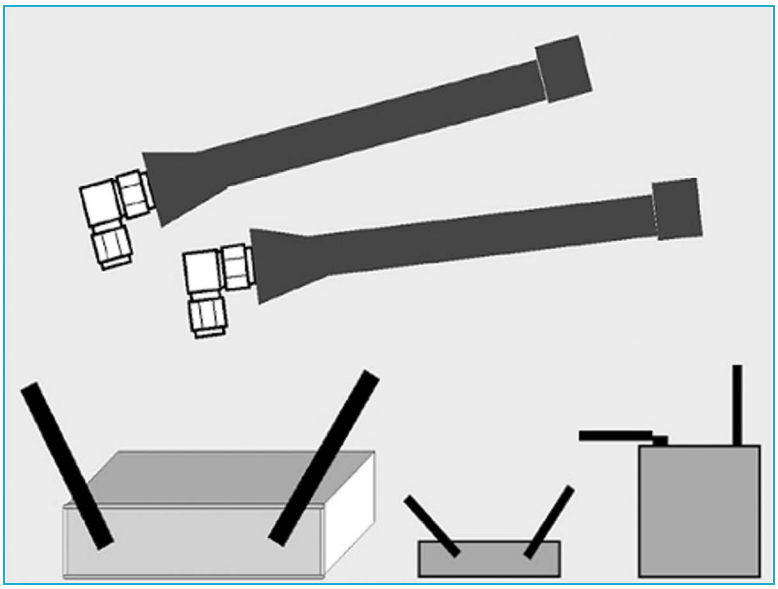


Figure 2: Antenna Positioning

Each antenna post supplies an RF signal to the two parallel radio receivers in the M250 Reader. Antenna input impedance is 50 ohms nominal.

Both the type of antennas used and the Reader range setting determine the effective read range. The normal Reader-range features are defined using ¼-wave helical antennas. These antennas are appropriate for most Reader applications. Optional antennas that offer diverse receiving properties or extend the range of the Reader are available for the M250 Reader. Contact your RF Code reseller for more information.

The Reader can operate with one antenna on either antenna post, but the benefit of receiver diversity is only obtained when both antennas are attached and pointed in different directions.

To achieve the best receiver diversity:

- **Antenna Angle from Reader:** Point the antennas at different angles from the Reader.
- **Antenna Angle from Each Other:** Antennas should be at 90-degree angles relative to each other.
- **Height:** As a rule, the higher a Reader is positioned above the ground or floor, the better the Reader's detection range.

Important: Do not allow antennas to overlap. Keep the antennas separated. Allowing the antennas to overlap reduces the effectiveness of each antenna.

To minimize RF interference:

- **Separation:** Maintain a minimum of four to six feet of separation between the Reader antennas and potential RF radiators such as computers, monitors, printers, and electronic office equipment. RF emissions from equipment local to the environment where the Reader is deployed can limit the Reader's effective read range.

- **Height:** Do not operate the Reader on or close to the floor or ground. Grounded and reflective metallic structures around the Reader and/or Tags affect the system's performance. For best results, the Reader should be mounted as high above the ground as reasonably possible.

TIP: Low-loss SMA coaxial extension cables may be used to extend the antennas from the Reader (available separately).

Getting Started

Readers should be configured (if necessary) prior to being installed in their permanent locations. Readers must be configured prior to use if the IP address needs to be assigned or if the "Up Connect" feature (explained below in this document) is to be used. This is done through the Reader Configuration Utility which is available in the downloadable image provided by RF Code. This software is also available for download from the RF Code web page, support.rfcode.com. Readers may not need to be pre-configured if the intent is to use DHCP for IP address assignment.

Configuring the Reader for DHCP

By default the reader is set to DHCP and will be automatically assigned a DHCP address by a DHCP server if one is available. If a DHCP server is present, the reader will attempt to request a hostname for DNS resolution as well. Most, but not all DHCP servers are implemented in a way that will allow DNS resolution for DHCP clients that request a specific name. The M250 will request a hostname similar to *rfcodexxxxxx.domainname.com* where xxxxxx are the last six digits of the MAC address of the wired Ethernet interface on the reader and domainname is your domain that the DHCP server will provide. A label on the bottom of the reader lists the default hostname for each reader.

To Configure the Reader for DHCP:

1. Attach a power source to the M250 Reader (AC power brick, DC power, or Power Over Ethernet cable).
2. Attach an Ethernet cable to the Ethernet port of the M250 Reader and to an available network port on the switch.

   Note: For initial configuration, the M250 Reader must be attached to a network port that is on the same subnet as the PC that you are using to connect to the M250 Reader with.
3. Open a web browser window and type ***http://rfcodexxxxxx.domainname.com*** where *rfcodexxxxxx* is the default hostname listed on the bottom of the reader and *domainname* is the domain handed out by the DHCP server.
4. If you are able to browse to the M250 Reader, then DHCP worked properly. You may configure features like Up Connect, configure security, or use the web-based diagnostics. If the reader was not found, then your DHCP server probably does not support hostname resolution and you will need to use a static IP address to connect the reader to your network or alternately configure "Up Connect" to connect your reader to your RFID application. Use the instructions below (Configuring the Reader for Static IP Address or DHCP with Up Connect) to configure your M250 Reader.

Configure the Reader for Static IP Address or DHCP with Up Connect

1. Install the RCU on the PC being used to configure the reader.

   Note: If you run into any issues installing the driver, refer to the following RF Code KB Article: support.rfcode.com/customer/portal/articles/721801

2. Connect the reader to the USB port. Depending on which device you have, this may require using a USB-A–to–USB-B cable like those included in a RF Code pilot pack.

   Note: USB cables are not provided with purchases other than pilot packs; they can be purchased at an electronics store or big box general retailer.

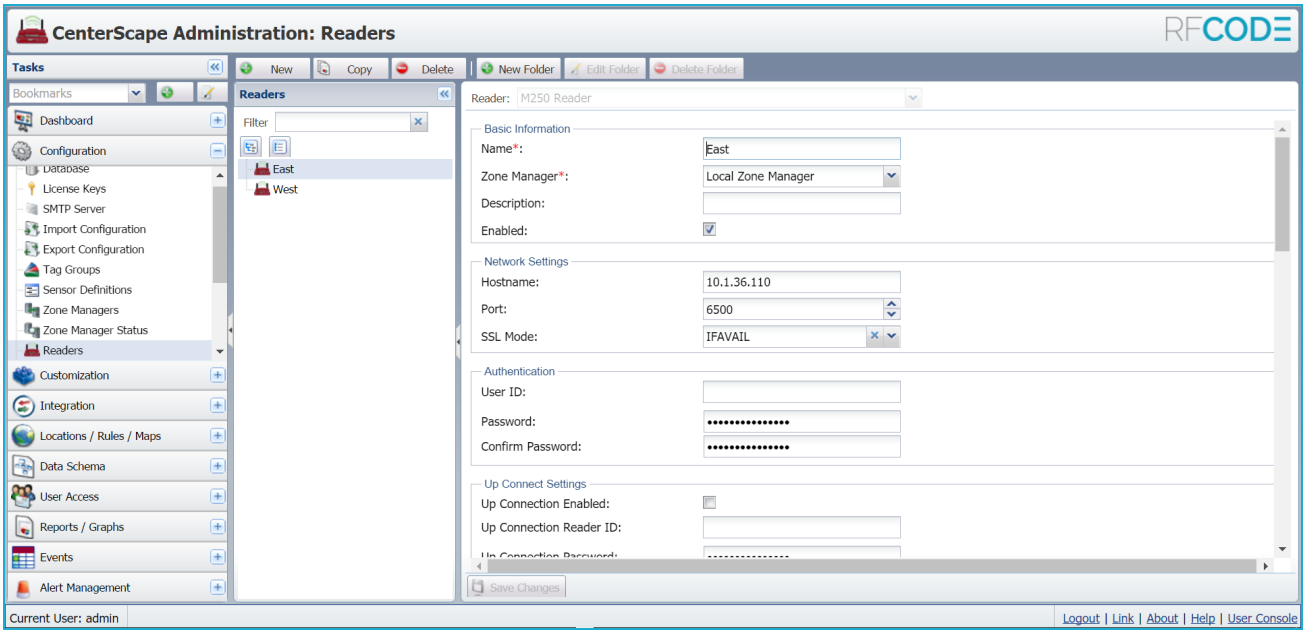
3. When prompted, install the RFCUSB.inf driver from the downloaded image's installation directory.
4. Run the configuration utility.
   a. Select **Local** as the connection method. The M250 Reader should be seen on one of the COM ports listed.
   b. Select the COM port and click **Next**.
   c. If desired, change any setting in the configuration tabs including the IP address and Up Connect settings.
   d. Click **Save Changes** so that the configuration is saved to the reader.
5. After a static IP is entered, you will be able to connect to the M250 Reader with a web browser. If you wish to use DHCP, the Reader Configuration Utility will also report the IP address that has been assigned to the reader. However, this address may change. If you choose to configure the reader using a static IP, use the Up Connect feature to connect the M250 Reader to an RF Code software system such as CenterScape or Asset Manager.

