RFC1000-CE
Wireless RF Transceiver & Repeater

PRODUCT
USER GUIDE

CE

MADE IN THE USA

MADGETECH
*WE BUILD DATA LOGGERS*

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Product Overview

The RFC1000-CE is a wireless transceiver for use with the RFOT and 2000A series data loggers. It has a long transmit range, providing optimal performance in occluded environments, such as ovens and refrigerators. The RFC1000-CE has an external antenna, allowing more flexibility with mounting positions in both orientation and proximity to metal walls. The RFC1000-CE may be used as a repeater, or directly plugged into a Windows PC.

Operating Environment

The RFC1000-CE is rated for use in an environment with temperatures from -20 °C to +85 °C (-4 °F to +185 °F) and a humidity range of 0 %RH to 95 %RH non-condensing. The RFC1000-CE is rated IP40 and is protected against solids that are greater than 1 mm in size. This device is not water resistant.

LED Indicators
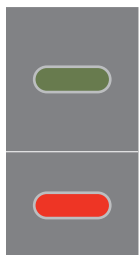
Data: Green LED blinks when communicating with other MadgeTech devices.

Power: Red LED Indicates that the device has power.

Wireless Transmission

The RFC1000-CE can connect to a maximum of 64 data loggers. The RFC1000 transmits on a frequency of 2.405 GHz - 2.475 GHz.

Transmission distance to data logger:

- Unobstructed line-of-sight (outdoors): Up to 2,000 feet maximum
- Typical urban environment (indoors): Up to 500 feet maximum

Transmission distance to other RFC1000-CE wireless transceiver:

- Unobstructed line-of-sight (outdoors): Up to 2,500 feet maximum
- Typical urban environment (indoors): Up to 700 feet maximum

Extending Wireless Transmission Distance

Additional RFC1000-CE wireless transceivers (sold separately) can be used as repeaters to transmit over greater distances. If transmitting over a distance greater than 700 feet indoors, 2,500 feet outdoors or there are walls, obstacles or corners that need to be maneuvered around, set up additional RFC1000-CE's as needed. Plug each one into an electrical outlet in the desired locations.

Software Installation

Installing MadgeTech 4 Software

The MadgeTech 4 Software makes the process of downloading and reviewing data quick and easy, and is free to download from the MadgeTech website.

1. Download the MadgeTech 4 Software on a Windows PC from **madgetech.com/software**.

2. Locate and unzip the downloaded file (right click on the file and select **Extract**).

3. Open the **MTInstaller.exe** file.

4. Select a language, then follow the instructions provided in the MadgeTech 4 Setup Wizard to finish the MadgeTech 4 Software installation.

Installing the USB Interface Driver

Follow the instructions provided in the Installation Wizard to install the USB Interface Drivers. Drivers can also be downloaded from the MadgeTech website at **madgetech.com**.

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Activating & Deploying the Data Logger

1. Connect the RFC1000-CE wireless transceiver to the Windows PC with the provided USB cable.

2. Additional RFC1000-CE's can be used as repeaters to transmit over greater distances. Plug each one into an electrical outlet in the desired locations.

3. Verify that the data loggers (sold separately) are in wireless transmission mode.

4. On the Windows PC, launch the MadgeTech 4 Software.

5. All active data loggers will be listed in the **Device** tab within the **Connected Devices** panel.

6. To claim a data logger, select the desired data logger in the list and click the **Claim** icon.

7. Once the data logger has been claimed, select a start method in the **Device** tab.

> For steps to claim the data logger and view data using MadgeTech Cloud Services, refer to the MadgeTech Cloud Services Software Manual at **madgetech.com**.

