USER GUIDE

RFOT-12

MadgeTech

Distributed by AKRIBIS

RFOT

Wireless Meat Temperature Data Logger

Product User Guide

To view the full MadgeTech product line, visit our website at madgetech.com.

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MADGETECH
WE BUILD DATA LOGGERS

Quick Start Steps

Product Operation (Wireless)

1. Install the MadgeTech 4 Software and USB Drivers onto a Windows PC.
2. Connect the RFC1000 wireless transceiver (sold separately) to the Windows PC with the provided USB cable.
3. The RFOT is shipped with wireless transmission in an active, low power state. During normal use, inserting a USB (micro B type) cable into the RFOT will pass control to the MT4 software and disable the wireless transmission. When the USB cable is unplugged, wireless transmission resumes with settings that were chosen in MT4.
4. Launch the MadgeTech 4 Software. All active MadgeTech data loggers that are within range will automatically appear in the Connected Devices window.
5. Select the data logger within the Connected Devices window and click the **Claim** icon.
6. Select the start method, reading interval and any other parameters appropriate for the desired data logging application. Once configured, deploy the data logger by clicking **Start**.
7. To download data, select the device in the list, click the **Stop** icon, and then click the **Download** icon. A graph will automatically display the data.

Product Overview

The MadgeTech RFOT is a two-way wireless meat cooking and cooling data logger. The RFOT's rugged design, equipped with a flexible piercing probe allows it to be used in harsh environments. The RFOT is perfectly suited for use in smokehouses, ovens and other cooking processes up to 212 °F (100 °C) as well as refrigerators and freezers down to -4 °F (-20 °C). The RFOT is completely splash-proof, and can withstand wash down cycles. The RFOT records and wirelessly transmits internal product temperature readings back to a central PC for instant real-time monitoring, even when a smokehouse or freezer door is closed. The RFOT allows the user to also set-up real-time wireless alarming within the software, so that the user is notified by email or text if an alarm condition has been met or exceeded. The RFOT assists in complying with HACCP requirements as well as USDA regulations.

Options & Accessories

RFOT-FR, RFOT-4, RFOT-4TD,
RFOT-7 and RFOT-12

TLH-5903
PN: 901748-00
3.6V Lithium Battery

RFOT O-Ring Kit
PN: 902149-00
Includes 1-Square and
1-Round O-Ring

Software Installation

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.

MadgeTech 4 Software

1. Download the MadgeTech 4 Software on a Windows PC by going to **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

USB Interface Drivers can easily be installed on a Windows PC, if they are not already available and running.

1. Download the USB Interface Driver on a Windows PC by going to **madgetech.com/software**.
2. Locate and unzip the downloaded file (right click on the file and select **Extract**)
3. Open the **PreInstaller.exe** file.
4. Select **Install** on the dialog box.

For more detailed information, download the MadgeTech Software Manual at **madgetech.com**.

MadgeTech Cloud Services

MadgeTech Cloud Services allows users to remotely monitor and manage groups of data loggers throughout a large facility or multiple locations, from any internet enabled device. Transmit real-time data to the MadgeTech Cloud Services platform via the MadgeTech Data Logger Software running on a central PC or transmit directly to the MadgeTech Cloud without a PC using the MadgeTech RFC1000 Cloud Relay (sold separately). Sign up for a MadgeTech Cloud Services account at **madgetech.com/software**.

For more detailed information, download the MadgeTech Cloud Services Manual at **madgetech.com**.

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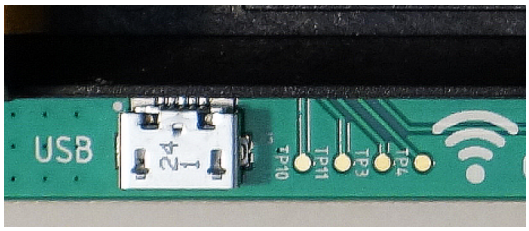
Activating & Deploying the Data Logger

1. Connect the RFC1000 wireless transceiver (sold separately) to the Windows PC with the provided USB cable.
2. Additional RFC1000's can be used as repeaters to transmit over greater distances. If transmitting over a distance greater than 500 feet indoors, 2,000 feet outdoors or there are walls, obstacles or corners that need to be maneuvered around, set up additional RFC1000's as needed. Plug each one into an electrical outlet in the desired locations.
3. Launch the MadgeTech 4 Software.
4. The RFOT is shipped with wireless transmission in an active, low power state. Inserting a USB (micro B type) cable into the RFOT enables direct USB communication and disables wireless transmission. Direct USB communication allows for changing the wireless channel in the device's Properties, if necessary.