   Note: If the M250 Reader is provided with wireless networking, the Ethernet interface should be disabled after the wireless interface is connected. While both interfaces may be enabled at the same time, only one will be routable.

6. Attach the provided ¼-wave helical antennas, ensuring proper steps have been taken to maximize desired read-range through antenna orientation (Please refer to the Antenna Orientation section of this document).
7. Mount the M250 Reader using the process described in the Mounting section of this document.
8. Configure the M250 Reader within RF Code's CenterScape or Asset Manager using the web UI.
   a. open the web UI and log in.
   b. Navigate to **Admin Console > Configuration > Readers**.
   c. Select a Reader from the list to configure that reader, or click **New** to add a reader.
   d. Complete all required and any additional desired fields. In the Up Connect Settings section, set the fields to:
      - **Up Connect Enabled:** Check this box.
      - **Up Connection Reader ID:** Complete this field with the information you used when configuring Up Connect in the RCU or in the web portal (GUI).

- **Up Connection Password:** Complete this field with the information you used when configuring Up Connect in the RCU or in the web portal (GUI).
- **Confirm Password:** Complete this field with the information you used when configuring Up Connect in the RCU or in the web portal (GUI).

e. Click **Save Changes**.



Please refer to the Reader Configuration Utility User Manual for further instruction on using the Reader Configuration Utility. Once you have configured the M250 Reader with the Reader Configuration Utility, you may access the M250 Reader directly by accessing the Reader Web Console to perform further diagnostic and configuration tasks.

Note: To obtain Tag data or customize the way the M250 Reader sends Tag data to your software application please refer to the Reader API document available on the RF Code website: http://support.rfcode.com.

Reader Web Console

Once an IP address has been assigned to the M250 Reader using the Reader Configuration Utility software, the Reader Web Console can be accessed to give you a direct connection to the Reader. To access the Reader Web Console, open a web browser and type the IP address of the reader in the URL address bar. The main console screen will appear. If you configured a username and a password with the Reader Configuration Utility, you may be prompted for this information before you will be able to access the Reader Web Console.

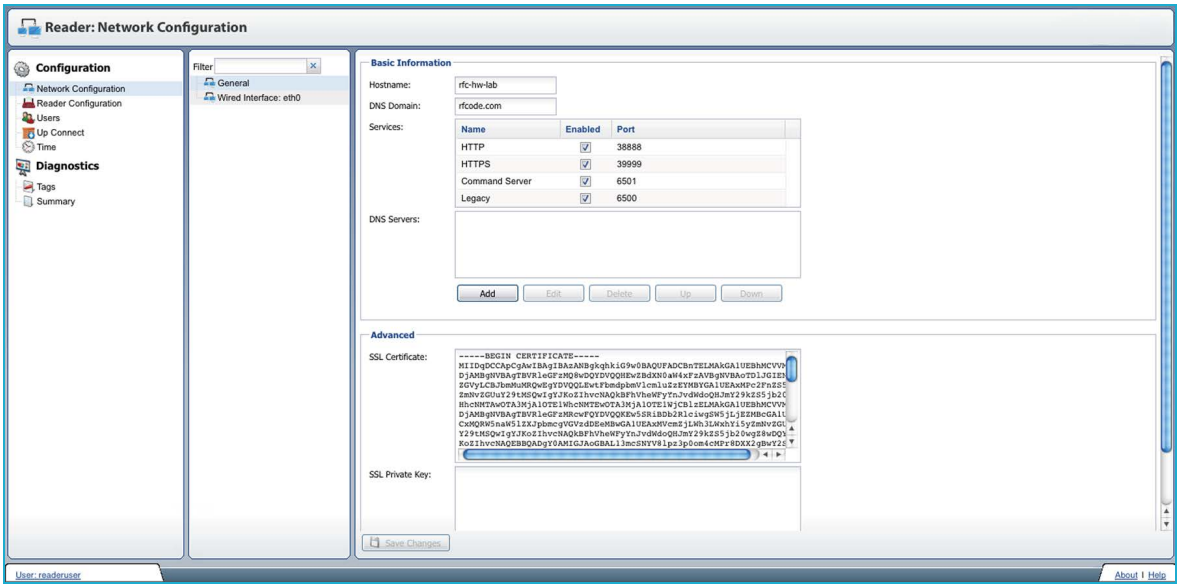


Figure 3: Reader Web Console

There are two main tasks available to you in the Reader Web Console: *Diagnostics* and *Configuration*.

Task or Sub-Task	Purpose
Configuration	Use this task menu to set up the reader or modify settings.
Network Configuration	View and modify the different types of network configurations you have set up for the Reader.
Reader Configuration	View and adjust the Noise Floor level for Channel A and Channel B of the Reader.
Users	Add user authentication to the M250 Reader.
Up Connect	Allows for reader communication with Zone Managers to be more "firewall friendly". When this option is selected, the M250 Reader is configured to initiate the contact with the Zone Manager rather than requiring that access be granted to allow the Zone Manager to connect to readers behind a firewall.
Time	Allows the time settings to be configured for a Reader. By default this Reader function is already set to local time with access configured for three NTP (Network Time Protocol) Servers.
Diagnostics	Use this task menu to assess the conditions of the reader.
Tags	Verification tool to ensure that the reader is online and detecting tags.
Summary	Reports version, model, IP address, and other information that has been configured for the Reader.
Reboot	Button available from Summary sub-task allows you to reboot reader.

Add a Tag Group Code

The Tags sub-task can be accessed by navigating to **Diagnostics > Tags**. If the Reader has not been configured to accept data from tags, add the appropriate tag group codes.

To add a group code, click the **Add** button and a window will appear. Enter a group code and treatment code (see below) to test the Reader with. Click the **OK** button to add the Tag Group. If your reader is online and reading tags properly you should begin to see tag data in the main task screen.

