MADGETECH
WE BUILD DATA LOGGERS

RFC1000-IP69K
Splash-Proof Wireless Transceiver for the RFOT,
Therm▪A▪lert and RF2000A data loggers

Product User Guide

MADE IN THE USA

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Product Overview

For environments that require high pressure, high temperature washdown, MadgeTech has designed the RFC1000-IP69K. This new splash-proof transceiver can be installed directly in the wash down location, ensuring 100% communication throughout the entire process. This device includes a high powered transceiver with an IP69K ingress protection rating. The RFC1000-IP69K has a substantially longer transmit range, providing better performance in occluded environments such as ovens, and refrigerators. This new The RFC1000-IP69K also includes an external antenna which is protected by a neoprene boot, allowing more flexibility with mounting positions in both orientation and proximity to metal walls.

Operating Environment

The RFC1000-IP69K 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 100 %RH. The device has been specifically tested to ensure its ability to resist water ingress as well as dust. The RFC1000-IP69K will withstand high pressure and high temperature wash down cycles using caustic chemicals, as the enclosure is made of Acetal plastic.

Note: The power supply of the RFC1000-IP69K is not rated as splash-proof. Exposing the power supply to moisture will potentially damage the unit. Additional precautions should be taken by the user if the power supply will be exposed to a condensing environment.

LED Indicators

» **Power (Red):** Indicates that the device has power.
» **Data (Green):** Blinks when communicating with other MadgeTech devices.

Wireless Transmission

The RFC1000-IP69K can connect to a maximum of 64 data loggers. The RFC1000-IP69K 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-IP69K wireless transceiver:

» Unobstructed line-of-sight (outdoors): Up to 4,000 feet maximum
» Typical urban environment (indoors): Up to 1,000 feet maximum

Extending Wireless Transmission Distance

Additional RFC1000 wireless transceivers (sold separately) can be used as repeaters to transmit over greater distances. If transmitting over a distance greater than 1,000 feet indoors, 4,000 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.

Software Installation
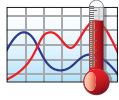
MadgeTech 4 Software

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

Installing the MadgeTech 4 Software

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

2. Locate and unzip the downloaded file (typically you can do this by right clicking on the file and selecting **Extract**).

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

4. You will be prompted to 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:

2. Locate and unzip the downloaded file (typically you can do this by right clicking on the file and selecting **Extract**).

3. Open the **PreInstaller.exe** file.

4. Select **Install** on the dialog box.

## Activating & Deploying the Data Logger

1. Connect an RFC1000-IP69K wireless transceiver to the Windows PC with the provided USB cable.

2. Additional RFC1000'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:

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Mounting Instructions

The RFC1000-IP69K has a pivoting external antenna to accommodate either tabletop or wall mounted orientation. For best wireless performance, RFC1000-IP69K 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. The antenna of the RFC1000-IP69K should also be at least 1.5 inches away from any metal.
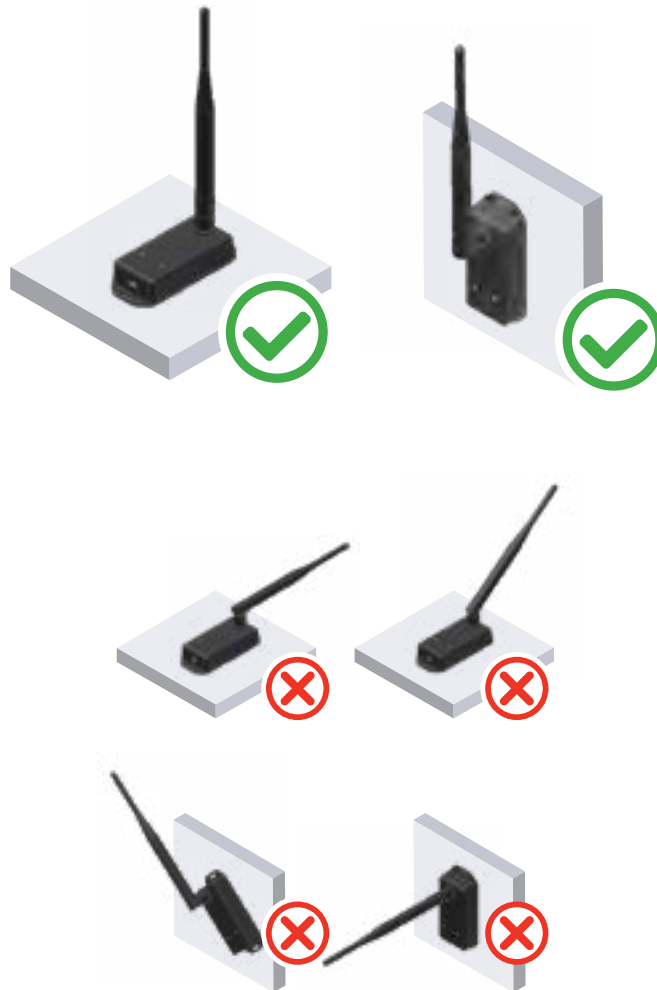
Channel Programming

Different wireless channels may be used to create multiple networks in one area, or to avoid wireless interference from other devices. Any RFC1000-IP69K 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-IP69K is programmed by default on channel 25**.