5. When the USB cable is unplugged, wireless transmission is enabled.
6. All active data loggers will be listed in the Device tab within the Connected Devices panel.
7. To claim a data logger, select the desired data logger in the list and click the Claim icon to pair the logger to the RFC1000 connected to the PC.
8. Choose the start method, either Real Time Start to view data as it is collected, or Custom Start for standalone logging to memory. By default, a report is generated automatically when starting a logger using Real Time Start. With Custom Start, data is recorded to memory and can be viewed by selecting Stop to end the cycle, and Download to retrieve the data from the logger's internal memory.

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

For best performance, the RFOT should always be hung by the hook in an upright position. This will allow for the best path for the wireless signal.

Transmission Distance

Typical transmission distance from an RFC1000 to an RFOT:

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

Obstacles

Obstacles will decrease the line-of-sight from an RFC1000 to another RFC1000 as well as from an RFC1000 to an RFOT. Obstacles that interfere with or decrease the wireless signal could include but are not limited to smokehouse doors, freezer/refrigerator doors, building structures such as walls and metal beams and internal traffic such as forklifts and metal racks or carts. Additional RFC1000's can be placed near obstacles to lengthen and strengthen the wireless signal.

Deflection

When a wireless signal "hits" an object such as a metal wall, the wireless signal will not just stop but rather it could turn a corner, bend or slow down. When installing the RFC1000's obstacles and possible deflection should also be considered.

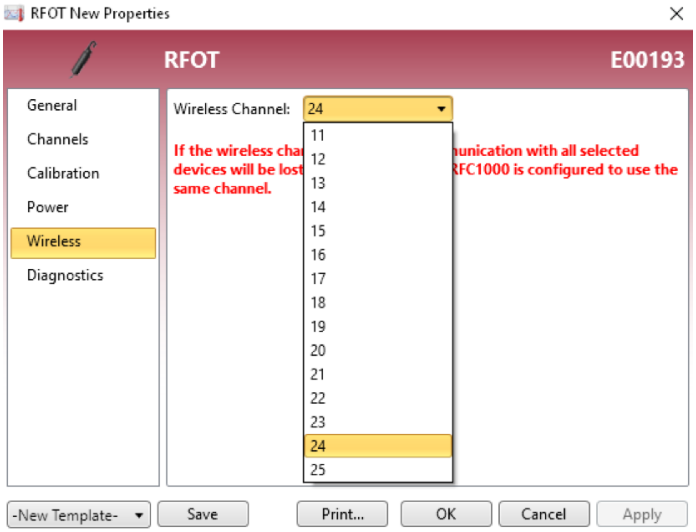
Channel Programming

Different wireless channels may be used to create multiple networks in one area, or to avoid wireless interference from other devices. Any MadgeTech data logger or RFC1000 wireless transceiver that is 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. MadgeTech wireless data loggers and RFC1000 wireless transceivers are programmed by default on channel 25.

Changing the channel settings of the RFOT

1. Using a USB cable, plug the RFOT into the PC.
2. Open the MadgeTech 4 Software. Locate and select the data logger in the Connected Devices panel.
3. In the Device tab, click the Properties icon. Or, right click on the device in the connected devices window and select properties.
4. Under the Wireless tab, select a desired channel (11 - 25) that will match with the RFC1000.
5. Click OK to save changes.

Be sure that the channel chosen matches the channel settings of the RFC1000 wireless transceiver which this device will communicate through.

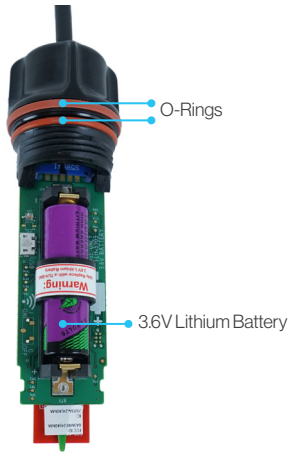


CHANNEL NOTE: MadgeTech wireless data loggers and wireless transceivers purchased prior to **April 15, 2016** are programmed by default to channel 11. Please refer to the Product User Guide provided with these devices for instructions to change the channel selection if needed.