All RF Code tags are defined as being members of a specific group, and have a unique tag ID number within that group. The group code is a string of six letters and is assigned by RF Code. Each group code is unique for a given tag type. When an RF Code reader is configured, it can be supplied with up to 32 group codes. Each group code has a corresponding treatment code. The treatment code instructs the application software how to interpret the payload data for each tag event within that group code. RF Code tags have the ability to transmit various types of data within their radio frequency beacons such as flags for various sensors including for motion, panic, tamper, infrared location, humidity, pressure, temperature, and low battery amongst others. The group code and unique, numeric tag ID are printed on a label affixed to each tag.

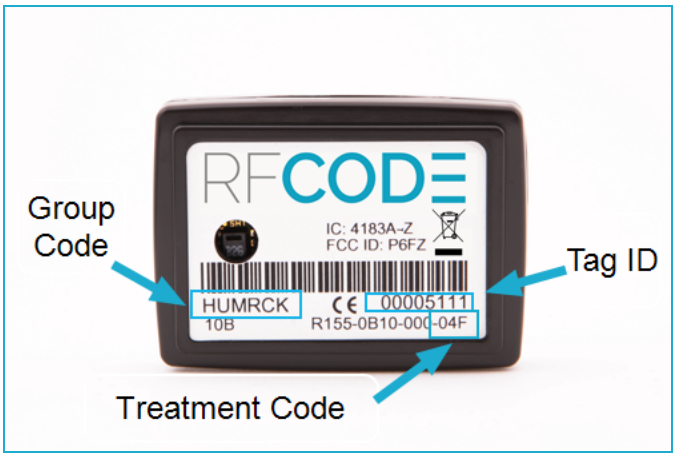


Figure 4: Group ID, Tag ID, and Treatment Code Location

Note: A support page with the most updated list of group/treatment codes is available to help you determine your specific Group Code and Treatment Code: support.rfcode.com/customer/portal/articles/843080

Tag ID	Payload	Payload (Octal)	SSI (Channel A)	SSI (Channel B)
LOCATE00014015	496	760		-55
LOCATE00018442	496	760	-58	-57
LOCATE00020597	496	760	-53	-59
LOCATE00032733	496	760	-40	
LOCATE00032821	496	760	-52	-51
LOCATE00034044	496	760	-58	-57
LOCATE00034045	496	760		-60
LOCATE00034052	496	760	-56	-57
LOCATE00034053	496	760	-56	-60
LOCATE00034060	-496	-760	-56	-58
LOCATE00034089	496	760	-56	
LOCATE00034097	496	760	-56	-53
LOCATE00034098	496	760	-53	-47
LOCATE00034123	-496	-760		-58
LOCATE00034129	496	760	-52	-56
LOCATE00034138	496	760	-50	-57
LOCATE00039192				-55
LOCATE00039198	496	760		-51
LOCATE00042702	504	770		-51

Figure 5: Example Tag Data in Tags Sub-Task

Summary

The Summary sub-task can be accessed by navigating to **Diagnostics > Summary**. This sub-task is available to provide a report of version, model, IP address, etc. information that has been configured for the Reader.

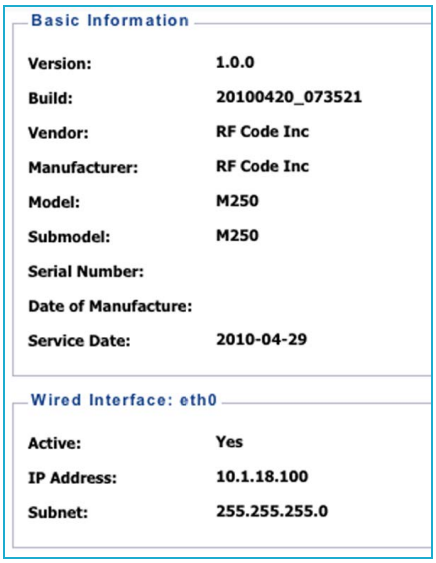


Figure 6: Summary Sub-Task

Tools

The Tools sub-task can be accessed by navigating to **Diagnostics > Tools**. This sub-task is available to test reader connection with a server or to reboot the reader.

Ping a Server

To ping a server, type in the Hostname of the server and choose a Protocol from the drop down list (Both, IPV4 or IPV6), then click the **Ping** button.

Reboot the Reader

To reboot the Reader, click the **Reboot** button. You will be prompted with a dialog box to confirm if you want to reboot the reader. If you would like to reboot the reader, select the **Reboot** button. If you want to opt out, select the **Don't Reboot** button.

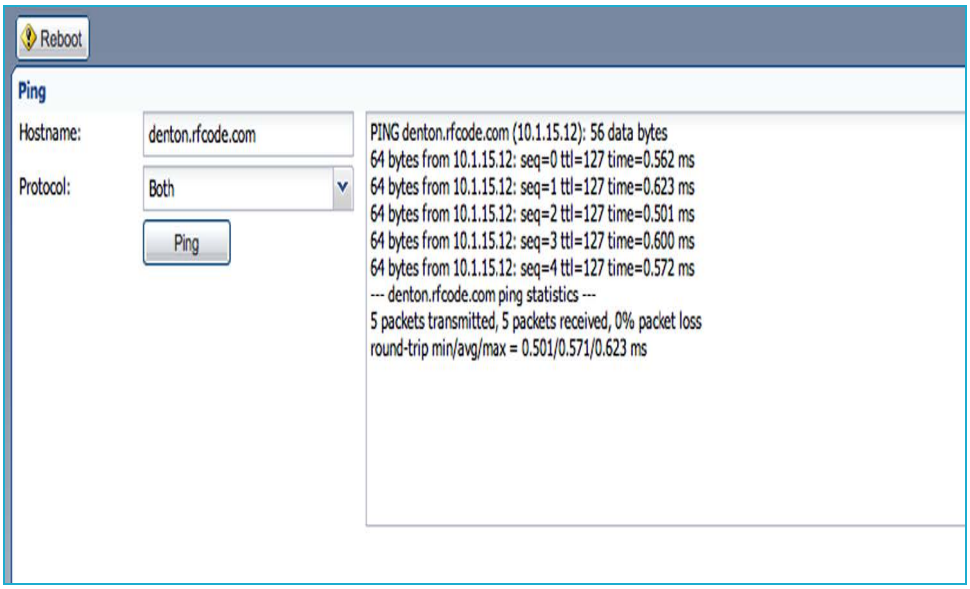


Figure 7: Tools Sub-Task

Configuration

Within the Configuration task, there are five sub-tasks that will allow you to modify reader settings that were initially configured using the Reader Configuration Utility: Network Configuration, Reader Configuration, Users, Up Connect, and Time.

Network Configurations

The Network Configuration sub-task can be accessed by navigating to **Configuration > Network Configuration**. Within this sub-task you may view and modify the different types of network configurations you have set up for the Reader. Please refer to the Reader Configuration Utility Manual for more information regarding specific network configuration tasks.

SSL Certificate Configuration

By default, when HTTPS is enabled, a self-signed 10-year SSL certificate is generated so that communication on HTTPS port is encrypted. To communicate with both encryption and authentication, an SSL certificate must be digitally signed by a well-known certificate authority (CA). Please contact your Network or System Administrator for obtaining a signed SSL Certificate.

To configure the M250 Reader with the SSL Certificate, perform the following steps:

1. Obtain a private key using a preferred tool or a certificate authority may provide this service. Please archive the key and file in a safe place for security purposes. This key will be needed for SSL certificate configuration later.
2. A Certificate Signing Request (CSR) is generated based on the private key.
3. Submit the CSR to a certificate authority.
4. The certificate authority issues an SSL certificate based on the CSR and in a PEM format.
5. Once a signed SSL certificate is obtained from CA, import it to the M250 Reader:
6. Copy the SSL certificate portion from “BEGIN CERTIFICATE” to “END CERTIFICATE” from the PEM and paste it into the “SSL Certificate” field.
7. Copy the private key and paste it to “SSL Private Key” field.
8. Click the **Save Changes** button for the signed SSL certificate to take effect.