Mounting Instructions

The RFC1000-CE has a pivoting external antenna to accommodate either tabletop or wall mounted orientation. For best wireless performance, RFC1000-CE wireless transceivers and the MadgeTech data loggers should be mounted in the same orientation. This usually means that the external antenna will be pointing straight up.
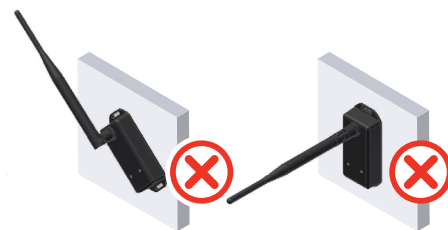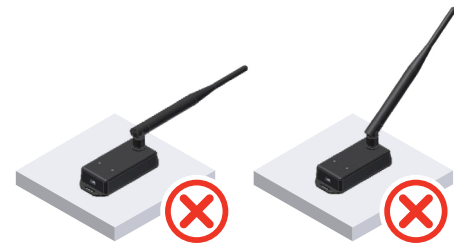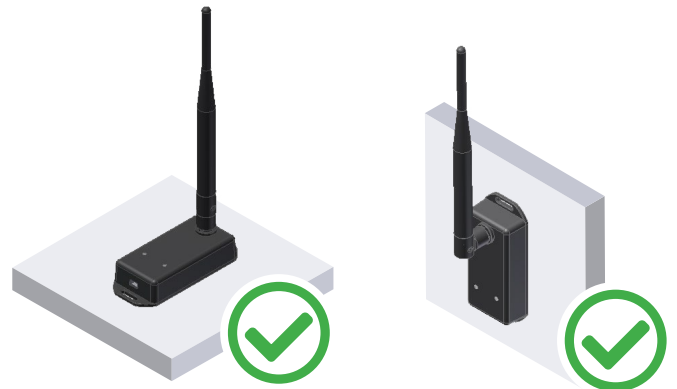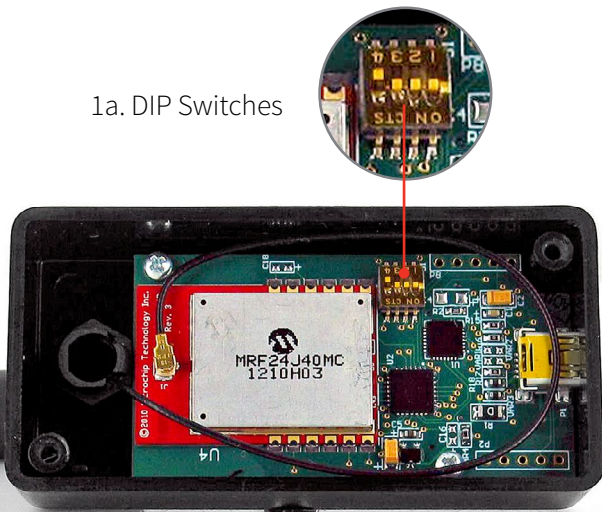
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Channel Programming

Different wireless channels may be used to create multiple networks in one area, or to avoid wireless interference from other devices. Any RFC1000-CE wireless transceiver or MadgeTech data logger on the same network is required to use the same channel. If all of the devices are not on the same channel, the devices will not communicate with one another. **The RFC1000-CE is programmed by default on channel 25.**

CHANNEL NOTE: MadgeTech wireless data loggers and wireless transceivers purchased prior to **April 15, 2016** are programmed by default to channel 11. Please refer to the Product User Guide provided with these devices for instructions to change the channel selection if needed.

Configuring the Channel Settings of the RFC1000-CE

1. Unplug the RFC1000-CE.

2. Use a Phillips head screwdriver to unscrew the back of the RFC1000-CE enclosure.

3. Find the DIP switches located on the front of the PCB circuit board *(diagram 1a)*.

4. Change the DIP switches to match the desired channel *(diagram 1b)*. **WARNING: Do not touch other sensitive electronics.**

5. Screw the RFC1000-CE enclosure back together.

6. Reconnect the RFC1000-CE.

1a. DIP Switches

Channel DIP Switch Orientation

The images below show the orientations available of the switches for each channel.

1b.

CH 11	CH 12	CH 13	CH 14
CH 15	CH 16	CH 17	CH 18
CH 19	CH 20	CH 21	CH 22
CH 23	CH 24	CH 25	CH 26

DEFAULT CHANNEL   NOT SUPPORTED

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Troubleshooting

Troubleshooting wireless transceiver problems

Check that the software properly recognizes the connected RFC1000-CE wireless transceiver.
If the wireless data logger is not appearing in the **Connected Devices** list, it may be that the RFC1000-CE is not properly connected.

1. In the MadgeTech 4 Software, click the **File** button, then click **Options**.
2. In the **Options** window, click **Communications**.
3. The **Detected Interfaces** box will list all of the available communication interfaces. If the RFC1000-CE is listed here, then the software has correctly recognized and is ready to use it.

Check that Windows recognizes the connected RFC1000-CE wireless transceiver.
If the software does not recognize the RFC1000-CE, there may be a problem with Windows or the USB drivers.

1. In Windows, click **Start**, right-click **Computer** and choose **Properties**.
2. Select **Device Manager** in the left hand column.
3. Double-click on **Universal Serial Bus Controllers**.
4. Look for an entry for **Data Logger Interface**.
5. If the entry is present, and there are no warning messages or icons, then windows has correctly recognized the connected RFC1000-CE.
6. If the entry is not present, or has an exclamation point icon next to it, the USB drivers may need to be installed. USB drivers can be downloaded from the MadgeTech website.

Ensure that the USB end of the RFC1000-CE is securely connected to the computer.
1. If the cable is connected to the PC, unplug it and wait ten seconds.
2. Reconnect the cable to the PC.
3. Check to make sure that the red LED is lit, indicating a successful connection.

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Compliance Information

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.

To satisfy FCC RF Exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Countries approved for use, purchase and distribution:

Australia, Austria, Belgium, Bulgaria, Canada, Chile, China, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Estonia, Finland, France, Germany, Greece, Honduras, Hungary, Iceland, Ireland, Israel, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malaysia, Malta, Mexico, New Zealand, Norway, Peru, Poland, Portugal, Romania, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, The Netherlands, Turkey, United Kingdom, United States, Venezuela, Vietnam

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