To configure the channel settings of the RFC1000 wireless transceiver (sold separately), please refer to the RFC1000 Product User Guide that shipped with the product or download it from the MadgeTech website at **madgetech.com.**

Product Maintenance

Battery Replacement



Materials: TLH-5903 Battery

1. Unscrew the end cap and gently separating the end from the body of the data logger.
2. Remove the battery retention clip by sliding a small screwdriver blade or paper clip between the clip and battery holder and prying away from the holder.
3. Grasp the black base of the unit with cord hanging downward and both edges of the circuit board, all with one hand. Pull the old battery out with the other hand.
4. Install a new battery, observing the polarity markings on the circuit board and battery holder. Position the battery retention clip over the new battery and install by pressing downward until a click is heard from each side.
5. Install the new battery as shown by the diagram on the bottom of the battery holder.
6. Screw the body of the logger back together making sure the O-Rings are not visible.

O-Ring Replacement

Materials: RFOT O-Ring Replacement Kit

1. Unscrew the end cap from the RFOT to expose the O-Ring.
2. Use a small pointed tool (knife or pick) to pry the old O-Ring out of its groove.
3. Make sure that the O-Ring groove is free of any dirt or debris.
4. Partially screw the mating parts back together leaving the O-Ring groove exposed.
5. Apply a thin coat of silicone based lubricant to the O-Ring.
6. Stretch the O-Ring over the cap and into its groove.

WARNING: Avoid stretching the O-Ring over the threads. Sharp threads can cut the new O-Ring.

O-Rings

O-Ring maintenance is a key factor when properly caring for the RFOT. The O-Rings ensure a tight seal and prevent liquid from entering the inside of the device. Please refer to the application note **O-Rings 101: Protecting Your Data**, found at madgetech.com, for information on how to prevent O-Ring failure.

Recalibration

Recalibration is recommended annually for any data logger; a reminder is automatically displayed in the software when the device is due. To send devices back for calibration, visit madgetech.com.

Troubleshooting

Why is the wireless data logger not appearing in the software?

If the RFOT doesn't appear in the Connected Devices panel, or an error message is received while using the RFOT, try the following:

- Check that the RFC1000 is properly connected. For more information, see **Troubleshooting wireless transceiver problems** (below).
- Ensure that the battery is not discharged. For best voltage accuracy, use a voltage meter connected to the battery of the device. If possible, try switching the battery with a new 9V lithium.
- Ensure that the **MadgeTech 4 Software** is being used, and that no other MadgeTech Software (such as **MadgeTech 2**, or **MadgeNET**) is open and running in the background. **MadgeTech 2** and **MadgeNET** are not the compatible with the RFTemp2000A.
- Ensure that the **Connected Devices** panel is large enough to display devices. This can be verified by positioning the cursor on the edge of the **Connected Devices** panel until the resize cursor appears, then dragging the edge of the panel to resize it.
- Ensure that the data logger and RFC1000 are on the same wireless channel. If the devices are not on the same channel, the devices will not communicate with one another. Please refer to the Channel Programming section for information on changing the device channel.

Troubleshooting Wireless Transceiver Problems

Check that the software properly recognizes the connected RFC1000 wireless transceiver.
If the wireless data logger is not appearing in the **Connected Devices** list, it may be that the RFC1000 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 is listed here, then the software has correctly recognized and is ready to use it.

Check that Windows recognizes the connected RFC1000 wireless transceiver.
If the software does not recognize the RFC1000, 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.
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 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.

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.

Need Help?

Product Support & Troubleshooting

- Refer to the Troubleshooting section of this document.
- Visit our Knowledge Base online at **madgetech.com/resources.**
- Contact our friendly Customer Support Team at (603) 456-2011 or **support@madgetech.com**.

MadgeTech 4 Software Support

- Refer to the built-in help section of the MadgeTech 4 Software.
- Download the MadgeTech 4 Software Manual at **madgetech.com.**
- Contact our friendly Customer Support Team at (603) 456-2011 or **support@madgetech.com**.

MadgeTech Cloud Services Support

- Download the MadgeTech Cloud Services Software Manual at **madgetech.com**.
- Contact our friendly Customer Support Team at (603) 456-2011 or **support@madgetech.com**.

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