   Note: If a signed SSL certificate configuration is not successful (for example if the SSL Certificate and the SSL Private Key do not match) the M250 Reader’s self-signed certificate will take place.

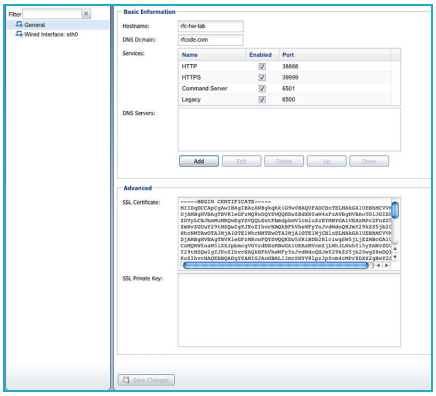


Figure 8: Network Configuration Sub-Task

Note: If you modify any settings, click the **Save Changes** button.

Reader Configuration

The Reader Configuration sub-task can be accessed by navigating to **Configuration > Reader Configuration**.

Within this sub-task you may view and adjust the Noise Floor level for Channel A and Channel B of the Reader.

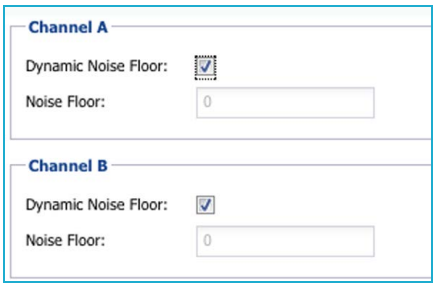


Figure 9: Reader Configuration Sub-Task

- **Channel A Dynamic Noise Floor:** When this box is checked, the noise floor for this channel is adjusted automatically.
- **Channel A Noise Floor:** Enter a value to set the noise floor for channel A antenna.
- **Channel B Dynamic Noise Floor:** When this box is checked, the noise floor for this channel is adjusted automatically.
- **Channel B Noise Floor:** Enter a value to set the noise floor for channel B antenna.

Click the **Save Changes** button when you have completed your adjustments to the Reader settings.

Users

The Users sub-task can be accessed by navigating to **Configuration > Users**. This sub-task can be used to add user authentication to the M250 Reader.

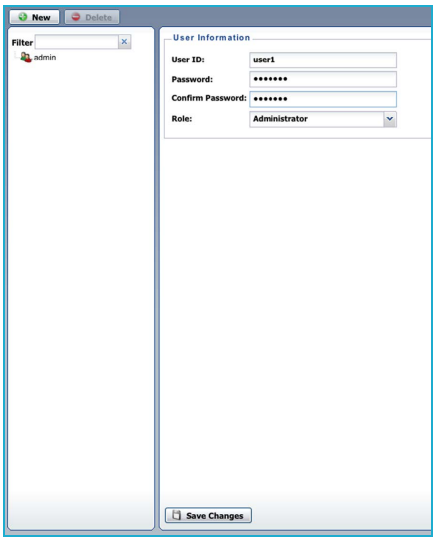


Figure 10: Users Sub-Task

Add a User

1. Click the **New** button.
2. Enter a username, password, confirm the password and select a user role.
   - **Administrator:** has complete access and control of the Configuration and Diagnostic task
   - **Configuration View:** has view only access to the Configuration task and can utilize the Diagnostics tasks
   - **Event View:** only has access to the Diagnostics tasks of the Reader
3. Click the **Save Changes** button.

   Note: The first user that must be created is the Admin user, so the user role will default to Administrator.

   Note: After a user is created, neither the User ID field nor the Role field can be changed. A new password can be assigned, but to change either the ID or the Role of a user, the user must be deleted and then created again as a new user.

Delete a User

To delete a user, select the user from the list that you wish to delete and click the **Delete** button.

Up Connect

The Up-Connect sub-task can be accessed by navigating to **Configuration > Up Connect**. This sub-task allows for reader communication with Zone Managers to be more "firewall friendly". When this option is selected, the M250 Reader is configured to initiate the contact with the Zone Manager rather than requiring that access be granted to allow the Zone Manager to connect to readers behind a firewall.

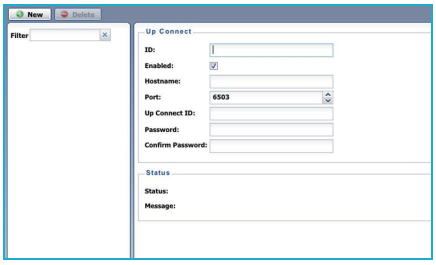


Figure 11: Up Connect Sub-Task

Configuring Up Connect

To add an Up Connect Configuration, click the **New** button. Populate the following fields and click the **Save Changes** button.

- **ID:** Enter a name for the Up Connect configuration.
- **Enabled:** Check this box to enable the reader to up connect to a Zone Manager.
- **Hostname:** Input the IP address of the Zone Manager that the reader should connect to.
- **Port:** Input the port number over which the reader will communicate with the Zone Manager.
- **Up Connect ID/Password:** Input and verify a reader ID and password that will be utilized in the Up Connect configuration of Zone Manager.

Note: if you want to enable and use Up Connect, you must also configure the Up Connect settings in the M250 or Zone Manager web console as well.

- **Status:** Once the Up Connect link has been configured, this field will populate with the connections status for the Up Connect link. User configuration is not require for this field.
- **Message:** This field will populate with a message regarding the status of the Up Connect link. User configuration is not required for this field.

Deleting an Up-Connect Configuration

To delete an Up Connect Configuration, select the configuration from the list that you wish to delete and click the **Delete** button.

Time

The Time sub-task can be accessed by navigating to **Configuration > Time.** This sub-task allows the time settings to be configured for a Reader. By default this Reader function is already set to local time with access configured for three NTP (Network Time Protocol) Servers. Users may need to adjust these settings for their own network security policies. There are three primary ways that users may desire to configure their time settings:

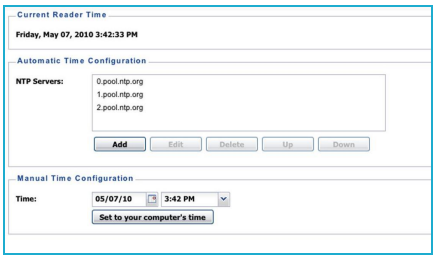


Figure 12: Time Sub-Task

- **Default:** In this instance, the time would be automatically set using the NTP Server and then would continue to automatically keep time by periodically checking with the three default NTP Servers provided from the factory.
- **Automatic Time Configuration:** In this instance, the time can be manually set by choosing a date and time from the pull-down menu and clicking the Set to your computer's time button. Then the NTP Server that are configured by default can be edited, deleted, or moved by clicking on the corresponding button. Finally, click upon the **Save Changes** button to save the configuration.
- **Manual Time Configuration:** In this instance, the time can be configured manually by selecting a date and time from the pull-down menu and clicking the **Set to your computer's time** button. Then delete the default NTP servers by selecting each one in turn and clicking the Delete button. Finally, click the **Save Changes** button to save the configuration.

Serial Ports

The Serial Ports sub-task allows for the configuration of the Reader for USB Serial Device integration (such as a Global Positioning System device).