> *CHANNEL NOTE: MadgeTech wireless data loggers and RFC1000 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-IP69K
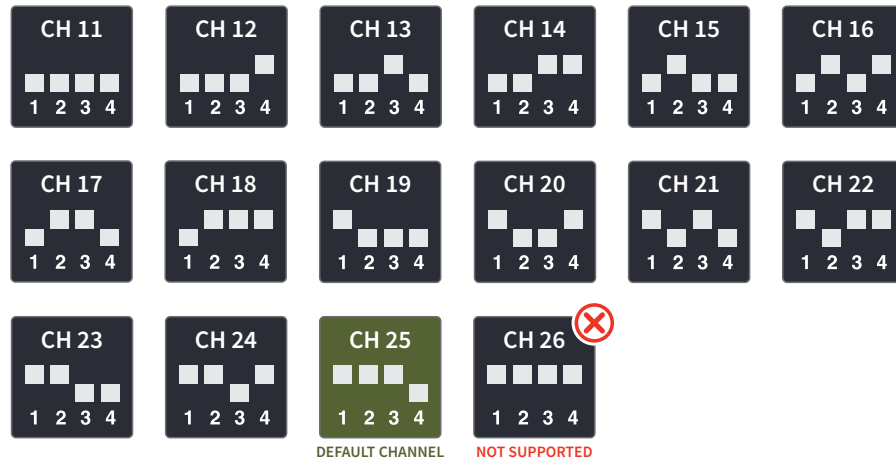
1. Unplug the RFC1000-IP69K.
2. Use a Phillips head screwdriver to unscrew the back of the RFC1000-IP69K enclosure.
3. Find the DIP switches located on the front of the PCB circuit board *(diagram 1a)*.
4. Change the DIP switches to match the desired channel *(diagram 1b)*.
5. Screw the RFC1000-IP69K enclosure back together.
6. Reconnect the RFC1000-IP69K.

DIP Switches

1a.

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
1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

CH 17	CH 18	CH 19	CH 20	CH 21	CH 22
1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

CH 23	CH 24	CH 25	CH 26
1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
		DEFAULT CHANNEL	NOT SUPPORTED

Troubleshooting

Troubleshooting Wireless Transceiver Problems

Check that the software properly recognizes the connected RFC1000-IP69K wireless transceiver.
If the wireless data logger is not appearing in the **Connected Devices** list, it may be that the RFC1000-IP69K 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-IP69K is listed here, then the software has correctly recognized and is ready to use it.

Check that Windows recognizes the connected RFC1000-IP69K wireless transceiver.
If the software does not recognize the RFC1000-IP69K, 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-IP69K.
6. If the entry is not present, or has an exclamation point icon next to it, the USB drivers may need to be installed. These are available on the software flash drive included with the RFC1000-IP69K,

Ensure that the USB end of the RFC1000-IP69K is securely connected to the computer.
1. Locate the USB-A plug of the RFC1000-IP69K.
2. If the cable is connected to the PC, unplug it and wait ten seconds.
3. Reconnect the cable to the PC.
4. 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.

Countries approved for use, purchase and distribution:
USA, Canada, Chile, Columbia, Ecuador, Honduras, India, Malaysia, Mexico, Peru, Singapore, South Africa, Thailand, Venezuela, Vietnam

General Specifications

Interface Type	USB (to PC), Wireless (to Data Logger)
Operating Environment	RFC1000-IP69K: -20 °C to +85 °C (-4 °F to +185 °F), 0 %RH to 100 %RH non-condensing Power Supply: 0 °C to +40 °C (+32 °F to +104 °F), 20 %RH to 85 %RH non-condensing
LED Indicators	Power: Red Data: Green
Enclosure Materials	Body: Acetal Plastic Cover: 300 Series Stainless Steel Antenna Boot: Neoprene
Transmission Distance to Data Logger	Unobstructed line-of-sight (outdoors): 2,000 feet max Typical urban environment (indoors): 500 feet max
Transmission Distance to RFC1000-IP69K	Unobstructed line-of-sight (outdoors): 4,000 feet max Typical urban environment (indoors): 1,000 feet max
Compatible Data Loggers	RFOT, Therm•A•lert and RF2000A Series
Maximum number of connected data loggers	64
Frequency	2.405 GHz - 2.475 GHz
Ingress Protection	IP69K
Dimensions	Body: 3.4 in x 2.9 in x 1.3 in (86.36 mm x 73.66 mm x 33.02 mm) Antenna: 7.5 in (190 mm)
Weight	14.1 oz (400 g)
Approvals	FCC ID: OA3MRF24J40MC, IC#: 7693A-24J40MC, ETSI 300 328 (EU R&TTE)