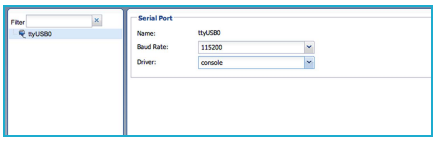


Figure 13: Serial Ports Sub-Task

To access this sub-task a USB serial device must be plugged into the Reader. Once you have plugged the device into the Reader, access the Serial Ports sub-task by navigating to **Configuration > Serial Ports**. The serial device will appear in the list on the left and you will notice that the Serial Port configuration menu (on the right) is populated by default based on settings obtained from the serial device. Some configuration may be necessary for your serial device. The configuration (if any) that is needed will be determined by consulting the device literature (user manual, etc.) that came with your serial device.

Resetting the Reader

To reset the Reader settings back to the factory defaults, follow these steps:

1. Verify that power is applied to the Reader.
2. Flip the Reader upside-down.
3. Using a pointed object, press the **Reset** button for five (5) seconds.
   Note: Make sure you can tacitly feel the button being depressed. For example, most ball-point pens are not long enough to engage the button.
4. Release the Reset button. The lights will blink, and then the Reader will reboot.
5. The Reader will now be reset to the factory default settings.

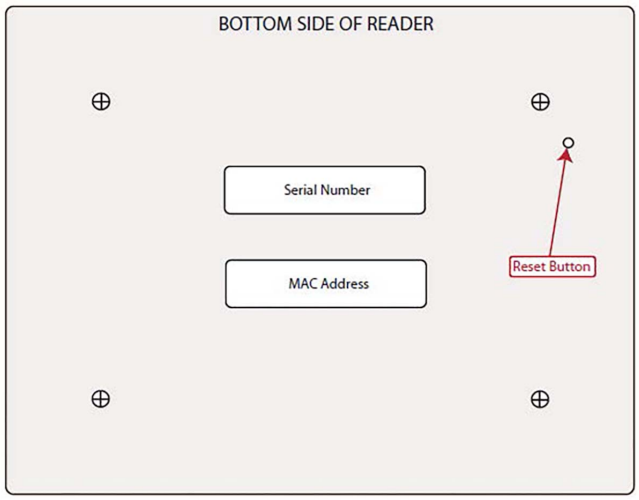


Figure 14: Reader Reset Button Illustration

Mounting the Reader

To mount the Reader, please use the following steps:

1. Flip the Reader upside-down and use the four screws provided to attach the mounting plate to the bottom of the Reader.
2. Attach the RF antennas and the WiFi antenna (for optional Wi-Fi enabled M250 Readers).
3. Thread screws (not provided) through the mounting cut-outs on the mounting bracket and mount the Reader to the wall or ceiling.
4. Attach the provided power supply cord to the Reader and to an available electrical outlet or use the PoE (Power over Ethernet) feature to power the reader. All M250 Readers support and have built-in PoE and do not require an external adapter.

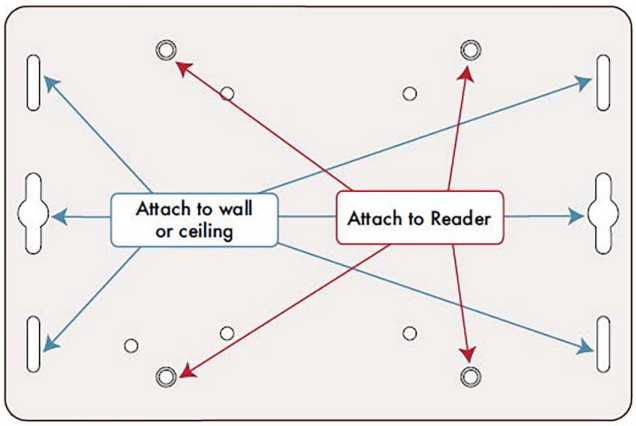


Figure 15: Reader Mounting Plate Illustration

Appendix

Warranty and Service

Limited Standard Warranty Terms

RF Code warrants its products to be free from defects in materials and workmanship for a period of 1 year (12 months) for hardware and software from the date of purchase from RF Code. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. This warranty does not apply to equipment that has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser (end-user) and is not transferable.

Standard Warranty Limitations

Except as provided herein, the entire liability of RF Code and its suppliers under this limited warranty will be that RF Code will use reasonable efforts to repair or replace, without charge, all defective Products returned to RF Code by a Customer, all as more particularly described in the End User Warranty. Except for the express warranties stated herein, RF Code makes no other representations or warranties and RF Code hereby disclaims, all other warranties, express, implied, statutory, or otherwise, including without limitation, any warranty of merchantability, noninfringement of third party intellectual property rights, fitness for a particular purpose, performance, satisfactory quality, or arising from a course of dealing, usage or trade practice.

Obtaining Service & Support

For in-warranty service, customers have several options. Customers having difficulty with RF Code products should attempt to solve those problems through RF Code's Technical Support Problem Escalation Process:

First, contact the RF Code representative or other distributor from whom the RF Code product was purchased for information on how to obtain local support.

Second, contact the RF Code Customer Support via e-mail.

Third, contact the RF Code Customer Support via the Support Line.

For product returns, the support engineer will provide a return material authorization (RMA) number. No returns will be accepted without an RMA number. If the warranty expired, there is a charge for

repair or replacement per RF Code's out-of-warranty policy. For full details of the RF Code RMA policy, please review the "RF Code Warranty, RMA, and Extended Warranty Policy" document.

RF Code Customer Support

RF Code Customer Support gives entitled customers and partners the ability to contact RF Code about installation and usage-related questions as well as make defect inquiries about eligible products that are covered under RF Code warranty agreements. A team of technical specialists can be contacted electronically or via phone.

The Support Line is available to provide General Support during normal business hours: Monday through Friday, 8:00 a.m. to 5:00 p.m. Central time, excluding national holidays.

Online Resources: support.rfcode.com

E-mail: support@rfcode.com

Voice: 512.439.2244 or toll-free at 866.830.4578

Using the M240 or M250 Reader with Windows 7

To use the M240 or M250 Reader with the Windows 7 Operating System, the following additional configuring steps should be performed:

1. Install the M240 or M250 Reader driver software that came with your RF Code Reader Configuration Utility downloaded image.

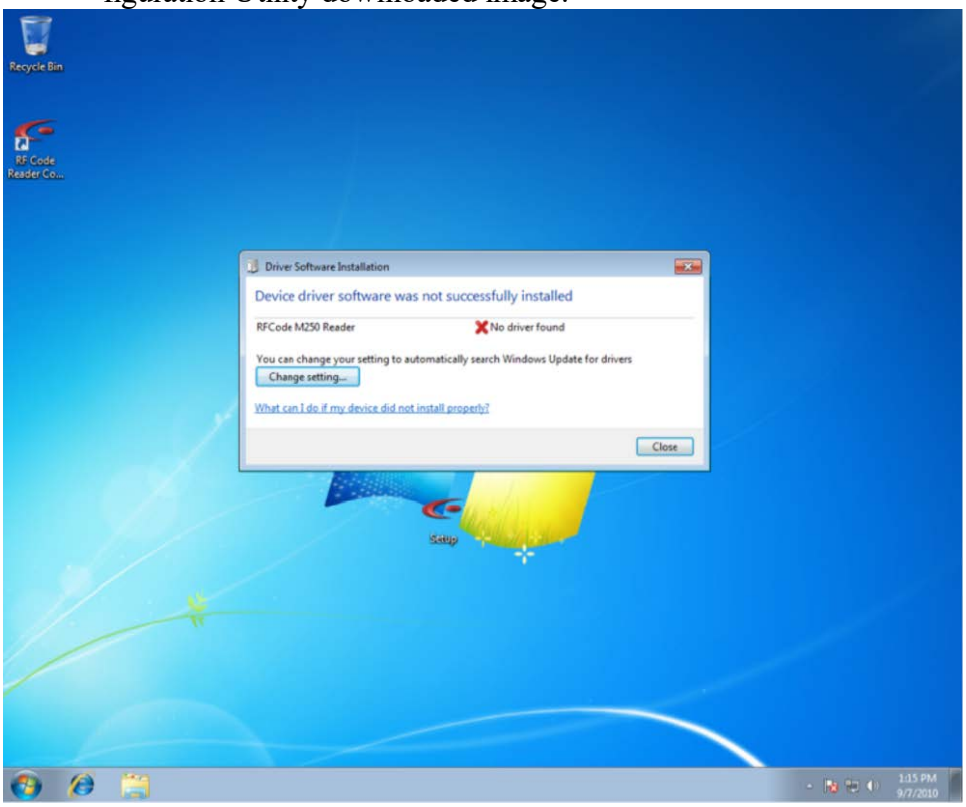


Figure 1: Reader Driver Software Installation

1. Navigate to **Start > All Programs > Devices and Printers**.

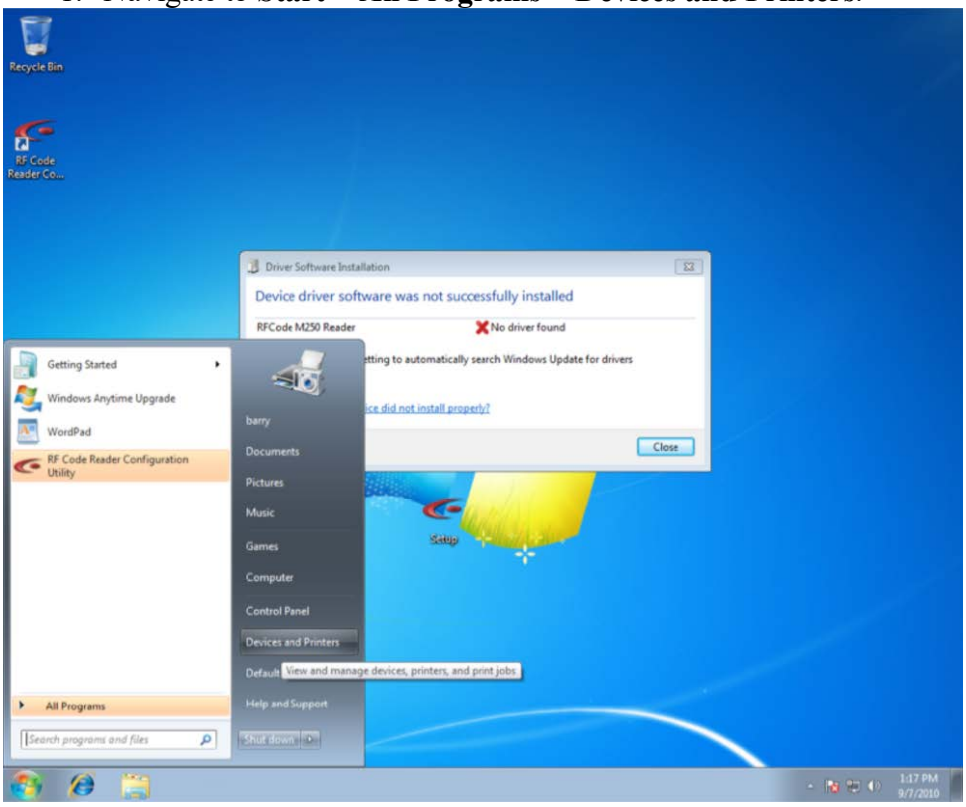


Figure 2: Navigate to Devices and Printers

1. Right-click on the RF Code **M240 or M250 Reader** and select **Properties**.

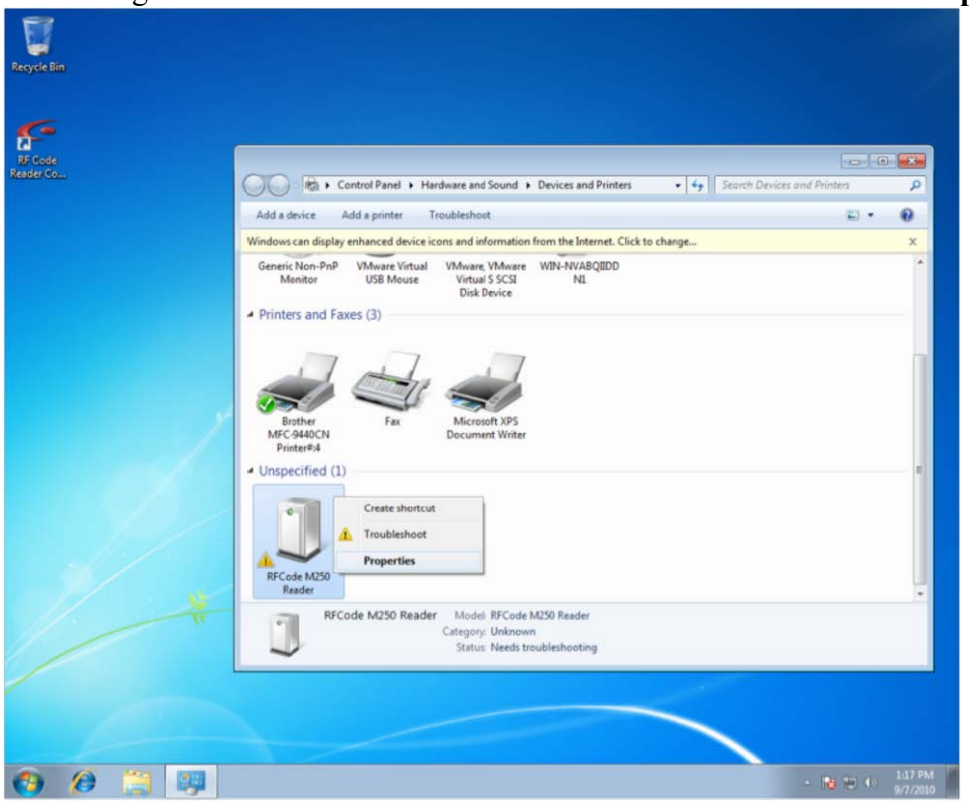


Figure 3: Select Reader Properties

1. Access the **Hardware** tab and select **Properties**.

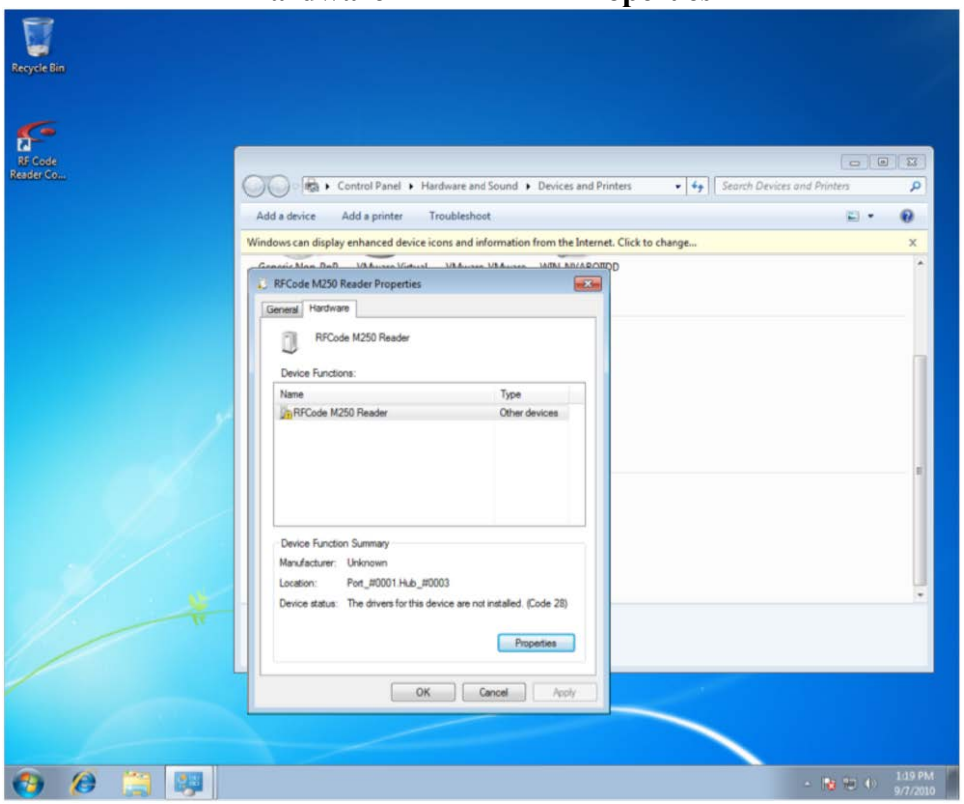


Figure 4: Select Properties in the Hardware Tab

1. Click **Change Settings** and **Update Driver**.

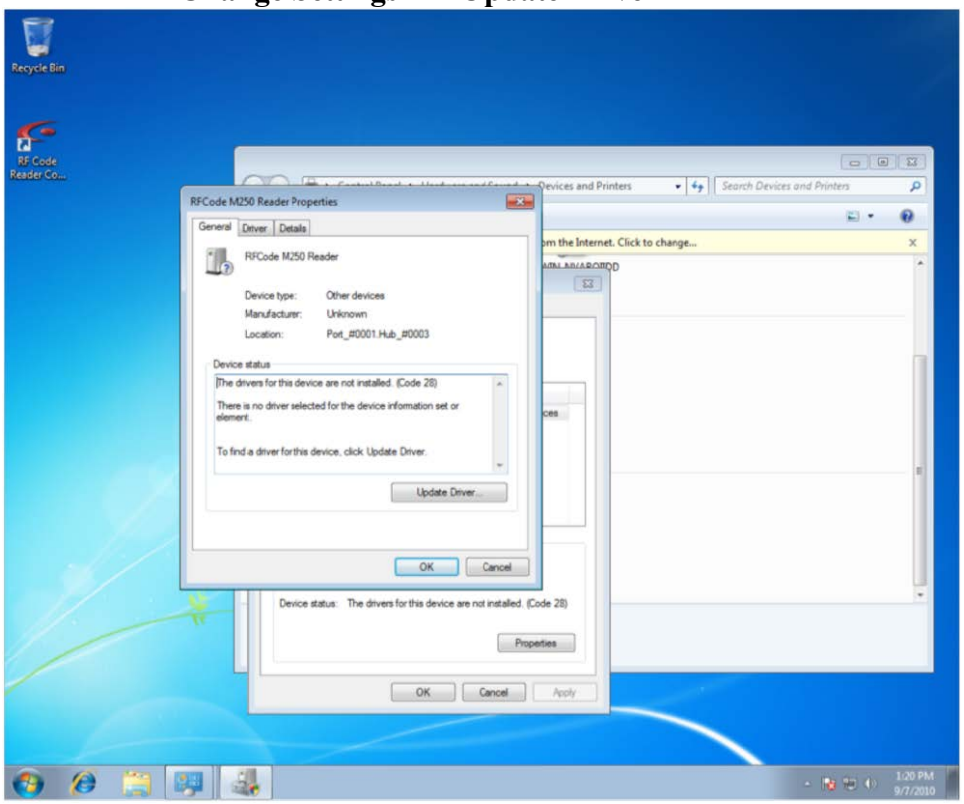


Figure 5: Update Driver Option

1. Choose **Browse my computer for driver software**.

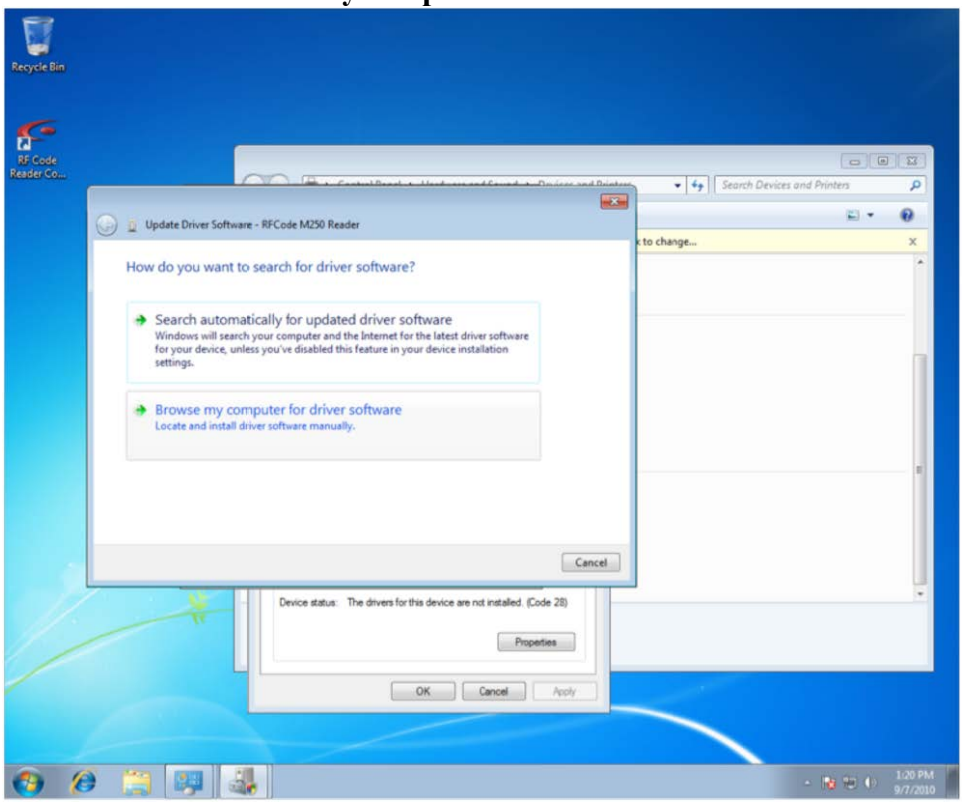


Figure 6: Browse My Computer Option

1. ***Select the folder*** in which you have installed the Reader Configuration Utility.

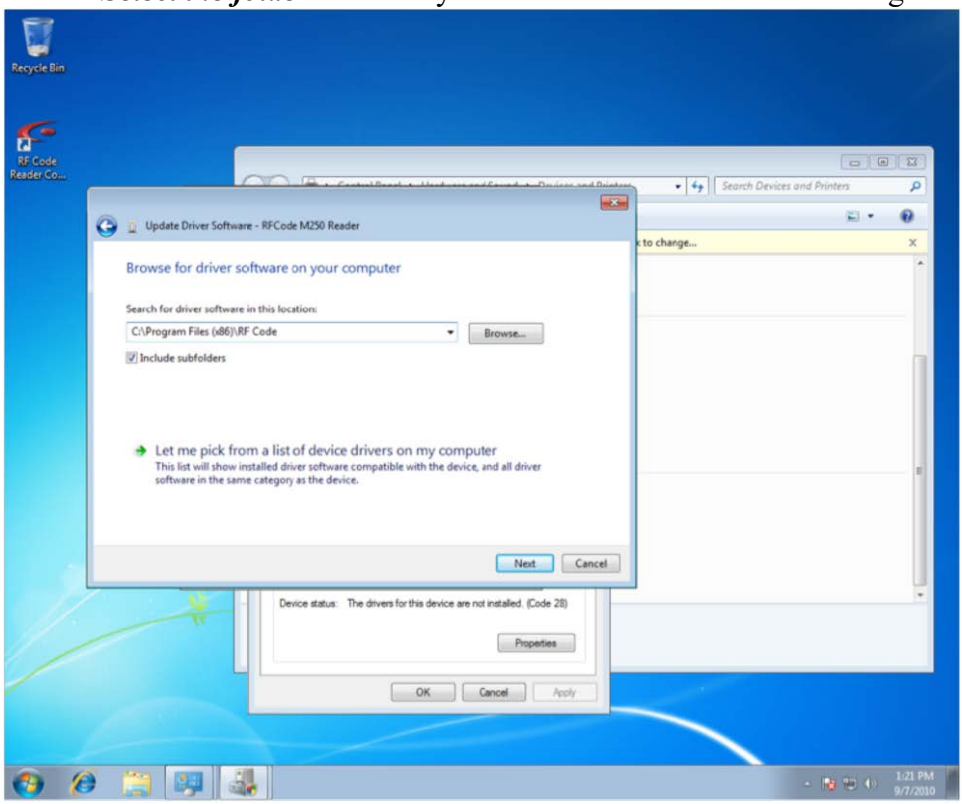


Figure 7: Folder Selection

1. A dialog box will appear that will indicate that Windows can't verify the publisher of the driver software. Click **Install this driver software anyway**.

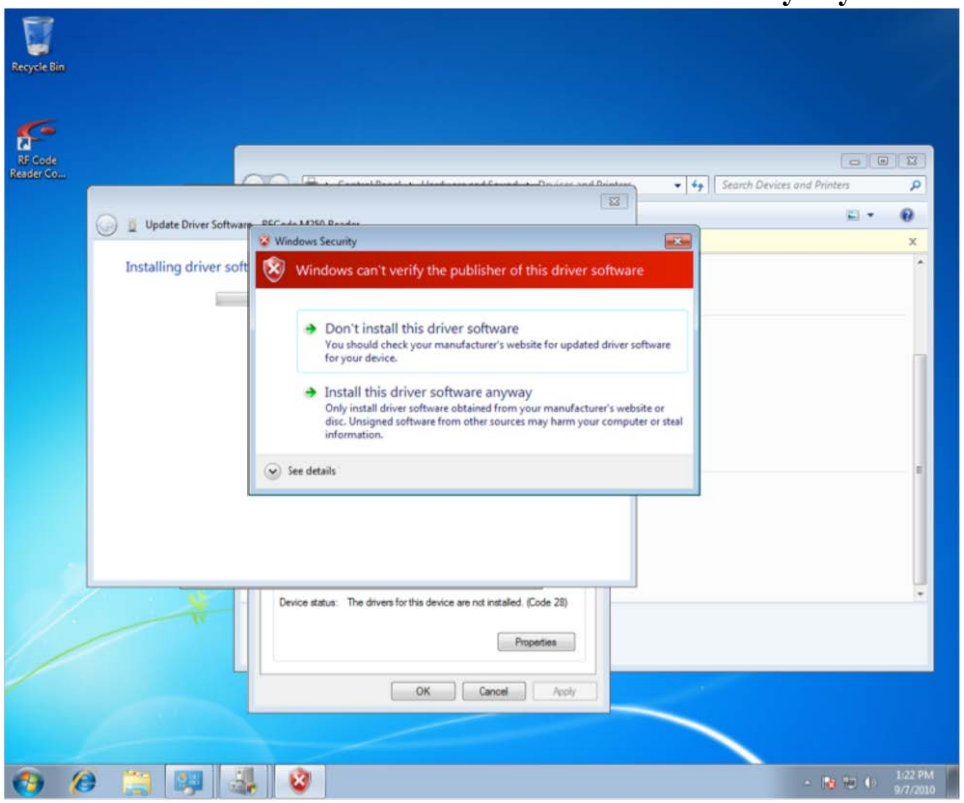


Figure 8: Install Driver Software

1. You will see a dialog box indicating that the driver software has been installed successfully. You can now access your M240 or M250 Reader using the Reader Web Console.

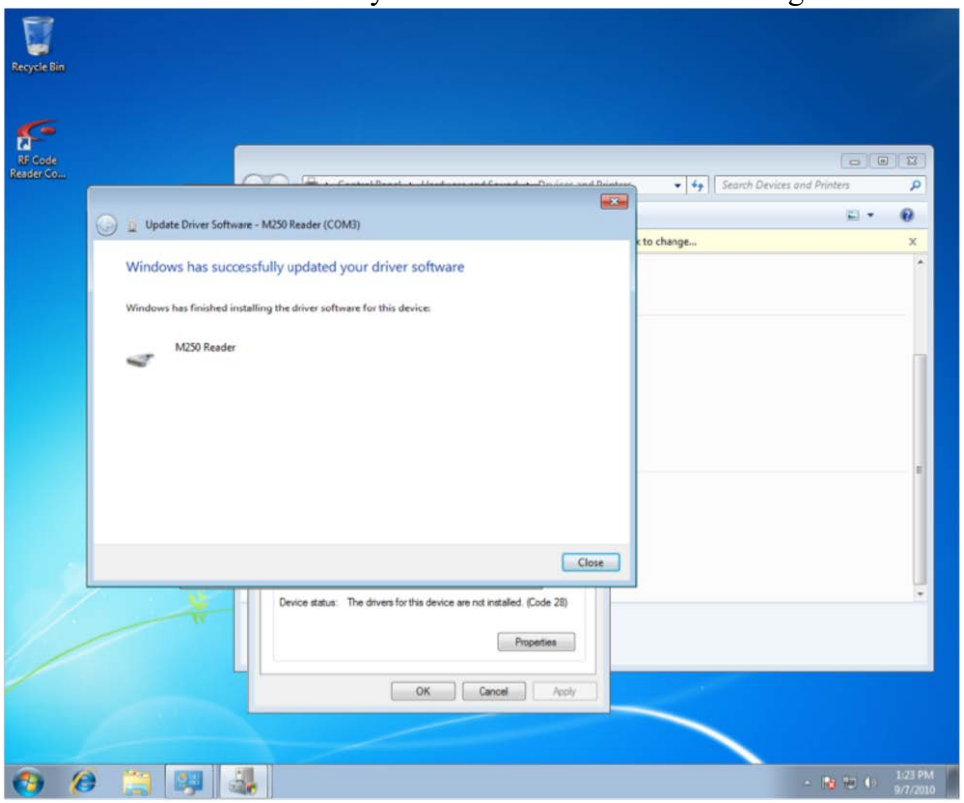


Figure 9: Reader Driver Installed Successfully

RF Code Support and Professional Services

For additional information about functionality that is not described in this document, please visit the RF Code support website and/or contact RF Code Support.

For more information about RF Code Professional Services, refer to:
rfcode.com/solutions/professional-services